level. The first objective should be to gain farmers' confidence with unambitious, guaranteed effective techniques.

(c) There is a concentration on a restricted number of crops - possibly only one.

(d) The farmers, or anyone with something to gain or lose financially, have an important say in directing the type of extension advice proposed.

(e) There is a system of research capable of providing extension workers with advice and a system for retaining extension workers.

25. Generally speaking farmer co-operatives and crop Commodity Boards who decide to spend money on extension workers are those who benefit most from research and extension efforts.

Role of the Private Sector

26. The farmer is the natural entrepreneur. The complex nature of family responsibilities, of social responsibilities and the intricate nature of farm production has made it difficult for outsiders to plan comprehensively for an ideal production unit. Central control of farming systems has always been difficult.

27. Only when there have been a limited number of farm operations, e.g. wheat, rubber, tea or beef production, has it been possible for large scale successful planning from the outset to take place. Only in the case of 'hydraulic' cultures with a long tradition of 'despotic' control, has central direction been effective. Large scale company farming has been successful where appropriate products are being grown, e.g. wheat, tropical export crops, beef, but for mixed farms something akin to the family farm has been proved to be the most appropriate unit.

28. The private sector has been most vulnerable to criticism in its role as an intermediary - providing inputs and selling outputs. In most cases there is a fair amount of competition but there are many cases of large monopoly profits being made by traders.

29. The state has often taken over some of the key strategic roles in trade in order to eliminate middlemen's profits. Unfortunately, in many cases the state has exploited the rural sector to an even greater extent than the private sector - and provided a worse service.

30. While doctrine seems to justify the type of system to be encouraged, a slightly deeper analysis - of who benefits and how - combined with an examination of the nature of services provided, would enable more relevant analyses to take place.

31. The crop technology, for example, should be a critical factor in determining the degree of state participation. In the marketing of perishable crops such as fruit and vegetables, state intervention has seldom been successful. This is because these crops need a rapid decision-making system and a great knowledge of sources of supply and demand in order to marekt produce successfully. The large bureaucratic organisation simply cannot cope with these problems. On the other hand, the state has much better prospects in marketing non-perishable export crops, e.g. coffee, cocoa, palm oil.

32. Between these two types there lies a range of crops which could be marketed by state or private organisations. Which would do best depends upon what objectives are established, who is supposed to benefit most, and how the management structure is organised.

Marketing

33. The marketing system and the market for crops is essential to the success of any new scheme and should be examined at the very earliest stage. As far as market prospects are concerned, it is necessary to differentiate between an international and a domestic market.

34. As far as the *international market* is concerned, it is likely that the scale of output that is proposed is not going to affect international prices. However, an examination of international price forecasts frequently shows that the prospects are not particularly good.

35. It is necessary to treat these forecasts with caution: (i) the forecasts are seldom for more than five years, whereas the investment which is under consideration is likely to be for 20 years or more; (ii) the record of price forecasting is so dismal, and so incorrect, that, had they been taken seriously, agricultural export earnings would barely have risen over the last few decades; (iii) those countries which have concentrated on agricultural exports, contrary to common belief, have been far more successful in the longer run than those who have turned their backs on international trade.

36. The important issue is not whether the price forecasts are favourable but whether the costs of production in the region or country are likely to be competitive with those of other areas in the longer run. In the history of any export crop there are certain to be violent price fluctuations and what is important is to ensure that the crop is grown in an area which has a comparative advantage and can ensure its survival in the unfavourable troughs of income which are bound to occur. If, therefore, it is thought that there is some international comparative advantage in that area, increased output merits serious consideration.

37. The other market is the *domestic market* in which the situation is somewhat different. The output is likely to be a much greater share of the domestic market than it would be in international trade, and therefore it will have a direct effect on domestic prices. The excess of supplies will lead to a dramatic drop in prices and it is important therefore to make a very careful assessment of the market for domestic crops.

38. Perishable crops are subject to much more violent price fluctuations, partly because they normally serve the domestic market and frequently because there are a larger number of producers all reacting in the same way to price changes. In addition the demand for these products does not alter very much as prices change. The market for fruit and vegetables requires an extremely rapid system of decision-making and an extremely knowledgeable system for distributing produce to consumers. This is why traditional fruit and vegetable marketing is left to small scale entrepreneurs who are able to adapt rapidly and efficiently to changes in supply and demand. Large organisations,particularly those in the public sector, are generally unsuited to the marketing in this type of produce since they seldom possess the flexibility for success in this field.

37. The only investment which can be defined as entirely a marketing project, is a central or municipal market system. Many misconceived projects have been set up in order to provide cleaner and better marketing facilities in town centres. Unfortunately, attempts to charge users a fee in order to recover the costs has seldom been successful, since traders frequently move to adjoining areas where they can sell just as much produce without paying any fee at all. Central marketing systems will only been economically successful if traders have not the space to set up selling points in areas adjoining the market, or the public administrative system

is sufficiently effective to curtail this competition. It can, of course, be argued that a more hygienic central market will have social benefits which outweigh financial losses. This may be so, but it cannot be proved. In general, however, these facilities are only justified in densely populated urban areas, and even then they need to be assessed with some care.

* * * * * *

This guide could not have been produced without the help of many people in many countries from whom I have learnt a great deal over the last two or three decades - farmers, administrators, professionals and academics.

The earlier drafts of this paper were improved as a result of ideas from colleagues in the Overseas Development Administration, particularly P Stutley and G Gwyer. The final version also benefited from helpful comments by K Anthony, A Smyth, A Stobbs, A Spurling, A Peers, D Trotman, and P Weare. The sections on co-operatives were heavily dependent on advice from the late Bert Youngjohns. Subsequently the draft was also improved by comments from D Pickering and some of his colleagues in the Agricultural Department of the IBRD.

While almost all their helpful suggestions have been incorporated into the guide, I would like to stress that the blame for the final form and content of this guide is entirely my own.

G A Bridger

Overseas
Development
Institute

10-11 Percy Street London W1P OJB
Tel: 01-580 7683

AGRICULTURAL ADMINISTRATION UNIT

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AGRICULTURAL ADMINISTRATION NETWORK

NEWSLETTER NO. 5 *APRIL 1981*

CONTENTS

* *Discussion Paper 5 is enclosed as a separate booklet*

I *NEWS OF THE AGRICULTURAL ADMINISTRATION UNIT*

(i) RECENT MEETINGS

There have been 3 lunch-time meetings at ODI in recent months.

On 22nd January, Peter Oakley spoke on *"Rural Social Development: current trends in practice"* and showed a short film on the development of a peasant group in N.E. Brazil.

On 12th March, Clare Oxby spoke on *"Group Ranches in Africa"*, drawing on the commissioned research she has been carrying out recently for FAO on the same subject.

On 19th March, Barbara Harriss, Research Associate of ODI, spoke on *"Mercantile Groups, Mercantile Associations, Mercantile Politics"*, drawing from her recent fieldwork in S. India.

Three meetings are planned for late April: Anil Gupta on *"Viable Projects and Unviable Farmers (Credit in Harayana)"*, Sean Conlin on *"Questioning the benefits of hill irrigation schemes: a case study from Nepal"*, and Richard Tapper on *"Getting grass: the allocation of grazing rights among pastoral communities"*.

(ii) VISITS

Guy Hunter visited Bangladesh for 5 weeks (Feb-March)
(1) To launch the working plan of a 7 country research programme on *"Delivery Systems in support of Small Farmers"* sponsored by the Centre for Integrated Rural Development in Asia and the Pacific (CIRDAP) and by FAO. This involved persuading 7 countries each to produce a 'Country Study' (through one or more Research Institutions). The second half of this consultancy will fall in October-December 1981, to write an overall Final Report to CIRDAP-FAO.
(2) To join for 10 days Bank-FAO (Co-operative Programme) in preparation of the Government of Bangladesh proposal for the Bank's 2nd period of their Extension and Research Programme (ERD II). Guy Hunter visited Rome (FAO) in April for discussions on these 2 programmes.

Clare Oxby will be visiting Cameroon in May/June as a member of a team carrying out an evaluation of Stabex payments made under Lomé I for the EEC; she will be collecting material on cooperatives and farmer groups also.

John Howell was in the Sudan in January and February assisting in an evaluation of a NORAD-supported rural development programme in Eastern Equatoria. The programme involves rural infrastructure, the establishment of six agricultural development centres and support for cooperatives.

(iii) OTHER NETWORKS

The Pastoral Network series issued in January 1981 included papers by Lucas Ayuko on *"Organization, Structures and Ranches in Kenya"*, and by Brenden Halpin on *"Vets - Barefoot and Otherwise"*. A full list of papers in the Pastoral Network series (eleven issues in all since 1976) is available from the AAU.

Among the papers of the recent (December 1980) Irrigation Management Network was one on *"Promoting Participatory Management on Small Irrigation Schemes: an Experiment from the Philippines"* (B. Bagadion, F. Korten and D. Korten). Copies are available from the AAU.

II NOTES ON DISCUSSION PAPERS

Discussion Paper No. 5 *"Institutions and Decision-Making in Agricultural Research"*
by Stephen D. Biggs

The administration of agricultural research, particularly the impact of public sector research and development upon small farmers, is the subject of Discussion Paper No. 5. 'Administration' in this paper is largely a question of discussing various institutions involved at different levels in R & D and examining the ways that types of institutions influence research priorities and help to form professional attitudes.

Stephen Biggs first examines what ought to happen if R & D is to be effective as an instrument for small farmer agricultural development. The 'ideal' system is one which links the informal process of on-farm trial and error to the work of formal research establishments. He contrasts this to the actual practice in low-income countries and suggests that even where the R & D system has had tangible successes (such as HYVs in South Asia) this has been fortuitous rather than the result of the system of research itself working properly.

He then lists a number of considerations in the design of research systems which he claims can help to reduce the costs of 'imperfections' and thereby ensure a better return on investment in agricultural research. Most of these considerations are based upon areas of concern which are familiar to those involved in policy and management (e.g. clarification of objectives, responsiveness to clients, cost/effectiveness of method, staff motivation, organisation of specialists into a team approach, appropriate location of functional responsibility) but which, Stephen Biggs argues, have been seriously neglected by those involved in administering agricultural research.

III AGRICULTURAL ADMINISTRATION NETWORK PAPERS

No. 11 N.S. Carey Jones *"Aspects of Administering Agriculture: A Response to Discussion Paper no. 4"*

This takes up three points raised in the paper on *"Ministries of Agriculture and the Administration of Agricultural Development"*. Firstly, it argues that support for agricultural production and the promotion of marketing aspects of agricultural commerce, as administrative activities, *should* be closely related within MoAs, and not separated as DP no. 4 advocates. Secondly, he argues that *seasonal* credit administration *should* be the responsibility of agricultural officers. Mr Carey Jones (who was Permanent Secretary of the Ministry of Lands and Settlement in Kenya in the 1960s) also relates the experience of Kenya in administering land settlement. The brief reference to the administration of land settlement, and its separation from Agriculture, in Zimbabwe in DP no. 4 is the peg upon which this interesting account is based; but Mr Carey Jones does not in fact regard the Kenyan experience as relevant to Zimbabwe.

This paper is available on request from the AAU Librarian.

Other papers available are

Network Papers

No. 6 Syed Hashim Ali *"Practical Experience in Implementing the Training and Visit Extension System in Large Command Areas in India"*

No. 8 Donald Curtis *"Appropriate village-level institutions: Some generalisations from the case of Lesotho's village water supplies"*

No. 9 Roderic Dutton *"Rural Community Development in Oman"*

No. 10 Gordon A. Bridger *"Guidelines for the Appraisal of Agricultural Projects"*

Discussion Papers

No. 2 Clare Oxby *"Rural Development and Traditional Institutions - the example of Gandu in Hausaland"*

No. 3 Guy Hunter *"The Management of Agricultural Development: Reflections on Field Level Planning and Management from India and Sri Lanka (January - March 1980)"*

IV *SOME RECENT PUBLICATIONS ON AGRICULTURAL ADMINISTRATION*

(This section is to notify members of publications or papers which they are unlikely to come across unless they happen to be on a particular mailing list.)

A.J.H. Bauer, *Rural Development in the Third World 1970-77*, International Institute for Land Reclamation and Improvement, PO Box 45, 4700 AA Wageningen, The Netherlands. This is no. 17 in ILRI's bibliographic series. It has 1197 entries and costs 20 Dutch guilders, post free. It appears to include most of the major, easily available, contributions to the field of agricultural administration. (One way of keeping up to date with literature is *Rural Development Abstracts*, a quarterly journal published by the Commonwealth Agricultural Bureaux since 1979 (Central Sales, CAB, Farnham House, Farnham Royal, Slough SL2 3BN, UK) which costs £40 per year (£24 to new subscribers) and has around 2 500 entries per year from some rather recondite sources.)

Development Alternatives Inc., *Integrated Rural Development: Making it Work?* This is an interim report to USAID under a project to find ways of improving the management of integrated rural development projects. DAI's authors draw upon their experience of IRD projects in (e.g.) the Bicol (Philippines), North Shaba (Zaire), IDRP (Jamaica); and they give a full account of available literature in this field. Their main contribution, however, are arguments about organization design, management behaviour, motivation, and coping with uncertainty. The 253 page report is available from DAI, 1823 Jefferson Place, N.W. Washington DC 20036.

F.A.O. *Improving the Organization and Administration of Agricultural Development* Report of an Expert Consultation held in Cyprus, 1980. This is the second workshop organised by the Development Organization and Institutions Service of FAO's Human Resources, Institutions and Agrarian Reform Division. The first was held in Manila in 1979 and the Report of the earlier meeting includes useful 'Guidelines' prepared by the Service on 'a Programme to Improve the Organization and Administration of Agricultural Development'. These provided the basis for the discussions at both Manila and Cyprus, although the Guidelines paper was revised for the second meeting. The two reports are available from FAO (ESH Division), Via delle Terme de Caracalla, 00100 Rome, Italy.

International Agricultural Center, Wageningen *The Rural Poor and Technical Assistance.* This is the final report of the 'Small Farmer and Development Co-operation' project. It is 200 pages and is a compilation of fieldworkers reports and papers on specific topics (e.g. Niels Roling on agricultural extension alternatives) many of which have appeared in the project newsletter *Approach.* Available free from PO Box 211, Wageningen 6700 AE, The Netherlands.

COPAC, *Co-operative Information Note no. 1. Democratic Republic of the Sudan* (43 pp). A useful country background paper with information on both Northern Provinces and the Southern Region and covering different agricultural sector co-operatives (traditional rain-fed, irrigated, mechanised rain-fed, livestock) as well as the movement as a whole, and especially external technical assistance to it. First of a new series and available from COPAC Secretariat, C/o FAO, Via delle Terme di Caracalla, 00100 Rome.

David Norman, *The Farming Systems Approach: Relevancy for the Small Farmer*, M.S.U. Rural Development Paper no. 5 (1980). Excellent summary of now familiar arguments for a farming systems research approach (with familiar examples of mixed cropping and late-planted varieties) to designing small farmer projects. Staffing and cost aspects of such an approach are not discussed at length. Free of charge (and, like other MSU Papers, well-produced) from Dept. of Agricultural Economics, 206 International Center, Michigan State University, East Lansing, Michigan 48824, USA.

Lars-Erik Birgegard, *Manual for the Analysis of Rural Underdevelopment*, Swedish University of Agricultural Sciences, Uppsala, 1980. This is an imaginative approach to conducting agricultural surveys (crops, livestock, technology, input supply, physical resources, *and* organisations) and developed further by practical use in Nepal and Sri Lanka. The main aim is to explain rather than describe low levels of rural productivity through survey methods, and there is also discussion of the operational aspects of undertaking field investigation. 145 pp. Available from International Rural Development Centre, Swedish University of Agricultural Sciences, Uppsala, Sweden.

V *NETWORK MEMBERS HANDBOOK*

The green booklet which we produced last July with the names, addresses, jobs and interests of network members will be reissued with the next set of papers. There are a number of new entries and amendments. Members who wish to revise their entries should do so as soon as possible and members not already included should send us details of (i) their recent professional responsibilities, and (ii) their other interests in agricultural administration.

Overseas
Development
Institute

10-11 Percy Street London W1P OJB
Tel: 01-580 7683

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AGRICULTURAL ADMINISTRATION NETWORK

NEWSLETTER NO. 6 *JULY 1981*

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Networkers' Responses to our questionnaire is enclosed as a separate booklet

I NEWS OF THE AGRICULTURAL ADMINISTRATION UNIT

(1) Meetings

On 12 August, the Unit is collaborating with the Developing Countries Specialist Group of the British Computer Society to hold a meeting on *The Use of Computers in the Planning, Implementation and Monitoring of Small Farmer Development Programmes.*

Three papers will be presented:

Michael Felton (Head of Evaluation and Planning, Ayangba Agricultural Development Project, Nigeria), *A Review of Experience with Micros in Agricultural Development Planning in Nigeria*

E.C. Mackey (formerly Evaluation Officer, Ministry of Agriculture and Natural Resources, Malawi), *Computing in Programme Planning and Evaluation, with particular reference to experience in Malawi*

G.P. Tottle (Manager, Agricultural Applications, Technology Division ICL) and F. Robson (Head of Management Systems, Royal Agricultural College, Cirencester), *Requirements of Development Authorities in the Smallholder Sector as evident in studies in Kenya, Malaysia, Pakistan, Zimbabwe and Sudan.*

A report on the meeting and a summary of papers will be included in the next newsletter.

(2) Publications

An ODI Briefing Paper on *The Sahel* is now available from the Publications Officer, and a Briefing Paper on *World Food* will be available shortly to coincide with the first World Food Day in October.

Clare Oxby has joined the editorial board of *Community Development Journal.*

John Howell and Guy Hunter are producing a special issue on the organisation of services to small farmers for the journal *Agricultural Administration.*

II *NOTES ON DISCUSSION PAPERS*

You will already have received Discussion Paper no. 6, *A Hard Look at Directing Benefits to the Rural Poor and at 'Participation'*, by Guy Hunter.

On p. 35, there are a number of specific questions on the paper's conclusions on
(a) the approach to making direct, consultative contact with the poor and ensuring that they receive their share of benefits
(b) the practicality of local programming for the needs of the rural poor
(c) the requirements for the staffing and management of field services for meeting the requirements of the rural poor
(d) the appropriate forms of government organisation to meet the needs of local programming, and of reaching the poor.

Two earlier discussion papers have been reprinted and are available once again:

no. 3 Guy Hunter, *The Management of Agricultural Development: Reflections on Field Level Planning and Management from India and Sri Lanka (January - March 1980)*

no. 4 John Howell, *Ministries of Agriculture and the Administration of Agricultural Development.*

III RECENT PUBLICATIONS ON AGRICULTURAL ADMINISTRATION

PASITAM Series. The PASITAM programme of publications on the design and management of development programmes (which had a fairly strong bias towards the rural sector) has come to an end. It was set up under William Siffin, the Director of the International Development Institute at Indiana University under a USAID grant and produced 25 short 'Design Notes' and a number of publications including Earl Kulp's *Designing and Managing Agricultural Programs.* Their final publication is by Jon R. Moris, *Managing Induced Rural Development.* $10.00 (plus $1.00 for postage) from International Development Institute, 400 East Seventh Street, Bloomington, Indiana 47405, USA. (Cheques payable to Indiana University). Jon Moris is currently a visiting professor at the Department of Agricultural Education and Extension of the University of Dar es Salaam and his book is based upon his experience over the past twenty years particularly with establishing projects or programmes in traditional sector crop and livestock production. The full list of the Design Notes series which are still available can be obtained from the above address.

"Indian Agriculture", The Statesman (New Delhi) 18-19-20 May 1981. Three long articles on (1) the overall picture of agriculture in India, particularly regional imbalances, "Indications of a Retreat"; (2) the organisation of agricultural research, "Back to the Laboratory"; and (3) the organisation of agricultural services and investment, "The Need for a Dialogue". It is a particularly informative series, especially for those without first-hand knowledge of India. We are grateful to Robert Chambers (now with the Ford Foundation in New Delhi - at 55 Lodi Estate) for sending it. If networkers do not have access to *The Statesman* we are prepared to send photocopies to those interested.

Participation Occasional Paper: Debaters' Comments on "Inquiry into Participation: a research approach" by Andrew Pearse and Matthias Stiefel, 1980. United Nations Research Institute for Social Development (UNRISD) Participation Programme. Available from Selina Cohen, Queen Elizabeth House, 21 St Giles, Oxford OX1 3LA or UNRISD, Palais des Nations 1211 Geneva 10, Switzerland. This 130 page document consists largely of comments, by some 90 academics and practitioners, on a detailed research proposal on the subject of participation by the late Andrew Pearse and by Matthias Stiefel. The next stage in the UNRISD project is a journal called *Dialogue*. No. 2 will be devoted to Latin America, and no. 3 to Asia.

Michael Cernea, *Measuring Project Impact: Monitoring and Evaluation in the PIDER (Mexico) Rural Development Project.* World Bank Staff Working Paper no. 332. This staff working paper is interesting particularly because it discusses attempts to involve small farmers in decisions on local investment. This paper does not describe the actual practice of consultation in detail but it outlines the types of investment which resulted and goes into considerable detail on the methodology employed. PIDER itself is a IBRD-assisted large-scale multi-sector project covering a population of around 5 million with current investment at around $350 mill per year. Available from Agriculture and Rural Development Department, The World Bank, 1818 H Street N W, Washington DC 20433.

COPAC Cooperative Information Notes. The first publication in this series, on Sudan, was mentioned in the previous Newsletter. The second one, on Kenya, is now available from COPAC Secretariat, c/o FAO, Via della Terme di Caracalla, 00100 Rome. These two will be followed shortly by no. 3 on Egypt, no. 4 on Zambia, no. 5 on Tanzania and no. 6 on Thailand.

Asian Productivity Organisation, *Farmer Education and Extension Services*. Report of a meeting held at APO in Japan, July 1980. This is valuable mainly for its series of short country papers on extension organisation in Taiwan, Hong Kong, India, Indonesia, S. Korea, Nepal, Philippines, Sri Lanka and Thailand. From Asia Productivity Organisation, 4-14 Akasaka 8-chome, Minato-ku, Tokyo, Japan 107.

International Agricultural Development Service, *Agricultural Assistance Sources* (3rd edition). This book describes the organization and agricultural programmes of 18 international institutions and the bilateral agricultural activities of 16 nations. Single copies available on request from IADS, 1133 Avenue of the Americas, New York, NY 10036, USA. The *IADS Newsletter* provides further information on IADS, which is expanding its activities to include specialist advice on organisation, management and policy aspects of agricultural development, and is moving to Washington DC.

IV *NEWS OF NETWORKERS*

(1) Conference Report

Clare Oxby attended the International Union of Anthropological and Ethnological Sciences (IUAES) Inter Congress in April at the Royal Tropical Institute, Amsterdam.

The symposium attended was entitled *Traditional Cooperation and Modern Cooperative Enterprise*. The convenor, Pierre Van Dooren, was unable to attend due to illness. Koenrad Verhagen took his place.

There were some 20 participants at the symposium, mainly from the Netherlands and Germany. Only two participants were from ldcs: S.O. Adeyeye from Nigeria and A.K. Gupta from India. 10 papers were presented and discussed; a further paper was distributed but the author, M.R. Dove, was unable to attend the symposium. H.D. Seibel brought a paper with him but there was not time to discuss it.

The papers were as follows:

Frits J.A. Bouman, Department of Agrarian Law of Non-Western Countries, Agricultural Ministry, Hollandsweg 1, Wageningen, The Netherlands, *Exploring Informal Saving and Credit Arrangements in Developing Countries: some notes on Sri Lanka.*

Case study of the *cheetu*, a rotating savings and credit association (ROSCA) in Sri Lanka.

Hans Dieter Seibel, Bergelchen Ort 14, D-4600 Dortmund 16, BRD, *Indigenous Self-help Organizations and Development: the African case.*

Examples from Liberia and Ghana of reciprocal work groups and ROSCAs, and their potential for development.

M.D. Levin, Dept. of Anthropology, University of Toronto, Toronto, Ontario, Canada M5S 1A1, *Labour, Savings and Credit in a Nigerian Village.*

Work groups, rotating savings associations, religious groups, age sets, women's groups and patrilineal lineage segments in a village in Cross River State.

Benno Galjart, Hertenlaan 6, Wageningen, the Netherlands, *Cooperation as Pooling.*

A discussion of cooperation as reciprocal exchange, whereby what is collected from group members is then redistributed within the group.

Göran Hyden, Ford Foundation, P.O. Box 41081, Nairobi, Kenya, *Modern Cooperatives and the Economy of Affection in Sub-Saharan Africa.*

The importance of principles of reciprocity, kinship and affinity in pre-capitalist socio-economic relations leads the author to his concept of the 'economy of affection' which, he argues, has unfortunately been neglected in African development.

S.O. Adeyeye, Yaba College of Technology, Yaba, Lagos, Nigeria, *The Place of 'Esusu Clubs' in the Development of the Cooperative Movement in Nigeria.*

Successes and failures in the attempts to transform a form of ROSCA known locally as *esusu* into cooperatives.

A.H. Eijken, c/o K. Verhagen, Royal Tropical Institute, Mauritskade 63, 1092 AD Amsterdam, the Netherlands, *The Barracellato, a Traditional Insurance Cooperative in Agro-pastoral Village Communities of Sardinia.*

A case study of the *baracellato*, showing its historical development from the Middle Ages to the present day, through the year 1898 when the institution was formally recognized by the government in Rome.

Hans H. Münkner, Inst. for Co-operation in Developing Countries, Am Plan 2, D-3550 Marburg, BRD, *Possibilities and Problems of Transformations of Local Village Groups into Pre-cooperatives.*

Examples of traditional village groups and *nam* groups in Upper Volta, and of modern pre-cooperatives in Niger and in Ivory Coast.

H.D. Heinen, Departmento de Antropologia, I.V.I.C., Apartado 1827, Caracas 1010A, Venezuela, *Experimental Production Units and the assimilation of technological inputs in indigenous areas of Southeastern Venezuela.*

A detailed account of an attempt to facilitate the incorporation of certain Amerindian communities into the capitalist economy of Venezuela by setting up agricultural cooperatives.

Anil K. Gupta, C.M.A., Indian Institute of Management, Vastrapur, Ahmedabad 380015, India, *Farmers' response to Cooperative Project Implementation; cases from dairy, sheep and pasture management in arid regions.*

Case studies of individual farmers involved in the cooperatives demonstrate the difficulties, especially for deficit farmers, of getting out of the cycle of indebtedness, and the rationality of the farmers' responses and strategies.

Dieter W. Benecke, Nordstr. 14, D 5205 St. Augustin, BRD, *Modern cooperatives in the 'Newly Industrialised Countries'.*

General discussion, with examples of rural cooperatives promoted by government agencies in Ecuador.

M.R. Dove, The Rockefeller Foundation, Yogyakarta, Indonesia, *Traditional Reciprocity versus Modern Cooperatives: The Ideology of Peasant Labour in West Kalimantan, Indonesia.*

According to the official Indonesian belief, the Kantu' of Kalimantan engage in cooperative socio-economic relations characterised by *unbalanced* reciprocity, oriented towards the good of the group (i.e. the village) at the expense of the individual. The author on the contrary argues that *balanced* reciprocity between households is the norm, and that individuals seek to maximise the returns to their labour. The implications of this misunderstanding are discussed in relation to development among the Kantu' - particularly of state-controlled cooperatives.

Clare Oxby has prepared a paper which is aimed at clarifying certain problems of definition which emerged at the symposium. This has been circulated to participants.

There will be more information on publication plans and availability of papers in the next newsletter.

(2) Agricultural and Rural Management Training Institute (ARMTI)

ARMTI is being established in Ilorin, (PMB 1343) Kwara State, Nigeria to train agricultural sector project managers and staff through short courses. It will shortly produce a report on management resources and training requirements in the country.

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10-11 Percy Street London W1P OJB
Tel: 01-580 7683

AGRICULTURAL ADMINISTRATION UNIT

AGRICULTURAL ADMINISTRATION NETWORK

NEWSLETTER NO. 7 *NOVEMBER 1981*

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I AGRICULTURAL ADMINISTRATION NETWORK PAPERS

The meeting on the use of computers in small farmer development programmes provides the Network with its present batch of Network Papers. These are available to Network members from Fiona Harris. (Non-Network members are being asked to pay £2.50 for the set of three.) Two of the papers (Numbers 13 and 14) are particularly concerned with the use of computers in the monitoring and evaluation of traditional sector agricultural performance, where there is likely to be considerable diversity in production and marketing even within specified area projects. The general conclusion of these two papers is that computers should be used warily and, in particular, that attention should be paid to the costs and difficulties of obtaining the sort of information that is likely to justify the costs of computer installation. The third paper (Number 12) takes a more robust view, largely because it is concerned with the use of computers in the particular commercial/production environment of single crop/outgrowers. The experiences described are RISDA (rubber in Malaysia) with cross-references to tea and coffee production organisation in Kenya.

Network Paper Number 12 *Computing Requirements of Development Authorities in the Smallholder Sector* by G P Tottle and F Robson

This paper examines the computing requirements of agricultural development authorities identified during the course of the

SCAPA project (System for Computer-Aided Planning and Action). From the viewpoint of the farmer, profitability and risk-reduction are of major importance; so too is diversity, as a means of smoothing both labour peaks and income. Manual methods of control can be unduly restrictive in this respect. Computer methods are described which help with budgeting, accounting, and credit control. From the viewpoint of the extensionist, a computer system can provide valuable information of farm capability and the farmer's plans. Computer-based tabulation and reporting also releases the extensionist for more specialist non-clerical work. Structured computerised techniques of project control make it possible to delegate routine functions to less experienced staff. The simplified accounting model that has been developed for SCAPA, based on gross margin techniques, is also described.

Network Paper Number 13 *A Review of Experience with Micros in Evaluation and Project Planning in Nigeria* by Michael Felton

This paper describes the experience of the Ayangba Agricultural Development Project. The project required a weekly survey of 150 farmers, but problems in the data processing services, which covered several projects, meant long delays. The use of a microcomputer led to major improvements in timeliness of reporting and also assisted project planning operations in other ways. Its introduction was not without difficulties, including import licencing, power supply and air conditioning, and staff recruitment. Furthermore, the original plans to

accelerate data collection through multi-variable date entry proved unworkable; it became necessary to have a programmer in attendance throughout data entry sessions. The Paper cautions against the wholescale adoption of computerised techniques in this field, and points to the need to have the facility of fall-back to manual methods.

Network Paper Number 14 *Computing in Programme Planning and Evaluation with Particular Reference to Experience in Malawi* by E C Mackey

This paper examines the use of computers in monitoring and evaluation at the national level. Feedback from M & E in Malawi was frequently channelled to too remote a level of decision-making, leading to the accumulation of un-utilised data and a consequent loss of confidence in M & E at the implementation level. The introduction of computerised data processing techniques has speeded up data transcription and correction, has encouraged the development of new and more rapid appraisal methodologies, and has led to the fuller participation of project management in the M & E process. However, the general conclusion of the Paper is that the introduction of computers in the small farm sector requires much careful consideration of the operational requirements than normally takes place.

II NOTES ON DISCUSSION PAPERS

Discussion Paper Number 6 *A Hard Look at Directing Benefits to the Rural Poor and at 'Participation'* by Guy Hunter

A number of comments from Network members have been received, on both general and particular points. About 20 of these are of substantial length and importance. It is hoped to republish the Paper, with small amendments in the text but with substantial excepts on whole comments printed with it. Meanwhile, this note will mention these comments very briefly so that Network members have an idea of what has been raised.

The Discussion Paper opened with three main arguments - moral, political, and developmental - which may justify the effort to get more benefits to the poor. *N S Carey Jones* questions how far the moral argument is felt by LDC governments (as contrasted with Western feelings) in the context of their own societies. Further, he questions the validity of the development argument on the grounds that maximun increase of economic resources (enabling a better share to go to the poor) is not likely to be achieved through programmes aimed at production by the poor.

The Paper continues in Part I and II by stating a large number of assumptions which would have to prove valid if poverty-oriented programmes are to succeed. *T N Chatuvedi* (Indian Institute of Public Administration) comments that not enough mention has been made of insecurity of tenure as a major obstacle to all schemes designed to increase the productivity of small, poor farmers.

Part III of the Paper, and the conclusions in Part IV, deal with the implications for action which arise from the examination of assumptions in Parts I and II. As the individual comments often straddle several sections of the original Paper, they are dealt with here by a dozen headings covering particular issues, rather than in the order of the Paper itself.

Social/Political. Judith Tendler (Univeristy of California) makes a series of observations on ways of eluding or minimising local capture by the rich and powerful of benefits intended to reach the whole farming community. These include the possibility of having two different programmes (so that each get appropriate benefits), and avoiding the common situation where the programmes for the poor are entrusted to an agency which is politically and financially weak. *J Jacobs* (IDS, Sussex) mentions that, in some circumstances, a strong initiative from the Centre may be the only way to ensure that benefits reach the poor. This argument tells somewhat against overall devolution of responsibility to local institutions. This is a critical issue also stressed by *Robert Chambers* (Ford, New Delhi) with suggestions of getting small scale technology and assets directly into the hands of the poor. A rather different line of comment comes from *Neils Röling* (IAC Wageningen), *Göran Hyden* and *Janice Jiggins* (both Ford Nairobi) suggesting that organisation of the poor as a "countervailing power" to demand and extract their rights and fair share of benefits may be a necessary condition for success. *Hari Mohan Mathur* (Home Affairs, Government of India) takes the view that reorientation of training of field officials offers a way of improving understanding of the needs of the rural poor.

On *delivery systems* both *Alec McCallum* (FAO Rome) and *Gilbert Etienne* (IDS Geneva) stress the existing failures especially noted by the World Conference on Agrarian Reform and Rural Development (FAO Rome 1979). Etienne particularly stresses the need for ample supply - shortages are at the root of unfair allocation to the rich and influential.

On *numbers*, the same two commentators stress the sheer numbers of the poor and the costs of staffing to a level which would assure reasonable contact and service; Etienne suggests that more indirect methods (investment in services such as irrigation, power supply, access roads) can by itself make an important contribution to their capacity to produce.

On *technology*, *Robert Chambers* (Ford, India) mentions items particularly suited to small farmers, and *James Ryan* (ICRISAT, India) underlines the extreme local specificity of technical solutions and the need to consult farmers.

On *administration and institutions* there are a number of comments, largely confirming the arguments in the Paper. *Judith Tendler* argues that in some cases, competition between institutions may be effective in improving services, and that powerful institutions may be more effective (even outside their formal terms of reference) than special institutions in the same field. This is an argument against 'coordination'. On the organisation of agricultural as against social services *N V Ratnam* (Indian Institute of Management, Bangalore) suggests that the general infrastructure and production programmes should be kept separate from special beneficial social programmes

and this chimes with the view expressed in the Paper on this separation. Etienne suggests a stronger administration at District. *J M Leach* notes the confusion of Ministries and Agencies, and suggests that they should be grouped by function with a secretariat to ensure action.

Decentralisation A Stronger distinction between bureaucratic decentralisation and devolution of powers to local authorities is required. *S K Rao* and *N K Jaiswal* (NIRD, Hyderbad) suggests that Departmental 'coordination' should be aided by each department dealing with specific relevant avocations (farmer, carpenter, weaver etc) at village level.

Bureaucratic style There is a strong contribution from *D C Korten* (AID, Manila), and *Norman T Uphoff* (Cornell) on the incompatibility of bureaucratic style with any consultative and participatory approach with suggestions for retraining: and there is radical criticism of extension management by *R J G Steel* (MoA, Lesotho).

Extension Duties There are still wide differences of opinion, which could be summarised in asking are Extension services primarily there for technical advice or should they be acting more as 'institutional organisers' (*Norman Uphoff* cites Schemes in Sri Lanka) or facilitators (see the work of *B Johnston* and *C Clarke* (Food Research Institute, Stanford) cited below). Suggestions on the use of Voluntary Organisations for better contact largely follow the lines of the Paper. *Göran Hyden* (Ford, Nairobi) emphasizes that central government is really unable to deal with farmers without strong local organisation. *R Chambers* pinpoints the difficulty of combining dedication with scale of action.

Groups Several contributors emphasised that the poor are not homogeneous and may compete with each other (*Etienne, Niels Röling*). Hyden emphasizes that cooperatives seldom succeed unless formed from a sense of vital necessity by the membership. *Rau and Jaiswal* emphasize that (in India) small functional groups may work, but only if they collaborate with a local village Panchayat (elected committee). General agreement that groups formed round a single specific function or purpose (even if socially mixed) have homogeneity of interests for *that function* There are warnings that small groups have limited capacity, often for production but not for commercial and other external relations.

In addition to letters coming in, a number of papers have been received from Networkers working in this field. They include:

Judith Tendler, *Rural Projects Through Urban Eyes*: current status: restricted AGREP Division (World Bank) Working Paper, but possibly available as a (published) Staff Working Paper in due course. (Judith Tendler, 3062 Beuna Vista Way, Berkeley, California)

B F Johnston and W C Clark: draft chapter (on Institutional Structures and Managerial Procedures) of forthcoming book *Redesigning Rural Development: A Strategic Perspective* (John Hopkins University Press)

Norman Uphoff *The Institutional Organiser Programme in the Field After Three Months* (Uphoff, Rural Development Committee, Cornell University, Ithaca, New York 14853)

Niels Röling *Target Groups and Agricultural Extension* (Roling, International Agricultural Centre, Agricultural University, De Leeuwenborch, Hallandseweg 1, Wageningen, Netherlands)

David C Korten and Norman Uphoff *Bureaucratic Re-orientation for Rural Development* (Korten, USAID/ORAD, Ramon Magsaysay Center, 1680 Roxas Boulevard, Manila Philippines).

Hari Mohan Mathur *Rural Development in Traditional Societies: An Anthropological Perspective* (Shri Hari Mohan Mathur, Department of Personnel and Administrative Reforms, Ministry of Home Affairs, New Delhi - 110001)

Discussion Paper Number 7 *Farmer Groups in Cameroon, Some Experiments in Credit Delivery* by Clare Oxby

The primary reason for the failure of the farmer groups described in this paper is one that is so often found in agricultural development: there was insufficient attention paid to determining the interests of farmers and the likely advantages or disadvantages to them of participating in the scheme over a long period. As a corollary, far too much attention was paid, as elsewhere, to the convenience of government officials.

This failure of the scheme to take into account the farmers' own assessment of likely costs and benefits will be familiar to most readers. And, in theory at least, most agricultural planners would accept the importance of this factor. In practice, however, these mistakes keep being made.

One reason may be that it is difficult to determine, in advance of the implementation of a particular scheme or investment, the likely response of all farmers. And planners might argue that

it it is impossible to generalise about likely farmer response from experience elsewhere. But in Cameroon there is a specific type of initiative - the formation of farmer groups with precise functions-and the record of failure does seem to provide pointers to determining necessary conditions for the success of such initiatives, at least in the Cameroon. Clare Oxby examines such conditions on page 15. (Similar attempts have been made elsewhere eg: Koenraad Verhagen in "The Preparation and Appraisal of Co-operative Development Programmes and Projects" *Review of International Co-operatives* Number 1, 1981; and V S Doherty and N S Jodha, *Conditions for Group Action Among Farmers*, ICRISAT Occasional Paper Number 19, 1977.)

The Cameroon experience of group farms, as described by Clare Oxby, provides a basis for generalisations on some of the conditions for the success fo farmer groups of this type. It would be interesting to hear from Networkers if their own experience bears out the conclusions of the paper, or to hear what other conditions they think are necessary for the successful formation of farmer groups.

III SOME RECENT PUBLICATIONS

1 Eric Clayton and Francoise Petry (editors) *Monitoring Systems for Agricultural and Rural Development Projects*, FAO, 1981, (pp 261) This includes two useful conceptual pieces (by McArthur and Clayton) and a number of case studies of monitoring and evaluation work,

including APMEPU in Nigeria (Slade), Lilongwe (Kinsey), Saemaul Undong (Whang), Vuvulane Irrigation in Swaziland (Cobban), T and V in Rajasthan (Mahajan and Petry), Mwea (Clayton), Bimas (Birono and Badianto), and Credit in Tunisia (M'Tibaa and Zghidi). Available from both the Publications Division and the Policy Analysis Division of FAO. A similar document has been published by FAO in French based on Francophone country case studies: *Systémès de suite pour le développement agricole.*

2 Asian Productivity Organization, *Producers' Associations for Marketing Farm Products,* 1981 (pp395), Asian Productivity Organisation 4-14 Akasaka 8-chome, Minato-ku, Tokyo 107, Japan.
This is based upon an APO symposium which examined the performance, internal structure and 'external relations' (with private traders and government) of producers' organisations/co-ops in several Asian countries. The main value is in the country reports: Thailand, Sri Lanka, India, Taiwan and South Korea are the most informative.

3 Asian Institute of Management, *Rural Development Management Programme*
This describes the 'action research' undertaken by AIM at the field level of agricultural sector ministries in the Philippines and the plan for the next stage of research which is designed to improve the responsiveness of government agencies to small farmer requirements. The paper is Number 2 in a new series under the aegis of Management Institutes Working Group on Social Development which constitute an international research Network. More information is in Paper Number 1, available from AIM, MCC, PO Box 898, Makati Metro Manila, Philippines.

4 Participation Occasional Paper: *Some Dimensions of People's Participation in the Bhoomi Sena Movement* by Md Anisur Rahman. The paper focuses on a tribal movement of landless and in part bonded labourers in Western India with which the author has been in close interaction for the past few years. The movement is analysed in terms of people's power, people's participation and self-reliance. Available from: UNRISD Popular Participation Programme, Palais des Nations, 1211 Geneva 10 Switzerland, or Selina Cohen, UNRISD Popular Participation Programme, Queen Elizabeth House, 21 St Giles, Oxford OXL 3LA, England.

5 *Dialogue about Participation 1* This first issue launches the debate on participation. The editorial by Matthias Stiefel and the late Andrew Pearse is followed by a contribution by W F Wertheim: "The Urgency Factor and Democracy: A Theoretical Contribution" and some 30 pages of debate between Professor Wertheim and Satish Arora, Arthur Clegg, Peter Idenburg, Nguyen Khac Vien, Ernst Utrecht, Jaap van Ginneken, Marshall Wolfe and Peter Worsley. There is also a news section, and an annotated bibliography. Available from UNRISD.

6 Ho Nai Kin *The Framework of Agricultural Extension Programme in the Mada Scheme* (pp 42) Mada Monograph Number 39 M$6.00 This is written by the Senior Agricultural Officer in the Division of Agriculture at MADA in Malaysia. It describes in detail the intended operation of the T and V extension system (including job descriptions for staff involved) in large (80,000 ha plus) rice area. Available from Muda Agricultural Development Authority, Telok Chengai, Alor Setar, Kedah, Malaysia.

IV OTHER NEWS

Members of the AAU are currently engaged in short-term consultancy work overseas.

Clare Oxby is undertaking a study for FAO on the sedenterisation of pastoral nomads in Africa. She is visiting Upper Volta and Nigeria in the course of this work.

John Howell is preparing a report for the Overseas Development Administration (ODA) on UK aid to the co-operatives sector in developing countries. This work may take him to The Gambia, Botswana and Kiribati.

The research project on co-operative research and planning with small farmers (involving RTI in Amsterdam, the ICA, the Co-operative Council of Sri Lanka, the Co-operative League of Thailand) has completed field work in Sri Lanka and Thailand and a working Document (Number 24, available from the *Department of Social Research, Royal Tropical Institute, 1092 AD Amsterdam)* contains preliminary conclusions on the institutional and management requirements for the establishment and consolidation of small farmer-based co-operatives. There are also interesting, and entertaining, accounts of experience in organising village meetings. The detailed field reports (on Chonnabot and Chum Phae Districts in Thailand and Moneragala District in Sri Lanka) will be available early next year.

A new six-week *study programme for agricultural research and extension staff* in developing countries has been prepared by the Overseas Development Group at the University of East Anglia. It concentrates upon the planning, organisation and management of agricultural research. Details from Dr David Gibbon, Director ODG, University of East Anglia, Norwich NR4 7TJ.

An ODI Briefing Paper on *World Food Production and Security* is now available from the Publications Officer, ODI.

Overseas
Development
Institute

10-11 Percy Street London W1P 0JB
Tel: 01-580 7683

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AGRICULTURAL ADMINISTRATION NETWORK PAPERS

No. 11

ASPECTS OF ADMINISTERING AGRICULTURE:

(A Response to Discussion Paper No. 4)

by

N S Carey Jones

Mail address: *Mawingo,*
Welsh St Donats,
nr Cowbridge,
South Glamorgan,
CF7 7SS.

[1980]

The points that I make in this paper reflect my own experience in the administration of agriculture in Kenya. This experience confirms much of what John Howell writes on the appropriate range of activities and internal organisation of Ministries of Agriculture (Discussion Paper No. 4). If you load a MoA with too many functions, it loses clarity of objectives and is liable to become a top-heavy monster in which one is not sure what the purpose of the *ministry* is, since it then has a multitude of purposes. Apart from this, it becomes difficult to have any coordinated policy rather than a variety of policies. (I recall that, in Kenya, we once took over into the MoA the Co-operative Dept., because we had had some conflicts with it over produce marketing. But it was always a stranger in the MoA and most of what it was doing (inspection and regulation of co-ops) did not interest us. The field staff of the MoA could usually look after the technical problems of agricultural co-ops without the Dept. of Co-ops being with us. When we started the large settlement schemes, they were always referred to as the "fifth wheel in the agricultural coach", meaning that we had not time to give them the attention they needed - they were a political programme rather than an agricultural one.) I think a MoA's overall objective should be limited to "agricultural development". Then everyone knows what he is trying to do and all have a broad criterion within which they can use their initiative.

But there are three points where I either part company with Howell or want to take his points further: they are (a) the relationship between support for agricultural production and the promotion of agricultural commerce (which he would like to separate), (b) within this relationship, the particular role of credit administration, and (c) the issue of Land Settlement and Agriculture.

Production and Commerce

I think that the starting point in any consideration of agricultural development must be the farm. The farmer is the "actor" or "do-er" and activities by "production" services are designed to influence him. However, his greatest incentive to change is the return that he will get - in effect, the price. Agricultural development cannot be separated from farm economics. One side of any farm plan is the return to be expected by the farmer (the other side is the cost of his inputs - including unpaid labour of the farmer himself and his family, which may not appear to have an economic cost but are a real cost to him). Unless these sums have been worked out, the production side of agricultural services is working in the dark. I suspect that, in many countries, these sums are not worked out at all, with the result that much expenditure of money and energy on agricultural services is wasted, unless one is very lucky.

This factor is one of the reasons why I consider that, unless there is some means of determining prices, one side of the farm's plan cannot be calculated, and one cannot really plan agricultural development (or even work at it sensibly). There are enough hazards in farming, in any case, so that there must be an ensured and *good* return at this point to cover the risks. I think it follows that the marketing side of agriculture is a condition for the growth of production side. I am not suggesting that marketing services and organisations should be a part of the MoA rather than be handled by special organisations, but that the MoA should decide marketing policies - and in some detail. The MoA thus becomes the link between the marketing of farm products and their production. Through this link both sides of the farm's P & L account can be estimated. I stress this matter of the farm economy because it is important to agricultural credit, which I deal with below. Here I am stressing that the marketing side determines production possibilities and is really inseparable from them.

To take this a stage further, let us suppose that there is some means of determining prices for a number of agricultural products, so that the conditions given above are satisfied. It is possible to take the view that the market environment is static, something that one accepts as given. It is, however, possible so to manipulate the market that opportunities may be given for increasing production (ie. it may be made economically worthwhile to produce a crop which it had not been worthwhile for farmers in the previous market conditions) or for producing new crops. Research into the application of improved, or new, production possibilities will often show that these possibilities are not practicable in the given situation, but would be if it were changed in some specific way. Thus, again, production services become dependent on marketing services. This is elementary business lore. What you can produce depends on what you can sell and what you can get for it. This is why I am against separating the two conceptually although they will be handled by different parts of a MoA (including statutory boards under its ultimate control), since governments can affect the marketing side in ways that make increased, or new, production possible (because worthwhile to the farmer).

Credit Administration

There seem to me to be two broad kinds of agricultural credit:

(a) Seasonal credit: advances for seeds, fertiliser, pesticides and, possibly, but with some hesitation, labour. All these, where the return can be expected within the year, can be handled by co-ops (or even marketing boards, which would thus play a role similar to that of the moneylender-cum-produce dealer). If it is done this way, no cash need change hands (except for advances for labour - hence the hesitation) since the farmer can be issued with his requirements in kind and the repayment deducted from the payment for his crop deliveries.

This avoids credit being spent on other things and is desirable for government credit (which is always subsidised - even when more than the full interest rate is charged, it is unlikely to cover the cost of supplying the credit). Barring natural disasters, plagues, etc this kind of credit is thus effectively secured and getting repayment is relatively painless. Governments need not be deeply involved, beyond supplying boards and co-ops with the money.

(There must be provision for writing off credit in the case of natural disasters, since the farmer will need new credit and never really be in a position to repay the old, since the income which it was expected to produce has not accrued, through no fault of his own.)

(b) Development credit: for wells, dams, boreholes, pumps, tree crops seedlings, terracing, drainage, cattle or other livestock, tractors or other machinery, tools, etc.

This kind of credit creates problems. On the principle that the length of a loan should be related to the life of the asset it creates, one would have an enormous variety of terms: 2-3 years for a tractor, 7-10 years for a cow, and so on, while some, like tea or coffee seedlings will not yield an income for 2-3 years (coffee) or 4 years (tea), or the awkward pineapple which takes 1½ years, and should carry a moratorium on repayment until they do. Obviously, to do this would be a wickedly expensive way of accounting for thousands of loans, and any single farmer could have half-a-dozen loans on different terms. This is not understood by the farmer who is bewildered when his repayments vary every year. He wants to know where he stands, so one equalises his loans over an intermediate period with a simple, unchanged repayment. (We tried to

do it the complex way on the Kenya land settlement schemes but gave up after a comparatively short experience.) This is why a development plan for a farm should have built in to it something producing an *annual* return, so that the farmer can meet his annual repayments from the start - an annual crop or some dairy cattle which bring in a monthly milk payment. (This, of course, may not be a problem with long-established farmers, since they may already have a regular income-earning activity which can carry the cost of repaying credit for an investment that will not yield a return for a few years, and a particular investment may be quite small in relation to the total farm activity.)

So we are back at the farm economy again. It is foolhardy to offer long-term (over one year) credit to farmers, except against a farm development plan. This may sound rather grand and elaborate, but it can in fact be some quite small thing that requires investment. Whatever it is, someone will need to work out, before giving credit, that the investment will yield sufficient income to do more than repay the loan plus interest. (This need not be done precisely farm by farm, but by classes of farm, and then the model is adjusted to suit the particular farm.) This is merely good banking for "project" finance. Again no cash need be given to the farmer - he is issued with a purchase order for the things he needs and this is cashed by the supplier at the credit organisation ("supervised" credit). Again one is ensuring that the money the government makes available for agricultural development is actually spent on it and not dissipated.

But who is going to supervise the issue of credit? Who is going to make sure that the investment is practicable and will more than repay itself? This requires some agricultural expertise (and knowledge of the character and abilities of the individual as well). The person most likely to have this is the agricultural officer and he is, by definition, most

concerned with developing the farmer soundly. (If he gives unsound advice, he brings the whole agricultural service into disreoute and under suspicion - and retards development thereby.) If he has control of the issue of credit, he has a powerful lever of persuasion - much better than telling a farmer what to do and then having to tell him to go somewhere else to get the money. If a separate "banking" organisation were set up to do the job, its staff would require the same qualities of knowledge and experience. This, beside being expensive in duplicating field staff, would not work as well, since the bank would not have the same responsibility for local development. There are simply not enough technical people, anyway, in most countries to squander them in this way, and considerable problems arise of how to co-ordinate the credit organisation's activities with the field organisation's activities. Credit, like marketing, is closely related to the production process and to advice on it. If the agricultural officer issues credit, the whole thing is tied together. It is probably good for the agricultural officer - though he probably dislikes it - as it makes him take a close economic interest in the farm, as he becomes responsible for the soundness of the loan.

This does not mean that he has to be concerned with the paying out or recovery of money. This can be handled by the accounts side of the ministry, including debt collection (if co-ops or boards cannot be used for this at the grass-roots level - obviously recovery is easier to handle if it is secured on the crop, etc which the farmer delivers to his co-op, dairy or marketing board) or by a separate section of the ministry or by a separate organisation. How it is done is *relatively* unimportant and the means can be adapted to local tastes.

Land Settlement and Agriculture

The idea of separating land settlement from agricultural development in Zimbabwe sounds horrible (Howell, p. 10). Although we seemed to do this in Kenya, when we set up a Ministry of Land Settlement it was staffed, in the Department of Settlement, by ex-MoA technical officers and its proposals were vetted by the MoA. The Ministry of Land Settlement also took over the Departments of Lands, of Surveys and of Town Planning, so that all aspects of settlement could be co-ordinated readily, but the main object of the Department of Settlement was to make a political project as much of an economic one - and especially for the farmers settled - as possible.

I am not at all sure that the Kenyan experience will have any relevance for Zimbabwe. Presumably in both cases the problem is a political one with large economic implications, but I don't know the actual political circumstances in Zimbabwe.

So, politics first, as this had a lot to do with our structure in Kenya. The first, 1959, settlement scheme was a small affair (90 000 acres) meant to produce high quality settlement in the newly-opened white highlands. It was designed to place some Africans scattered around among Europeans in a "Yeoman" scheme and rather more others on the edges of the white areas in a "Peasant" scheme. It was expected that the latter would be absorbed into the African areas. As in any government activity in the white areas, the Europeans had to administer it.

So we set up a board, rather like the European Agricultural Settlement Board, of white farmers and a couple of token Africans to run it. There were some political hold-ups with the UK over the terms of purchase. The Board tended to ignore the project negotiated with the World Bank, and followed the same methods as the European Board. In 1960 came the constitutional conference which showed that there was little time

before independence (under four years). A new minister, alarmed by African demands for land and threats to seize European farms at independence, went to London to get money to double the project (to 180 000 acres) by adding a "High Density" scheme and changing the terms of the World Bank scheme but not re-negotiating the loan agreement. The Chairman never showed the original negotiated project to the Board or the staff and they all set off doing things for which there was no money! (I, who had negotiated the loan, was on leave at the time.)

Eventually the chairman was disposed of and an official put in his place. Meanwhile the political tempo hotted up. Leading European opinion came to the conclusion that a massive settlement scheme was needed. (This became the "Million Acre" scheme.) They decided, in effect, as Gary Wasserman says in his *Politics of Decolonisation*, to sacrifice the mixed farmers to preserve the plantations, ranches and business interests.

A second constitutional conference was held in early 1962, when pressures were put on the UK to this end. Out of the conference came a "Framework of the Constitution" for an independent Kenya, which included a quite unworkable regional system with division of powers between the centre and the regions (abolished soon after independence). It also produced a Central Land Board to take charge of settlement. This was also independent of the government. All this was to come into being in mid-1963. One result was the establishment of a Ministry of Settlement (to which was tagged on Water Development and Irrigation). The CLB was to have a representative from each region and one from the central government and one from the sellers of land (the white farmers), plus an independent chairman of stature appointed by the UK and really responsible to it. He was supposed to secure the interests of the Europeans in settlement and its funds.

In 1962 time was getting short and the old Board had done very little by then. Settlement was given absolute priority by the government over everything else, so that we could make a dent in things before independence and prevent a land grab. I was appointed P.S.. The first things to do were to stop the nonsenses the old Board was engaged in; to draw up the million-acre scheme (which none of the ministers concerned had seen untill they got on the plane to London to negotiate it!); to emasculate the CLB; and to set up a Department of Settlement to execute the project.

The problems of the CLB were (a) that you could not hand over to a body independent of the government a matter in which the government (and the very hot politics of the time) were deeply concerned; (b) settlement had to be got on with very urgently and could not be left to a board in which there would be plenty of conflict among representatives who were otherwise rather unimportant people; and (c) one had to find the biggest share of settlement for the Kikuyu. No board so composed would agree to give 40% of the project to the Kikuyu, and each tribe wanted as much as it could get.[1]

So I began talks with the African and European leaders to get agreement on a reduced role for the CLB. It was agreed that it should confine itself to the purchase of land (thus looking after the European concern with valuations) but not undertake settlement. Hence the Department of Settlement, as the project had to be dealt with with great urgency and speed. This demanded careful planning on a large scale if the resources available were to do the job in time. I stress the sense of urgency in all this as it governed all our actions. The Department was staffed entirely by agriculturalists transferred from the Department of Agriculture, supplemented at lower levels by ex-farmers and ex-farm managers. The availability of these people was invaluable and we could not have done without them (and they were cheap as there were pressures from the European side on them to work for us). Meanwhile the old

board was still in existence with its statutory powers over settlement. I persuaded them that they could not really undertake the administration of the new scheme which demanded a large diversion of government resources from other departments. We arranged that I would issue the funds to them and they would hand them back to me to carry out the schemes. The board really became advisory but legally it approved the individual schemes.

When planning the million-acre scheme there were two principal objectives: (i) to settle as many Africans as possible as quickly as possible, and (ii) to try to maintain - and even increase - the economy in doing so (there was an inducement to this, in that the government had to repay its loans for the project, so we had to plan for the farmer to repay his to the government). The farms were all planned to give standard net incomes (a good farmer could do much better; bad ones did worse), so they varied quite a lot in size. If the European farms had been seized they would have reverted to subsistence agriculture and the Kenya economy destroyed. All farm plans were based on a subsistence area, a cash crop and some high-grade dairy cattle (which was the way farms were being developed in African areas).

By the time the CLB came into being we had bought three-quarters of the land and obtained UK approval for the next year's purchase plan and particularly the Kikuyu share. So there was really little left for the CLB to do. On co-ordination, we shed Water Development and took into the Ministry of Settlement the Departments of Lands, of Surveys and of Town Planning, all of which were closely involved in our work. Co-op officers were seconded to us. Of course, having absolute priority of government business was a help, but it was a weapon of last resort only.

Co-ordination at my level was done through a monthly meeting of heads of departments and sections, including the chairman of the CLB when he arrived. Here all problems and difficulties were raised and sorted out and they were kept in touch with political problems. Co-ordination at the executive level was dealt with by a weekly meeting under the Director of Settlement: problems of timing of, and delays in, purchasing land, the handling of standing crops bought (normally one would not wish to buy standing crops but time pressed), movement of tractors and machinery, surveys, planning of villages, supply of farm inputs, disposal of assets, availability of, or need to construct quarters for staff, and many other matters which needed close co-ordination were dealt with, and the situation might change from week to week. All these things had to be meshed together and always there would be snags which had to be dealt with at once.

In effect, all the MoA had to do was to vet the schemes formally. Otherwise we were not much concerned with them, as we were almost a second MoA operating in different areas and having taken over their staff, mainly from the old European areas, so they were familiar with the land. The field staff of the Department of Settlement were divided into three Area Settlement Controllers; under them a number of Senior Settlement Officers (all ex-MoA down to this level) and lots of Settlement Officers, each responsible for one scheme (5 000 - 10 000 acres). The last were mainly ex-farmers although we had a rapid training scheme for Africans and were about 30% Africanised at independence plus a high ratio, compared with other areas, of African extension workers of all kinds (about twice or more the normal level of field staffing).

I am very reluctant to transpose practices that have emerged and developed to meet one particular set of circumstances to another which is likely to be very different. (And I have said nothing about the interplay of personalities

in all this!) So I doubt if there are any practical lessons for Zimbabwe.

Afterwards, I gather, settlement took a different turn in Kenya (although the old schemes continued to run so that hope was not destroyed) and became mainly the transfer of whole, or large chunks of, European farms, and that was looked after by the MoA. In effect, two MoA were not sensible once the heat had been removed. But the main attention of the government was given to the development of the old African areas where the richest land in Kenya lay.

1. In theory, decisions about which areas to re-settle and which tribes should get schemes became the business of a sub-committee of the cabinet, composed of members of both parties and, in affect, the leaders of the major tribal groups. In practice the committee's meetings were pretty chaotic, given over to arguments, threats, demands, funny stories, gossip and general bonhomie. My minister and I would then try to assess what had been said and relate it to the practicalities of planning. I would then draft the record of the meeting so that it led to the conclusions reached. The existence of this committee, then, does not affect the general impression of the paper that everything was decided by the ministry. But, in fact, we took a lot of note of what was said, so that the committee did affect decisions.

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Tel: 01-580 7683

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AGRICULTURAL ADMINISTRATION NETWORK PAPERS

No. 12

COMPUTING REQUIREMENTS OF DEVELOPMENT AUTHORITIES IN THE SMALLHOLDER SECTOR*

by

G P Tottle, *I.C.L.* & F Robson, *Royal Agricultural College, Cirencester.*

Mail address: *Agricultural Applications Technology Division, International Computers Ltd, Warlock Way, West Gordon, Manchester M12 5DR.*

*This paper was presented at a joint AAU/BCS meeting on *The Use of Computers in the Planning, Implementation and Monitoring of Small Farmer Development Programmes* held at ODI, 12 August 1981.

Computing Requirements of Development Authorities In the Smallholder Sector

Background

This paper summarises some key aspects of the computing requirements of Development Authorities as we have encountered them in the SCAPA project. SCAPA (System for Computer Aided Agricultural Planning and Action) is a project set up by ICL Research Division and Manchester University in 1978 to examine what contribution computing could make in this field of application. It has involved an interesting and unusual mix of computing and operational research specialists and those from various agricultural backgrounds, ranging from researchers to people with twenty or more years of field experience as agricultural or administrative officers in developing countries. Their proposals have benefited greatly from inputs and criticism from ODA and the World Bank, from development institutes, consultancies and universities in the UK and overseas, and in particular from visits and detailed studies with development authorities in several countries.

Main Areas of Application

These studies gave rise to a conviction that, while the areas of macro-level modelling, organisational planning, ecomonic analysis and forecasting had been well explored, the practical use of computers to meet the requirements of grass-roots development in the field had been relatively neglected. In our field studies therefore we have worked form the farm level requirements upwards. The farmer's view of development is illustrated in Figure 1, which shows the various functional units (primarily planning, input supply, extension advice and marketing) on whose activities he depends.

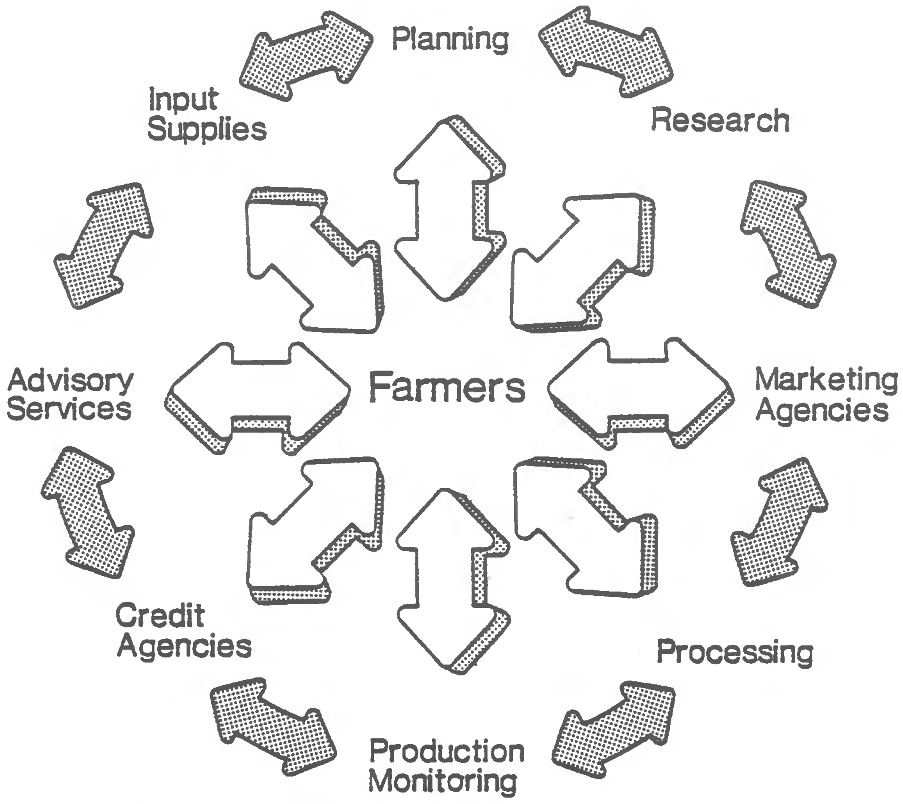
Requirements at Organisational Levels

We would like to summarise these requirements for two organisations which are reasonably representative, in the range from a highly integrated, top-down approach to organisation seen for instance in the Sudan Gezira Board, to a more laissez-faire approach, the later being more analogous to agriculture in Western Europe - where the farmer has complete freedom to acquire inputs and credit and to market his produce where he chooses standardised computer procedures cannot easily be instituted.

We will then concentrate on farmers and extension service requirements, and basic farm accounting facilities. As a general conclusion on Figure 1, a key difference between current European agriculture and that in most LDCs is the much higher level of centralisation in LDC and this centralisation clearly involves opportunities for computer use which the laissez-faire approach inhibits. Typically between 50% and 80% of the functions shown are under the integrated control of one or two authorities. RISDA, the Rubber Industry Smallholders Development Authority in Malaysia, is responsible for six of these eight functions in supporting the half million rubber smallholders in Malaysia, who produce over half the country's output of natural

Information flow in supporting small farm agriculture . . .

Muranga, Kenya.



Typically, for an area the size the size of the Isle of Wight, there will be:

- 40,000 small holders
- £46 million annual output
- 20 major crops
- £5 million annual consumption of inputs
- £1 million production credit
- 12 Co-operative societies
- 20 Processing factories

Fig. 1

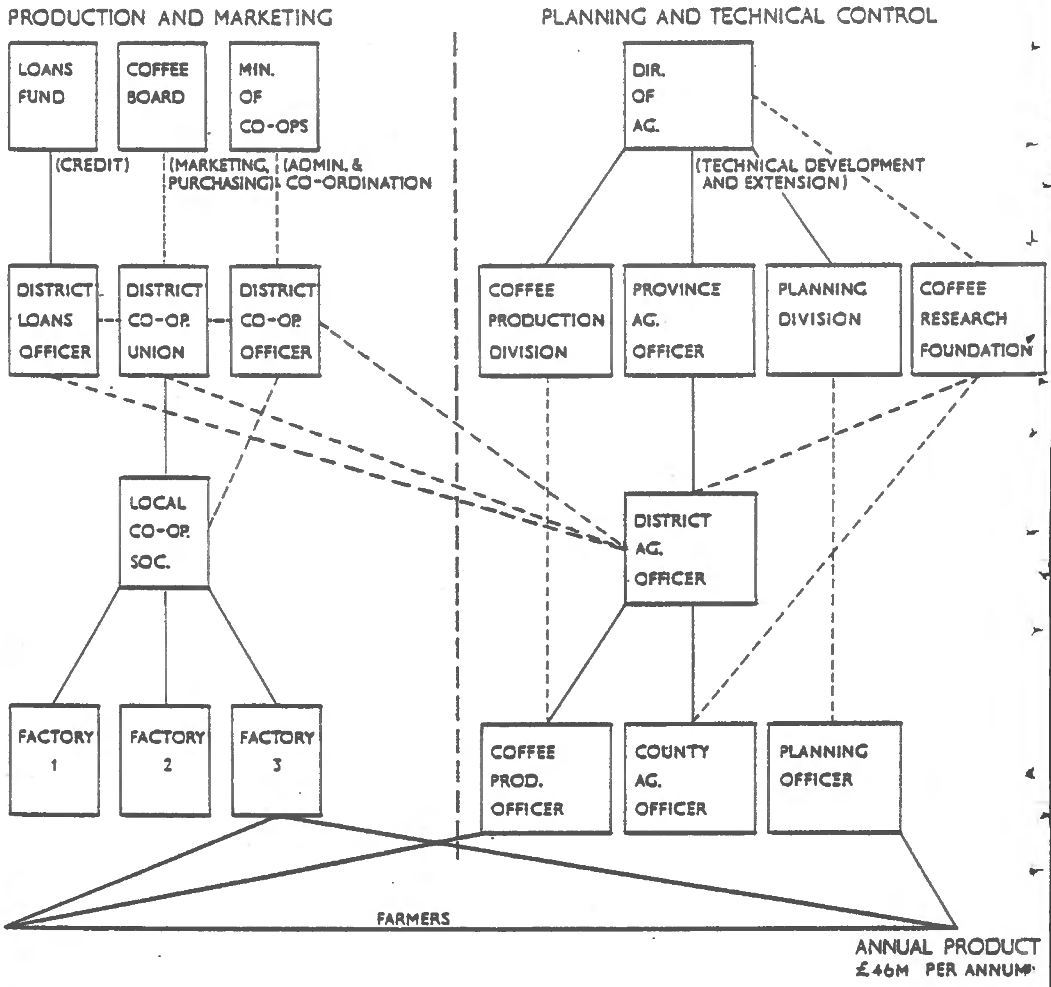
rubber. As is shown in figure 2, a smiliar role is taken by the Ministry of Agriculture and the Cooperatives Union in Kenya for coffee or tea production. At this level of generality two other features of the computing requirements seem evident. Firstly, that there is significant commonality of requirements across development authorities. Hence standardised, easily tailored modular software packages may be feasible. Given the difficulty, scarcity of computing expertise and costs of writing special purpose software in LDC's, the package approach is attractive providing it allows local people to develop their own systems from this base. A second feature of the computing requirements is the difference against typical European needs - far larger numbers of people and hence transaction volumes, even in the most limited application, and a much higher premium on processing efficiency. A typical medium scale European farmer might justify costs of about £400 per year for a postal computing service, or £2,000 per year for an on-farm micro, whereas a coffee farmer with 1-3 acres in Kenya might justify £4-12 per year. Thirdly, the difference in their information requirements is comparable to that between a merchant bank and a small savers' Trustee Savings Bank. Typical UK or US farm management packages, which are being promoted in LDC's, are incomprehensible and unusable for Malaysian or Kenyan smallholders at present. Nevertheless, if the information already contained in plans, input delivery notes, production returns, sales receipts and so on in Kenya were accessible to computer analysis the opportunities for improving cropping practices, gross output and extension and research performance would be immense.

Requirements at Local Management Levels

The higher level internal organisational requirements of development authorities are similar to those of many organisations - financial, physical and economic modelling, planning, accounting, payroll, stock control, purchasing, sales, job costing and so on. Where they differ significantly is in their interaction with the primary producers, the smallholders, whose activities are very numerous and relatively uncontrolled and unpredictable. Planning and controlling the production of planting material for smallholders, for instance, tends to be on the basis of last year's output plus or minus an intelligent guess by field staff at what farmers will do in the coming year. The real gross requirement frequently varies from this by 20-30% with much larger variations between localities. In response to this unpredictability the general emphasis among development agencies has been towards standardised agricultural cropping packages, often mono-cropping, transmitted to farmers through for example the Benor Training and Visits system, and monitored as closely as possible by reporting systems, of which that used in the World Bank sponsored Muda scheme in Malaysia is among the most advanced. This monitoring tends generally to be funded at between 1% and 2% of the total project costs. The Malaysian Rubber replanting package for example has been running, with amendments, since 1973, involves 800 extension staff with an average ratio of 1 extensionist to 1000 farmers, and includes 17 key agricultural and managerial stages which are reported upwards and trigger off loan instalments, tree felling, the delivery of inputs and so on. This process is shown in Figure 3, part of a list of actions which spans in total 7 years. Similar lists are used for tea or coffee in Kenya, less clearly structured and not computer based, and most cropping packages might usefully involve a similar approach.

We now wish to discuss check-lists of the key areas of farmer and extensionists requirements to identify what benefits a computerised approach on these general lines might bring, and its necessary features.

ORGANISATION OF COFFEE PRODUCTION – KENYA



DISTRICT COMPRISES

48,000 FARMS
12 CO-OPERATIVES
40 FACTORIES
20 MAJOR CROPS

DATA PROCESSING NEEDS
(EXISTING PROCEDURES)

PRODUCE RECORDING	-490K
MEMBERS DEBTS	-171 K
PAYMENTS	-165 K
SAVINGS	-150K
LOANS	- 23 K
TOTAL	999K

Fig. 2

MASTER ACTION LIST RISDA REPLANTING 000019 PAGE 2

CASH CONVERSION FACTOR 1.

PERIOD	ACTION NUMBER	ACTIVITY	COMPLETION DATE	NECESSARY PREDECESSORS	CREDIT FACTOR	MANDAYS
1	1	APPLY FOR REPLANTING GRANT.	31/01/81		0	0
1	2	APPLICATION IS REGISTERED AND ACKNOWLEDGED BY RISDA.	15/02/81	01	0	0
1	3	SMALLHOLDER RECEIVES ACKNOWLEDGEMENT,CO-OWNERSHIP FORMS(IF ANY) AND LETTER OF INDEMNITY.	28/02/81	02	0	0
2	4	PRELIMINARY INSPECTION AND COLECTION OF FARM INFORMATION BY RISDA.	28/02/81	02	0	1
2	5	CO-OWNERSHIP FORMS(IF ANY) AND LETTER OF INDEMNITY RETURNED BY SMALLHOLDER.	28/02/81	02	0	0
2	7	FUND A DEDUCTION IS MADE IF APPROPRIATE BY RISDA.	15/03/81	05	0	0
3	8	RISDA COMPLETE ASSESSMENT AND APPROVE LOAN.	10/03/81	05	0	0
3	9	APPROVAL AND CREDIT RECEIVED BY SMALLHOLDER.	10/03/81	08	0	0
3	10	RECEIVE CASH FOR MINOR PURPOSES,STAGE 1.	30/04/81	08	5	0
3	11	APPLY FOR CHAIN SAW CREDIT AT ONE PER HECTARE--	10/03/81	08	10	0
3	12	ARRANGE FOR TRANSPORT FOR WOOD IN MARCH OR APRIL--	10/03/81		5	1
3	13	ORDER RUBBER SEED FOR NURSERY--	10/03/81		1	0
3	14	ORDER FERTILIZER FOR NURSERY--	10/03/81		2	0
3	15	ORDER POLYBAGS AT 400 PER HECTARE--	10/03/81		2	0
3	16	BUILD POLYBAG NURSERY USING LOCAL MATERIALS--	10/03/81		0	0
3	17	ORDER TREE POISON--	31/03/81		1	0
4	18	RECEIVE RUBBER SEEDS--	31/03/81	13	1	0
3	19	RECEIVE NURSERY FERTILIZER--	31/03/81	14	2	0
3	20	RECEIVE 400 POLYBAGS PER HECTARE--	31/03/81	15	2	0
3	21	RECEIVE TREE POISON--	31/03/81	17	1	0
3	22	PLANT RUBBER SEEDS IN POLYBAGS WITH NURSERY FERTILIZER AND SOIL MIXTURE--	31/03/81	18,19,20	0	1
3	23	ORDER BUDWOOD AT 400 PER HECTARE--	31/03/81		1	0
3	24	ORDER TAPIOCA STICKS OF BLACK TWIG CLONE TYPE AT 400 PER HECTARE--	01/04/81		1	0

Fig. 3

Farmer Requirements

Attractive, profitable low-risk crops or livestock. Diversity is important to increase interest, smooth labour peaks and give a steady income. RISDA for example offers support for 19 main and 12 minor crops, and for 16 livestock varieties. Under manual systems this is very difficult to support, whereas computers may retain control while permitting diversity.
Appropriate technology and advice, incorporated in a viable extension package. Manual systems tend to be generalised and necessarily vague about specific quantities or dates, or else unduly rigid.
Careful labour budgets. These exist as models for example in Kenya, but matching models to specifics is rarely done, and computers could provide a useful tool.
Secure supplies of inputs.
Secure market outlets and prices.
Straight forward farm accounts to reflect success or failure.
Credit and banking facilities. Cheap and simple procedures operating in the vernacular.
Adequate provision for security of data and for privacy.

Extensionists

While basically providing an advisory service as the spearhead of innovations (as ADAS does in the UK) extensionists' responsibilities and authority usually cover much wider functions, often mutually exclusive, including planning, supply, processing, marketing or debt collection.
They require:
Detailed information about individual farm capability and farmers' intentions, hardly ever available under manual systems. Computing facilities to maintain and analyse this information and vet plans for viability e.g. against labour requirements would be attractive.

A mechanism for disseminating appropriate advice against a diverse range of farms and crops. This advice tends under manual systems to be generalised circulars, centrally produced, where a computer system might produce particularised advice, easier to understand, whose content the extensionist could control.

Feed-back from farmers on progress and problems - they can necessarily visit very few of the thousand or more for whom they may be responsible. Current manual systems such as the Benor system might usefully be computer-based to increase flexibility.

Assistance in controlling support functions, and regular feed-back from these functions.

Assistance in compiling reports, statistics etc. Commonly 80% of extensionists time is spent on bureaucratic concerns - "routine, ritual, unusable, unused and unread reports passed upwards".

A structured system so that more routine functions, such as inspection visits to farms to check criteria for loan instalment release, can be delegated to less experienced staff while retaining overall control. A standardised computer-based monitoring system could assist in this.

Some of the techniques of computerised systems such as PERT (Programme Evaluation and Review Technique), GERT (Graphical Evaluation and Review Technique) or RPD (Research Planning Diagram) might be adopted in this context. This would need however to be in a cheaper, drastically simplified and more open-ended form than usual - to run PERT for a 150 man year software development project

tends to require a full time PERT expert and significant system time on a medium sized mainframe.

The modified approach we have taken for SCAPA is given in part in Figure 3. This lists the main activities, with dates, dependencies and resource requirements either for individual farms, or for groups of farms such as the Malaysian mini-estates. These lists are related to individual farms' capability and planning information. They are set up centrally as models, which the local extensionists and farmers can adapt. A simple monthly review, change and reporting mechanism is used to monitor progress. Various codes against the activities are used to enable input requirements and predicted outputs to be aggregated. These codes also enable key event and slippage reporting to different higher levels of management. Time prevents a detailed description of this particular approach here, but I hope the general idea is clear.

Accounting Requirements at Farm Level

We have found generally that smallholders were rarely aware of the costs, income and hence the profitability of their various activities. In some cases the development authorities had produced account books and procedures for this purpose, but these were rejected by the field staff and farmers as too complicated. The use of computers to fill this critical information gap could be well worth-while therefore, providing the significant constraints below are taken into account:

Smallholders may be reluctant to disclose their true earnings. They must therefore be persuaded, justifiably, that privacy is assured, or else the computerised system may include only transactions which are in any case known to it, typically input costs and sales returns for the major cash crop.

Data vetting and other accuracy checks are essential to minimise accounting errors and potential fraud.

As elsewhere, literacy is an obvious requirement, at least within the smallholders family, if direct interaction between the smallholder and the computing system is envisaged. Taking a more positive view, the availability of relevant material such as reports on farm transactions and profitability might be a significant spurt to literacy programmes. Since in many cases a full picture of farm inputs and outputs is most unlikely to be available for all farmers, a sampling technique might be used. A small sample of farms could be monitored to give all the data required for full conventional farm accounts. This information is a key feature of the services provided by consultancies in the UK.

Against these constraints, a farm accounting system as demonstrated in survey and case study models is covered by routines under the following headings:

a. Gross Margins, the summarisation of individual crop direct inputs and outputs.

b. Fixed Costs to a particular farm.

c. Cash Flow and Trading Account figures for a farm.

From the information already recorded manually in Kenya and Malaysia by the development agencies at least a partial report on these lines could be produced by computer, with monthly statements of input and output transactions, and fuller annual accounts.

Simplified Accounting Routines for Farm Data

There is a wealth of primary research information available into the designing of accounting models. Models in use however, either in the UK farming or in developing countries tend to suffer from procedural difficulties that stem from the teaching and practice of long established accounting and management methods which are perhaps inappropriate. For example detailed information is recorded and repeated, which has no real value, and procedures neither follow a logical sequence in time nor in calculations.

Gross Margin Field Crop Model (see Fig:4)

Input of Data

The Gross Margin Crop Model represents the simplest sub-system based on a gross margin for the whole range of farm and farm support activities needed where a development project is in operation and could be the central carrier for financial information. It is based on the fundamental management requirements of a crop management situation. The gross margin is a basic technique that may be adopted to give for a crop; an enterprise, that includes livestock; a field; a farm, or a district, all the physical and financial information necessary for performance analysis, for input control, credit needs and output forecasting.

The form of input data follows the same general pattern for each physical productive item, this being a sequence of four essential sets of figures following the item name in the columns across the page.

e.g.

ITEM NAME	A0 unit input per acre	A1 unit cost	A3 acres of crop	A7 time period of order	A8 time period of action	A9 time period of cost

OPTION FOR ONE

A key gives identification to the time periods, which any be chosen as required and numbered 1 - 14 in sequence from the initial startpoint. Usually these are monthly periods. The entry format of the data into the computer is item identification, followed by the four sets of figures. Conversion to metric terminology is by a special feature that can be incorporated into the program according to the required construction. Headings also alter.

Calculations and Display of Information

The calculations required are a series of multiplication, addition, subtraction and division processes. In a given order the calculations are going to complete the crop model by filling into the output display the figures:

e.g.

A2 item cost per acre	A4 item cost for acres grown	A5 total units of item for acres grown	A6 acres covered by item

Results of first calculations give full information of items used in the production of the crop and the items produced.

The next requirement is to obtain total costs per acre and total costs for all the items required for the crop, also total produce per acre, total cash return

GROSS MARGIN FIELD CROP MODEL DATA INPUT

CROP NUMBER OF HECTARES

PHYSICAL INPUTS MARKED *

CALCULATED FIGURES NOT WORKED

ITEM NAME	UNITS INPUT PER HECTARE *	UNIT COST $ *	COST PER HECTARE $	HECTARES OF CROP *	TOTAL UNITS INPUT	TOTAL COST $	TIME PERIOD *
e.g. SPRAY ONE	2	1 $	2 $	2	4	4 $	3
TOTAL COST	. . . .		PER HA			TOTAL CROP	

PHYSICAL OUTPUTS MARKED *

ITEM NAME	UNITS OUTPUT PER HECTARE *	UNIT PRICE *	RETURN PER HECTARE $	HECTARES OF CROP *	TOTAL UNITS OUTPUT	TOTAL RETURN VALUE $	TIME PERIOD *
e.g. GRAIN	0.25	60 $	15 $	2	0.50	30 $	8
TOTAL OUTPUT	. . .		PER HA			CROP. TOTAL	
GROSS MARGIN			PER HA				

Fig. 4

per acre and total cash return for the crop.

The final figures required are those that are obtained by subtracting costs per acre from cash return per acre, and total costs for the crop from total returns for the crop, giving, (1) gross margin per acre
(2) gross margin for the crop.
The Fixed Cost calculation (where necessary) follows the simple Gross Margin routine, adapted in two ways, (1) without any outputs,
(2) alterations in terminology and calculations.
The Gross Margin cycle may be repeated for other crops on the farm.

Sources of Primary Data for the Gross Margin Model.

By reference to an action list for the crop, and local knowledge of crop requirements and crop yields, the items and units input may be identified. Current costs may be obtained from the economic advice of suppliers. Error levels in data have been analysed and effects and possible reduction considered in other papers. In a particular area for a specific crop the original gross margin may be worked out per hectare before any production has been achieved, and the figures related to particular smallholdings within the nucleus. As feedback data becomes available on the farm size and plot size, from the farmer/smallholder to the extension specialist, farm financial requirements and possible profit, are determined more realistically. As the productive cycle progresses, then further information on crop yields, and the response to inputs, enable a more accurate picture of the physical and financial performance of the crop to be determined. The key data is that of input quantities and it is important to the success of the monitoring of the project that this may be obtained from sources other than the farm.

Results Produced and Their Use.

The type of data format area allows for simple inputs, that contain a considerable amount of detail such items as the amounts needed of the various productive requirements or yields per hectare, are best standardised in fractions of a ton/tonne/hectare, unit costs being expressed in the accepted currency for the geographical location.

The inclusion of the number of acres/hectares as a piece of input data, allows each field to be dealt with individually if so desired, in an overall crop gross margin for one enterprise where seed cost, fertiliser application or the number of times the crop is sprayed may vary from field to field.

Calculations done produce answers that fit into the rows of data input and so give a full display of the detailed physical and financial information.

Programs should take as many enterprises as data is provided in one run. When used as the initial section of the module that carries on to produce a cash flow and trading account, the identity of items, the total values amounts, and time periods of financial spending and returns, the analysis of items of input required and forecasts of amounts of produce and timing of these for marketing. These results produced may be used to confirm arrangements by credit and marketing authorities as well as extension specialists and project directors.

By having an input string of 1 - 14 time periods as a core monthly sequence, the pre-year and post year spaces are provided for items in the current year's budget as being part of farm production for the year, but which fall outside the year as financial transactions.

Benefits to Users (see Fig:5)

1. Extension Officer.

Collects information for the particular crop standard in his nucleus. His sources are research and historical records. To this he adds financial data that allows him to produce a basic gross margin target per hectare.

By study of farm profile information which has been gathered from farms and smallholders in the group by extension workers,the extension officer determines the size of enterprise on each farm, introduces this figure to the data and then computes a total gross margin for the farm.

This total gross margin may be adjusted as the production cycle progresses or as the results of one season are at hand to give a more accurate indication of the individual farm's performance within the group.

2. Supplies of farm production requirements.

From the basic target model information is available on:

a. Total inputs required
b. The time period these will be needed
c. The amounts for each individual farm
d. The cost per farmer
e. The total cost.

3. Farmer.

The farmer obtains information from extension officer of his potential performance, cash requirements, and possible returns given mean environmental and market conditions.

Subsistence farming information

A farmer is conscious of letting his own infomation be known to other people even within his own family circle. As much of his production is often for his own use the problems of finding out this information and using it to improve performance must be overcome. It is important that both the farmer and the extension specialist have the facts and figures relevant to the whole of the farmers production available for study and analysis. Therefore a separate section within any farmers' accounts is necessary. This information must be confidential to extension specialist and farmer. To set this up the crops that are grown for the family use rather than for sale must be monitored. They may be recorded in the same way as those that are grown for market in a separate section of the account. True costs, of production and, shadow prices of outputs must be included in order to assess the true performance of his operation. It is then possible to produce an overall performance record showing profit for the full farm that includes both saleable and non-saleable crops.

An important function is the ability to carry out sensitivity analysis for a particular crop, to show the effect of environmental or market changes on yield or price.

4. Marketing Agency.

Knowledge of total forecast production, probable time of marketing, location of crop to assist arrangements at harvesting centres, local and terminal transport, individual farmers contribution to national harvest.

DATA SOURCE: PROCESSING: INFORMATION USE

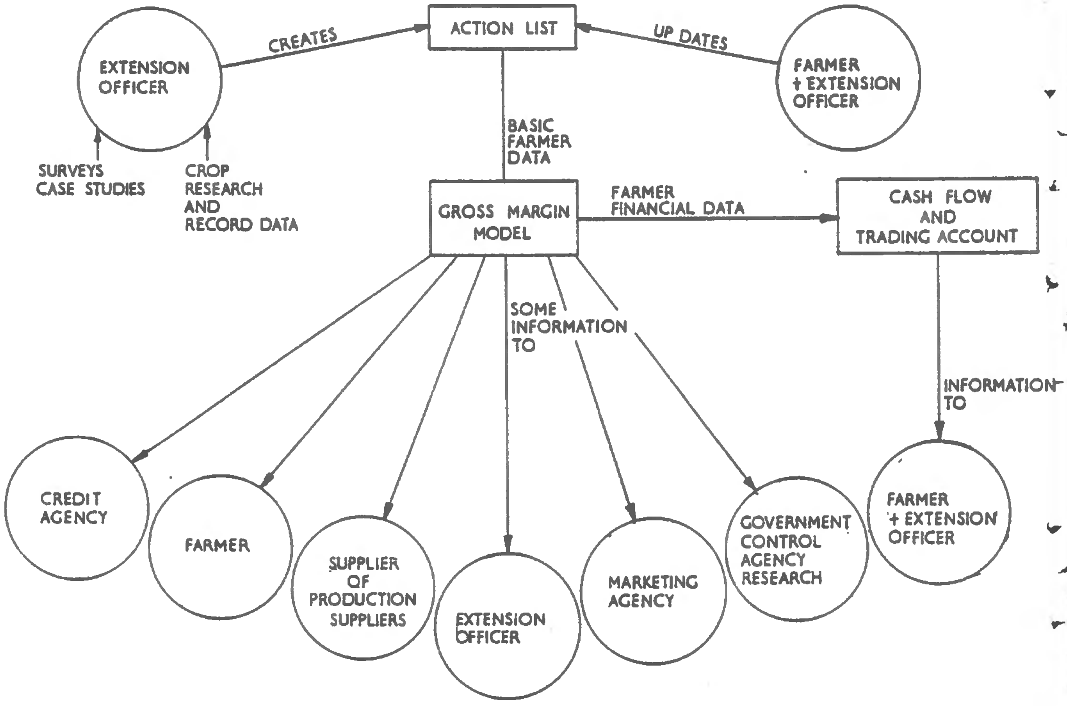


Fig. 5

5. Credit Agency.

Figures would allow the calculation of credit needs and interest, a timetable for repayments, with adjustment if necessary into contingency plans.

6. Overall Government Control Agency Research.

Valuable information on project performance.

Conclusion

From the accounting system a full series of individual and aggregate financial statements may be produced in printed form.

A significant measure of security can be provided by control on credit levels, by check digits for farm identifiers, by credibility checks on the values of transactions, and the random inspection process. Information recorded by the system can also be used for example to compare manually the flow of inputs into a particular area with its eventual product sales.

The importance of the accounting section to the general organisation of a farm development is that it provides the feedback information to compare with, and correct activities for next season, the physical information produced from initial farm action lists used to specify and order supplies of inputs.

The importance to both parties concerned at farm level is that to the smallholder, the financial knowledge obtained can provide incentives without which improvements in husbandries would be slow. To the extension specialist it provides a measure of economic efficiency for the whole operation.

Overseas
Development
Institute

10-11 Percy Street London W1P OJB
Tel: 01-580 7683

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AGRICULTURAL ADMINISTRATION NETWORK PAPERS

No. 13

A REVIEW OF EXPERIENCE WITH MICROS IN EVALUATION AND PROJECT PLANNING IN NIGERIA*

by

Michael Felton

Mail address: *Fieldgate,*
96 North End,
Ditchling,
Sussex.

*This paper was presented at a joint AAU/BCS meeting on *The Use of Computers in the Planning, Implementation and Monitoring of Small Farmer Development Programmes* held at ODI, 12 August 1981.

A REVIEW OF EXPERIENCE WITH MICROS IN EVALUATION AND PROJECT PLANNING IN NIGERIA

Mike Felton (formerly Head of Evaluation and Planning, Ayangba Agricultural Development Project, Nigeria).

Background

Ayangba is one of the Agricultural Development Projects (ADPS) being undertaken in Nigeria as part of Government policy to implement enclave ADPS in each of the 19 States of the Federation. Under an ambitious programme referred to as the 'Green Revolution', national agricultural development is being promoted by a combination of enclave and statewide ADPS , supplemented by a less intensive programme in the remaining areas of the country.

The first microcomputing facilities on an ADP were introduced at Ayangba in 1980. This paper reviews the experience of the use of the micro on the project for evaluation, monitoring and for project planning; and puts forward some ideas on the wider use that could be made of microcomputers in Nigeria within the much expanded Green Revolution strategy.

Ayangba Agricultural Development Project

Ayangba ADP is an integrated agricultural development project operating in an area covering some 25% of Benue State in the middle-belt of Nigeria, designed to provide a range of services to rural communities. These include agricultural, livestock and fisheries extension, land development and conservation, input supply (and credit), the construction of rural roads, staff training, forestry and associated infrastructure development. Although it also includes, for example, minor programmes in such activities as home economics, it is not in the full sense a rural development project, and in spite of the wide range of activities the emphasis is on crop

extension, input supply and rural road construction. Individual project components have their own quantified goals; the overall primary objective is an increase in crop production and farm incomes.

The project is managed as a semi-autonomous unit under the Ministry of Agriculture by a project manager (and department heads) responsible to an executive committee. The livestock, fisheries, forestry and home economics aspects are handled by the project on behalf of the respective ministries. Funds are provided by the State and Federal Governments and the World Bank and amount to £52 million over 5 years.

Monitoring and Evaluation

The importance of establishing a regular and systematic method of monitoring and evaluation was recognised at the onset of the ADP programme. To undertake the coordination of these functions a unit (now known as the Agricultural Projects Monitoring, Evaluation and Planning Unit, APMEPU) was established to provide technical direction to separate project based evaluation units.

The Evaluation Unit, Ayangba

The Evaluation Unit at AADP as originally established had three principal functions:-

- Evaluation; which involved carrying out a series of large-scale surveys and data analysis to provide information for on-going, and (primarily) ex-post project evaluation.
- Monitoring; survey and analysis work to provide funding agencies with reports which monitored specific items of project activity and enabled the measurement of project performance against a number of important parameters or 'key indicators'.
- Project Planning; on-going project planning. The planning function expanded considerably in 1980/81 with the inception of the planning of statewide programme undertaken by the unit.

The Establishment of Microcomputer Facilities

The programme of evaluation work (as opposed to monitoring) for the 5-year initial term of an ADP is relatively formalised and although it has undergone considerable modification consists essentially of:-

- A village listing survey (to provide a survey frame), followed by;
- A farm inventory (Baseline survey);
- Annual surveys of agronomic performance (centred on crop and plot data);
- Two yearly farm management surveys;
- Periodic supplementary surveys

The surveys are characterized by having multi-objectives, large sample size or regular recall over 12 months, relatively complex survey schedules designed to facilitate computer analysis, the need to undertake extensive enumerator training, considerable organizational problems and the production of quantities of data which could only be feasibly handled by a computer.

Within the evaluation programme, as far as it concerned Ayangba, survey design was undertaken mainly by APMEPU, enumerator training by the project and APMEPU, and the organization and implementation of the survey, followed by hand extraction and initial data analysis, by the project based unit. Completed survey schedules were then sent to APMEPU to be punched onto cards for analysis on a mainframe Ciba 70 at Ahmadu Bello University, Zaria, using software based on the SPSS package. The delays in computer analysis (up to 2 years in some cases), which were caused by a whole series of factors, (mainly outside the control of the central unit) combined with a reluctance by APMEPU to take any corrective action beyond the level of minicomputer feasibility studies, led to the decision to purchase a microcomputer at Ayangba.

Microcomputer Configuration

The choice of hardware was made in 1979 and among the types considered were the TRS 80, Pet, Apple and Sord. The Sord (a Japanese machine) was eventually selected as it provided the greatest disk and core storage capacity (the farm management survey was estimated to require storage of up to 2 megabytes). The complete system is listed as follows

Item	Description	£ (1979 FOB UK)
Core System		
Sord M223 with 2 x disk drives	64 k byte RAM S-100 bus, Z804 microprocessor, CRT with 80 characters x 24	4,250
Two extra drives	350 k byte, minifloppy drives	845
Paper Tiger Printer	132 character line	926
Sub total		6,021
Spares		
Two disk drives	(as above)	845
Printer	(as above)	926
Sub total		1,771
Other equipment		
Air conditioner		400
Voltage regulator		1,000
Special furniture		250
Paper (5 boxes)	half size	662
Sub total		2,312
Software		
Basic interpreter		
Blank disks		500
Total FOB cost		10,604
Freight/customs clearance		3,700
TOTAL CIF AND DUTY		£14,304

5/...

Software

The computer is controlled by the Sord operating system, and the machine accepts Basic, Cobol and Fortran. Application software are available for a number of operations such as accounts analysis, payroll and stock control, but the range is relatively limited and documentation has been poor. A number of these programmes are being run on a trial basis for the Administration Department. The main emphasis at AADP has, however, been the design and application of programmes created within the Evaluation Unit.

Setting up the System

The Sord was probably the first microcomputer introduced into Nigeria. In setting up the system a number of problems had to be overcome in what was an ostensibly simple operation:-

- the license required to import computers is almost impossible to obtain; 5 days were spent at the Airport 'convincing' the customs officials before the equipment was released.
- a separate, sealed, dust free, secure office had to be set up with air conditioner and voltage regular. Regardless of the availability of the national grid power supply (which is notoriously unreliable) a separate generating system would be required. At Ayangba, which operates its own power supply, the main problem was the twice daily generator change-over. The system was always disconnected from the mains at night and work was occasionally stopped during the day to avoid lightening damage.
- staff; qualified programmers are difficult to recruit into the government system due to competition from private organizations. Further difficulties are caused by the absence of the Basic language and microsystems in the curricula at Nigerian universities. In spite of these problems, the project recruited a very competent graduate. The training and orientation of suitable clerical staff for key punching and data entry operations proved time consuming.
- the documentation supplied with both the hardware and software was inadequate. With reference back to the supplier virtually impossible, it took, for example, two days to get the machine and printer operational - it was certainly not a 'plug in and switch on' system. With the purchase of a second printer and two spare

disk drives the risk of a mechanical failure causing the computer to go 'down' was minimised. A standby CPU and CRT would be required in the longer term.

Data Processing

The approach to data processing and the establishment of an overall system was based on a certain amount of trial and error in the early months. This evolutionary path to data analysis is briefly recounted as it provides some experience which may prove useful to users in similar situations.

The justification for the purchase of the micro was based on the limitations of the mainframe computer at Zaria and its inability to process data from the farm management surveys within a reasonably short period. Although it was never considered feasible to replace the role of the mainframe (or mini) which would enable the whole data set to be analysed on a single run, it was originally planned that the farm management survey would be blocked into distinct 'time sets' or 'activity sets'. It was, therefore, decided to separate the results of the main five components of the survey for individual analysis on a whole year basis. Based on these principles an analysis of labour input data was first attempted. For the 150 households in the sample a relatively simple programme was designed to analyse labour inputs (in hours) by activity (planting, harvesting, etc.) and by type of labour (male, female, child, hired).

Output from this programme was eventually obtained, but more important than the survey results themselves, the major lessons of the methodology to be adopted in processing were learnt.

For data entry an attempt was made initially to partially simulate a card punching machine and a routine was established to enter up to five discrete variables at a time, separated by commas and a return. Operators were, however, incapable of keying in data with any degree of accuracy using this system and the sequence was quickly lost. Multiple variable entry was abandoned for a single prompt - single entry, with a visual echo after every 5 variables were entered, and a yes/no accept prompt. Even with this check, the accept prompt w a s not fully utilised, requiring a second update facility to be incorporated. Some validation routines were built into the

programme, but the majority of variables could not be limited, except over a very wide range. A further problem at this stage was the use of incorrect keys creating a situation from which the key operator was unable to recover and which could only be overcome by constant supervision by the programmer. As a further option, double entry of all data (as in card punching) was considered. However, the time required to have undertaken this would have involved enormous delays. As a final check a simple routine was established to produce a suitably formatted hard copy of data for visual inspection. In summary, therefore, acceptable data entry was established by:-

(1) Single prompt, single entry

(2) Regular accept/not accept facility

(3) Data file update facility

(4) Presence of programmer during key punching operation

(5) Production of hard copy of data file and visual check.

Evaluation surveys are characterized by the production of large quantities of raw data, requiring time consuming but initially relatively simple analysis. The early problems of data entry, however, led to a move away from the original objective which was to carry out whole survey analysis. Data processing was, therefore, restricted to certain key aspects requiring relatively low levels of data entry, (which could be closely supervised) but involving analysis which was too complex and laborious to undertake accurately by hand.

On this basis programmes were written to calculate:-

- Field and plot areas (from physical field lengths and bearings)
- Crop yields
- Cropping patterns and changes in cropping pattern over a season
- Labour inputs
- 5-year project cost tables

Probably the most useful programme developed enabled the production of 5-year cost tables for the Benue State Plan. The planning operation involved the construction of some 130 5-year cost tables. A set of programmes were designed which allowed the cost tables to be created simply by keying in the number of items required in years 0 to 5. Apart from the obvious saving in time in the mechanical calculations, changes or modifications of the main variables were made possible; eg description of the item, number of items, unit cost, foreign exchange percentage, contingency allowance, etc. Storage and update of material was facilitated by keeping data files for each programme component on separate disks. Although this may have resulted in relatively inefficient use of disk space it allowed for a simplification of data handling.

Future Applications

The microcomputer at Ayangba was used mainly for specialised applications on evaluation surveys and for cost table calculation in project planning, but was not found suitable for complete survey analysis involving large (2 million character) data sets. The development of microcomputer applications is likely to continue with a trend by the Federal Government towards greater emphasis on timely analysis of project monitoring information within the Green Revolution Programme. This will require the creation of software to generate regular, (probably monthly) statistical reports on project performance.

The successful application of microcomputers, however, will only occur under the most stringently supervised conditions at project or government headquarters level. The predictions which envisage the expansion of microcomputer usage to interface with the farmers at village level are most unlikely to be realised. In the Nigerian context, if the scale of evaluation surveys continues, micros are unlikely to replace larger capacity machines under specialist control or provide a substitute for simple hand extraction techniques for much of the analysis of the smaller surveys.

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Development
Institute

10-11 Percy Street London W1P OJB
Tel: 01-580 7683

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AGRICULTURAL ADMINISTRATION NETWORK PAPERS

No. 14

COMPUTING IN PROGRAMME PLANNING AND EVALUATION WITH PARTICULAR REFERENCE TO EXPERIENCE IN MALAWI*

by

E C Mackey

Mail address: C/o IBRD Mission,
PO Box 5515,
Addis Ababa,
Ethiopia.

*This paper was presented at a joint AAU/BCS meeting on *The Use of Computers in the Planning, Implementation and Monitoring of Small Farmer Development Programmes* held at ODI, 12 August 1981.

INFORMATION SYSTEMS AND M & E

Information systems development for the appraisal, monitoring and evaluation of rural development programs is rapidly evolving, and the assessment of their effectiveness over the relatively brief period of experience has spawned a vigorous and diverse body of criticism. Directed inwards in an attempt to understand the deficiencies in early and current implementations it has been concluded that "enough development fads have passed through the agency (AID) to leave behind examples of almost every conceivable project type which are said to have failed. A careful review of these projects would probably reveal that their final impact on mandate objectives is unknown because it was never measured" (2). Directed outwards, in striving to find better and more effective means of achieving M & E objectives, simpler and more rapidly implemented designs have evolved from the sometimes cumbersome early approaches. The "neoclassical framework" (23) of Little and Mirrlees (6) has fallen into disfavour in the newly emerging methodologies (Refs 16-23) due to its cumbersome analytical structure for rural development appraisal and evaluation.

Under both directions of scrutiny, due to implementation difficulties and structural deficiencies the effectiveness of M & E management services has been questioned*. The provision of a

* Commonly M & E units have suffered from over ambitious terms of reference, late establishment, lack of continuous staffing and analytical capability. Because, also, of the fairly low priority of M & E in past project implementation "widely different projects commonly contained project information components which failed in the long run to function effectively in a management support capacity" (15).

continuous and useful (timely and appropriate) information stream on progress in achieving project objectives, through description of project outputs, effects and impact has, generally, either not come about or not been utilised in on-going policy formulation.

That the protegé has gone astray is cause of concern for its custodians. The present paper is intended to highlight some experiences of an M & E system as it underwent metamorphosis through computerisation and the repercussions this had on all aspects of M & E.

PROJECT M & E

Experience in project and national M & E is drawn mainly, but not entirely, from the author's appointment as Evaluation Officer in the Karonga Agricultural Development Division of the Malawi National Rural Development Programme (1978-80) *.

It has been recorded (15) that project Evaluation Economists are commonly distracted from their primary monitoring and evaluation roles by the over-burdening of extra-disciplinary management-specified and follow-on project planning tasks . The operational characteristics of an evaluation team, however, have immense bearing on the effectiveness of project M & E. Furthermore it is anticipated that little change will come about in those basic facts, although operational performance will be greatly influenced by the methodology of approach adopted.

* KRADD, formerly known as KCRDP, KRDP. The characteristics of the survey design for the main annual socio-economic surveys is described by Poate (25) - prior to computerisation.

Throughout the varying philosophies there is appreciable consensus on what M & E should strive to achieve; in its primary management service function (9, 12, 15) of supporting the decision making machinery at project level, and its secondary function of providing an information-base for project evaluation by higher authorities.

The most frequently experienced problem in M & E is overelaborate data collection without the analytical capability to make proper use of it. There is a risk that data collection and accumulation become, if not ends in themselves, a vicious cycle impossible to break out of (2, 12, 15). Furthermore, information usage may be hampered due to political sensitivity , but more due to the lack of involvement of users in M & E design and their subsequent lack of trust or confidence in M & E findings . Optimal information gathering techniques are required to ensure that user requirements are satisfied through a viable M & E programme.

When considering minimum information systems, a distinction should be recognised between the credibility of consultants and in-house M & E rapid appraisal approaches. The proven attractions of consultancy M & E are that, with appreciable resources and expertise, there is the capability to come up with "an answer" to a problem rapidly, and present it in a form which decision makers are likely to take notice of. While the objectivity of consultants is equally as questionable as that of in-house M & E, such "task-force" operations may be superficial. Other than the selective collection of data from primary sources, the principal data-base for most studies is the same as that for in-house M & E, without the same regard to data reliability . "Facts" which would not be acceptable in-house attain credence through coinage by outside experts. While consultancies undoubtably have roles to play, and will continue to operate, the need for viable in-house M & E remains.

REALIGNING IN-HOUSE M & E

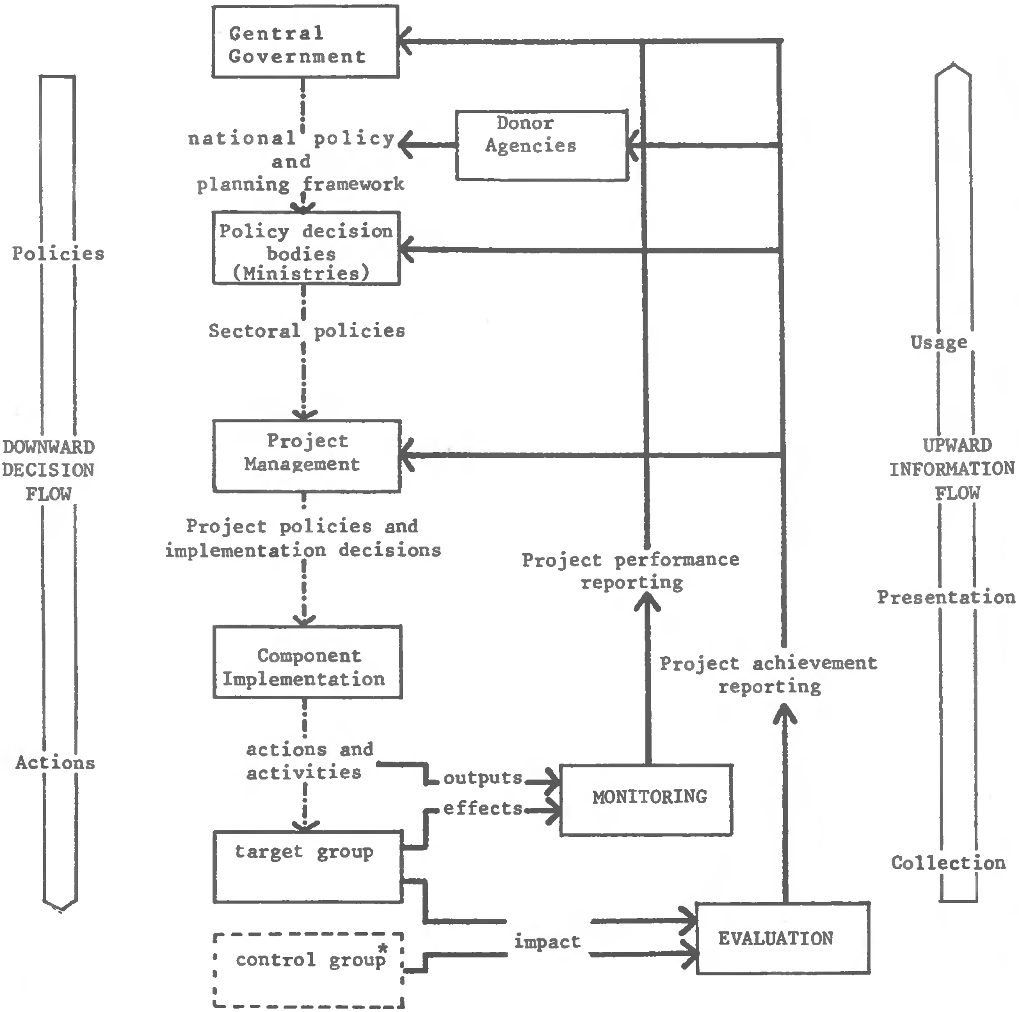
Given the criticisms of, and problems encountered in in-house M & E, fundamental deficiencies in the M & E approach have contributed to its lack of success and lack of impact on project decision making. The maxim of objectivity commonly produces an insular attitude whereby the M & E body divorces itself from the operational aspects of the project, thereby cutting itself off from crucial data sources. Lack of understanding on both sides, due to severed lines of communication, generates tensions and suspicions which conspire against the acceptance of M & E as a project service. Disinterest in operational mechanisms in favour of simple operational performance generates distrust of M & E which quickly leads to the view that it is a "policing" organisation. Thereby problems and deficiencies in project component implementation, and the real impact of programmes are concealed from its view.

It has been stated (15, 18) that the typical top-down model (Diagram 1) is inadequate and that M & E should be viewed as a 2 way process. It is argued here that the emphasis given to the management service aspect of M & E (6, 9, 12) to the virtual total neglect of lower levels of decision making and programme implementation is detrimental to effective M & E. While in the lowest sense, stock indicators for project monitoring, such as credit issues, extension visits, training sessions, etc. are adequate for regular performance reporting, they are hollow of any real information about project performance. Even a stagnating project with zero (or even negative) impact may appear viable on the basis of "activities".

Unless the gap in understanding is bridged by senior evaluation staff participating in local project discussions, and not simply at headquarters level, there seems little prospect of M & E being accepted or effective in project implementation.

DIAGRAM 1: TOP DOWN (information up) PROJECT ACTIVITY FLOW

Characteristic features: No involvement of users in survey design;
No discussion of evaluation results or feed-back of implementation problems;
M&E divorced from project operations.



* Pre-project status or groups excluded, by design or default, from the main stream of project activities.

-.-.-.-.-.- Action inflow

——————— Information outflow

INFORMATION SYSTEMS DEVELOPMENT

The tendency of conventional evaluation practice to "collect data in such volume that most of it is simply stored or never subject to examination" (12) is a frequently encountered pitfall, even when the dangers are recognised. In addition, the "generation of information . . . provides no guarantee that it either can or will be used in an operational manner" (15). In the absence of an adequate data-base project operational decisions continue to be made. Where evaluation is out of tune with project operations, there is a tendency to exclude evaluation information from the decision making process *, relegating it to data archives.

The overwhelming theme in current M & E methodology is to tailor information services to user requirements, through rapid and simple procedures to make information available where and when required. The criticism of broad-based macro surveys, suited particularly to ex-post evaluation, is that they tend to pre-empt immediate needs, and where priority is necessarily given to various ad-hoc studies, suffer in their characteristic quality of data accumulation. Given that project M & E is a multi-faceted operation, the multiplicity of demands on it overload its conceptual design. Rapid appraisal methodologies (16-23) are having

* For instance in the use of extension estimates for planning forecasts to the exclusion of evaluation results. Discrepancies in estimates between the sources, by factors of 2 or more, discredit both such that confusion arises where differences in methodology and spheres of concern are not appreciated and explained. While extension estimates are usually more suited to short-term seasonal planning (eg. of input requirements) evaluation should play a more active role in their formulation.

an appreciable influence in M & E programmes, but if they are restricted to isolated areas of study, the fragmentation of effort and resources may potentially compound problems already encountered.

The level of detail at which data should be collected is subject to debate and contention. It is argued that there may be resistance from management to detailed data collection because it threatens its "security in ambiguity" making it more accountable and open to outside criticism. Minimum information systems may risk aggregating the uncertainties (7) and in their adoption, it may be questioned whether information gains have been achieved.

If rapid appraisal methods are to be used for approximate studies (23) there is a danger of clouding the issues of real importance. For instance, detailed evaluation analysis of credit performance in KRADD highlighted areas of concern in adoption rates and patterns. Radical policy changes were instigated, supported by evaluation recommendations. Similarly in nutrition studies, production patterns etc. an overly aggregated view may give few clues as to the needs of an area or appropriate policy instruments for rectification programmes.

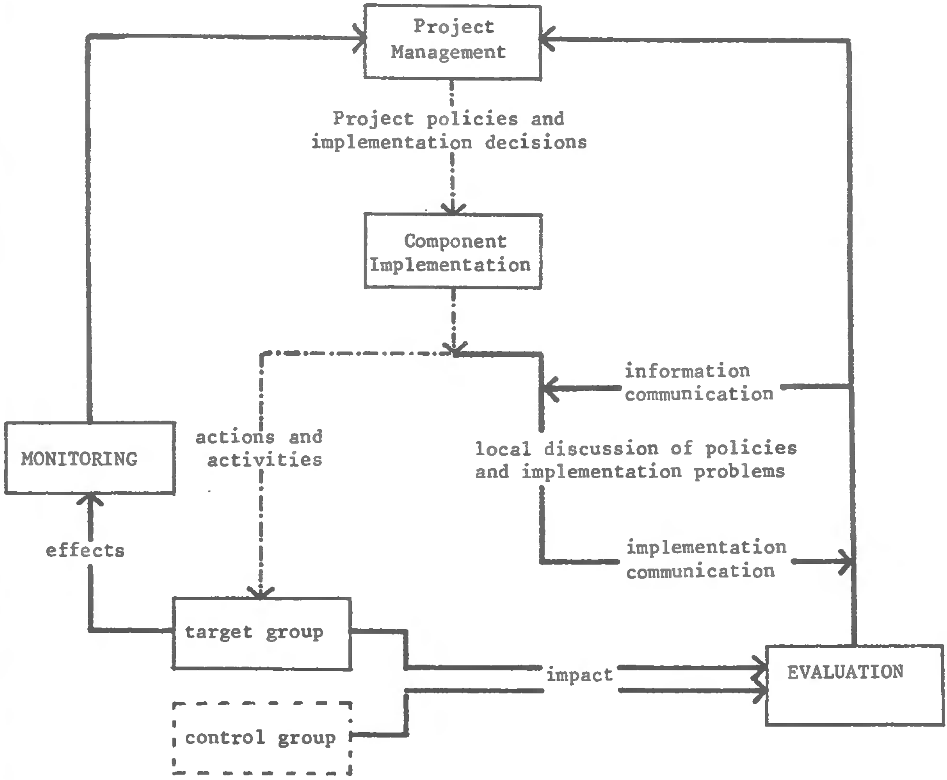
Ideally, a balance should be struck between the need for broad coverage through base-line surveys, and flexible ad-hoc studies. In the development of an information system, these should be compatible - in that neither interferes adversely with the performance of the other - and mutually re-inforcing, whereby the overall information gain from the two approaches is greater than the sum of the parts.

To achieve operational effectiveness, information systems development impinges on all components of the information cycle (Diagram 2), relieving

DIAGRAM 2: PROJECT LEVEL INFORMATION CYCLE

Special characteristics: Involvement of users in evaluation methodology and survey design (not shown);
Communication of evaluation purposes with implementing groups;
Exchange of information and ideas at local level;
Effective participation of M&E in project activities.

Note: These do not imply any infringement of sectional responsibilities or breach of data confidentiality and evaluation objectivity.



jams and bottle-necks and strengthening weaknesses. The essence of the system should be that it is self supporting. The principles of computer-based, if not computerised, techniques have a major role to play in such a system, by structuring the data collection, validation, analysis and presentation aspects of M & E in a rigorous framework where operations are explicitly defined and roles and requirements clearly understood*. The key components of the system, viewed in terms of manpower, data collection and analytical requirements are: survey design and implementation, data control and flows, data analysis and information presentation.

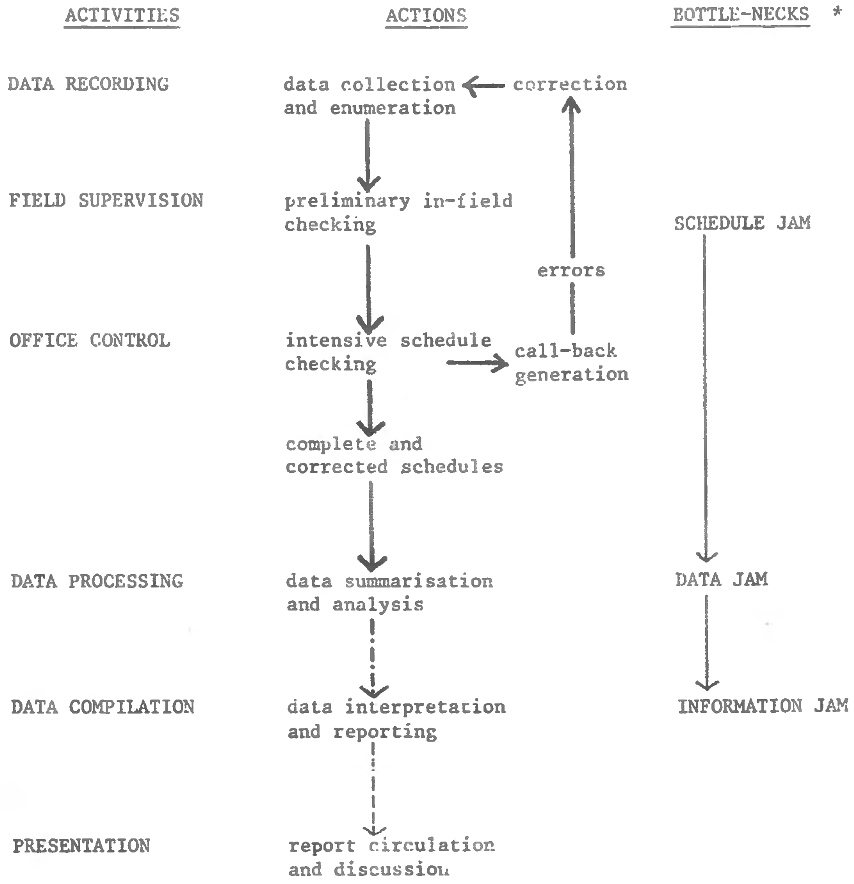
An example of such a system which has been implemented with success, suited to both hand and computer data processing, is shown schematically in diagrams 3a - c** .

* Duplication of activities are often not realised, such as data recording in free-format followed by in-field coding (9) - an error prone and mis-directed form of data management. The severest bottle-neck in the system is the capacity of the Evaluation Officer to perform the necessary functions of problem solving, training and administration in addition to data analysis and channeling of information to the many users. A structured approach defines work spheres and responsibilities in such a way that optimal use is made of all manpower resources available. In the system described efficiency gains were achieved at all levels with reduction, rather than increase in work loads.

** Computer processing of the major, nationally standardised socio-economic surveys was implemented in KRADD in 1979. COBOL software for data editing and analysis was developed in the Planning Division of the Ministry of Agriculture and Natural Resources and processing performed on the Malawi Government ICL 1900 series machine at the Computer Service Bureau. Integrated field and office procedures were developed within the KRADD M & E team. In that year, both hand and computer analyses were performed. to test the system and safeguard against catastrophic computer failure.

DIAGRAM 3a: PRIMITIVE (Pre-computer based) INFORMATION SYSTEM

System deficiencies: No clear separation of activities. Confusion of responsibilities;
Inefficient use of manpower resources due to heavy duplication of activities (focussed on schedule checking) and effort expended in bottle-necks.



* Bottlenecks are self propogating once one has occured early in the system. The main deficiency in the system is that data source requirements are not identified, such that all users - from the field enumerator to the office analyst - are competing for schedules. The result is that schedules spend long periods in unproductive use in the office while the enumerator requires them in his field activities.

———— Schedule flows

·—·—·—·— Data flow

– – – – – – – – Information flow

DIAGRAM 3b: COMPUTER-BASED INFORMATION SYSTEM (non-computerised components)

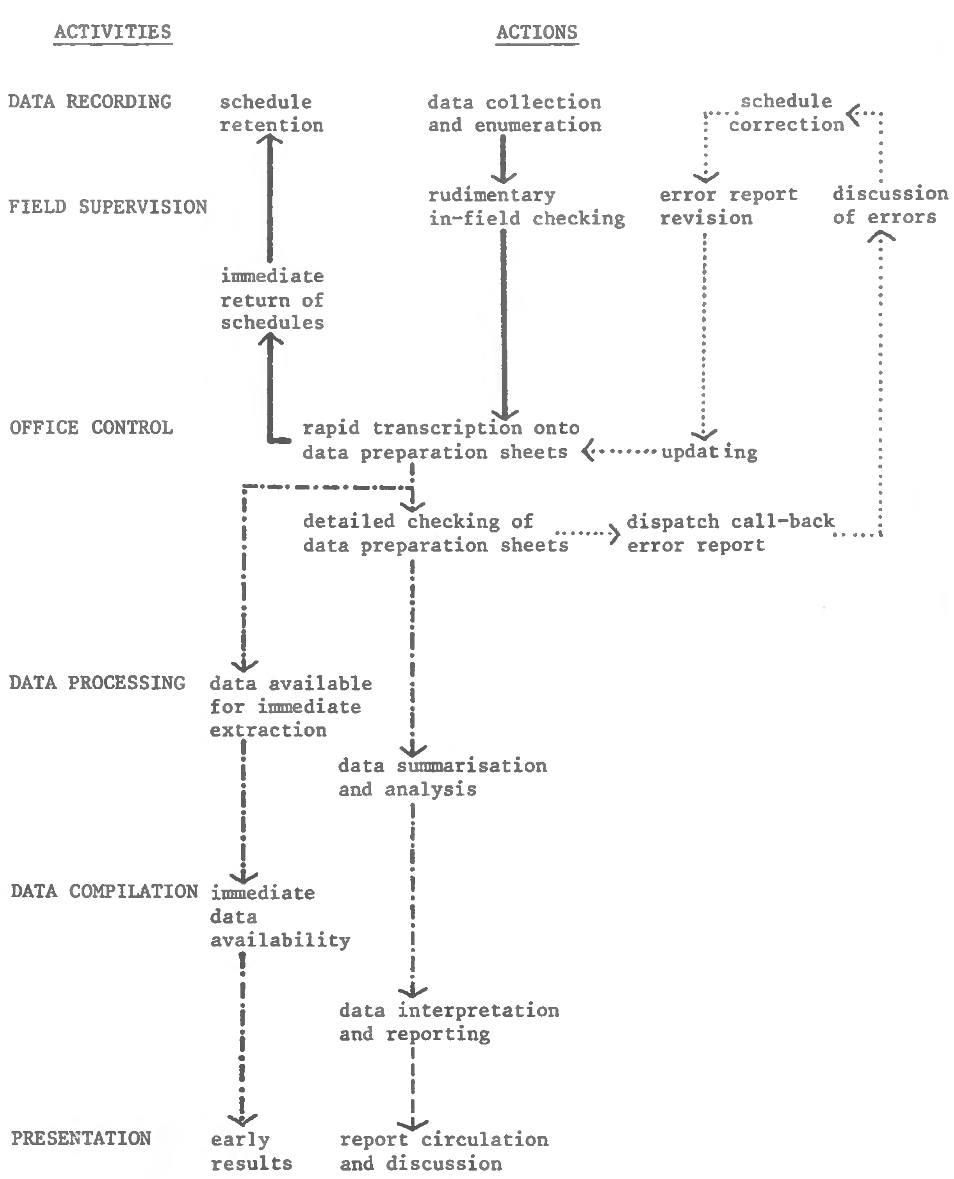
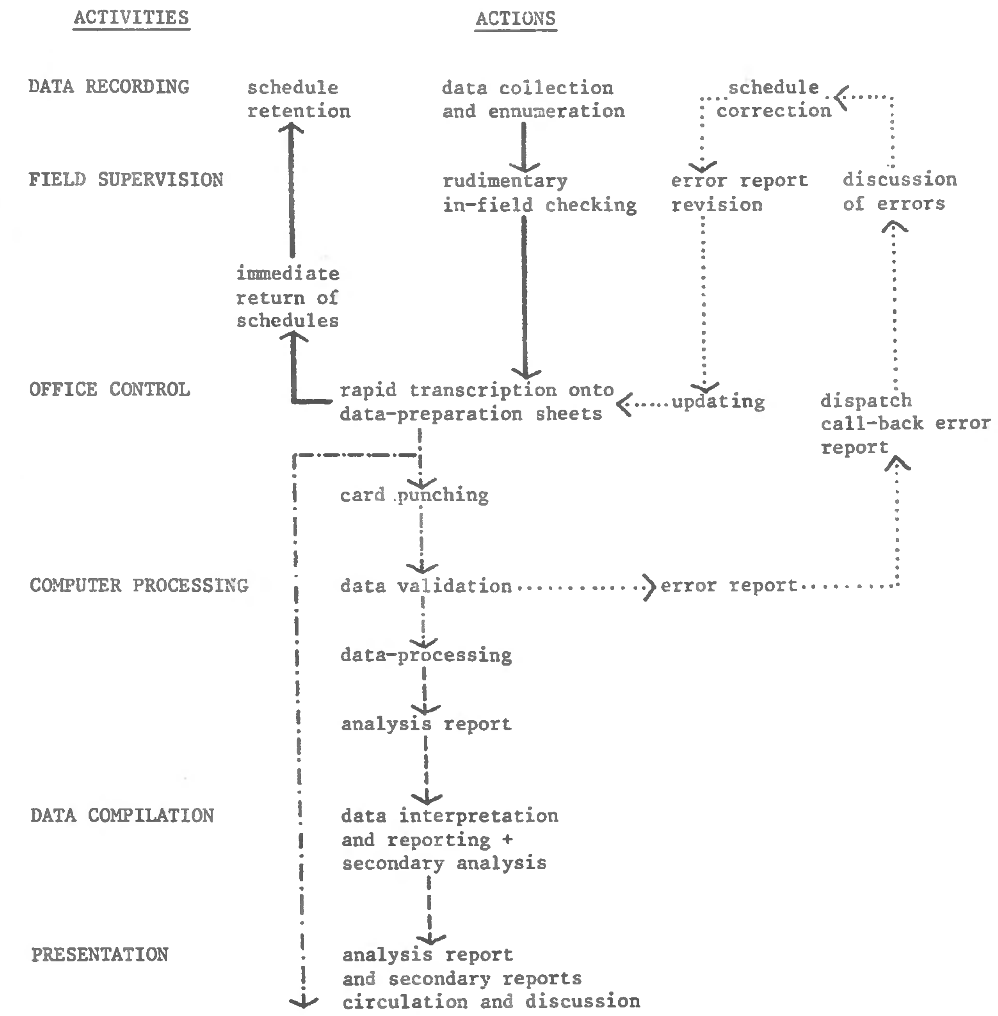


DIAGRAM 3c: COMPUTER-BASED INFORMATION SYSTEM (computerised components)



M&E systems development has been stressed in the above discussion because the use of computerised data processing does not guarantee information gain or enhanced M&E capability. Unless the M&E operational structure is geared to effective data collection and control, the superimposition of computer analytical capability will have little impact on operational performance. Furthermore, the system developed does not necessitate computerised data processing. Indeed it is a built-in feature that such reliance is avoided * .

* A redundant feature in a wholely computerised system is the transcription of data onto preparation sheets. Where data processing is by remote-control, delays are experienced in computer processing, and there is a hazard of data loss in transport. Any errors made in transcribing are quickly picked up through validation procedures.

THE UTILITY OF COMPUTERS IN PROJECT M & E

Associated with the use of computers in developing countries are problems not experienced in the industrialised world. On one hand, the level of knowledge and sophistication among users dictates the standards of goods and services they receive. On the other, economic conditions determine suppliers willingness to enter and compete in the market. The explosive demand in developed countries for computer hardware and software has been the feedstock for the massively expanding computer and related industries. Favoured by the level of development of the technological and infrastructural base, it is also a reflection of the level of user-support services available, guaranteeing proper installation of hardware and rapid rectification of faults at minimal inconvenience. So too, in operation, the intensity of operator cover ensures adequate maintenance of hardware and software, which should, potentially, be used optimally.

In developing countries market competition among manufacturers and suppliers is generally non-existent, with central government and government agencies being the sole users. The vagaries of national economies in developing countries render markets marginal and uncertain. Subsequently there is little choice in systems available. Lack of knowledge in the technology and operational requirements of computer systems renders users vulnerable to marketing practices that would not be tolerated in developed countries, for instance in the selling of incomplete and inappropriate systems. Established sales outlets may also find their interests in a country contracting, particularly where machines already installed are obsolescent and markets stagnant. Where the supplier reneges on service contract guarantees there is little scope for the user to take remedial action*.

* The present discussion is not directed at ICL operations in Malawi; ICL has provided an extremely good service.

In addition, compounding infrastructural inadequacies, high transport and maintenance costs, remoteness and shortage of technical expertise impinge on computer system reliability. Wide diurnal and seasonal climatic variations demand strict environmental control of the computer operating area, where much of the year is hot and dusty and the rest is warm and humid. Electricity supply is notoriously unstable, which can be rectified only up to a point by voltage stabilisers, and particularly in the rainy season massive fluctuations and cuts are experienced.

Subsequently computer systems are generally operated sub-optimally, but are strained by frequent shutting-down and cold-starting due to hardware, installation or external faults.

In project M & E the demands that can be made on computer systems are necessarily limited. Data processing capability is generally primitive with little choice of compilers and packages and only the most basic software available. In addition, remote control data processing from distant stations is harzardous in itself.

Lest computers be thought of as a panacea to free M & E of its shackles in developing countries, it is worth bearing in mind some of the operational difficulties. So too is it worth developing information systems that are sufficiently robust to withstand failure in computerised data processing. The simplest and most effective way is felt to be by mimmicking computer processes in field and office procedures, with the development of systems that readily adapt to hand processing in a free and natural way.

The above discussion is not intended to dismiss computer systems outright, but rather to indicate the need for special care and attention in their implementation. Computerised data processing of national macro surveys offers immense savings in time and effort for project M & E staff. Sophisticated systems, such as advocated by Anderson and Dent (24) will not be adopted widely in developing countries in the forseeable future, demanding as they are of technical skills and other manual and material resources. Rather, simple and easily implemented basic data processing systems offer the greatest prospect for increased computer usage. Data-base and analytical packages are readily available, however, they have as yet made little impact in developing countries.

The main aid agencies have made little comment on the applicability of computers in developing countries. Their introduction is often haphazard, with lack of guidance on operation and usage. The impression is that the donors are undecided about the appropriateness of computerised systems in most countries (with notable exceptions) and are waiting to see what happens.

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10-11 Percy Street London W1P OJB
Tel: 01-580 7683

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I NOTES ON DISCUSSION PAPERS

Discussion Paper No 8 *Managing Agricultural Extension: The T and V System in Practice* by John Howell

The prominence of the Training and Visit system of extension in many externally-assisted agricultural programmes is not only because of World Bank pressure: many Ministries of Agriculture are also concerned at the low productivity of their extension effort. The paper develops three main themes. First, it examines categories of problems in providing technical advice and information to small farmers (p4-7). Second, it examines the components of the T and V system against these problems (p7-11). Third, it identifies the most common criticisms made of T and V and discusses whether the record bears them out (p11-17). The general conclusion on T and V is that as long as not too much is claimed for it and as long as it is not implemented too rigidly, the system may eventually deserve a better reputation than it is currently getting.

This is a large area for debate about both the principles of extension organisation and the precise record of success or failure of T and V in different countries. As well as comments on the paper itself, it would be useful to know of any work on evaluating T and V which has not yet been made widely available. The AA Network would be willing to edit and circulate papers of particular interest.

Discussion Paper No 7 *Farmer Groups in Cameroon; Some Experiments in Credit Delivery* by Clare Oxby (Issued in November 1981)

Response from Marie-Noëlle and Philippe Lenoir (Ingènieurs Agronomes Volontaires du Progrès) BP 12 Mbouda, République Unie du Cameroun.

1 *Pooling land* (p6*): It is difficult to see how the authorities could have contemplated settling young people on land managed *communally*, for at least two reasons: firstly, young farmers' energy to work varies a lot; this is a source of discord between them, especially since in this type of agriculture, farmers must begin by satisfying their own subsistance needs first. Secondly, in Bamilake country at least (west Cameroon) the land is exploited by families, not household heads: farms are first and foremost family farms.

On the other hand it would be desirable for the agricultural potential of the zone in question to be studied more closely, in order to locate and to reserve, *before* allocating individual plots, the areas which would be suitable for communal management: irrigable river beds, steep slopes for reforestation, springs or wells for common use, etc... As volunteers on a young farmer resettlement scheme we are confronted by problems resulting from this lack of method and lack of field surveys; these problems are all the more difficult to resolve since the authorities are very slow at altering the legal status of the land. It is therefore important to distinguish between what can be done by each individual in his own home and what is suitable for communal development.

As to the *Groupement d'Agriculteurs Modernes* (GAM) whose members do not live in the same village, how can one be surprised at the fact that these people only got together to obtain credit? One has to question the seriousness with which these projects are prepared and supervised by GAM members and by local authorities.

* page numbers refer to Discussion Paper 7

2 *Pooling Labour* (p7): The emphasis on communal labour, especially in agriculture, is difficult to understand.

Nevertheless, communal labour certainly exists in some forms; for example: customary work groups; mutual help, which is written into the statutes of one of the local Jeunes Agriculteurs (JA) settler groups; amongst the settlers, communal labour for the construction of a well, for driving an ox-drawn plough, for the construction of houses, for the maintenance of paths and ditches, etc.

Moreover, one must recognise that communal labour is not necessarily the most productive: it also provides an occasion for drinking, eating, discussing football. (It can however give very good results, for example in our experience a communal house, a well...)

As to the use made of money, recourse to paid labour is widespread: the settlers automatically think of hiring a tractor if they obtain a loan.

And then there is another form of communal labour: it is the labour of the family group. The groups of 'young farmers' which do not take account of mothers and wives, young brothers and sisters, seem to us to be artificial, and more modelled on European concepts of the household head than on African reality.

As to the women's plot (p8), it is not necessarily a bad system to group together in the same field what are in fact individual plots: we have had success with this arrangement (plots for coffee saplings; irrigated plots...).

To conclude, it seems that to every type of work corresponds a type of organisation: communal for a canal, a well or a home; mixed for an irrigated command; and individual for one's own field.

3 *Equipment* (p8): as to the list of equipment allocated to young farmers, it is true that communal equipment could have been made available to them. However, one must recognise firstly that the equipment given to each individual is useful (certainly, it would be even more so if the needs expressed by the settlers were taken into account rather than giving all of them the same standard list). Secondly it must be recognised that communal equipment assumes *agreement between users* and *capacity to manage expensive technical equipment*. We have realised however that this is far from the case in our area, and that this would necessitate previous training (notions of running costs, amortization and so on) and a minimun standard of discipline. If group members agree, they can subsequently aquire communal equipment through credit, savings - or through the intermediary of outsiders, including foreign volunteers.

The remarks are all the more true so far as vehicles for marketing are concerned. It is very difficult to make such equipment profitable; vehicles must be loaded regularly and sufficiently, without mentioning the temptation to use them for other purposes. It is possible to envisage other solutions to the problem of marketing. For example, a) MIDEVIV, the parastatal responsible for directing food crops towards the urban centres; if this system is to work, the producers must deliver enough so that the lorry can set off. (But this would reinforce even more the power of the State over the farmers.) b) something along the lines of the *Centre d'Assistance Rurale*, a non profit-making organisation which ought to be able to assure quality, quantity and variety of produce. c) the private sector: for example, one group of settlers hire a Toyota at a standard price, one day a week, from a local ex-teacher. There again a minimum of organisation is required to produce enough regularly.

In the absence of any such system, the producers can only present themselves individually, in which case most of the profit is made by the carriers. But the outlets do exist!

4 *Unpaid Labour* (pp7-8): This refers to a system which appears to be practised quite often in this area (and not only by men but by all categories within the population). In Western Province, there are many coffee plantations, and coffee is men's work; this often results in women lacking land for food crops. It is therefore common to allocate a piece of land to a woman who can come from more than 20 kms away to grow food crops. The only condition imposed by the land owner is to be able to plant his coffee trees there. For several years the woman therefore has access to land and she keeps the whole of the produce. The owner on the other hand gets his coffee trees weeded for nothing (without weeding the trees would be suffocated and burned). But after about ten years, the coffee trees have grown a lot and the food crops do not produce much any more; so the woman goes elsewhere, she is not chased away by the land owner, rather by the coffee trees.

5 *Size of Productive Unit* (p11): the grouping together of plots does enable the young settlers to organise themselves more efficiently (for ploughing, marketing, etc), even if the plots are exploited individually.

6 *Credit Risks* (p11): it seems that the authorities are defenceless (or voluntarily passive?) in the case of desertion or non-repayment of loans. But right from the beginning, were the members ever capable of repaying the loans?

7 *Transitional Stage* (p13): Is it realistic to imagine that a group of farmers would ever be able, on their own account, to transform themselves effectively into a cooperative; and the cooperatives in the region which function as cooperatives have a leadership independent of the farmers (eg UCCAO, the coffee parastatal) and are in general helped from outside.

8 *General Comments* : The comparison between the reality of both of GAMs and the JAs with the 1973 speech to the Agro-pastoral Congress of Cameroon held at Buea is unfair. The GAMs

were certainly set up in the context of this speech and we can see the results today (fake GAMs and non-repayment of loans). But the objectives of the JAs were not fixed by the 1973 speech. They were:

i to settle young people in the country and to slow down the exodus from the rural areas (it is certainly a pious wish for many people, but it does have some founding in reality);

ii more immediately, to bring in foreign currency and resources to the State.

As far as these two objectives are concerned, one cannot conclude that the scheme was a failure; anyway one will have to wait several more years before concluding on the JAs.

II SOME RECENT PUBLICATIONS

1 FAO *Administering Agricultural Development for Small Farmers* (Economic and Social Development Paper No 20)

This paper looks at the practical implications for governments seeking to adopt ideas of "decentralisation" and "participation" to the agricultural sector. It deals with four main levels: the national, or central, organisation of agriculture and "rural development", district level administration, the level of managing field services and input supply, and the farm and village level where forms of group action appear desirable. The document is based upon a manuscript originally prepared by John Howell in 1980 and subsequently revised. It is also available in Spanish and French and can be obtained from Publications Division, FAO, Via delle Terme di Caracalla, 00100 Rome.

2 John D Montgomery and Masihur Rahman *Integrating Rural Development: Views from the Field* Lincoln Institute Monograph 81-3, Lincoln Institute of Land Policy, 26 Trowbridge Street, Cambridge, Massachusetts 02138, USA.

This paper is based upon data provided by managers of agricultural and rural sector projects and training centres in India, Bangladesh and Taiwan. The data comes from the use of "critical incident" questionnaires which have been used successfully in industrial and military contexts and which Professor Montgomery has pioneered in the analysis of rural development management and training. He would be particularly interested to hear from networkers involved in in-service management training who would be prepared to administer questionnaires which would be processed at Harvard. Please contact Professor John Montgomery, Kennedy School of Government Harvard University, 79 Boylston Street,Cambridge,Mass 02138.

3 A B J Willett *Agricultural Group Development in Botswana* Agricultural Management Associations, Ministry of Agriculture, Botswana, October 1981

Requests to: Office of the Commissioner, Agricultural Management Associations, Ministry of Agriculture, Private Bag 003, Gabarone, Botswana.

Four volumes of detailed description and analysis of a range of groups set up under the Group Development Programme of the Division of Agricultural Management Associations within the Department of Agricultural Field Services, Ministry of Agriculture, Botswana. The emphasis is on implementation, problems encountered in setting up groups and suggestions for the practitioner. The material is organised in the following way:

Vol 1: Traditional group practices and background to the Programme.

Vol 2: Communal fencing, communal grazing, dairy ranching in the communal areas, group ranching, group activity in water development, cattle husbandry groups for tick control, smallstock management groups.

Vol 3: Group action in the fishing industry; in crop storage, marketing and processing; tractor groups, poultry groups;

group horticulture projects; agricultural group work with women; farmers' committees. General conclusions.

Vol 4: Appendices, including some 270 pages of tables giving details of the various groups, and groups' contributions.

A separate summary of the Report is also available.

III AGRICULTURAL ADMINISTRATION NETWORK PAPERS

Network Paper No 15 *Administrative Levels for Rural Development Functions: a Suggested Framework* by B J J Stubbings

This paper suggests that, given the particular problems raised by the planning and implementation of rural development strategies, a tiered approach to administration is a useful starting point in improving administrative performance. He recommends five tiers but places particular emphasis upon the district tier and a local government council tier. Drawing upon experience in Pakistan and Nigeria especially, he lists the sorts of functions and responsibilities appropriate for each tier.

In the past, most Agricultural Administration Network Papers have originated at meetings organised by ODI, and Discussion Papers have been written by members of the AAU. But all Networkers are encouraged to contribute papers for consideration as either *Network* or *Discussion* Papers. Discussion Papers are distributed to all networkers and normally they will involve issues upon which correspondence is invited. Network Papers are reproduced in smaller numbers and are available only where asked for by networkers.

IV OTHER NEWS

1 *Financing Agricultural Services*

The AAU is currently considering organising an international seminar in mid-1983 on the problems of directly financing the recurrent costs of agricultural services. The particular emphasis would be upon Africa and the financial problems facing agricultural programmes after an initial externally-assisted capital investment phase. The Unit would like to hear of any work that has already been done in this area whether it is on financing specific services (such as soil conservation, tractor-hire, extension) or on procedures for cost-recovery relating to the supply of specific production requirements. Write to John Howell, Anthony Bottrall or Stephen Sandford.

2 *Use of Computers*

The last Newsletter mentioned the joint AAU/British Computer Society (BCS) meeting on the use of computers in small farmer development and the availability of three Network Papers (Nos 12-14). The BCS Specialist Group for Developing Countries are now planning a 3-day conference with an emphasis upon agriculture. This will be in Warwick in July 1983, the week after the Royal Agricultural Show. If any networkers have any suggestions for contributions they should write to Graham Tottle, ICL, Warlock Way, West Gordon, Manchester or Lt Col S K Mair, Indian High Commission, India House, Aldwych, London WC2. Further details will appear in the BSC Specialist Group for Developing Countries Newsletter. For general information on the Specialist Group contact The British Computer Society, 13 Mansfield Street, London W1M OBP.

3 *Agricultural Administration: The Journal*

A special issue on *Providing Services to Small Farmers* edited by John Howell and Guy Hunter has been prepared for publication in 1983. It includes five contributions from members of the AA Network as well as contributions from John Howell and Guy Hunter. These are:

SHREEKANT SAMBRANI	..	Managing Commodity Systems: The Development of Co-operative Dairying in India
MARTIN ADAMS	.. ..	Irrigation and Community Development in Indonesia and Sri Lanka
JAMES LEACH	..	Administrative Co-ordination in African Rural Development
SHOAIB SULTAN KHAN	..	Organising Farmer Groups in Mahaweli
DEREK POATE	..	Organising Farmer Services in Nigeria

Agricultural Administration is available from Applied Science Publishers Ltd, Ripple Road, Barking, Essex, England.

The editors are John Pearce and Gwyn Jones of the University of Reading. The number of issues per year has been raised to 12 and the editors are particulaly anxious to extend their regional coverage. Networkers with papers relevant to agricultural administration in South, South-East and East Asia and the Middle East are invited to submit them to The Editors, *Agricultural Administration*, Department of Agriculture and Horticulture, University of Reading, Reading RG6 2AT. "Agriculture", incidentally, includes non-farming subjects such as forestry, fisheries, nutrition, and rural employment.

4 *Courses*

A new short course on Agricultural Project Planning and Management has been set up at the Project Planning Centre, University of Bradford. Details are available from Frank Wilson (Course Director) Project Planning Centre for Developing Countries, University of Bradford, Bradford, West Yorkshire BD7 1DP, UK.

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AGRICULTURAL ADMINISTRATION NETWORK

NEWSLETTER NO. 9 *AUGUST 1982*

CONTENTS

I RESPONSES TO DISCUSSION PAPER NO. 8

Managing Agricultural Extension: The T and V System in Practice
by John Howell

The most significant early response to the T and V paper has come from Daniel Benor who visited ODI in August. These notes were prepared by John Howell and subsequently revised by Daniel Benor.

Daniel Benor first developed the Training and Visit system on relatively small projects but since 1976, T and V has been developed as State or national extension projects financed mainly by the World Bank and the concerned governments. One of the latest countries that has decided to adopt T and V is Kenya, where project preparation is in its last stages and where Daniel Benor has been working recently. Training and Visit extension has been supported by the World Bank in more than fifty projects (including those now under preparation) in about twenty-five countries. In addition, a number of other countries have adopted T and V extension (though not always correctly, Benor suggests) on their own accord.

The paper described T and V as I had seen it in practice, or had it described to me, in parts of Nigeria, Malaysia and India. The main *defects* of T and V in practice which I discussed were that:

1 By over-emphasising the management and control functions, it was more concerned with the productivity of extension staff than the productivity of farmers.

2 By concentrating upon a series of key practices and specific crop technologies, the T and V extension effort has become a top-down package approach inappropriate to the diversity of small-scale farming environments.

3 By confining the work of extension officers to advice on agricultural production, the system fails to take account of (a) the difficulties for government in providing other support functions (credit, input supply, etc) and (b) the importance of these functions in the work of extension officers in gaining the confidence of farmers.

4 By using a system based on contact farmers and farmer groups, a large number of farmers were likely to be excluded from the benefits of extension advice where social conditions were not conducive to group extension.

All of these points are contested by Daniel Benor. He claims the first two points of criticism (staff management emphasis, and top-down technology) are based on a fundamental misunderstanding of the extension philosophy behind T and V. Through continuous contact with farmers, extension officers acquire an understanding of technical problems and an awareness of potential for increased farm *incomes* (ie not only production) which is to be relayed to the research and specialist staff, through routine fortnightly training sessions, monthly workshops of Subject Matter Specialists and research staff or other extension/research meetings established under the system. In this way, the generation of improved agricultural technology is *demand*-led, quite the contrary to the supply-led system described in my paper.

It is Daniel Benor's view that extension and research can never be useful unless farmers themselves demand advice and these demands and problems reach specialists and researchers, and they are subsequently dealt with in the production recommendations passed back to farmers. By giving farmers regular and frequent contact with an extension worker, and by establishing regular, systematic links between extension and research, T and V is a way of encouraging such demand. In short, T and V is not a philosophy of management, but a philosophy of *agricultural development* that can be achieved through better management.

The third point (the concentration upon a single function) is central to the implementation of this philosophy, and Daniel Benor will not be budged from it. He makes two points. First, where extension officers have other functions relating to supplies, marketing, quality control, regulation, etc, these functions invariably relegate the work of providing technical advice to farmers. This is because such jobs are time-bound and measurable: they must be 'completed' and be seen to be completed. For this reason they will always take priority over the proper extension duties which are not time-bound and measurable. Second, effective extension requires professional extension workers who have a high level of professional pride and competence and who have a high standing among field officers. The regular training and discussion sessions are vital for this, but the entire effort towards professionalisation is held back if agricultural officers undertake work which is essentially non-professional, even clerical, in nature.

The fourth point (contact farmers) is one that Daniel Benor broadly accepts - where social conditions are not conducive to group extension. In most areas, however, contact farmers are a useful and necessary mechanism given the number of farmers an extension worker cannot meet individually. A key to successful extension through contact farmers is to ensure that as many farmers as wish should become "contact farmers": that is that they receive regular visits from the extension worker and that they want to adopt some of his recommended practices. These detailed questions of the nature of 'visits', 'contact farmers', 'demonstrations', 'farmers' groups', etc, are the subject of a forthcoming World Bank manual on agricultural extension. (The next Newsletter will have more details on this.)

The final, more general, points are the ones that Daniel Benor would wish to make most forcefully. He believes that T and V is *not* a system which only works well under conditions of relatively closely-supervised irrigation and cites its adoption in India, Thailand, Indonesia and elsewhere, where

the system works well in both irrigated and rainfed areas. In those rainfed areas, production is very diverse and 'unsupervised'. He also believes that the returns on investment in improved extension can be far beyond the returns from, for example, physical infrastructure. The extension service is the basis for all other investment in agriculture for without effective extension, the returns on other investments will be limited. He cites many examples where fairly rudimentary advice on husbandry (timely sowing, spacing, weeding, etc) given to farmers through regular - and purposeful - visits has transformed dramatically production and yields of a wide variety of crops.

It should be pointed out that some of the difficulties experienced with T and V that I described could be interpreted as a mis-application of the basic principles of T and V as advocated by Daniel Benor. There is a gap, in some countries, between theory and practice. While the system may appear relatively simple, it depends on the effective implementation of a number of inter-related activities (field visits by all staff, regular training, absence of non-extension functions, streamlined administration, support and involvement of research, etc) - the absence of any one of which can impair the system's effectiveness. Without close guidance, the significance of some of these prerequisites may be unappreciated and some of the key features of T and V are lost.

I have also received detailed responses to my request for specific country, or State-level, experiences of T and V and in the next Newsletter I shall summarise these. I also hope to put together a longer account of T and V in practice and further case studies would be welcome.

The responses that I have are primarily from the perspective of those engaged in reforming agricultural extension: ie planners, consultants and senior administrators.

II RECENT PUBLICATIONS

1 AAU Occasional Paper No 4 *Enlisting the Small Farmer: The Range of Requirements*. Edited by Guy Hunter, pp 63, £2.00. Available from the Publications Officer, ODI, 10-11 Percy St London W1P OJB.

This paper springs from Discussion Paper No 6 in the ODI Agricultural Administration Unit Network series, which was entitled *A Hard Look at Directing Benefits to the Poor and at Participation* . Comments on that paper were requested, and more than 20 considered comments were received, some raising new issues, some amending or questioning the existing text. This new Occasional Paper is aimed to share these comments with Network members, but in a form which will also be intelligible to new readers.

Discussion Paper No 6 was structured by listing and discussing a rather numerous list of assumptions which it would be necessary to make if development programmes more directly aimed at small and marginal farmers were to meet the difficulties and objections which have been raised against them, and which partly account for the neglect of the very large section of the rural economy - the poor.

This Occasional Paper takes a rather more positive line. It is structured by listing and considering what modifications would have to be made to commonly existing policies, structures, attitudes and administrative arrangements if development of the poorer rural sections is to be achieved on any considerable scale. It does, therefore, assume that change is desirable, and the emphasis is on its nature and on its practicability.

The paper is structured along the following lines:

PART I: CENTRAL ECONOMIC AND POLITICAL POLICIES
Direct Economic Costs
Policy Initiatives and Failures

PART II: REQUIREMENTS FOR EFFECTIVE SERVICE TO SMALL FARMERS
The Local Power Structure and the Choice of Institutions
Technology, Research, Programming
Supply to Small Farmers

PART III: ADMINISTRATION
Required Changes in Government or Elected Council Services
Government Organisation and Management

PART IV: CONCLUSIONS

The text is interspersed with comments from networkers and extracts from papers send in by networkers.

2 Agricultural Administration *Providing Services to Small Farmers* (Vol 11 No 4). Edited by John Howell and Guy Hunter.

The special issue of the Agricultural Administration Journal, which was mentioned in Newsletter No 8, will be available from The Agricultural Administration Unit, ODI, 10-11 Percy St, London W1P OJB. It includes five contributions from members of the Agricultural Administration network as well as contributions from John Howell and Guy Hunter. Price £9.60, including postage and packing, payment in sterling in advance.

III NOTES ON DISCUSSION PAPER NO 9

Discussion Paper No 9 *The Organisation of User Recommendations and Pesticide Distribution in Tanzania.* by Peter Cox.

The paper describes research on pesticide use in cotton, maize and coffee-growing areas of Tanzania. Apart from the purchase by farmers of DDT (to counteract stalkborer

damage on maize), the general pattern of pesticide distribution is for crop authorities to issue standard amounts of insecticide or fungicide in line with extension service recommendations. Peter Cox is critical of this alleged rigidity in distributions and of the ways that user recommendations are determined.

Although the paper is fairly narrowly focussed on the provision of a particular production requirement there are parallels with previous papers on other aspects of agricultural service provision. Discussion Paper No 6 on agricultural extension services also examines the difficulties of applying standard technical advice, and Discussion Paper No 5 on agricultural research services comes to similar conclusions on the importance of acquiring and using farm-level information as the basis for policy decisions on technical support to farmers.

IV NEWS OF AAU STAFF

As networkers will have realised from recent AAU job advertisements, there are a number of changes underway in the staffing of the Unit.

From October 1982 *Anthony Bottrall* will be working as an Agricultural Programme Officer with the Ford Foundation in Bangladesh. Irrigation research, and the Irrigation Management network will continue.

From January 1983 *Stephen Sandford* will be joining ILCA in Addis Ababa. The Pastoral network will continue under *Clare Oxby's* editorship.

At the end of this year *Guy Hunter* will be retiring from ODI, although he will remain associated with the Unit's work as a member of its Advisory Committee.

These changes mean that the Agricultural Administration network, for the time being, is the sole responsibility of *John Howell*. This will be the final Newsletter of 1982 as John Howell is leaving in September for three months work in India, largely related to the Indo-British Fertilizer Education Project. These notes were written on 17 September 1982.

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AGRICULTURAL ADMINISTRATION NETWORK PAPERS

No. 15

ADMINISTRATIVE LEVELS FOR RURAL DEVELOPMENT FUNCTIONS:

A SUGGESTED FRAMEWORK

BY

B J J Stubbings

Mail address: 203 Woodstock Rd
Oxford
OX2 7AB

Introduction

The search for a "model" organisation structure for rural development planning and implementation in lesser developed countries is not worthwhile, but, from my own experience, I would contend that there is some utility for planners in a approach to administrative structure which draws on general principles of organisation which can be employed in the establishment of different operational levels to perform different functions.

The paper (1) briefly summarizes the main difficulties to be faced in planning rural development organisation and (2) recommends a basic operational and institutional framework. This framework is based mainly on experience of formerly British-administered countries, particularly Pakistan and Nigeria (Kano State Integrated Rural Development Project).

Difficulties

In rural development planning, the Pakistan experience illustrates the main difficulties which are also familiar elsewhere.

- There is an imperfect definition of the respective roles of central and provincial governments. At federal/central level, responsibilities for rural development are diffuse resulting in differing interpretations of policy eg role of cooperatives.
- At the provincial level these responsibilities are allocated to different departments in the several provinces. Inter-departmental frictions and rivalries occur.
- When elections under the various provincial Local Government Ordinances are not held, there is no effective local government to play its essential part in rural development.
- The Local Government Ordinances provide (in rural areas) for councils at District level only. There is no provision for lower tier councils.
- The absence of an effective local authority system leads to the establishment of different ad hoc systems for different development plans. This in turn entails

duplication of staff, building of bureaucratic empires which are jealously guarded, adds to the difficulties of integration and at the same time leads to disillusionment of the public and the politicians who see limited funds being largely consumed by administrative expenses.

- There is undue emphasis on "projects" and "programmes". These terms carry an inherent temporary connotation whereas rural development is a continuing process.
- Present financial provisions including powers to raise their own revenue, do not suffice for District Councils, let alone lower tier authorities.
- The allocation of the limited development funds raises the problem of priorities. Should funds go to selected "development areas" or should they be spread thinly, and possibly ineffectively, over all districts? Because of this difficulty funds are very often allocated on an ad hoc basis in response to pressure rather than in accordance with an integrated plan, previously agreed with local authorities.
- "Development" funds are spent with inadequate regard to the inevitable commitment of "recurrent" expenditure later.

Operational Levels

There are some general principles, or assumptions, which form the basis for the framework below. These are:-

(i) Planning should be grouped with Finance at Central and Provincial levels to ensure that there is from the start effective budgetary control and that development schemes, before they are embarked upon, make adequate provision for subsequent recurrent expenditure.

(ii) Planning and senior departmental staff of all disciplines should as far as possible be employed by the same level of authority which should be as close to the scene of action as is compatible with the maintenance of competent standards.

(iii) Central governments' influence is best exercised through (a) financial controls eg general scrutiny of budgets and supervision of utilisation of government grants

(b) advice, particularly technical, at provincial and district levels.

The items included under the following headings are not exclusive but they illustrate the range and types of functions that I consider appropriate for many countries seeking to reform or improve their rural development administration. In some smaller countries, three - rather than five - levels would be more appropriate.

Central Level

- Setting out the broad principles of rural development policy, and allocation of priorities for development.
- Allocation of block sums for Provinces for development.
- Grouping of ministerial responsibilities to reflect an appreciation of the more important features of rural development thus avoiding diffusion and facilitating coordination.
- International and Bi-national Aid and negotiations for agricultural inputs eg machinery, fertilisers etc involving foreign exchange.
- Undertaking major development works beyond the capacity of Provinces.
- Research.
- Statistics.
- Law and Order services ie Courts and Police.
- Maintaining an effective government and local government service and ensuring adequate conditions and career opportunities by establishing eg Public Service and Local Authority Service Commissions.

Provincial Level

- Preparation (after consultation with Central and lower levels) of development plans in broad outline.
- Undertaking large development works beyond the capacities of District staff and local authorities.
- Allocation of finance for individual development projects

and grants to local authority projects.

- Review and monitoring of development plans (exceeding in cost a reasonable minimum) within the Province.
- Grouping of departmental responsibilities to facilitate co-ordination of development. (Assuming that maximum use is to be made of local authorities and that consequently an effective and efficient local government system at District level exists, the co-ordinating responsibility at provincial level should be on the department responsible for Local Government.)
- Where land reform is being undertaken, provision of services such as cadastral survey, land registration, tenure reform enforcement etc (in close liaison with Central level).
- Ensuring the existence of agencies, private and/or public, to provide rural lending, saving and other banking services, farm supply services, and primary storage, marketing and processing services. These agencies need not necessarily be established or run on a provincial basis.
- Providing advisory and extension staff with technical expertise in the various activities essential to rural development, eg agriculture, water, public works, education, health, cooperative legislation and inspection etc.
- Providing training in rural development, organisation and management for such staff.
- Providing primary school teachers on secondment to local authorities.
- Undertaking services and works which cannot effectively be provided by local authorities for financial staffing or geographical reasons eg secondary (possibly tertiary) education and training, hospitals, major water supplies and irrigation works, major roads and bridges.

<u>District Level</u>

Rural development can best be achieved by a two pronged approach:-

(a) a District Team consisting of the senior members of all central and provincial departments represented in the district and

(b) the District Council ie the local authority at this level.

District Team

- Assisting and advising the district council on matters which are to be implemented by the district council.
- Consulting with the district council on matters which are to be implemented directly by central or provincial government departments.
- Implementing or assisting in the implementation of central or provincial government works and services.

The role of the Team's head or "Development Coordinator" calls for special mention. It is not difficult to trace his ancestry to the District or Deputy Commissioner of the colonial era. Indeed in some countries eg Pakistan, Kenya and Tanzania, the "commissioner" system is still retained in some form although the emphasis has changed from primarily law and order and revenue collection functions to an increasing responsibility for the coordination of development programmes. Whatever his title and whatever his ancestry the value of such an appointment is considerable. The suggestion of a Development Coordinator, (answerable probably to the Minister for Local Government and Administration at Provincial level) does not indicate more than the necessity for there to be a coordinating officer who is capable of taking a broader than departmental view, who can lead his colleagues, who is sympathetic to the aspirations of the local authority and yet does not assume airs and graces of a supposedly superior status.

District Council

The compulsory functions allotted to Councils should be strictly related to the funds and staff at their disposal. It is preferable to make a moderate and realistic start with limited functions which can be readily financed, staffed, implemented and maintained. In the light of experience or changed conditions, additional functions can be allocated or others deleted.

The size of the Council, the area it covers, the population it serves, the resources at its disposal will vary greatly.

Subject to these limitations implementation of most rural schemes should be the responsibility of the appropriate local authority which should have adequate financial sources either directly raised or from grants, and have available and under its direct control, staff capable of carrying out works for which it is responsible. This will assist in eliminating inter-departmental frictions among central and provincial government staff and will ensure that there is no unnecessary duplication of administrative machinery.

Despite the wide variety of Districts, it is possible to indicate the sort of functions which should be exercised at this level. Some of these may be better performed at sub-district level if this will bring responsibility closer to the scene of action to ensure popular involvement. (These are asterisked) On the other hand staff, financial or geographical considerations may dictate otherwise.

District Council Responsibilities

- Raising revenue by grants, rates, taxes, fees etc sufficient for its functions.
- Provision and maintenance of primary schools, and dispensaries.
- Prevention, regulation and removal of encroachments on public lands and highways.
- Prevention, regulation and control of infectious diseases.
- Protection of food-stuffs and prevention of adulteration.
- Regulation of traffic, licensing of vehicles other than motor vehicles, and the establishment of maintenance of public stands for vehicles.
- Enforcement of building lines in villages.
* - Provision and improvements of minor public roads, oulverts and bridges.
* - Provision of public gardens, play-grounds and places.
* - Provision of minor water supplies, construction of water works and other sources of supply.

* - Planning and execution of district level agricultural, industrial and community development schemes, including location of "farm service centres".

Sub-District Level

In densely populated and large districts there is often the need to have an operational "development unit" at a level below the competent district local authority eg in Pakistan where the Markaz has been established. Itmay sometimes be advantageous to establish a subordinate local authority.

Where a sub-district level is necessary, the general remarks regarding District Teams and District Councils apply. The appropriate compulsory functions could however be more restricted and probably the following would be adequate for a Sub-district council.

- Ensuring that adequate funds are available for the implementation and subsequent running of development projects and other functions.
- Ensuring by direct employment or by agency/secondment arrangements that adequate competent staff is available.
- Those functions asterisked above at the District level.

Primary (Village or Group of Villages) Level

- Sanitation and public health.
- Repairs and maintenance of village water works and domestic water supplies
- Allocation of irrigation water to end-users.
- Planting and preservation of trees on road sides and in public places.

The use of Farmers' Associations or Cooperative Societies at primary level with "Federations" or "Unions" at the next level are prima facie attractive but they suffer from a fundamental disadvantage as a substitute for local government. Government at all levels must concern itself with the affairs of all the

people. Farmers' Associations and Cooperatives are intrinsically voluntary associations for a specific purpose, usually economic, and do not necessarily include all or even the majority of the people resident in an area. Consequently essential services such as Health, Roads, Water Supplies, Education etc should be controlled and paid for by a body representative of all the people eg a district council.

Overseas
Development
Institute

10-11 Percy Street London W1P OJB
Tel: 01-580 7683

AGRICULTURAL ADMINISTRATION UNIT

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AGRICULTURAL ADMINISTRATION NETWORK

NEWSLETTER NO. 10 FEBRUARY 1983

CONTENTS

I REPORTS AND PAPERS

(i) From the Agricultural Administration Unit

UK Aid to Co-operatives in Developing Countries 1977-81, pp 116.
This is a report, prepared by *John Howell*, to the Overseas Development Administration on the contribution of different forms of UK aid to co-operative development. This includes 'indirect' co-operative aid, or aid to agricultural sector projects in which co-operative societies are involved in project implementation. The main types of co-operative society beneficiaries have been those engaged in credit provision, farm input supply, crop marketing and consumer retailing in rural areas. The countries selected for study reflected this. *Gambia's* co-operative movement is concerned primarily with loans, input supply, and groundnut marketing; in *Kiribati*, the co-operative activities are in consumer supply and copra marketing; and in *India* (only briefly dealt with to illustrate 'indirect' aid issues) the co-operatives which are receiving UK aid in some form are primarily concerned with input supply and credit.

One of the wider issues raised by the study is the frequent mismatch between donor objectives in co-operative development (such as the evolution of participatory and commercially-viable organisations) and LDC government objectives (such as the establishment of a mechanism for distributing inputs at concessionary rates, recovering loans, and marketing commodities in which government intervention - in pricing for example - is considered desirable). A limited number of copies of the report are available from ODI.

Machakos Integrated Development Programme (Phase I Evaluation and Phase II Project Dossier). In November, the AAU undertook an evaluation of an EEC-funded project most of which is in the semi-arid region of Machakos District in Kenya. The project involves development in crops, livestock, soil conservation and dam construction. The subsequent Phase II Project Dossier was compiled in collaboration with the Ministry of Economic Planning and Development. *Martin Adams* was temporarily engaged by ODI as team leader.

Delivery Systems to Small Farmers: Some Asian Experiences. This is a report based on seven Asian country studies commissioned by FAO and CIRDAP. The compilation of the 67 page report was primarily the work of *Guy Hunter* and the material used included five papers from Bangladesh (on 'Village-level Contacts, Needs and Potential', 'Coordination and Institutions', 'Management of Supply Services', 'Research and Extension' and 'Rural Finance'), two from India (on Tamil Nadu and Rajasthan) and single papers from Indonesia, Pakistan, Philippines, Sri Lanka and Thailand). The individual country studies are available in separate volumes from the Centre on Integrated Rural Development for Asia and the Pacific, Comilla, Bangladesh and the final report is available from both CIRDAP and the Human Resources, Institutions and Agrarian Reform Division of FAO.

(ii) From Others

The volume of reports, papers and publications arriving at the AAU is increasing all the time and it is impossible, with our resources, to provide a comprehensive listing of reports and papers in the field of agricultural administration which have been acquired for our documentation room. But networkers are free to come and use the room whenever they are in London and there is normally someone available to explain the cataloguing system which would tell readers what entries there are on, for example, fibre crop marketing in Tanzania. The entries - around 3,000 - largely consist of material which is unpublished

or not easily available. In addition, the ODI library itself contains journals and books on agricultural development. ODI is now open to visitors from 9.30 to 5.30 on weekdays.

In this section of the Newsletter, I shall mention only those reports and papers which, in my view, are of some interest to network members but which are not - in most cases - likely to become available in College or Department of Agriculture Libraries in LDCs. In other respects, the selection of entries is random: they are simply reports and papers which have caught my attention over the last few months.

PARTICIPATION AND VOLUNTARY AGENCIES

Waithira Gikonyo *Development by the People*, pp 20.
This is a case study of a project in Central Division, Machakos District, Kenya, supported by the Institute of Cultural Affairs. The booklet describes the process of sub-village level consultation involving twenty to thirty families, and the ways that support for the agreed projects is organised within the village community.
This pamphlet is available from ODI, but further information on the project can be obtained from Richard Alton, Area Director, The Institute of Cultural Affairs, PO Box 21679, Nairobi, Kenya. Also available is an evaluation of the ICA branch in Kenya undertaken by the Swedish Co-operative Centre.

Judith Tendler *Turning Private Voluntary Organisations Into Development Agencies - Questions for Evaluation* AID Program Evaluation Discussion Paper No. 12, pp 194.
This is probably the best critical study available of the role of private voluntary organisations in rural development. It is particularly concerned with examining the claims that voluntary organisations are more effective than large donor and government organisations in reaching the poor and

in generating local 'participation'.
This report is available from the Editor of ARDA, S&T/DIU/DI, Bureau for Science and Technology, Agency for International Development, Washington, D.C. 20523, U.S.A.

TECHNOLOGY

Appropriate Technology Institutions: A Review Occasional Papers No. 7 (Intermediate Technology Development Group). Much of this pamphlet is taken up with a description of the wide range of appropriate technology agencies, institutions, committees and departments. It concludes with a section on the sorts of organisation and management issues (including staffing and financing) that can inhibit the development and effectiveness of appropriate technology institutions within the government and policy-making structure in LDCs. This is a new research area for ITDG - and AT as a whole - and this pamphlet is an encouraging start. It was written by Richard Whitcombe and Marilyn Carr.
It is available from Intermediate Technology Publications Ltd., 9 King Street, Covent Garden, London WC2E 8HN, price £3.00 including postage and packing.

Douglas Thornton *Technology and Institutions for Increased Food Production among the Rural Poor* pp 33.
This is a report of a field unit to the drought-prone areas of Tamil Nadu (India) in mid-1982. It examines existing technologies available to the poor with particular reference to the prospects for bovine development.
Available from the Department of Agricultural Economics and Management, University of Reading, Earley Gate, Whiteknights Road, Reading, RG6 2AR.

CREDIT

African Regional Agricultural Credit Association *Newsletter.*
The Newsletter on AFRACA contains short papers (e.g. credit

recovery in Tanzania in No. 2, July 1982) and items of news on small farmer credit policy, largely in Anglophone Africa.
The Newsletter is available from AFRACA Secretariat, PO Box 14677, Westlands, Nairobi, Kenya.

COMPUTERS

John J Bennett and Derek Poate *The Use of Micro-Computers in Farm Management Surveys.*
This paper outlines the introduction and use of micro-computer systems as employed by the Agricultural Projects Monitoring, Evaluation and Planning Unit for data entry and preliminary analysis of farm surveys. APMEPU is primarily responsible for evaluation of World Bank associated projects in Nigeria. This paper was one of several presented to a conference on 'The Use of Micro-computers and Programmable Calculators for Agricultural Research in LDCs' held at the Kellogg Centre, Michigan State University, U.S.A. in May 1982.
It is available from Derek Poate, Principal Evaluation Officer, APMEPU, PMB 2178, Kaduna, Nigeria.

SERVICES

Improving the Organisation and Administration of Agricultural Services for Small Farmers in Africa Report of a Regional Expert Consultation held in Nairobi, Kenya, December 1982.
This is a report of a 'regional expert consultation' (Directors of Agriculture, Permanent Secretaries, etc.) held in Nairobi in December 1982. Included are two papers prepared for the meeting: *Issues on the Organisation and Administration of Agricultural Services to Small Farmers in Africa* by S Ramakrishnan; and *The Role of Training in Improving the Organisation and Administration of Agricultural Services to Small Farmers* by S Ramakrishnan and A McCallum.

The report is available from the Human Resources, Institutions and Agrarian Reform Division Food and Agriculture Organisation of the United Nations, Rome.

II MEETINGS

Financing the Recurrent Costs of Agricultural Services. This will be the subject of a workshop to be held near London from 3 July to 8 July 1983. It is being organised by the AAU with financial support from several international agencies, companies, banks and research foundations. We anticipate forty participants including around twenty LDC officials representing Planning and Finance ministries, ministries of Agriculture, and public sector agricultural corporations. The main emphasis will be upon sub-Saharan Africa where there are now acute problems of financing agricultural programmes beyond an initial, often donor-assisted, capital investment phase. This appears to be a problem which affects the provision of technical services to farmers (including research, extension, crop protection, veterinary and soil conservation); the maintenance of infrastructure (irrigation, rural roads); and even the financing of inputs with in-built devices for cost-recovery such as credit and the supply of production requirements.

The workshop organisation has yet to be finalised but there will be initial sessions on the macro aspects of the problem (its nature, extent, and causes), sessions on different components of the problem (such as sources of revenue, costs and productivity, and financial procedures) and sessions on particular services affecting both crop and livestock production. There will also be some attention to the influence of donor procedures and requirements on the recurrent costs problem.

The papers and proceedings will be available to networkers in due course, but the precise form of availability has

yet to be decided. Correspondence about the workshop should be addressed to Mr J W Leach. (James Leach, who is now an independent consultant, has been engaged by ODI until July to direct the organisation of the workshop.)

Marketing Boards in Tropical Africa

A seminar on this topic will be held in Leiden (The Netherlands) at the African Studies Centre from 19-23 September 1983. The seminar will concentrate upon public sector intervention in crop marketing, especially in food grains.

The main organisers of the workshop - Paul Hesp and Laurens van der Laan - have written a note on the subject area. I have extracted parts from it. They write:

> The literature on Marketing Boards shows that this topic is often drawn into the orbit of a larger topic or concern... Some authors are concerned about what seems to them excessive state intervention and see the Marketing Boards in Africa as an instance of this. The academic discussions about the Export Marketing Boards in the 1950's and the Food Marketing Boards in the 1970's reflect strong preferences for either state intervention or a free market.
>
> Concern about the slow growth of agricultural production has determined the approach of a second group of authors. They prefer to study the whole spectrum of agricultural policy and treat the Marketing Boards and their activities as one item in this spectrum.
>
> The recent "food crisis" in Africa - first in the Sahel and later also elsewhere - led to a concern about food shortages. Authors who share this concern tend to evaluate the Food Marketing Boards as an instrument for achieving food self-sufficiency.
>
> In the 1970's many social scientists began to question whether governments actually promote development (as was generally hoped and expected in the preceding decades). The Marketing Boards as part of the government sector were also subject to this criticism.
>
> Finally, a fifth group of authors may, with some simplification, be described as champions of the farmers. For them the question that matters is whether the operations of the Marketing Boards are favourable for the farmers or not.

And later:

> Those who advocate a (partial) return to a free market have stimulated research on the Board's costs and their efficiency and have explored the possibilities for "alternative arrangements". Those concerned about agricultural stagnation have embarked on research on supply response, that is, on how farmers respond to the prices fixed by the Boards. The "food crisis" has reminded us that urban consumers and rural producers have conflicting interests which the Marketing Boards cannot reconcile. Critical scientists have scrutinized institutional elements, including the non-price aspects of the transactions between the Boards and the farmers. And the champions of the farmers have provided a consistent framework for comparing primary research from various countries and for discussing the effects of Marketing Boards on farmers' incomes.

By way of contrast, Hesp and van der Laan want the workshop to examine marketing boards as institutions in their own right. They are encouraging papers which deal with such matters as operating methods and costs, and which have "depth in their description and analysis of what goes on both at the headquarters of the Board and at the produce buying points up-country".

Networkers wishing to find out more about the workshop should write to H L van der Laan, Afrika-Studiecentrum, Postbus 9507/2300 RA Leiden.

III DISCUSSION PAPER NO. 10

The Discussion Paper on *Strategy and Practice in the T and V System of Agricultural Extension*, by John Howell, which is enclosed with this Newsletter, is primarily the result of networkers responding to the debate on the Training and Visit System of agricultural extension which, for this network at least, started with Discussion Paper No. 8.

The paper does not take into account the evidence and analysis of a recent World Bank workshop on the Training and Visit system as the report of this did not reach me until after DP10 had been reproduced. Networkers interested in the findings of this workshop should write to Donald Pickering, Assistant Director, Agriculture and Rural Development Department, The World Bank, Washington D.C., U.S.A. The report is called *Asian Regional Workshop on the Training and Visit System of Extension* (held in Thailand, November - December 1982). Another paper of interest from the same Department is "Some Comments from Recent World Bank Experience in Financing Training and Visit Extension" by John Russell (a paper presented at a *Working with Small Farmers* workshop at North Carolina State University, January 1983).

The Thailand workshop was concerned with the implementation aspects of T and V (farmer participation, research-extension links, training, maintenance, monitoring), but in DP10 several writers claim that there is much more to T and V than extension management techniques: they suggest that T and V represents an entirely new approach to agricultural extension and, in some respects, a new approach to agricultural research based upon greater responsiveness to production constraints identified by extension staff at the farm level.

The paper is divided into three parts: the first concerns the issues of strategy mentioned above, the second is more on the nuts and bolts of organisation, and the third looks at some of the issues in the evaluation of T and V.

The contributions are from people with considerable experience in planning and supervising extension reforms, but there remains a field-level gap. Apart from work undertaken by Peter von Blanckenburg and others in Sri Lanka on *Some Observations on the Agricultural Extension Training and Visit System in Sri Lanka* (Dept. of Agricultural Economics and Extension, Faculty of Agriculture, University of Peradeniya, Sri Lanka, March 1980), I have not heard of any recent work which examines the attitudes and performance of agricultural extension staff under T and V or which assesses farmers' responses to particular aspects of T and V such as fixed visits

(and thus possible inaccessibility of staff on other days) and - where it occurs - the withdrawal of extension staff from input supply and other functions. My own report on field work in Orissa will have something to say on performance at this level and I shall adapt some of this report for network purposes in the next issue.

IV NETWORK PAPER NO. 16 (available on request)

C D S Bartlett *Identification of Priority Project Areas for Small Farm Development*

This paper describes an approach to determining investment priorities within small-scale agriculture in a specified zone. The basis of the approach comes from a farming systems research perspective and describes a process of initial survey, problem identification, and the screening of possible improvements for economic viability within the resources of the rural household. The case study is from Bihar (India). The paper concentrates upon production constraints in major crops (paddy, wheat, gram, maize, mung) and land utilization (especially irrigation potential) and argues that project design for small farm development is frequently arbitrary and fails to prioritize improvements which are likely to have the highest pay-off within the farming system.

V NEWS OF AAU STAFF

Since the last Newsletter was issued, the Unit appointed two new members of staff.

In the field of smallscale irrigation systems, *Dr Mary Tiffen* was appointed. She has almost twenty years experience in research, teaching and consultancy in Africa and the Middle East, and she is the author of *The Enterprising Peasant* (HMSO, 1976), and, more recently, a report for FAO on the *Economic, Social and Institutional Factors in Shifting Cultivation in the Humid and Semi Humid Areas of Africa.*

Dr Simon Commander was appointed to work in the new area of rural employment. He has conducted substantial field work in India, and at the time of appointment was engaged as a consultant by ILO. He is the author of *The Agrarian Economy of Northern India in the Colonial Period* to be published by Yale University Press.

VI COURSES

Agricultural Research Planning and Management University of East Anglia, September 28 to November 9, 1983.

The objective of the course is to review methods and techniques used in the organisation and management of agricultural research systems in developing countries. The course concentrates on three main themes. First, principles and procedures used in farming systems and on-farm research. Second, methods and criteria for allocating scarce research resources in projects, programmes and national agricultural research systems. Third, issues concerned with the management of agricultural research in cultural, institutional and research resource situations.

Enquiries to Dr S D Biggs, Overseas Development Group, University of East Anglia, Norwich, NR4 7TJ.

Rural Research and Rural Policy University of Sussex, January 9 to April 6, 1984.

The course is designed as in-service training for practising planners, researchers, and research managers in the agriculture, health, education and energy sectors. It will be particularly useful for policy-makers; for specialist researchers moving in to more general research management; for the staff of institutions or projects engaged in multi-disciplinary research at field level; for the staff of planning, monitoring or evaluation units.

Enquiries to The Chairman, Teaching Area, Institute of Development Studies, University of Sussex, Falmer, Brighton, BN1 9RE, or to Dr Simon Maxwell, Course Director.

Senior Management in Agricultural Development Mananga Agricultural Management Centre, Swaziland, August 21 to September 23, 1983.

This is a programme for senior managers which examines problems of managing agricultural organisations; it is particularly concerned with personnel management, decision making and organisation development.

For further details, contact F N Youdale, The Principal, MAMC, PO Box 20, Mhlume, Swaziland.

Agricultural Administration Unit

Overseas Development Institute
10-11 Percy Street London W1P 0JB
Telephone: 01-580 7683

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I WORKSHOP ON RECURRENT COSTS

In July, the AAU organised an international workshop on financing the recurrent costs of agricultural services in developing countries. The report of the workshop has been prepared for donors and participants and is now available to members of the network. It includes a summary of the working group discussions on the causes and nature of the recurrent costs problem, the importance of reforms in economic management (particularly the budgetary processes), and revenue and expenditure issues in agricultural services. These three main categories will form the basis of a book that, with the help of Margaret Cornell, ODI's editorial assistant, I shall be editing over the next few months. The book will be largely based upon selected workshop papers. In the meantime, this is a full list of papers prepared for the workshop. There are some copies available free-of-charge from ODI, but for most papers ODI will need to charge the costs of photo-reproduction at 7p per page. In some cases, papers have not yet been cleared for distribution.

J Akinwolemiwa (Federal Department of Rural Development, Nigeria).
Recurrent cost finances in agricultural development projects in Nigeria. (pp7)

A Anteneh (ILCA).
Financing animal health services in some African countries. (pp43)

I Carruthers (Wye College).
Factors influencing agricultural recurrent budget problems in ldcs: implications for domestic reforms. (pp23)

G Chirwa (Government of Malawi).
The experience of the agricultural sector in Malawi. (pp10)

K Christian (formerly Ghana Cocoa Marketing Board).
Financing cocoa projects in Ghana. (pp14)

J Clarke (ODA).
Aid for recurrent costs: the donor view (ODA). (pp12)

K Davey (University of Birmingham).
Financing agricultural services: the impact of agricultural organisation. (pp9)

B Elbashir (NAPC, Sudan).
Status of agricultural services in N Sudan. (pp4)

L Fredericks (University of Malaya).
Financing the recurrent costs of the Muda Agricultural Development Authority (Malaysia). (pp27)

M Gold (Kwara State, Nigeria).
The experience of Nigerian ADPs: the Ilorin example. (pp13)

A Goueli (Zagazig University, Egypt).
Recurrent costs of agricultural research in Egypt. (pp13)

P Heller and J Agherli (IMF).
The recurrent cost problem: an international overview. (pp43)

D Jones (Ford Foundation, Nairobi).
Evaluating current programmes. (pp15)

E Mbuya (Government of Tanzania).
The recurrent cost problem: the Tanzanian experience. (pp12)

J Meerman (World Bank).
Some comments on financing recurrent costs in agricultural projects (IBRD). (Plus Appendix.) (pp4 and pp39)

V Mrisho (Government of Tanzania).
An integrated approach to planning, budgeting, implementation and monitoring (Tanzania). (pp5)

P Oram (ISNAR).
The nature and extent of the problem: an overview of research and extension needs. (pp42)

J Otieno (ADB).
The recurrent cost problem and the role of financial institutions (ADB). (pp14)

N Panigrahi (Government of Orissa, India).
Funding recurrent costs: an experience (Orissa). (pp11)

S Ramakrishnan (currently HIID consultant in Kenya).
Management of recurrent expenditures in agricultural services. (pp38)

S Sambrani (currently FAO expert in Zimbabwe).
Subsidies as recurrent costs of agricultural services. (pp48)

M Stevens (First National Bank of Boston).
The management of recurrent costs. (pp20)

J Toborn (SIDA).
Financing rural development in Ethiopia: SIDA support. (pp15)

P Van Dooren (Royal Tropical Institute).
Revolving fund financing of agricultural inputs and credit. (pp12)

J Yayock and I Akinbode (Ahmadu Bello University).
The case of Nigeria's agricultural development projects. (pp38)

Members interested in this area of work should also consult a symposium report entitled *The Recurrent Costs in the Countries of the Sahel: how to evaluate, finance and control them* (Club du Sahel, Paris and CILSS, Ouagadougou). This includes a summary of the 1980 research report on Sahelian development programmes and a wide range of papers on financing issues. It is 592 pages long and available from Club du Sahel, OECD, 2 rue Andre-Pascal, 75016 Paris. Unlike our own workshop, this symposium was not focussed on the agricultural sector but there are, nonetheless, a number of contributions which relate to both crop and livestock sectors of the economy in Sahelian countries.

II NOTES ON DISCUSSION PAPERS

Discussion Paper 9 - Pesticides in Tanzania

The Discussion Paper by Peter Cox issued in September 1982 on *The organisation of user recommendations and pesticide distribution in Tanzania* has elicited a particularly useful response from Brigitte Nyambo, a Cotton Entomologist with the Tanzanian Agricultural Research Institute at Ukiriguru. Peter Cox, in DP9, was critical of the basis of user recommendations. Brigitte Nyambo writes:

> Details on how the current recommendations for pesticide use in Tanzania were developed can be found in the Progress Reports From Experimental Stations, Tanzania by the Empire Cotton Growing Corporation and later by the Cotton Research Corporation. On the Western Cotton Growing Area, a lot of entomological research work was done between 1960-61 and 1967-68 seasons, and the blanket spraying recommendation was made taking into account the biology and ecology of the major cotton insect pests within the area, and *not* on earlier work in Uganda.

She also partly concurs with Cox:

> The present blanket spraying recommendation for cotton has its weakness as it ignores any variations in pest pressure which may occur during the season.

> (But) This weakness was realised even at the time the blanket recommendation was being made, and it was suggested that a system of basing sprays on the actual infestation level should be developed. This work is still in progress and we hope that if it is successful, farmers will be involved in deciding when to spray.

On pesticide marketing, on which Cox was also critical, Dr Nyambo notes the following:

> The one-acre packs of DDT plus dimethoate supplied to cotton farmers in the Eastern Cotton Growing Area are for convenience of distribution and for the user; and a cotton farmer, just like the maize farmer, is at liberty to buy as much insecticide as he requires depending on the size of the cotton field. It is however estimated that, on the average, a farmer will have at least one acre of cotton, and hence the standard packs.

Discussion Paper 10 - The Training and Visit System

Once again, the issue of the functions of extension staff has been raised. Disagreeing with the T and V emphasis on a separation of extension and input supply functions, Mr Sudarshan Synghal (an Additional Collector in Sidhi District in Madhya Pradesh) writes as follows:

> It has generally been recognised that extension work must be de-linked from *recovery* of loans. Nothing can be worse for extension work than to have farmers avoiding the extension worker for fear that he may be demanding repayment of loans.

But he then qualifies this by explaining how extension workers are *insufficiently* involved in responsibility for the *issue* of loans.

> Extension workers, if they are expected to motivate a targetted number of farmers towards a particular service/input that is being given by their department as a loan, are known to make their own task easier by misguiding farmers that the service/input is entirely subsidised and getting illiterate farmers to put

> thumb impressions on agreement forms. Later when the recovery agent - an officer of the department of revenue demands repayment, the farmers' faith in the extension worker and in all extension work generally is very rudely shaken, greatly to the detriment of all development programmes. Extension workers can and should guide farmers to the closest source of institutional finance and inform them of the terms on which that institution would give loans. If the farmer gets credit from these sources, he would be perfectly clear in his mind about the commitment he is making and would not feel cheated or betrayed later on.

On physical production requirements, Mr Synghal writes:

> On the question of supply of inputs through the extension worker, however, there need be no reason to prevent it, if it is entirely free or if payment is to be received in straight exchange. Such service, far from 'diluting' extension work, makes it all the more richer because the farmer gets what he requires and also because he is enabled to use it under the direct supervision of the extension worker, there and then. (To give an example) upon getting news of a certain pest affecting the crop, an extension officer reached the spot with pesticides borrowed from a dealer. When he explained to the farmers that he had the needed material, which could be used on payment to the dealer, they readily agreed. The pesticide was sprayed and the crop saved. If he had only advised them to get such and such pesticide and spray it, most would not have bothered and suffered the inevitable loss.

Michael Cernea, a sociologist with the World Bank, has also written pointing out that the debate on T and V has so far paid insufficient attention to issues of monitoring and evaluation. He has sent a paper which will shortly be published by the World Bank in a collection on agricultural extension. Michael Cernea argues that monitoring and evaluation "are lagging far behind the general progress in organising T and V extension services". He writes:

> There is little aggregate information generated through empirical evaluation about various agronomic, social, or economic processes triggered by T and V extension or about the reactions of farmers to extension advice. There is little in-depth knowledge about the further dissemination (or hoarding) of extension messages by contact farmers. The hard data available on adoption rates, on changes in cropping patterns, or on yield

> increases are scattered and insufficient. In short, the T and V phenomenon is understudied; this refers to both its technical requirements and its sociological-cultural impact on farmers' behaviour.

In part, he blames this on "excessive reliance on the extensive sample survey approach and neglect of simpler, speedier, more in-depth and more manageable studies".

> A convincing example of the complex difficulties, high costs and staff requirements, and unavailability of results from large-scale surveys is offered by the experience of a monitoring and evaluation unit in Thailand. Four impact evaluation surveys were carried out annually between 1978-81 on a countrywide basis, and the cost of each one (covering each time between 3,600 and 4,000 respondents scattered all over the country) ranged from 0.6 million Baht to 2.4 million Baht (for a total of over 5.2 million Baht). Not one of the large-scale surveys, even the ones carried out in 1978 and 1979, has yet resulted in a final report four years later. It is difficult to say whether such reports will ever be produced; but even if some data will come out later, the field situation which the findings reflect will in all likelihood have completely changed.

He suggests:

> The alternative, a more knowledge-effective and cost-effective approach, would be to pursue the selected necessary indicators through several more limited - but feasible - monitoring studies. Such a realistic approach would permit the use of participant observation in some quick monitoring studies, or the use of a combination of rapid sociological case studies or special purpose studies.

Giving an example of this, Cernea takes "the communication process of extension messages through village information networks":

> This communication process can be only very imperfectly, if at all, monitored and analysed through questionnaire surveys on randomly selected samples. We know that the ultimate success of the T and V extension projects is predicated upon the diffusion of improved recommendations *from* the contact farmers, who amount to only 10 to 15 per cent of the farmers, *to* the remaining 85 to 90 per cent

> of the farmers. The extension agent visits the village one day every two weeks. But *diffusion* processes are supposed to happen after he *leaves* the village. . . . . The monitoring of T and V implementation should periodically check on whether or not the basic assumption of dissemination from contact to non-contact farmers is confirmed. It should inform project management about the social mechanisms of interpersonal "travel" of extension information through village networks, about the speed of communication, about obstacles, etc. . . . . .
>
> This can be done efficiently with low-cost, village-focussed sociological assessments of extension results. Such monitoring assessments can be carried out by "sit-and-stare" participant observation studies. With brief training before field work, a participant observer would be able to assess factually whether the extension information is diffused, how, and when.
>
> The potential for translating such findings into improved extension procedures is enormous and immediate. Thus, these village-centred studies would complement other evaluation instruments by capturing aspects that those instruments cannot cover and by compensating for methodological survey limitations that otherwise cannot be overcome.

The operational difficulties in establishing a useful cadre of village investigators across a large area appear formidable to me, but I can endorse the utility of short, narrowly-focussed investigations into specific aspects of extension performance.

In part of April and May I was working in Tanzania for ODA, preparing an extension services project for the Mtwara and Lindi Regions. In the course of that work I visited the GTZ-assisted Tanga Integrated Rural Development Project, where a modified version of the T and V system has been in operation for three crop seasons. A number of useful field studies (of the sort advocated by Michael Cernea) on particular aspects of the T and V system (such as conduct of meetings, and demand for services) have been prepared by the project staff and interested network members should write to me or to Dr Christian Metzler at the Tanga Integrated Rural Development Programme, PO Box 5047, Tanga, Tanzania. Reports of particular interest are *Agriculture Extension Performance Survey* (1982) and *Evaluation of Bwana Shambas' Annual Reports* (1981).

L F Kortenhorst, (who was first involved in extension work in Madagascar in the 1960s and is now with the International Institute for Land Reclamation and Improvement in the Netherlands), has also written to point out a gap in current writing on T and V. He has particularly harsh comments to make about the recruitment and training of extension staff:

> In the comments on T and V in DP 10 I missed an important point that would, at least partly, explain why the system in practice cannot be as "adaptive" and flexible as it should be: for research and extension officers without a peasant background themselves, - and most of them haven't - it is hard to accept that it is worthwhile, if not necessary, to learn from farmers. They were brought up with the idea that peasant farming is primitive and has to be changed anyway. At school they have learnt blue-print technology to maximize the production of some "main crops" but they don't know anything about farmers' risks and the multitude of other factors that determine the viability - and the possibilities for improvement - of the local farming systems. They don't realise that a farming system is more than a few "main crops", that one and the same farming system may include several distinct cropping systems and livestock systems, but also collecting, off-farm, and consumption activities, which all draw from or contribute to the same (limited) family resources. No wonder that research workers often lack the confidence to face ordinary farmers (and village extension workers) and discuss practical problems, because they feel on slippery ground once they are outside the "safe" fencing around their highly scientific but artificial experimental plots and laboratories. The same applies to "conventional" extension officers: have you ever discussed with them a simple subject such as the rationale of mixed cropping? One of the biggest obstacles for the T and V "adaptive" extension approach is the conventional agricultural education system which delivers crop technologists who are basically unsuitable for a T and V job.

My request for information on reports and papers on T and V experiences has produced some valuable responses. Available from the National Institute of Rural Development, Rajendranagar, Hyderabad - 500 030 is the Report of a Workshop held in February this year on *Management of Transfer of Farm Technology under the Training and Visit System.* It includes detailed papers on thirteen States plus a few general studies. The

papers will be published by NIRD in due course, and network members should write to Mr N Vittal for details. Dr Mick Moore, of IDS, Sussex, has drawn upon a period of attachment to NIRD to write a paper on T and V from a different perspective to most authors. He looks at the convergence of bureaucratic and donor interests which have supported - in his view - ineffective extension reforms. Provisionally entitled "Special Interests, the World Bank, and India's Agricultural Extension Programme", the paper is currently available only as a pre-publication draft.

The Agrarian Research and Training Institute, PO Box 1522, Colombo 7, Sri Lanka, has now produced two studies of T and V in Sri Lanka in its Occasional Publication series: A M T Gunawardana and A Chandrasiri, *The Training and Visit System of Extension. A Paper based on experiences in the Training and Visit System of Extension under the Kurunegala Rural Development Project*, November 1981, OP 26; and Djaienti Hindori and Jan Van Renselaar, *The Training and Visit Agricultural Extension Programme in Matara District: an Evaluation* , August 1982, OP 31.

Discussion Paper 11 - Reforming Agricultural Extension and Research Services in Africa - Jon Moris

This paper has been extracted and restructured from a much longer report that Jon Moris compiled earlier this year for USAID. For network distribution purposes, I have picked out main themes: the research-extension link and particularly reasons for the poor results of agricultural research in Africa; the performance of ministry staff especially at the middle management and field levels; the potential contribution of reformed extension services on T and V lines; and the requirements for improvement in overall Ministry performance. I also include some of the arguments that Jon Moris makes against the case - which seems to me to be growing in some donor circles - that there should be no further investment in extension services and governments

should be encouraged either to cut them back or, in some way, privatise them.

I shall be pleased to reproduce comments on all these 'main themes' and also any reactions to the entertaining account of a DAO's life in the middle part of the paper.

Correspondence with Jon Moris should be addressed not to Salt Lake City as indicated on the front cover of DP 11, but to Utah State University, Logan, Utah 84322, USA.

Discussion Paper 12 - The Training and Demonstration System of Agricultural Extension in Northern Nigeria - Nick Chapman

The particular interest of this Discussion Paper is the way that an extension project has attempted to come to terms with the constraints of the low technical calibre of its staff and the relatively weak research base on which existing extension recommendations are based. It describes what is termed the 'T and D' system of agricultural extension introduced in a World Bank project in Northern Nigeria.

3 NETWORK PAPER 17

Sudarshan Synghal: *Administering Inland Fisheries Development in Madhya Pradesh* (available on request).

This paper examines the constraints to fisheries development in tribal areas of Madhya Pradesh (India) and the experience of the Fish Farmers Development Agency in providing services to small-scale fishermen. Mr Synghal notes some of the conflicts of interest in the modernisation in fish culture and traces the difficulties which have emerged for the FFDA in establishing tenure, credit and technical advisory arrangements appropriate to the needs of tribal farmers.

4 FORTHCOMING MEETINGS

Discussion Paper 12 on the T and D system in Nigeria is based upon a lunchtime meeting of the Agricultural Administration Network, held in ODI in June. UK members of the network are invited to these lunchtime meetings but I intend in future to convert lunchtime talks into either Discussion Papers or Network Papers for distribution through the network, whose membership is primarily based overseas.

There are two forthcoming meetings. The first concerns extension development and agricultural information communication in the Aegean region of Turkey, and the second concerns adaptive research in dryland areas of India.

Thursday, 29th September: Geoff Tansey and Anthony Fitzherbert, "Agricultural Development and Extension in Turkey".

Thursday, 13th October: Edward Clay and Nick Clarke, "Models of On-farm Research: the Indo-UK Indore Project and Other Dryland Operations Research Projects in India".

5 NETWORK ADMINISTRATION

I am enclosing a reply form which has three purposes:

(i) to check if members still wish to remain members;

(ii) to check addresses (which will be transferred to a micro-computer shortly);

(iii) to receive or update information for the next Members' Handbook due in early 1984.

A non-response will be interpreted as a sign that you do not wish to continue network membership.

The questionnaire for the Handbook entry is on the reverse of the form.

John Howell

Agricultural Administration Unit

Overseas Development Institute
10-11 Percy Street London W1P 0JB
Telephone: 01-580 7683

AGRICULTURAL ADMINISTRATION NETWORK

ODI/AAU NETWORK PAPER 16 FEBRUARY 1983

IDENTIFICATION OF PRIORITY PROJECT AREAS FOR SMALL FARM DEVELOPMENT - A CASE STUDY IN INDIA

by

C. D. S. Bartlett*

ISSN 0260-7883

* Chris Bartlett may be contacted at 119 Station Road, Clutton, Bristol, BS18 4PD.

CONTENTS

1. INTRODUCTION

There are, broadly, three approaches that have been advocated for identifying agricultural improvement projects suited to a specified area. These are:

(i) Consultation with farmers to identify their problems and opportunities and to develop an agreed programme to solve problems and to take advantage of opportunities (Hunter, 1978; FAO, 1978; Apte, 1978; Sen, 1976; UN Asian and Pacific Development Institute, 1980). These methods take full advantage of the farmers' extensive knowledge of their own farming system and environment and have the great advantage that they involve and motivate the farmers. But, beyond making use of the farmers' knowledge, the literature in this work gives little guidance on methods for identifying priority projects. In practice there is heavy reliance on two other methods.

(ii) A crop plan for an average farm is formulated based on technical recommendations. Surveys are then conducted to determine what necessities for the implementation of this plan farmers lack. Plans are then made for projects to supply these needs (Randhawa, 1965; Schickele, 1966). This method provides useful guidance for project identification but is generally based on whole-farm planning of representative small farms. In practice, small farmers are usually reluctant to adopt new farm plans and there is often a need to identify appropriate marginal changes to the present farming system.

(iii) A resource inventory is made. Projects are then designed to develop unutilized resources and to enable their optimal use (Vyas, 1978; India, Planning Commission, 1977; Arora, 1979; Thaha and Thaha, 1979). These methods indicate how another potential source of

production may be developed. Again, reliance is generally placed on whole farm planning and identification of optimal patterns of allocation of farm resources when in practice it is very difficult to carry out these exercises on small semi-subsistence farms.

In my recent work on a fertilizer extension project in India, I felt that each of these methods could make a contribution to the identification of priority project objectives but that none was sufficient by itself. Bearing this literature in mind I proceeded with the task on a pilot basis.

2. SELECTING A ZONE

The area I selected for study is part of the Ganges plains. It has deep alluvial soils which are cultivated by ox-plough. The main factor affecting the type of agricultural system and the agricultural practices in the area is irrigation. Accordingly, I defined the zone in terms of the source and availability of irrigation. The zone I selected was the area irrigated by canal from one irrigation dam, Kharagpur Lake in Monghyr District of Bihar State. This area consists of a total of roughly 20 square miles with a population of about 35,000 people.

Land records are an unreliable guide to farm size in India, but surveys of a few villages in the zone indicate an average farm size of 1 ha. and a median size of 0.5 ha. (Table 1). The attention of this study was focussed on farms between $^{1}/_{3}$ ha. and 2 ha.

The main land type is flat lowland*, most of which is irrigated by canal. There are also some upland areas many of which are not irrigated. Nearly all of the lowland area

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* 'Lowland' contrasts with 'upland which is found mainly on the edge of the irrigated area. Upland is a little higher and better drained than most of the land in the zone and is normally unirrigated.

TABLE 1

Farm Size Distribution in the Selected Zone

Farm Size (ha.)	% of farms
0 - 1	75.5
1 - 2	16.6
2 - 4	4.1
4+	3.8

produces paddy in the kharif** season. The main exception is that, close to the town of Kharagpur, some areas are devoted to sugarcane which is grown for the manufacture of local sugar and for chewing and juice. In the rabi season the main crop on this land is wheat. Wheat may be followed by mung on areas with little or no irrigation, and by maize on areas with good irrigation. Small areas of summer paddy are produced on areas with exceptionally good irrigation facilities from wells. Where no summer crop is taken a pre-kharif, short-duration maize crop may be planted in May and harvested in July before paddy transplanting. On unirrigated lowland kharif paddy is followed in rabi by gram, kesari or linseeed.

On upland, maize or pigeon pea is normally grown in the kharif season. Maize is planted in late May and harvested in September. On unirrigated land a crop of mustard or linseed may follow and - on irrigated land - potatoes, onion, wheat or maize. A crop of mung may be produced in summer. Cultivation is entirely by ox-plough.

** The kharif season is the rainy season starting in July and ending in October. It is followed by the rabi season in November which is cooler and dry and by the hot dry summer season in March.

3. COLLECTING INFORMATION

Information for the study was collected in several distinct phases:

(i) Extension staff were interviewed to obtain information on crops grown in the area and on recommended cropping practices and to obtain information on the basis of which the zone could be defined.

(ii) Fifty farmers were surveyed to identify systems problems, crops grown in each season, crops eaten and sold, technical production problems and use of recommended production practices on each crop.

(iii) A second survey of 50 farmers concentrated mainly on identifying reasons why farmers failed to use recommended practices.

(iv) Extension staff were again interviewed to obtain information on farm prices of crops, on yields with use of current practices and estimates of what yields would be obtained if recommended practices were used. Extension staff and people involved with the provision of services were interviewed to identify problems with the level of services provided to farmers and problems with improving these services. Research workers were questioned to obtain information on the prospects for new crops and methods.

The 100 farm interviews were by questionnaire method, each interview taking less than an hour. Six villages were selected from divergent parts of the zone. Within each village 15 farmers were randomly selected from a list of households. Those whose land holding was not between $\frac{1}{3}$ and 2 ha. were excluded from the sample. Two enumerators were used for short periods to conduct the survey. The level of education needed for this work was not high although some knowledge of agriculture was found necessary. Much of

the survey data was rapidly tabulated in the field by these enumerators.

4. IDENTIFICATION OF PROBLEMS

Identification of small farmers' priority production-increasing plans began with identification of major problems in the farm-household system which farmers are likely to want to overcome and whose solution should allow increase production. The main problems identified by the survey were:

(i) Labour shortage in July/August for paddy transplanting.

(ii) Cash shortage in July/August for paddy inputs and in October/November for paddy inputs, wheat inputs and food purchase which is alleviated when paddy is sold.

(iii) Food shortage in October/November, which is alleviated by harvest of paddy.

(iv) Land was also scarce although only about half the farmers interviewed said that they could use extra unirrigated land without the help of extra cash or labour and two-thirds of these farmers said that they would prefer cash to land.

(v) Shortage of ox-cultivation capacity was greatest for preparing land for rabi crops in November and December.

There appear to be two main problem periods in the year:

(i) July/August when labour is needed to transplant paddy and cash is needed for paddy inputs and labour.

(ii) October/November when food is scarce before the main harvest of the year (paddy) which is the farmers' main source of food and cash and cash is required at this

season for purchase of fertilizer for paddy and fertilizer and seed for wheat, and for hiring ox-ploughs.

In both of these periods cash shortage is an important component which can help to solve the other problems at that time. Cash shortage also appears to be a more important constraint for farmers than is land. Shortage of cash during the paddy growing season was thus identified as the major problem of farmers in this zone.

5. CONSIDERATION OF TECHNICAL IMPROVEMENTS

5.1 Crop Production

(a) Paddy

Place in system. Irrigated, transplanted paddy occupies most of the lowland areas in the zone in the rainy season. It is transplanted in July/August and harvested in November. Paddy is the most important crop grown by farmers for food and is the main source of cash for most farmers. It is also the crop farmers most want improvements for.

Problems. Most farmers claim to have no problem with transplanting on time nor with weeding the crop, but stem-borer is a major pest for nearly all farmers (97%). 40% of the farmers surveyed used correct methods for the control of stem-borer.

Opportunities. Nearly all of the farmers sampled (94%) grow recommended, improved, short-stemmed, high-yielding varieties, mainly of medium maturity. They buy some new certified seed on average once in $3\frac{1}{4}$ years whilst it is recommended that seed be renewed every 2-3 years. Spacing averaged 6½ inches between plants compared to the recommended 6 inches. Average fertilizer doses in three applications are low and imbalanced at 53 kg N, 11 kg P_2O_5 and 7 kg K_2O per ha. (53:11:7) compared to a

recommended 80:40:20.* Use of nitrogen (N) is almost adequate at 66% of the recommended rate and 7% of farmers applied N at rates actually above that recommended. But use of potassic fertilizer (40% of recommended) and especially of phosphatic fertilizer (28% of recommended) is poor. Only 12% of farmers applied adequate overall nutrient doses whilst 40% used N only or too much N.

There appear to be opportunities for increased and more balanced use of fertilizer on paddy, for the use of systemic insecticides to control stem-borer and some scope for more frequent replacement of seed. All of these improvements offer means for increasing production of paddy on which farmers place so much emphasis as a source of food and cash. But increased paddy production is not a major national priority nor does it solve major problems in the farm-household.

Reasons opportunities not taken. Balanced use of fertilizer requires no extra resources from the farmer. It is occasionally difficult to obtain some types of fertilizer but most farmers (91%) found no general problems with fertilizer availability. A balanced complex fertilizer for a basal dressing supplying N, P_2O_5 and K_2O in the ratio of 2:2:1 is difficult to obtain. But ignorance of the correct ratios in which nutrients should be applied is certainly the major factor causing imbalanced use of fertilizer nutrients on paddy.

Farmers generally want to apply more fertilizer and supplies are generally available but heavier use of fertilizer on paddy requires more cash in July/August. Shortage of cash at this time of year is the major problem of the farm-household and is likely to restrict expenditure on fertilizer for use on paddy. Systemic pesticides for control of stem-borer are generally

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* The splits are basal 40:40:20; and 20:0:0 for both top dressings.

available in this area but 38% of farmers did not know the correct control method for this most common pest. Extra investment during a period of cash scarcity is also required for this operation.

Most farmers (94%) knew where they could get improved seed but 19% reported that they had some problem getting as much as they needed at the right time. Cash outlay for certified seed at Rs 70/- per ha.* per year is modest compared to that required for fertilizer, but still extra cash must be found in a period of continuing cash shortage.

Suggested Projects. An extension programme should be able to educate farmers to balance the nutrients applied to paddy. An extension programme could also provide a major impetus to stem-borer control and some help to regular seed replacement, but these improvements also require the provision of credit. Credit provision would also be required to induce farmers to apply fertilizer at higher rates. Some improvement in seed supply is needed and improved availability of a balanced fertilizer would make extension work on fertilizer easier.

Project Selection. The project for educating farmers to apply a balanced dose of nutrients to their paddy crop can be approved for feasibility study as it requires no additional scarce resources from the farmer. *Increasing* the level of fertilizer use, however, requires additional scarce cash which can only be provided by means of a credit programme. But it is difficult to ensure that extra credit would be used for any specific designated purpose such as purchase of fertilizer since the extra fertilizer obtained may be sold or may replace normal purchases. Local banks say that they have plenty of money available for loans but that they cannot increase the credit given to farmers because of the high rate of

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* £1 = Rs 16

default. This low rate of repayment is said to be due to default by large farmers who, the survey indicates, get most of the loans. Credit may be unpopular amongst farmers, especially the smaller ones, because of the high cost of borrowing in the form of time spent making applications and the possibility that bribes may have to be paid. Improvements in credit are thus likely to be difficult to implement. It is recommended, therefore, that no special effort be made to increase the level of fertilizer use (although, as a result of complementary improvements in paddy production techniques, farmers themselves may choose to increase the rate of fertilizer use on paddy).

Improved control of stem-borer by increased use of a systemic insecticide requires both education of farmers and an increased investment by farmers. Increased frequency of renewal of seed requires an improvement in seed supplies as well as increased investment. It is then necessary to ask whether improved knowledge of stem-borer control methods and improved seed supplies are likely to induce farmers to invest more in insecticides and seeds respectively. The answer will depend on whether farmers have better ways to invest any surplus money.

Small areas of maize, sugar and legumes (pigeon pea and mung) are also grown in the kharif season. There is no market for any increase in sugar output, and most farmers have no upland where maize or legumes may be grown. For most farmers therefore, there would be few alternatives to investment in paddy production in this season.

The project for paddy production which is most acceptable to farmers is education in the balanced use of fertilizer. Improvements in seed supply and education in pest control requires extra use of the scarcest resource in the farming system (cash in July and August) and so may be

less useful, at least in the short-run.

(b) Wheat

Place in farming system. Wheat is the main rabi crop and the second most important crop grown in the zone. It is grown primarily for home consumption although surpluses may be sold. The crop is sown in late November through December on irrigated land generally after the harvest of paddy. Lighter soils are preferred and the crop is harvested in March or April.

Problems. Wheat has no major pest or disease in this area and farmers have no problem weeding the crop. The latest recommended date on which early maturing varieties of wheat should be sown is December 15th. Crops planted after this date have their growing seasons foreshortened by increasing temperatures in March and yields decline by about 1% per day that the sowing is delayed after December 1st. Yet 42% of farmers claimed to have problems sowing wheat on time.

Opportunities. Most farmers (96%) used improved, short-stemmed, high yielding varieties of seed, mainly (94%) early varieties maturing in 120-125 days, but they seldom renewed seed (79% of the sample had purchased certified seed two or fewer times). Seed rate was generally adequate except that farmers would not increase seed rates when sowing late (a practice which can compensate for reduced tillering of late sown crops).

Fertilizer use was relatively high at 101:22:16 kg. per ha. Average application of nitrogen was actually too high (126% of recommendation) whilst K was adequate (80% of recommendation) and P was too low (55% of recommendation). Expenditure on fertilizer averaged Rs 659 per ha. or 94% of the cost of the recommended rate (Rs 700). All farmers applied the basal dressing correctly in the furrow and applied the recommended two top-dressings.

The main opportunities presented for technical improvement in the production of wheat appear to be earlier planting, balancing of fertilizer nutrient application, and some increase in the frequency of seed replacement. As with paddy, increased wheat production does not solve any pressing national or farm-household problems.

Problems with use of improvements. As is the case with paddy, the main reason why farmers do not use balanced doses of fertilizer or wheat is ignorance of the correct nutrient ratios. Reasons given for not planting on time were mainly that irrigation water was not available (82% or farmers) and shortage of cash (17% of farmers). Farmers are generally short of cash for the purchase of wheat seed since they normally have not sold the rice crop by the time they need to buy wheat seed. Most farmers want to renew some seed each year, but 16% complained that they could not always obtain wheat seed when they wanted it.

Suggested improvements. The problem with imbalance between the fertilizer nutrients applied may be solved by means of an education programme. Timely planting may be encouraged by the provision of improved irrigation. Improved credit would enable more frequent purchase of new seed and more timely planting. Some improvement in the supply of wheat seed is needed, although supplies appear to be better than for paddy seed.

Selection of improvements. Farmers are at present spending large sums on purchase of fertilizer for the wheat crop. Much of it is wasted since too much nitrogen is used, and phosphate quickly becomes limiting. Education in the correct use of fertilizer should increase production at no cost to the farmer and so be highly acceptable to him. Sowing on time requires more irrigation water and more cash. Projects to improve irrigation and credit are

difficult to implement and so efforts to get farmers to improve their sowing dates are likely to lead to poor results. Efforts may be better directed towards means to adjust to late sowing such as higher seed rates.

More frequent renewal of seed requires more cash and some improvement in seed supply. Extra credit cannot be supplied so it is necessary to ask whether, if seed supplies are improved, farmers are likely to use any extra cash to buy seed more often or whether they may divert cash from alternative uses. Improved seed is complementary to other improvements in wheat production and farmers with adequate knowledge are likely to invest in a package of wheat improvements if they decide to make improvements in wheat production at all. Their alternative is likely to be investment in a package of improvements for production of gram or rabi maize. Sole cropping of linseed or mustard however do not appear to be economically viable alternatives (Table 2). An improved package of practices for wheat production gives an added gross margin (GM) of Rs. 3472 per ha. and requires no extra cultivation, a little extra cash and one extra irrigation. Added returns to these scarce added inputs are high relative to those obtainable when they are used to improve production of maize or gram (Table 2). Any cash available for investment is thus likely to be invested in improvements to wheat production including more frequent renewal of seed if it is available. Improvements in supplies of wheat seed may thus be accepted as a priority objective for a project.

First priority should be given to efforts to educate farmers in the correct ratio of nutrients to apply to wheat. Some effort may also be put into ensuring that improved seed is always available to farmers on time. Timely sowing of the crop may continue to be a problem whose effects may be alleviated by encouraging farmers to increase seed rates.

TABLE 2

Changes in Returns to Scarce Resources resulting from Implementation of Packages of Improvements on Crops

Crop	Current Practices		Improved Practices		Changes with Improvements		
	Cash Invested	Gross Margin	Cash Invested	Gross Margin	Cash Invested	Increased Gross Margin	Additional Irrigations Required
	(Rs. per ha.)		(Rs. per ha.)		(Rs. per ha.)		
1. Rabi							
Wheat	897	2603	925	6075	28	3472	1
Gram	300	1950	682	6068	382	4118	2½
Maize	737	1889	774	4496	37	2607	3
Linseed	not sole cropped		400	3503	400	3503	1
Mustard	" " "		637	4613	637	4613	2
2. Summer							
Mung	63	1812	420	4955	357	1143	1
Pre-kharif Maize	395	955	754	2621	359	1666	1

(c) Gram (Cicer arietinum L.)

Place in Farming System. Gram is sown in November after the harvest of paddy. Two ploughings are required. Heavier soils are preferred, although the crop will not tolerate water-logging. Gram may be grown on residual moisture with no irrigation or with a single irrigation.

Problems. A serious problem the crop suffers from is pod-borer (Etiella zinckenella Treitsche) which causes an average loss of 10-15% of the crop. Cutworm (Agrotis spp.) is serious in parts of the zone where 30-40% of the crop may be lost in a year when the land has been flooded. But the problem most frequently reported by most farmers was wilt which is of physiological origin.

Opportunities. Pod-borer may be controlled by spraying with endosulphan or by dusting with carbaryl whilst cutworm control requires more expensive soil treatment with aldrin. None of the farmers surveyed used appropriate pest control measures. On an unirrigated crop farmers do not generally apply fertilizer and the response would anyway be uneconomic whilst with one irrigation a small application of 6 kg. N per ha. would pay. There are thus limited opportunities to improve production of traditional varieties of gram.

More substantial opportunities are presented if improved varieties of gram are introduced. Some of these varieties (e.g. C 235) are wilt tolerant. They require 2-3 irrigations and would respond to 15:40:0 kg. per ha. of fertilizer. Together with pest control measures these improvements would more than double yields.

Problem with taking opportunities. None of the farmers surveyed knew the correct methods for controlling the main pests of gram. An investment averaging Rs. 32 per ha. is required to control pod-borer by spraying or a

little more for dusting. This is a small investment which must be made in a period when cash is becoming available from sale of paddy. Farmers generally do not know about improved varieties of gram. Seed is difficult to obtain and requires an extra investment at a time when cash is still scarce. The new varieties must also compete for winter irrigation. Use of fertilizer will require extra investment at a time when cash is still scarce. Since farmers habitually apply too little phosphate to crops there will be a need for education about the high phosphate requirement of gram.

Suggested improvements. Education of farmers in pest control is likely to be acceptable to farmers. Use of the recommendations requires a relatively small investment when cash is not too scarce. The success of other proposed improvements (supply of seed of new varieties, education in fertilizer use) rely on the willingness of farmers to use extra scarce cash and irrigation water on improving the gram crop. Analysis (Table 2) has suggested that they may get better returns by using these scarce resources to improve wheat production.

(d) Rabi Maize

Place in Farming System. Rabi maize is sown in November and December after the harvest of paddy and is valued as a source of fodder as well as for its grain. The crop requires 6-8 irrigations and so can be grown only on land where some supplementary irrigation from a well is available.

Problems. Shoot-borer was the only serious pest or disease on rabi maize but even this problem was reported by only 11% of those growing maize.

Opportunities. Fertilizer application rates are high (111:14:17 costing Rs. 709 per ha. compared to a

recommended 80:40:20 costing Rs. 700) but imbalanced. Shoot-borer is controlled by appropriate means by about half the farmers experiencing this problem. 90% of the sampled farmers grew hybrid maize in this season and renewed the seed annually. The main opportunity presented appears to be to increase the efficiency of fertilizer use by balancing the nutrients applied, notably by reducing the application of nitrogen and increasing phosphate. Improved control of shoot-borer would benefit only roughly 5% of farmers.

Suggested improvements. The main problem with improving fertilizer use again appears to be that farmers lack the knowledge of the best nutrient ratios. This problem can be corrected by an education project which will not place further demands on the scarce resources of the farmer. The package of improvements in maize production however gives poor returns to extra irrigation (Table 2) and so should receive low priority relative to wheat.

(e) Oilseeds

The main oilseed crops in the zone are produced in the rabi season. Mustard and rapeseed are both inter-cropped with wheat. Both do well relative to wheat in years when irrigation is poor. Linseed is normally broadcast in maturing paddy and grown on residual moisture without irrigation.

There appear to be few opportunities for improving mustard and rapeseed production while they are inter-cropped with wheat except that efforts should be made to ensure that any new varieties are suitable for inter-cropping with wheat. It might also be possible to introduce oilseeds as a sole crop if they could compete with wheat, gram and rabi maize for scarce cash, irrigation and cultivation resources in the rabi season. Analysis of Gross Margins (Table 2) indicates that they could not compete.

(f) Summer Maize

Place in the Farming System. Half the farmers interviewed grew a very short duration (60 days) crop of maize sown in May or June and harvested in July before the land is prepared for paddy. 2-3 irrigations are required and some reliance is placed on pre-kharif rains.

A small number of farmers (15%) also sow maize in March or April after harvest of wheat. This crop occupies a small area. It requires 6 to 8 irrigations in a period when water is not normally available from the canal system. It seems likely to remain an unimportant crop unless irrigation is radically improved. For this reason the crop will not be included in this analysis.

Problems. Pests and diseases are not a major problem on pre-kharif maize. Over half the farmers interviewed had problems sowing this crop on time because of lack of irrigation water.

Opportunities. The pre-kharif maize crop is currently grown using local varieties of seed and with an average fertilizer application of 62:5:4 kg. per ha. it gives a gross margin averaging about Rs. 1,000 per ha. (Table 2). Improved varieties (e.g. Diara Composite) with a slightly later maturity (70-80 days) are available. With these varieties greater fertilizer responsiveness would make an application of 80:40:20 profitable but an extra irrigation would be required.

Problems with opportunities. The key to improving the productivity of pre-kharif maize appears to be the adoption of higher potential varieties. These varieties are presently not available to farmers in this area. Cash for purchase of seed and more fertilizer should not be a great problem since May and June are not months of severe cash shortage, but farmers plainly lack knowledge

of correct methods of fertilizer use and would have problems providing an extra irrigation for the improved crop.

Suggested improvements. Trials may be needed to identify a very early maturing variety suited to this area. Successful trials would be followed by supply of seed and by demonstrations. Education in the correct use of fertilizer will become more important with the use of a more responsive variety. Since irrigation will continue to be the factor limiting crop production in this season these improvements will only be viable if the improved crop is able to compete away an extra irrigation from alternative crop improvements. An extra irrigation applied to short duration maize (together with complementary improvements) would raise Gross Margin by Rs. 1,650 per ha. (Table 2) whilst an extra irrigation for mung in the same period would raise Gross Margin by Rs. 1,150 per ha. The improvements to maize production will thus probably be a little more acceptable to farmers than the improvements in mung production.

Improvement selection. Tests, seed supply and demonstration of improved very short duration varieties of maize together with education in the use of fertilizer should be improvements which would prove acceptable to farmers.

(g) Mung (Phaseolus aureus Roxb.)

Place in Farming System. Mung was previously mainly grown inter-cropped with maize or pigeon pea on upland in the kharif season. Several years ago an early maturing (60 days) variety (Pusa Baishaki) was introduced to the zone. This variety could be grown with one irrigation or no irrigation relying mainly on the rains in the pre-kharif period. It is sown in May/June and harvested in July before preparation of land for paddy.

Problems. Infestations of hairy caterpillar (Amsacta moorei Butler) are the most frequently reported problems of mung production. This pest affects most of the crop, reducing yields by an average of 15-20%.

Opportunities. Few farmers have purchased certified seed for mung nor attempted to control hairy caterpillar with BHC dust. Generally no fertilizer is used on mung but, to obtain a good response from the recommended dose of 15:40:0, one to two irrigations would be needed.

Problems with taking opportunities. Certified seed is available from the Department of Agriculture and BHC dust from dealers, although farmers were generally unaware of these inputs. A small investment is required for these changes at a time when cash is not critically scarce but returns are likely to be low unless these improvements are complemented by fertilizer and additional irrigation.

Suggested Improvements. Some advantage may be gained by educating farmers how to control hairy caterpillar. Education in improved fertilizer use would only be valuable if farmers were likely to devote extra cash and irrigation to mung production. Gross Margin data (Table 2) has indicated that they may prefer to allocate these resources to pre-kharif maize production.

(h) Crops omitted from analysis

If crops were found to occupy small areas on most farms in the zone with little prospect of increasing the area grown they have been omitted from the analysis. In this category fall crops which have a limited, inelastic market such as sugar cane, barley, vegetables and potatoes. Also included in this category are crops which require special resources which are not commonly available such as upland in the kharif season (maize and pigeon pea), or heavy irrigation in the summer (summer paddy and long duration summer maize).

5.2 Land Development

(a) Opportunity

The major opportunity for increased use of resources within the zone is presented in the form of land which is unused during the rabi and summer seasons.

(b) Constraints

The main constraint to use of this land for crop production in the dry season is lack of sufficient moisture to produce anything but a poor crop of mung.

(c) Solution to Constraints

At present 14,000 acres are irrigated in kharif, 4,000 acres are irrigated 2-3 times in rabi and in summer up to 1,000 acres get some irrigation. Improved rabi and summer irrigation would enable an expansion of crop acreages in these seasons and an improvement in production techniques.

If the irrigation constraint is alleviated then other constraints become the main limitation on crop production. Crops giving high returns to these other constraints but lower returns to irrigation (Table 2), are then given encouragement. In the rabi season irrigation improvements should give a stimulus to improvements in gram production whilst in summer improvements in mung production techniques would be encouraged. Improved response and improved reliability of response to inputs also encourages farmers to generally raise the level of complementary techniques and inputs used in the production of all irrigated crops. Increased fertilizer use, more improved seed and pest control can be expected on rabi and summer

crops although expenditures at the beginning of the rabi season are still likely to be severely limited by cash shortage.

Improvements in irrigation offer especially good opportunities in the summer season. Then high insolation and few pests and diseases mean that yield potentials are high for many crops and there are few constraints to production other than moisture availability. Cash is not critically scarce and there is no shortage of labour or cultivating capacity. Added production may be sold to ease the farming system's most critical problem, scarcity of cash at the beginning of the kharif season.

(d) Improvements

Improved irrigation appears to offer farmers substantial opportunities. There are three possible ways in which irrigation may be improved in this area:

(i) Improvement in the storage capacity of the dam. This project has already been approved but most of the water will be going to a new area, at present unirrigated, which has no ground water. The present command area will benefit mainly from increased reliability of rabi water supplies.

(ii) There is ground water potential in the eastern part of the command area which could be developed by tube wells. However, it is Government policy not to aid construction of wells within areas served by canals.

(iii) Improved permanent field channels could improve efficiency of water utilization from the existing canal system. But construction of permanent field channels would require land consolidation and drainage which is costly and frequently socially divisive since it is often difficult to get farmers to agree on where the channels

should be made. This is a high cost project which would only give returns in the long run.

Returns to the farmers from improved irrigation would be high but there appear to be problems with all the proposed methods by which irrigation might be improved in this area.

6. DETERMINING PRIORITIES

Improvements in irrigation and credit availability are important basic changes which can affect the ability of farmers to implement a range of technical improvements and to increase utilization of their resources. Unfortunately projects to improve irrigation and credit do not appear to be feasible at this time and lack of money and water must be accepted as basic limitations on the productive capacity of the farming system. Within the limitations of these resource availabilities the following improvements appear to be the most acceptable to farmers:

(i) First priority would be given to balanced fertilizer use on the wheat crop. The main requirements for this improvement are a special extension effort in November and December together with the provision of a compound fertilizer with a balanced nutrient content. As part of the same project balanced use of fertilizer might be encouraged by an extension effort in May on pre-kharif maize and in July on paddy.

(ii) The next need of the farmers is for an improved variety of maize for growing in the pre-kharif season. An adaptive research programme is required to test the suitability of various improved varieties for production in this zone. When a suitable variety has been selected seed supplies would need to be organised.

(iii) Seed of improved varieties of gram and increased quantities of paddy seed are also required. A first step to improving supplies is to examine the system for supplying improved seed to farmers, to identify problems and to assess how it might be made more effective.

(iv) Finally, improved control over the main pests of paddy is needed. Special efforts by extension staff in August are required to teach farmers to recognize pests and to show them how the pests may be controlled.

The sectoral priority for the Indian 6th Five Year Plan is for an increase in pulse and oilseed production. (India, Planning Commission, 1979.) This study has indicated that it would be difficult to induce farmers to produce more oilseed in this zone. Increased production of mung in the summer and gram in the rabi is unlikely since farmers should prefer to increase their production of pre-kharif maize and wheat respectively. Overall, this area should not be relied upon to satisfy national needs for increased output of pulses and oilseeds but some increase in mung and gram production may be encouraged by education of farmers in pest control measures. Some improvement may also occur in both gram and mung production only if it is possible to improve irrigation.

7. THE APPROACH SUMMARISED

(i) A zone was selected within which it was possible to identify a single set of appropriate projects. The zone was defined by the main factor affecting cropping combinations and methods.

(ii) Opportunities for farmers to improve their production were identified. First, technical problems in production such as pests and diseases and difficulty in planting on time or in weeding properly were identified. Then methods for solving these problems were proposed and opportunities for use of other technical improvements

identified. Other opportunities presented by development of under-utilised resources were also examined. Technical opportunities were simply identified and their implications for national priorities and household problems determined with no attempt made to quantify benefits potentially available.

(iii) Next, problems farmers had with taking advantage of each of these opportunities were identified. These problems most frequently consist of resource shortages. So resource shortages within the farming system were identified in detail (but not quantitatively) and, in cases where they posed problems with taking opportunities, prospects for their alleviation were determined. Other sources of problems were generally lack of knowledge of individual improvements or lack of supplies of inputs or services needed for implementation of an improvement.

(iv) Improvements which solve problems but involve no input of scarce resources by the farmer were classed as acceptable to the farmers. Improvements which involve only (or mainly) additional inputs of scarce resources by the farmer were rejected unless a project to increase the farmers' access to these scarce resources also appeared feasible. Where an improvement involves change of knowledge of, or availability of, inputs but also investment of extra scarce resources in this input, then the question must be asked as to whether the former change is likely to induce farmers to invest extra scarce resources in this input. Such an investment is likely only if it can give better returns to the scarce resources than can other improvements. Extra returns to investments of scarce resources in various alternative ways were estimated and compared. Since improvements in each item of a package of innovations for a crop tend to complement each other comparisons are made of returns to scarce resources invested in alternative whole packages of innovations rather than to investment in individual improvements.

(v) In this way a series of improvements which should be most acceptable to farmers are selected. The list of priority improvement areas would then be passed to specialists for feasibility studies.

8. DISCUSSION

There are a number of areas to which this analysis may contribute. Its primary use is obviously in *project identification* where it provides a more systematic basis than is usually employed for selecting projects for feasibility study and appraisal. At present highly sophisticated formal appraisal methods are used to compare a limited number of projects which themselves have been selected on the basis of informal and often arbitrary identification procedures. The methods used here can help make this process less arbitrary by focussing attention on projects most likely to have a high pay-off within the farming system. By taking account of farmers' circumstances the method helps to avoid the design of projects which are not a high priority for farmers or which farms cannot use because they lack the required resources.

National planners require information on potential sources of increased supply of priority commodities and information on what night be done to induce this increased supply. The analysis used here is a useful source of such information.

Some *regional planners* and area development project planners already use parts of the methods employed in this work as a basis for their planning. Integrated Rural Development Project planning has been characterised as a "problem solving approach" (Belshaw, 1978) in which plans are formulated which solve local problems as opposed to the conventional top-down planning which is aimed at inducing farmers to act to satisfy national priorities. The analysis used in this work should provide a basis for identification of a limited range

of such problems and take the first step towards planning solutions. It may also be useful for poverty-focussed planning since attention can be concentrated effectively (as in this study) on the smallest farmers.

A major limitation of the method used is that it ignores problems and opportunities of marketing, storage and transport. The main reason for omitting this important problem area is that problems and opportunities of marketing, storage and transport are best identified at the farm level by a different type of analysis. Variations in prices over time and between points in the marketing chain need to be analysed. Such an analysis would complement the analysis presented here and provide a more complete range of agricultural project identification. Unfortunately this type of analysis was not possible in this study.

The method used is relatively rapid and cheap and could be widely used as a first step in the planning process. Data requirements were kept low by means of use of a small sample of farmers and by collecting quantitative data only where it is required as a basis for identifying a problem or opportunity. The careful focussing of the study on a progression of problems and opportunities also reduces data requirements. Thus the first step in the analysis is the identification of problems in the farming system. By contrast, in the farming systems research method used by CIMMYT (CIMMYT Economics Program, 1980) a wide ranging description of "farmers' circumstances" is required in order to explain factors limiting practices for production of one crop. The next step in the study, identification of opportunities for changing production methods, requires a description only of the production methods which may be changed whilst in the CIMMYT method a considerable effort goes into description of all aspects of production of the selected crop.

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Agricultural Administration Unit

Overseas Development Institute
10-11 Percy Street London W1P 0JB
Telephone: 01-580 7683

AGRICULTURAL ADMINISTRATION NETWORK

NETWORK PAPER 17 AUGUST 1983

ADMINISTERING INLAND FISHERIES DEVELOPMENT IN MADHYA PRADESH

by

Sudarshan Synghal

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A longer account of the Inland Fisheries Project will be appearing in Vol 14, No 4 of the Journal *Agricultural Administration* (Applied Science Publishers, Ripple Road, Barking, UK) under the title "India's Inland Fisheries Project: the Fish Farmers' Development Agency and Tribal Areas".

ADMINISTERING INLAND FISHERIES DEVELOPMENT IN MADHYA PRADESH

Sudarshan Synghal*

The Potential for Inland Fisheries in India

The inland fisheries sector has been a significant contributor to the total fish production in India. In 1977, this sector was responsible for the production of 875,000 tons of fish which was 35% of the country's total production. However, there remains a vast under-exploited potential for fish (carp) farming.

There are an estimated 1.6 million hectares of water ponds potentially suitable for intensive fish farming, yet at present, about 450,000 ha. are actually being used for fish cultivation - the average farm size being less than 1 hectare making for about 500,000 households engaged in this activity. The States leading in pond culture are West Bengal, Bihar, Orissa, Madhya Pradesh and Uttar Pradesh, and in these States the Inland Fisheries Project has been started with assistance from the International Development Association of the World Bank.

The Project is being executed by Fish Farmers Development Agencies established in 58 districts of the five afore-mentioned states to cover a pond area of 117,000 hectares. The FFDAs operate as a registered society under the direction of a Managing Committee chaired by the Collector of the District and include among its members, the local Deputy Director of Fisheries, the Executive Engineer for Irrigation, District

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* Until late 1982, Mr Synghal served as a Project Officer in Pushprajgarh, a tribal area in Shahdol District which comes under the Inland Fisheries Project. He is now an Additional Collector in Sidhi District.

Co-operatives Officer, District Panchayat Officer, the Chief Executive Officer of the FFDA and the representatives of local bank branches as well as fish farmers.

Constraints to Fisheries Development

Four main constraints to the promotion of fish production have been identified by the Project: seed supply, tenure arrangements, extension and credit.

(a) Shortage of carp seed

High quality carp seed must first be multiplied and India is merely at the beginning of this process. The main carp species farmed in India are 'Catla', 'Mrigal' and 'Rohu'. Some research has gone into induced breeding and the reproduction of carp in captivity. This process not only extends the breeding season to about six months (March through August) instead of the monsoon spawning season (June and July), but also provides a foundation for the establishment of modern carp hatcheries and the development of 'composite fish culture'.

(b) Tenure

Existing fish pond tenure arrangements permit only short-term leases and discourage farmers from making long-term investments. Traditionally, village ponds belong to local village bodies like the 'Panchayats' and only in a few areas (West Bengal) is the concept of private ponds in evidence. These local bodies are responsible for the management of these ponds and usually lease them out to any prospector for one or two seasons. The lessee has no interest in making any improvements in the condition of the pond or the quality of fish being reared. He simply makes his catch and sells it to a consigner who collects all catches on a particular route and transports it to some large market.

A longer tenure could induce the lessee to make substantial investments such as clearance of ponds of trees and stumps and levelling, repairs, etc. as well as the supply of fertilizers and other inputs. Unless the lessee will be able to derive the benefits of his long-term investments, he will not make them. Similarly, long-term leases could be an important factor in bringing about marked improvements in the quality of fish farmed; the farmer-lessee would be able to seed the farm *and* harvest the crop.

(c) Extension services

Though fish farming in India is many centuries old, it has not, until recently and in a very inadequate form, had the benefit of any kind of extension service. In the very limited scope and form that it has been made available, it is seldom, if ever, supported by any contact with research institutions. Farmers need to be taught how to optimise practices of seed-stocking, application of fertilizers, and the supply of supplementary feed inputs in order to get a good crop. Moreover, the maintenance of the pond and water-level are just as important as getting better seed varieties.

(d) Credit

The package of practices in modern fish farming is a costly business. Few, if any, fish farmers are in a position to meet the amount required on their own. Therefore, credit must be forthcoming if the package is to be applied at all. Long-term credit is needed for fish pond improvements and short-term credit for fish seed, fertilizer, and supplementary inputs.

The Inland Fisheries Project

The modus operandi of the FFDAs is to have village ponds leased out for ten years to landless, marginal and small farmers for fish farming. The lease agreement has clauses to ensure incentives for improvements. Credit cases of these farmers

are prepared to finance improvements and first year cash inputs. Fish pond improvements include earth-work for levelling, deepening and shaping the fish ponds, inlet and outlet structures, and bamboo screens. First year inputs comprise fingerlings, oil-cake and fertilizers. To help specific categories of backward fishermen, a subsidy of 25% of the loan is provided from government funds. This has been worked out to Rs 2500/- for improvements and Rs 312/- for inputs. Banks make loan payments on progress in improvement work and to suppliers for inputs to ensure that loans are made productive and to prevent their diversion to other needs. To help target groups, 25% of the beneficiaries must be from among scheduled tribes and 15% from scheduled castes.

Apart from lease arrangements and credit provision, the other tasks of the FFDA are to provide extension services, training courses, and technical assistance to farmers, and to develop fish breeding centres to make available to the farmer-lessee improved varieties of carp for seeding their ponds.

In Madhya Pradesh, the districts covered by the Project are Bilaspur, Raipur, Raigarh, Durg, Rajnandgaon and Shahdol. All are in the tribal heartland of the eastern part of the state. It was in the terrain inhabited by tribals that the best water bodies could be found. As such, the likely impact of the scheme on tribals assumes a very important dimension as fish is comparatively a cheap and plentiful source of high quality protein with which to supplement the tribal's diet; there is considerable utilisation of the numerous village ponds that abound in tribal areas; and productive employment opportunities in fishing and ancillary industries, like net-making and baskets for packing, are opened up.

These sorts of considerations, which go beyond the straight-forward objective of increased production, raise particular difficulties for assessing the likely impact of the Project.

Difficulties and Problems

First, the scheme by its very nature is designed to augment production and profit and has not taken account of any distributive effects. The lessee who makes substantial investments on credit is, and should be, a profit-maximising businessman whose interest would be to take away the entire catch to the most remunerative markets. While pondside prices are only Rs 4/- per kg, fish prices in the markets of metropolitan cities range from Rs 12 to Rs 18 per kg. In fact, the FFDA is expected to help in getting the best prices for the fish crop. The Chief Executive Officer of the FFDA, Shahdol, told me how he helped farmers from another part of the district to consign their produce for Calcutta markets at prices of Rs 12 to Rs 15 per kg! In the face of this claim, what possible argument can there be of this scheme improving the dietary status of the tribal?

Second, even among the farmers who are likely to benefit, the majority need not be tribals at all. The scheme stipulates a reservation of only 25% for the scheduled tribes and this is in areas where about 70% of the water bodies to be taken up lie in the tribal hinterland. Yet tribals may not be forthcoming because they like to avoid the formal procedures of executing lease and loan agreements. In such instances, departmental officials, pressed by their superiors to achieve certain targets may even encourage large land owners to nominate persons qualified to receive the assistance while they manage the business themselves. (An instance of encouraged *benami*: see below.)

Will the few tribals who are actually given leases be able to derive tangible benefits for themselves? The experience on this score has not been encouraging. A tribal co-operative society was set up in March, 1980, with government subsidy for a boat and implements to catch and market fish from ponds already seeded by government agencies. But the Assistant Fisheries Officer, Pushprajgarh, found "the members of the

society unable to catch fish" though most of them had been trained, and obtaining "help and training from outsider fishermen to catch fish which is sold to contractors".

This is how *benami* transactions appear on the scene. (*Benami* is a practice whereby the real operator acts through someone else's name to obtain advantage of tax concessions, subsidy or other benefits that he is not eligible for himself.) On the face of things, the lessee might be a tribal individual or group or society. Credits (at lower interest rates), subsidies (exclusively for tribals) and easier terms of lease could be obtained while the entire business may be in the hands of some outsider fisherman. The outsider would pocket all the profits and give to the tribal lessee a mere pittance which may be no more than the wages the poor man would receive were he a labourer on the fish farm.

The benefits could go where they are intended only if the beneficiary himself is well-trained and well-informed. Such is not the case with most tribals because of their long history of deprivation and neglect.

Third, the tribal may even find himself being denied the rights over water ponds which he has always enjoyed by custom. In a period of ten years, for which the lease is being given, there are bound to be a few years of water scarcity. On such occasions, even drinking water problems are known to crop up not to talk of water requirements for other purposes, such as pot-watering kitchen gardens and use by livestock. Therefore, it is only natural to expect that the use of the scarce water will be highly competitive. The lessee will have made expensive investments in improved varieties of seed and other practices; he is certainly to be expected to prevent the competitive use of the water resource from the pond he has leased. This may take the form of violent threats.

Many tribals are already deprived of using forests which were once their own, but are now being felled and sold elsewhere;

some have been driven off their agricultural land because precious minerals have been discovered in it; and now, fish are to be reared in their ponds, for outsiders, and tribals are denied the use of the pond-water!

The Fish Farmers Development Agency might succeed in the development of fisheries, but it is highly unlikely to bring about the development of the indigenous fish farmer. In tribal areas particularly, the programme would alienate the tribals rather than improve their position.

Alternative Approaches

But the choice need not be to have the FFDA scheme as it is or to bypass the development of water bodies in tribal areas. It is not either this or nothing. The available expertise can, and should, be used for the benefit of fish farming in tribal areas, though in a modified form. For that, one must first be clear about objectives.

The working group on tribal development of the Ministry of Home Affairs, Government of India, which had as its members the Secretaries to the Union Ministries of Agriculture, Irrigation, Co-operation, Health, Social Welfare and Planning Commission among others, has given thought to the matter. In its Report of July, 1978, it has gone on record to say that: "in smaller tanks, therefore, the programme should be so formulated that the assets are improved yet the community continues to have control over the resources and the increased production goes to augment their diet". It goes on to recommend that in the initial phase Government should "help the village community, both financially and technically, in improving their tanks, adopting new pisciculture practices and maintaining the asset according to their traditional custom". This recommendation takes account of the genuine needs of tribals and at the same time makes for the modernisation of fish culture in the area.

The FFDA scheme has a provision for subsidy to fish farmers. This means that government is willing to make investments without expecting any returns for itself. However, instead of going to individual fish farmers, this aid can be in the form of direct grants by government on the improvements of village ponds, on stocking them with better varieties of carp seed and on the supply of such fertilizers and supplementary inputs as may be required. It will involve a more financial burden than the amount of subsidies, but the benefits in terms of tribal welfare will more than outweigh any increase in costs.

Side by side, a training programme on a substantial scale must begin to teach the local tribals to catch fish, to make nets, and the use of other improved implements. Once the tribals are in a position where they could afford to pay for such services to government, a royalty can be levied on the catch. This royalty should be handed over to the local body and then they may communally pay for the stocks of seeds and fertilizer used on their fish ponds. It is a process of wooing the tribal, with patience and care, and clearly giving priority to welfare rather than production for the market at this stage.

Agricultural
Administration
Unit

Overseas Development Institute
10-11 Percy Street London W1P 0JB
Telephone: 01-580 7683

AGRICULTURAL ADMINISTRATION NETWORK

NEWSLETTER 12 July 1984

CONTENTS

I NEWS OF THE AAU

Recent Work

In March 1984, ODI published as Working Paper No.10, a report on Small Farmer Services in India: a study of two Blocks in Orissa State. It is 178 pages and costs £6.00 from the Publications Officer, ODI. A summary of the report is attached to the Newsletter as an appendix.

Meetings

Over the past ten months the following lunchtime meetings have been held for UK-based members of the Agricultural Administration Network:

September 1983: Geoff Tansey and Anthony Fitzherbert, "Agricultural Development and Extension in Turkey".

October 1983: Edward Clay and Nick Clarke, "Models of On-Farm Research: the Indo-UK Indore Project and Other Dryland Operations Research Projects in India".

December 1983: Emery Roe, "Getting and Spending and the Power that is Wasted: Government budgeting and the hollow centre in Kenya".

May 1984: Marcel Zollinger, "Agricultural Development and Planning in a South Pacific Island".

May 1984: Antony Ellman, "Farm Machinery in Peasant Agriculture: Examples from East Africa and the South Pacific".

For further information on the last of these talks, by Antony Ellman, members should write direct to:
The Food Production and Rural Development Division, Commonwealth Secretariat, Marlborough House, Pall Mall, London SW1X 5HY; UK, for details of the work of the rural technology programme.

The three other lunchtime talks - by Tansey and Fitzherbert on Turkey; Zollinger on Papua New Guinea; and Roe on Kenya, have been re-written and are available as Network papers (see pages 5-8).

The talk by Clay and Clarke is also available (see section IV on recent papers and reports).

Other Networks

Since the last Agricultural Administration Network Newsletter, the other two Networks of the Agricultural Administration Unit have distributed the following papers:

Irrigation Management Network

Series 8 - October 1983:

Paper 8b Using Indigenous Skills and Institutions in Small-Scale Irrigation: An example from Senegal. 11pp
Mary Tiffen, 'Introduction and Project Background'
Geert Diemer and Ellen C W van der Laan, 'Small-scale irrigation along the Senegal River'

Paper 8c K.K. Singh. Assistance Needs of Water User Associations in their First Years - The example of Pochampad. 11pp

Paper 8d Clare Oxby and Anthony Bottrall. The Role of Farmers in Decision Making on Irrigation Systems. 22pp.

Paper 8e Alternative Design Concepts for Irrigation Systems. 7pp.
Mary Tiffen, 'Definitions and Objectives'
Henry Gunston, 'Irrigation Scheduling by Farmers'
Demands - Merriam's Trials in Sri Lanka'

Series 9 - April 1984:

Paper 9b Jurriens, Bottrall and Others. Evaluation of Irrigation Design - A Debate. 20pp.

Paper 9c Belloncle and Bergmann. Farmer's Associations - Making them Effective or Making them Unnecessary. 13pp.
Belloncle, 'Giving Management Skills to Farmers Groups'
Bergmann, 'Management Structure in Mediterranean Irrigation'

Paper 9d F.L. Hotes. World Bank Irrigation Experience. 13pp.

Paper 9e E. Mayson. Assisting Villagers to Build Their Own Irrigation Scheme: An Example from Thailand. 12pp.

Paper 9f M. Tiffen (ed). Benefits and Problems with Unconventional Design. 9pp.
Gowing and Merriam,'Fixed Versus Adjustable Structures'
Merriam, 'The Demand Irrigation Pilot Project in Sri Lanka'
ed. 'Topics for the Future: The Management Alternative and Design for Easy Maintenance'

Pastoral Development Network

Series 17 - February 1984:

Paper 17b. Addis Anteneh. Financing Animal Health Services in some African Countries. 23pp (January 1984)

Paper 17c Zeremariam Fre. The Integration of Pastoralism and Semi-mechanised Farming: The Example of an Eritrean Experience in Eastern Sudan. 12pp.(January 1984)

Paper 17d K.A. Homewood and W.A. Rodgers. Pastoralist Ecology in Ngorongoro Conservation Area, Tanzania 21pp (February 1984)

II DISCUSSION PAPER NO. 13

John Howell. Conditions for the Design and Management of Agricultural Extension. (14pp)

In one sense, this discussion paper is the editor closing the correspondence on T and V. The paper argues that there are a number of issues which are currently preventing a serious consideration of T and V simply as a set of principles for organising field staff. The paper tries to identify and isolate these issues which members of the network have themselves discussed in earlier papers. It then goes on to suggest that despite the areas of difference, there is probably something resembling a consensus on the effective organisation of extension management.*

This is not, of course, likely to be the last word on T and V, but networkers who have time to comment on this paper, might like to consider whether these six conditions are useful and whether they could be added to. As in the past, if sufficient new ideas are forthcoming, comments from networkers would be included in a future discussion paper. One area where a forthcoming discussion paper might be useful is on the subject of the technical feasibility of using extension staff in research design and farm-level diagnosis. The guideline 4.4 (Using Extension for Research) is one that I suspect some research scientists, and farm management economists, might treat with caution.

**Under the title, 'Issues, Non-Issues and Lessons of the T and V Extension System', an earlier version of this paper was presented to the Workshop on Strategies for Agricultural Extension in the Third World. A note on this Workshop is included in Section IV.*

III NETWORK PAPERS

The following network papers are available on demand:

NETWORK PAPER NO 18

A. Fitzherbert and G. Tansey. The Development of Agricultural Extension in the Aegean Region of Turkey.

This paper is concerned with a particular region of Turkey - the Aegean - and is the result of several years work at the Aegean University. The main work was concerned with setting up an Agricultural Extension and Communications Centre at the University, as well as defining the areas of work in which this centre could make its best contribution. As part of this work, considerable research was undertaken in the Aegean region, looking at the existing systems of research and extension and the broad nature of the information systems that had already been established. This detailed work was to assist in identifying existing problems and gaps in these systems and thereby, help in clarifying the objectives of the new Centre. Its approach to work education and training, information and communication is discussed in the final section.

NETWORK PAPER NO 19

Emery Roe. Getting and Spending: Some Observations on the Government of Kenya Budgeting Process.

Emery Roe's paper is concerned with explaining why, given the centralised nature of decision-making in the Kenyan bureaucracy, the powers associated with such centralisation have been relatively under-utilised. It is argued that this under-utilisation is largely a result of current systems of budget allocation. Centralisation in the Government of Kenya budgeting process, to a great extent, takes the form of a limited concentration of power and influence around a few central bureaucrats, rather than an entrenched and pervasive incorporation of the periphery by the centre. Bureaucratic centralisation is characterised by a defensive and limiting approach to budgeting which deters the wider development of administrative entrepreneurialism beyond these core officials. This in turn partly explains the phenomenon of underprovision in the Development Budget. That is, projects are underfunded not only because there are too many projects and too few funds, but also because the budget process is characterised in part by a lack of bureaucratic entrepreneurship and persistent follow-up. This insufficiency has limited the nature and consequences of government centralisation in Kenya.

NETWORK PAPER NO 2Q

Alan Kingshotte and Louise Fortmann. The Performance of Extension Services in Botswana

This paper is not, in fact, co-authored. It is based on a report undertaken by Louise Fortmann of University of Wisconsin, Land Tenure Centre, of the performance of extension services in Botswana five Years after the completion of a major report by Alan Kingshotte on the re-organisation of extension services. A discussion of the Kingshotte reforms is contained in Discussion Paper No. 1 'The Organisation and Management of Agricultural Extension and Farmer-Assistance in Botswana', 1979. 25pp. *(unfortunately this paper is no longer available but photocopies may be obtained from the Agricultural Administration Unit, at a cost of £1.80).*

Included in the current Network Paper are a number of responses by Alan Kingshotte to Louise Fortmann's report, and a number of points on which Louise Fortmann herself is responding to Alan Kingshotte's comments.

The paper therefore is a dialogue between two people who have been closely involved in the practical implementation of extension reforms.

NETWORK PAPER NO 21

Marcel Zollinger. Agricultural Development and Planning in a South Pacific Island.

Manus Island Province covers a group of several hundred small islands at the northern end of Papua New Guinea. The main island - Manus - is 2,400sq km. The total population of the Province is scattered across the Islands, some villages numbering as little as one to two hundred people. The constraints to agricultural development in what has been termed an economy of 'subsistence affluence' were primarily lack of demand for large scale production rather than technical or environmental factors.

Marcel Zollinger's four year experience in Papua New Guinea as member of a planning team was unusual in that the time span took the project from goal definition to project completion; that the 'opinion of the population' had to have a major influence in the formulation of the plan; and that the remoteness and smallness of the Province presented considerable constraints. The aim was to increase self-sufficiency in food production from its existing 80% level and encourage a small growth in the cash crop sector - copra, cocoa and rubber.

IV RECENT REPORTS AND PAPERS

For this Newsletter, this section is divided into two: the first section covers recent papers and reports on agricultural extension; the second covers recent work on agricultural research, particularly work on agricultural research that is related to the organisation of on-farm development and its implications for agricultural field services.

Extension

Uwe Jens Nagel (Team Leader) et al. The Modified Training and Visit System in the Philippines. Berlin, 1983. 214pp.

This report is based on three months field service work carried out by an eight-person team from the Technical University of Berlin, in central Luzon.

The report is in six sections: The Socio-Economic Setting of Agricultural Extension; Concept and Contents of the Extension Delivery System (EDS); The Implementation of EDS in Four Pilot Areas; The Performance of EDS at the Barangay level; and Conclusions and Recommendations.

It is available from: Seminar fur Landwirtschaftliche Entwicklung, Podbielskiallee 66, D-1000 Berlin 33, Germany.

Michael M. Cernea, John K. Coulter, John F.A. Russell. Agricultural Extension by Training and Visit. World Bank, Washington, 1983. 157pp.

This is the report of the first Asian Regional Workshop on the T and V system, held in Thailand in December 1982. There are sections: Farmer Participation and the Village Extension Worker; Technical Recommendations and Research-Extension Linkage; Training; Management and System Maintenance; Monitoring and Evaluation; and Issues and Prospects.

Available from: Publications Sales Unit, Dept. B, The World Bank, 1818 H Street, N.W., Washington, D.C. 20433, U.S.A.

Second Asian Regional Workshop on the Training and Visit System of Extension. A summary Report of the Workshop that was held in March 1984, in Denpasar, Indonesia, is available from the Agricultural and Rural Development Department of the World Bank in Washington.

The main themes of the Workshop were: Identification of Farmers' Priority Production Problems; The Generation of Improved Technology and its On-Farm Validation; The Joint Identification and Formulation of Extension Messages by Extension and Research Staff; Policy and Institutional Issues in the Improvement of Research and Extension Linkages.

Seminar Strategies for Agricultural Extension in the Third World. Held at the International Agricultural Centre, Wageningen, The Netherlands, in January 1984.

The focus of this seminar was particularly upon the training implications of extension requirements in developing countries. However, a number of background papers were prepared with a broader perspective, including contributions from donor agencies and, consultancy firms as well as people professionally engaged in training. For further information on the seminar, network members should write to Dr N.G. Roling, International Agricultural Centre, Postbus 88, 6700 AB Wageningen, The Netherlands.

Karam Singh. Effects of Training and Visit Extension in Different States in India, 1977-82. New Delhi.

This paper has had a limited circulation but network members should be able to obtain a copy by writing direct to the New Delhi office of the World Bank. The paper is a summary of reports on extension improvement projects in Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Rajasthan and Tamil Nadu.

Resident Mission, The World Bank, PO Box 416, New Delhi, India.

Daniel Benor, James Q. Harrison and Michael Baxter. Agricultural Extension: The Training and Visit System. World Bank, Washington, 1984. 85pp.

This is a revised version of the original Benor and Harrison booklet and is itself a summary of a more comprehensive book titled Training and Visit Extension, by Daniel Benor and Michael Baxter, also available from the World Bank, Washington.

Delivery Systems of Agricultural Services to Small Farmers in Africa: Case Studies from Ethiopia, Kenya and Nigeria. FAO, 1983. 71pp.

The three case studies were carried out during 1982 as a contribution to an Issues Paper presented at FAO's Regional Expert Consultation on Improving the Organisation and Administration of Agricultural Services to Small Farmers in Africa., held in Nairobi, Kenya from 29 November to 3 December 1982. Available from A. McCallum, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy.

Research

Agricultural Research Management in Asia. Asian Productivity Organization, 1983. 238pp.

This is the report of the meeting on Agricultural Research Management in eleven Asian countries with fairly detailed country reports on: The Republic of China; Fiji; India; Indonesia; Republic of Korea; Malaysia; Nepal; Philippines; Sri Lanka; and Thailand.

The report is available from: Asian Productivity Organization, 4-14, Akasaka 8-chome, Minato-ku, Tokyo, Japan 107.

Stephen D. Biggs and Edward J. Clay. Generation and Diffusion of Agricultural Technology: a review of theories and experiences. 1983. 67pp.

This paper was produced for the Technology and Employment Programme of the International Labour Organisation. It is available only in working paper form but members of the network could try writing to the ILO, or the individual authors (Stephen Biggs works at University of East Anglia, and Ed. Clay at the IDS in Sussex). It is a valuable 'state of the art' paper with a thorough bibliography.

International Labour Office, (ILO)
Rte des Morillons, CH-1211, Geneva, Switzerland

University of East Anglia, (UEA)
Norwich NR4 7TJ, UK.

Institute of Development Studies, (IDS)
Falmer, Brighton BN1 9RE, UK.

J.C. Flinn and G.L. Denning. Interdisciplinary Challenges and Opportunities in International Agricultural Research. 1982. 16pp.
The International Rice Research Institute (IRRI) Research Paper series, No. 82, November 1982. Available from The International Rice Research Institute, Los Banos, Laguna, Philippines.

Robert Chambers and B.P. Ghildyal. Agricultural Research for Resource-Poor Farmers: The 'Farmer-First-And-Last' Model. New Delhi, 1984. 25pp.

This paper considers alternative approaches to the design of agricultural research and was presented at the National Agricultural Research Management Workshop in Hyderabad, March 1984. It is available from: The Ford Foundation, 55 Lodi Estate, New Delhi 110 003, India.

School of Development Studies UEA, Workshop on Agricultural Research to benefit poor people in developing countries

Three papers were presented to this workshop and interested members of the network should write direct to: David Gibbon, School of Development Studies, University of East Anglia, Norwich NR4 7TJ, UK.

The papers are:

Norman G. Clark and Edward J. Clay (University of Sussex)
Operational Experience in the Evaluation of Agricultural Research Projects
(this is substantially the paper presented at the lunchtime meeting in October 1983)

J.C. Davies and R.W. Smith (Overseas Development Administration)
The Present and Future Role of Aid Agencies in Strengthening Agricultural Research in Developing Countries.

S. Biggs and D. Gibbon (University of East Anglia)
The Role of On-Farm Research in Strengthening Agricultural Research Systems.

V REGISTER OF MEMBERS

With this issue of the Newsletter, I am enclosing a Register of Members. 'Members'in this context means networkers who have responded to the questionnaire which asked for information on recent professional responsibility and areas of interest in agricultural administration. Any recipient of this Newsletter whose name is not included in the Register of Members, and who wishes to be included in the next Register, should write to Jennifer Dudley, Administrative Secretary/Agricultural Administration Unit, enclosing the relevant information. A further register will be issued in due course.

VI OTHER (NON-ODI) NETWORKS

The College of Agriculture of the University of Illinois now produces a regular Newsletter which is primarily concerned with agricultural extension. It is a newsletter of the International Program for Agricultural Knowledge Systems and its title is INTERPAKS INTERCHANGE.

For further information write to: John B. Claar, Director, Interpaks Interchange, Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801, USA.

Appendix

SMALL FARMER SERVICES IN INDIA

A Study of Two Blocks in Orissa State, India

Summary of a Report prepared under an ESCOR grant by Dr John Howell of the Overseas Development Institute

The level and quality of services available to farmers - particularly small farmers - in ldcs is generally held to be a major constraint on agricultural development; but there is less agreement on the implications of shortcomings in services such as extension and research, credit provision and the supply of production requirements such as fertilizer, pesticides and seed. One view is that there has been insufficient investment in agricultural services, particularly in research and extension, and insufficient concern with efficiency in the delivery of services. But a contrary view is that there has already been too much investment in the public provision of agricultural services and that the poor returns to such investment point to the need for a new approach, in which ultimately services are requested and paid for on a commercial basis, with the private sector undertaking the major role in input supply and also providing technical advice to its customers and appointed agents.

The nature of this debate is clouded by the poor empirical base of the issue of agricultural service provision. This study is designed to identify and clarify some of the commonly held assumptions on the performance of publicly provided agricultural services and examine these against the evidence of two small areas in Orissa. The study uses the term 'public provision' to include both co-operatives and private dealers when operating in collaboration with government controlled subsidy and credit schemes.

The particular emphasis in this study is upon small and marginal farmers primarily cultivating food staples with family labour, using mainly traditional technologies and having limited irrigation facilities. Orissa itself is a state with lower levels of per hectare yields and fertilizer use than any state in India; and the study examines the supply of services and farmer demand for services in two of its Blocks: one in the poorly serviced plateau region (with a significant tribal population) and another in the more intensively cultivated central plain.

Both Blocks - Rairangpur and Nimapara - are currently subject to efforts to improve agricultural services and thereby increase production and incomes.

As part of a State-wide Orissa Agricultural Development Project, extension services have been strengthened by an increase and re-deployment of agricultural village level staff, a programme of research and training to establish new varieties and practices and to improve the relevance of crop recommendations and support available to selected farmers. As part of the Indo-British Fertilizer Education Project, a special effort is also being made by the Hindustan Fertilizer Corporation to demonstrate improved use of inputs and, similarly, to assist farmers in gaining access to services. In addition, over the past decade Orissa has had substantial investment in rural banking facilities and irrigation and plans to establish a larger public warehouse system to improve availability of fertilizer in particular.

Against this background of relative agricultural backwardness and new levels of public investment, the study examines four main issues.

First, it examines the performance and impact of extension services and in particular the view that such services are frequently inappropriate to the needs of the majority of farmers and wastefully concentrate scarce resources on a small group of already successful cultivators. Second, it examines the organisation of seasonal production credit to investigate in particular the view that difficulties of access and indirect cost to borrowers inhibit higher levels of credit use among smaller farmers. Third, it examines the evidence on inadequacies in the supply of production requirements as a factor in low rates of adoption of improved inputs. Finally, the study examines the extent to which the public supply of all three of these services - extension, credit and inputs - is biased against the smaller farmer.

These issues are examined from two perspectives: from farmer interviews it examines the level of effective demand, and difficulties in access to services; and from the public sector evidence it examines the different ways that services are provided and considers whether these represent the most efficient use of resources.

Extension

Compared to evidence from states elsewhere in India, the level of demand for extension services in Orissa is high, with over 50% of farmers interviewed indicating a familiarity with and interest in the work of the VAW. However, this interest is less in the provision of technical advice per se than in the inducements to improve practices. In particular, there is demand for seed

minikits, seedlings and plant protection materials which are obtainable through the VAW. The accessibility of such services has improved under the Training and Visit system, but the adaptations of T and V in Orissa (particularly the use of village demonstration plots rather than 'contact farmers' and the fusion of input supply duties with technical advice) has tended to concentrate support upon the 'adoptors' in the farming community. In practice this is similar to the approach adopted under IBFEP which further concentrates its support by selecting villages with relatively assured irrigation; although the scale of the IBFEP plots means that marginal farmers and sharecroppers are less under-represented than normally occurs with demonstration approaches.

The survey work of this study suggests that at least half of the farmers in Orissa do not receive useful advice or other extension support, do not apply for credit and do not use fertilizer or improved seed. In large part, this category of 'non-adopters' consists of marginal farmers. Many marginal farmers are primarily engaged in paid labouring work and are not available for extension services, but the recommendations and inducements of the extension service (both Department of Agriculture and IBFEP) are often uneconomic to farmers with poor land quality and high susceptibility to crop failure. In these circumstances, it is an efficient use of extension staff to concentrate upon adopters and also upon the provision of inputs and advice in the use of inputs. But given the generally well-organised system of training days for VAWs, there is scope for improvement in the research-extension links so that more attention can be paid to the non-adopters. At present, problems identified at the field level are largely technical in nature; reasons for non-acceptance of recommendations are not fully investigated and reported by VAWs.

The study argues, against current thinking on extension, that extension and input supply should continue to be linked. The Department of Agriculture (at present levels of private sector services) must take major responsibility for supplies and to use an entirely separate field 'service' for a function so closely linked to extension would represent an unjustifiable cost burden. Current extension worker to farmer ratios in Orissa are in the region of 1:600 but the coverage is better than in most ldcs because visits are regularly undertaken. In the IBFEP, the present agronomist to farmer ratio appears to be unnecessarily high (roughly 1:60) for the level of technical understanding of most farmers who often remain unconvinced of the economic viability of improvements but are not entirely unaware of the practices themselves. The technical weaknesses of farmers appear to be on timing and precise quantities of fertilizer and pesticide applications, not on the general

principles of use.

Credit

The effective demand for formal crop season credit in the two Blocks examined is not particularly high: 38% of farmers indicated their involvement. The remaining 62% consisted of direct buyers of inputs, defaulters, and 42% of farmers not using improved inputs anyway.

The supply of production credit in both Rainrangpur and Nimapara has declined substantially in volume (number of accounts) and value over the past three to four years. This is partly a consequence of commercial bank policy at branch level. There was an expansion of aggregate seasonal lending activities in both Blocks following the opening of new branches in the mid-1970s, but there have been high levels of default and a general reluctance to seek new business while problems of repayment and rephasing of loans has preoccupied bank staff.

But the decline is also due to the rapid expansion of medium-term lending under IRDP. The high administrative requirements involved in such lending operations have seriously curtailed the activities of agricultural loans staff. In the case of a few banks, seasonal production credit lending has stopped altogether as loans officers have ceased the practice of visiting villages to arrange loans. This may also indicate a very low level of demand for credit as very few farmers appear willing to visit the banks in order to open loan accounts. The practice has been for such accounts to be arranged at farm level since the borrower knows that he eventually needs the endorsement of an agricultural loans officer, VAW (or HFC Agronomist). It is for this reason that the distribution of seasonal credit is very patchy; certain villages may have as many as a quarter of farmers holding accounts, others have none whatsoever.

The study investigated organisational and management factors which are widely held to inhibit small farm borrowing: cumbersome procedures, delays in loan sanctioning and covert payments which increase the real cost of borrowing. The evidence of farmers, banks and suppliers suggests that all three of these factors may be exaggerated. Procedures often put a greater demand on loans officers than borrowers, and while the procedures of co-operative societies are often delayed by the accumulation of applications at different stages of loan consideration, there is some evidence to suggest

that farmer complaints at late delivery of fertilizers are often a pretext for not lifting. This is where the fertilizer component of a loan application has been deliberately inflated in order to increase the value of the cash component which is released prior to delivery of the kind component.

Evidence of corruption, or illegal payments, in the system of input supply is circumstantial in this study, but, on the whole the VAWs' current role in the system does not put them in a position to be a major part of any corruption. The level of charges that might occasionally be made on acquiring loan forms or assisting in access to supplies is very small and such charges do not substantially increase the cost of borrowing.

The greater speed and efficiency of the commercial banks compared to the co-operative societies is evident from this study, but if it is assumed that there should be continued government investment in improving formal credit supply for seasonal lending, it is hard to avoid the conclusion that this will have to come primarily through the co-operatives. The potential for CB expansion in places such as Orissa is severely inhibited by the high cost of lending in areas of low and erratic demand, low deposit potential, and poor recovery. An expansion of lending in such areas would probably require new forms of subsidies to lenders on their operating costs. The high cost relative to loan portfolio is, however, less critical in the case of co-operative banks since they already have a network of branches - the primary societies - which trade in other goods and appear to have under-utilized management resources.

At present, formal seasonal lending in Orissa is falling between two stools. Poor co-operative credit performance has stimulated government promotion for Commercial Bank operations. This has further weakened co-operative banking yet the CBs have neither the staff not the operating cost subsidies to take over from the co-operative societies.

Input Supply

The private sector supply of fertilizer is limited in both Rainrangpur and Nimapara. The low level of demand, the low profit margins for controlled-price goods, the risks of holding stock that can deteriorate, and the high capital cost, all deter existing general traders from holding fertilizer. Similar considerations apply in the case of pesticides and, to a lesser extent, seed, where commercial opportunities are restricted because of the high level

of government involvement in distribution.

In the foreseeable future, the role of the public sector - in Orissa (and India as a whole - in input supply (especially manufacture, pricing and wholesale distribution) will remain paramount; at the retail level, in Orissa specifically, the potential for a wide network of village traders, linked to publicly-provided wholesaling, depends largely upon a very substantial increase in demand.

The absence of such a network is widely assumed to be a factor in the low level of consumption of improved inputs. The evidence of the study on farmer demand does not support this. Farmers are not deterred from lifting fertilizer because of the cost and time involved in visiting co-operative depots and private traders in the main towns of larger villages; and there is little interest among farmers in reactivating village co-operative stores as fertilizer sales centres.

On the other hand there appear to be considerable difficulties on the part of co-operative societies and government agencies in efficiently staffing small sales centres in the villages. Co-operative stores are unreliably managed and Department of Agriculture seed stores - while well-managed - incur a high opportunity cost with VAWs being taken away from extension duties at critical times.

Private fertilizer dealers are generally preferred by farmers because the time involved in transactions (for fertilizer under subsidy arrangements) is relatively short and because opening hours are more convenient. But for officials, the use of private traders for such schemes still involves administrative costs.

There is, in fact, little evidence of abuse of the subsidy system. But some dealers have seen the opportunity of collaborating with farmers in falsely issuing fertilizer and claiming the subsidy. The involvement of IBFEP Assistant Agronomists in supervision has curtailed this practice but this has been at a cost to extension work proper. There is some evidence of a few farmers misusing their subsidized fertilizer in the sense that it is applied over a larger area than intended, but there does not appear to be any selling of fertilizer by farmers.

The evidence of farmers clearly indicates that the provision of 100 MT fertilizer godowns in the villages of Orissa is a poor investment at present

levels of demand. Farmers have no difficulty travelling 20-25 km to lift fertilizer and the costs of lifting away from the village are not a significant deterrent. Furthermore, unless such stores serve other functions - such as grain banks to mitigate distress selling - there is the likelihood of a low and irregular level of utilization with fertilizer sales alone unlikely to cover salary and other costs, at least on present fertilizer cost margins.

The impact of subsidies is impossible to calculate on available evidence of only two seasons, but the farm interviews suggest that many farmers are unlikely to continue their present levels of pesticide and fertilizer use once the IBFEP subsidy is removed. Those that will continue with high levels of use are generally the farmers who already have a record of improved input use.

Conclusions

The evidence of this study supports only some of the commonly held assumptions about the importance of public service constraints in ldc agriculture. Extension services in Orissa, while generally effective in meeting the demands of farmers involved in improved practices, provides insufficient support for the poorer farmers where yield levels remain extremely poor. There is also some bias in technical advisory services and input supplies towards already successful farmers and this represents a degree of inefficiency in resource allocation. But against this general confirmation of ldc trends, it is also evident that input supply constraints are not as important as they are often held to be and a supply-led approach to input provision, involving the construction of warehousing and associated operating costs throughout the countryside, is not always appropriate given the resource of farmers in acquiring inputs that they require for agricultural improvement. The indifference of farmers towards ostensible 'supply' constraints in lifting fertilizer suggests that where governments - in the absence of private sector alternatives - are involved in input supply they should recognise that the conditions of low demand that have led in part to the absence of private sector alternatives also apply to the public sector.

The over-regulation of public agricultural services (for example in the rationing of subsidized fertilizer) is also generally regarded as an important constraint to efficiency, and there is clear evidence in this study of inefficiency in the allocation of scarce professional resources to administrative tasks of regulating access and distribution. But there is not much evidence to support the view that such regulation inevitably leads to corrupt behaviour on the part of technical field staff; and there is every reason to

believe that without the supervision of field staff there would be abuses of the system of subsidized delivery of inputs. The issue of whether there should be regulation at all is another matter. But wider criteria of efficiency must be applied where the Government is using its control over service provision not simply to promote agriculture but as a deliberate instrument for intervention in the rural economy; for example to redistribute incomes or to redress the economic disadvantage of poorer farmers and tenants.

Agricultural Administration Unit

Overseas Development Institute
10-11 Percy Street London W1P 0JB
Telephone: 01-580 7683

AGRICULTURAL ADMINISTRATION NETWORK

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Network Paper No. 18

The Development of Agricultural Extension in the Aegean Region of Turkey

by

Anthony Fitzherbert and Geoff Tansey

This paper is based on a lunchtime talk given at the Overseas Development Institute in September 1983

Antony Fitzherbert,
The White House,
Stanstead Abbotts,
HERTS ST12 8LW
U.K.

Geoff Tansey,
3 Montrose Buildings,
Hebden Bridge,
West Yorkshire HX7 8LH
U.K.

1. INTRODUCTION

This paper is concerned with a particular region of Turkey - the Aegean - and is the result of several years' work at the Aegean University. The main work was concerned with setting up an Agricultural Extension and Communications Centre at the University, as well as defining the areas of work in which this centre could make its best contribution. As part of this work, considerable research was undertaken in the Aegean region, looking at the existing systems of research and extension and the broad nature of the information systems that had already been established. This detailed work was to assist in identifying existing problems and gaps in these systems and, thereby, help in clarifying the objectives of the new Centre. Its approach to work in education and training, information and communication, and documentation is discussed in the final section.

2. BACKGROUND

Turkey is one of the world's seven or eight self-sufficient agricultural exporters. In 1980 agriculture accounted for about 20% of GNP, compared to 25% for industry and 15% for trade, but its relative position has been declining. Agriculture accounted for $1,670 million in exports in 1980 or 57% of export earnings, by 1982 the amount had risen to $2,141 million, but the percentage contribution was down to 37%. Agricultural imports were 27% of the total in 1982, with industry accounting for 56% and oil 39% of total imports There has been rapid urbanisation, but over half the total population (just under 45 million) still live in rural areas. In the late 1970s about 60% of the economically active population was working in agriculture but this proportion is falling.

Over the last 30 years national policy has favoured industrialisation over agricultural development. However, for agriculture, measures to increase production have focussed

on large scale irrigation projects as well as input subsidies, machinery and fertiliser subsidies and low water charges.

What the World Bank terms import substitution crops have been encouraged rather than those that are export oriented. In recent years, emphasis has been placed more on the promotion of export crops. This distinction is, in any case, dubious as the World Bank makes no mention of basic food crops of which wheat (one of its import substitution crops) is the staple food. Bread is a staple food in Turkey, with consumption at 182kg/head in 1978-80.

A major national effort has been made to increase wheat yields. A decline in per capita wheat production in the late 1950s and early 1960s led to imports. Subsequent government concern led to the development of a national wheat improvement project. This, coupled with favourable pricing policies, allowed for a doubling of the national average wheat yield. This has, however, been unevenly spread. Yield increases were initially engendered by the introduction of new high-yielding varieties in the mid to late 1960s, particularly in the coastal areas, where there is irrigated production or sufficient rainfall. The more unusual dry land production revolution relied initially on improved agronomic practices, altering the timing and type of cultivation to conserve moisture, as well as the introduction of weed control. This led to improved yields from about 1t/ha to 1.8t/ha over ten years, based on good seed from existing varieties. The introduction of new varieties with greater yield potential now offers the prospect of higher yields in these areas.

The next stage will be to reduce fallow cropping and introduce pulses in rotations where the moisture availability will permit. This is one of the features of the World Bank sponsored Corum Cankiri Rural Development

Project. The wheat project cut across the traditional administrative structure and drew together research and extension, unfortunately only temporarily, in a commodity based programme which served as a model for other projects.(1) This has not been fully adopted elsewhere except in the development of national research teams on a commodity basis.

3. AEGEAN AGRICULTURE AND AGRICULTURAL EXTENSION

The geological and topographical complexity of Western Anatolia with its Mediterranean climate and its proximity to the port of Izmir, has permitted the development of a highly diverse, productive and export oriented agriculture. Though comprising less than one-fifth of the country area, the Aegean Region produces 45% of the country's cotton, 60% of its tobacco crop, 55% of its soft fruit, 30% of its vegetable oil, almost its entire seedless sultana crop, as well as being an important producer of cereals, citrus fruit and a wide variety of vegetables. Yet less than 40% of the Region is classified as agricultural land; the rest being classified as mountain and uplands covered in forest and scrubland.

Topographically the Region is characterised by a regular pattern of rift valleys running parallel on an east-west axis, separated by ranges of mountains and eroded uplands. The climate is basically Mediterranean with long hot summers and mild wet winters, though topography and altitude play an important part in creating very distinct local microclimates.

The most productive agriculture takes place along the bottom of main river valleys and the coastal plains formed by their silt-filled estuaries. Here, deep alluvial soils and recently developed irrigation systems permit the growing of high value export and industrial

crops such as cotton. Cotton, rice, cereals, fruit and vegetables of many kinds are the main crops of the valley bottoms, with sultana vines being grown on the more permeable sands and gravels.

Olives and tobacco are the main crops of the drier hill slopes. The uplands, where cultivation is possible, are mainly devoted to producing subsistence crops, with tobacco, olives and a variety of wild trees such as pistachio producing cash crops. Though pockets of land provide opportunities for cropping, much of the hill country is impossible to cultivate. It is rocky and covered with thorny scrub or government controlled pine forests. Wheat is grown by all communities, upland and lowland, for domestic consumption. In the valleys the adoption of high yielding varieties now produces a marketable surplus, but primitive durum varieties are still favoured by the farmers of the drier uplands for their own domestic use. Livestock remains important, with flocks of sheep and goats that produce meat and cheese being the economic mainstay of many upland communities. Some of the communities have developed quite sophisticated grazing systems to make the most of the scant pasturage.

Cattle are kept by both upland and lowland farmers mainly for household purposes, though also for draught purposes in some of the hill areas. In the valleys, recent breed improvements have led to a surplus of milk over household requirements. This is now the basis of a growing and largely privately organised milk industry which operates an efficient village collection scheme. The proximity to urban markets in Izmir and elsewhere coupled with agricultural credit schemes has led to the development of a number of intensive poultry, milk, beef and horticultural units in the area.

The level of mechanisation in the valleys is remarkably high, with tractors in general use. The general infrastructure of the area has been considerably developed over the last twenty-five years. Irrigation systems now serve much of the lower ground, and the lowland farmers are well served with roads, electricity and market centres. Additionally, much has been done in recent years to improve the infrastructure of the uplands. Few upland villages in the Aegean are not served by a motorable, if rough, road and many have electricity and piped water. Drinking ponds are being constructed for their livestock. It is rare to find a village that does not have a primary school with at least one teacher. Nonetheless, prosperity is not uniform, and areas of comparative impoverishment and underdevelopment remain.

More than half the agricultural population of the Aegean live on the poorer uplands. Much of the best valley land is occupied by large private farms, some over a thousand hectares, while village peasant holdings, even in the valleys, average less than 5 hectares. If sultana cropping is practised such holdings can be very viable units, but this is not the norm. Fragmentation of land holdings remains a problem that cannot be altered without radical changes in the laws relating to minimum farm size and inheritance patterns.

Though some upland communities are reasonably prosperous and some also have access to better land in the valleys, many are poor and very dependent on seasonal wages earned on the larger valley farms. These are also very vulnerable to labour displacement through increasing mechanisation. On the uplands, water is often scarce for both man and beast in the summer, when productive pasturage is also scarce.

Adult literacy remains a problem in both valley and upland communities, though this is changing. Nonetheless, levels of education in the rural areas remain very low and even in this, the most prosperous region, few village children go on to receive a secondary education.

In this area, it is important to note that virtually all farmers are owner-proprietors. If they rent or sharecrop land it is usually with close relatives or chosen associates. The large (absentee) land owners in this Region do not have any sort of feudal hold over the peasant farmers who are their neighbours, but run their farms capitalistically with foremen and hired labour. This proprietorial aspect of Aegean agriculture is of immense psychological importance in influencing the farmers' attitude to their land and to new ideas and practices.

Though important similarities in custom and culture are found throughout the villages of the Aegean (and the modern republic has helped to impose a common identity on all) significant differences exist between different communities. The last 100 years have seen dramatic shifts of political and national boundaries and consequent shifts in population throughout the Near East and the Balkans. Nowhere is this better illustrated than in the population of Aegean Turkey. Long established settlements do exist, but surprisingly few farmers now live where their grandfathers were born. Valleys that, one or two generations ago, were virtually uninhabited because of disease or flooding are now liberally settled. Hills that 100 years ago supported a mainly nomadic population of pastoralists are now scattered with village settlements, inhabited more often than not by the descendants of those same pastoralists. Population migrations from the 1880s to the 1950s which reached their peak in the great exchanges of population following the Greeko-Turkish war of 1919-22,

resettled old villages and founded new ones with Moslem peasants from all the old Ottoman provinces in the Balkans, Greece and the Caucasus. These peasants brought with them a diversity of experience, knowledge and custom. There have also been local shifts in population as hill farmers and pastoralists settled on the irrigated plains. There are therefore important social and cultural differences between rural communities that may not always be obvious to the casual observer or the unobservant agricultural official.

The agricultural diversity of the Aegean is matched by a comparable diversity in the sources of information potentially available to the farmers in the Region and the complexity of the organisational structure established to serve them. A total of 13 government organisations provide agricultural advice of one kind or another, in addition to the official Ministry of Agriculture's extension organisation - known as *Teknik Ziraat*. For many of these, extension is not their first duty, but has developed in response to a need that was either being inadequately met, or not being met at all, by the official extension service. In addition, a number of commercial and industrial groups selling chemicals or processing such things as vegetables and milk products are also offering advice and various inputs to their customers and contracted suppliers. There is an active informal transfer of ideas and information throughout the farming community itself which provides interesting examples of unplanned development. It is debatable whether in fact the official extension service was providing overall the most effective advisory service except in a few specific respects.

Teknik Ziraat, is established on the basis of provincial headquarters - nine in the Aegean Region - each reporting separately and directly to the Ministry in Ankara; each

with a complement of subject specialists and administrative staff, working through agricultural officers at county subdivision level and technicians at village group level. The latter are sometimes resident in the villages but usually this is not the case. In 1979-81 this service was being severely hampered by a lack of mobility due to shortages of fuel, cash and viable transport. These difficulties were compounded by the multitude of administrative and regulational duties placed on the shoulders of the county agents. These county and village agents were seen by the farmers not so much as technical advisors but as the representatives of a not very efficient supply agency providing certain inputs such as fertilizer, certified seed and the like. There appeared to be little direct contact between the subject specialists in the provincial head-quarters and the farmers. There also appeared to be a surprising lack of relevant basic information on the farmers themselves. Many extension agents at all levels expressed their own dissatisfaction with the training they had received and felt themselves to be woefully short of up-to-date information on relevant research findings.

Between 1979-81 the Regional Agricultural Research Institutes and Extension Service were separated into different and highly centralized command systems, with little effective communication between them. There had been some active co-operation between Research and Extension in the early 1970s at the beginning of the National Wheat Programme but this was not sustained. Since 1981 there has been some further reorganisation in the Ministry of Agriculture aimed at improving the situation but it seems that at provincial level this was a largely cosmetic exercise.

A serious division that still exists is the one between the Ministry of Agriculture's extension organisation and the organisation - known as *Topraksu* - that is responsible for all matters relating to soil, irrigation and drainage which is located in the rival Ministry of Village Affairs. Even if located within the same ministry, these two organisations would have difficulty in complementing each other, for while the extension service is organised on a provincial basis the soil and water organisation is organised on a project basis. *Topraksu* has its own research, engineering and farmer training establishments and because matters relating to soil and water cannot be divorced from general crop husbandry, duplications and contradictions inevitably occur. *Topraksu* often finds itself carrying out development projects without any formal means of handing over extension duties which are not strictly its responsibility and so is left with no alternative than establishing its own farmer training programmes. Much the same situation has faced the Agricultural Bank which has preferred to employ its own agronomists and livestock specialists to advise the recipients of its loans, rather than rely on the local extension services.

Other government development organisations employ their own agricultural and livestock experts - for example, the Village Co-operative Organisation and the Forest Village Development Organisation. The Regional Agricultural Research Institute, through its involvement with various National Crop Programmes - wheat, maize and potatoes, for example - has found itself more and more involved in direct dealings with farmers. Certainly, in the case of potatoes, it provides the only effective extension service for farmers and the success of this project largely reflects the degree of outside finance and help it has received. Cotton has its own specific research and field

establishments in the Region. There is some co-operation with the extension services, though these are used mainly as an agent to distribute certified seed rather than in an advisory capacity. Sugar-beet, where it is grown, is controlled by its quasi-autonomous government corporation. Plant protection and veterinary affairs have their own research and field services.

In the case of dairy farmers, there are different organisations in the region actively involved in developing small dairy units: a regional livestock development project under World Bank auspices; the Agricultural Bank; and the Forest Village and Village Co-operative organisations. In addition there is a private dairy products company that has developed a very effective advisory 'feed and breed' improvement programme for its contracted suppliers. Both the Extension and the Veterinary Organisations have livestock responsibilities and a certain amount of rivalry exists between them.

The three or four private tomato processing companies operating in the area undertake to provide an extension service to their contracted growers and the governmental extension service has, on its own admittance, relinquished its responsibilities to them. International chemical companies such as Bayer work actively through their provincial agencies and, indeed, the government's Plant Protection Service has used their manuals and brochures as models for its own.

The Turkish radio service broadcasts a daily morning programme for farmers which is used by the various government organisations. It is widely listened to but also widely criticised by farmers as being either too trite or too technical. It appears that little effort has been made to obtain meaningful feedback and farmers' letters

pile up in unread and disordered heaps in the local broadcasting office. Television has enormous potential as a means of informing farmers. All villages that have electricity have installed TVs in their tea houses where the adult male population spend much of their leisure time. There are agricultural programmes but they are irregular and usually foreign productions of little relevance to local conditions.

Finally, as an illustration of informal sources of information that continue to exist, it was found that in one village most of the farmers had changed from growing cotton to growing rice over a five year period, not through any government plan or agency but entirely through the influence of a group of immigrant rice farmers from Yugoslavia who had settled in the neighbouring market town. Though without land themselves they had persuaded the local farmers to go into partnership to grow rice. Rice was a crop that none of them had grown before: nevertheless, at the time it was extremely profitable, though its cultivation was not in fact encouraged by the extension services.

4. ISSUES FOR THE EXTENSION SERVICE IN TURKEY

The extension service in Turkey, as the earlier section has shown, is both complex and unco-ordinated. The lack of communication between two Ministries, other organisations and the media is a problem experienced in other parts of the world and not necessarily caused by the regional variety of agricultural conditions in Turkey. Nevertheless, the lack of co-ordination has led to an imbalance in access to, and control of, information and resources and this inhibits a more equitable development of the region.

No formal structures exist by which research findings, extension methods, agricultural development etc. may be supplied to or exchanged between extension workers.

There are some one-off training courses run on an ad hoc basis, some for academics and researchers. The links between these and other groups are poor and there is no proper channel for feedback from farmers. The limited radio programmes and occasional exhortative/instructional materials produced for farmers are generally poorly prepared.

Since past policy has favoured industrialisation there appears to have been little government interest in improving the extension service, with insufficient resources devoted to its development. The Turkish political climate is, moreover, unconducive to open information systems or development of independent groups serving these information needs and acting as mediators for expressing the experience and interests of rural people, small farmers, extension workers, etc. Although knowledge alone will not bring about rural and agricultural development, nor an effective functioning of the agricultural sector, its absence retards the process.

5. IMPROVING THE RESEARCH, EXTENSION AND COMMUNICATIONS SYSTEM IN THE AEGEAN

The University wished to make a direct contribution by establishing an Agricultural Extension and Communication Centre to develop its work on extension which was first introduced into the curriculum for undergraduate students in the mid-1970s. The first acting director of the Centre was the agricultural economics professor who had previously identified the need for it. It had only one junior staff member housed in the local office of the extension service until a university building was provided at the beginning of 1979. The initial task was to identify how the Centre could contribute to extension in the region. Some of the University staff felt that it should function as an active extension service but this was quite inappropriate given the nature of the existing system, the multiplicity of

organisations already giving extension advice, and the inadequacy of the university's resources. The Centre's aim was to assist those whose job it was to help farmers, work more effectively. This required working alongside the existing organisations, and in support of them, rather than in competition. This involved developing good working relationships at local, regional and national levels, and drawing together and utilising existing skills and talents: within the country, across the campus and amongst the different organisations. This was a difficult task and it has not been completely fulfilled.

The priority areas in the Centre's work included:

(a) Education and training
(b) Information and communication
(c) Documentation (requiring the collection and organisation of information to facilitate retrieval, use and circulation)

Research was conducted to identify specific extension problems and used as a guide in the development of suitable curricula for undergraduate teaching and for use in the Centre's education and training programmes. These were aimed at providing in-service training for extension workers from a range of agencies.

The University was keen to make known the results of its research and other activities to a far wider audience and to do this a monthly newsletter was started. The Centre's staff were responsible for producing it and a co-ordinating committee across all the departments in the Faculty of Agriculture provided contact points and inputs. This was the only major initiative taken in the information and communication area in the first two years of the Centre's existence, partly because of financial difficulties and partly as a result of more fundamental problems which arose in the development of information and communication systems in agriculture in Turkey. These included a shortage of trained people, a lack of status for the work

involved, and little if any provision for the circulation of information between the various groups in the sector: farmers, policymakers, researchers, extensionists etc. The political climate of the time also mitigated against that kind of exhchange.[4]

Once the newsletter was established the next priority was to develop an agricultural documentation unit, which would provide a foundation for the other work. The results of previous research, for example on the type of extension materials produced in Turkey, were very poorly documented. The exchange of research findings amongst different universities was poor: and although access to international research was easier, through journals, these were squeezed out as the economic crisis of the late 1970s prevented the use of foreign exchange for subscriptions. At Ege, where there were over fifteen different departmental and faculty libraries in the agriculture faculty alone, there was no common catalogue and only one trained, but junior, librarian between them.

Extension workers were far more poorly served than university research workers for information about agricultural developments and research results. It was decided that the documentation unit should be developed to help catalyse development in that field in Turkey with the co-operation of other interested parties. Links were therefore made to the Ministry of Agriculture and *Turdok*, the National Documentation Centre, both situated in Ankara. An ad hoc group was established between the three to promote documentation development in agriculture.

This was intended to promote a greater exchange of knowledge between research, extension and farmers in Turkey and elsewhere, of conditions relevant to Turkish agriculture. The collection of data began with university generated information, materials from extension organisations in Turkey, and freely available foreign materials. Through

Turdok an experienced librarian was recruited to assist in the development of the documentation unit, the post being funded by an interested outside donor.

Overall, the main aim in developing the Centre was to work in a catalytic and co-operative way with other relevant interested parties; a full-time director was appointed at the end of 1980. By mid-1981 a protocol was agreed between the Centre, Ministry and *Turdok*, defining responsibilities for developing different aspects of documentation. A detailed development scheme for outside funding was prepared during the first half of 1981. This was accepted by the State Planning Organisation and included in an aid package for funding by a multilateral foreign donor. Unfortunately this was later blocked by the donor grouping for political reasons connected with the military regime in Turkey.

6. CONCLUSION

Much remains to be done to develop an adequate and effective agricultural information system in Turkey. Such a system is needed to aid the design of new policies and to guide decision-making at all levels from government agricultural policy, to research, extension and farming. It will also help to provide the means to monitor and evaluate the effect of what is attempted. At the same time, far greater emphasis needs to be placed upon widening access to existing and continuing research within the country - as well as from outside. The Centre at Ege was a small step which will amount to little unless it succeeds in helping to catalyse action within the system.

The various attempts to restructure the Ministry of Agriculture and other agencies in Turkey since 1981 offer some hope that a more suitable structure may be set up in which this flow and exchange of knowledge will occur more readily. An indication of the changing focus is that, for the first time, a new World Bank supported

initiative includes a communications component in the restructuring of the research and extension systems in the sixteen provinces. However there is still a long way to go.

Footnotes

1. A full account of the wheat improvement project can be found in Tansey, G. Turkey's Green Revolution: A Dryland First - an account of the Turkish Wheat and Training Project, 1969-82. to be published by the Rockefeller Foundation late in 1984.

2. This was the case at the time of the ODI/Agricultural Administration Network meeting at which this paper was given. There has since been considerable reorganisation. It is too early to say how this will affect future operations but it does not affect the discussion of the situation from 1978-81.

3. See the full report on the research carried out for more detail about the information flows: Fitzherbert, A.R. Information, Organisation and Agricultural Change: A Study of Agricultural Extension in the mid-Aegean Region of Turkey. Ege University, Turkey, 1982.

4. For a basic outline of information problems see Tansey, G. 'Agricultural Extension and Communication in Turkey - a development project at the Aegean University'. Paper presented at the Development Studies Association Conference, Oxford, September 1981. *(copies may be obtained from the author)*

Agricultural Administration Unit

Overseas Development Institute
10-11 Percy Street London W1P 0JB
Telephone: 01-580 7683

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GETTING AND SPENDING: SOME OBSERVATIONS ON THE GOVERNMENT OF KENYA BUDGETING PROCESS

by

Emery Roe

Mail address: GP 55, 2607 Hearst Avenue, Berkeley, California 94720, USA.

C

Introduction

On the face of it, there is nothing contradictory in this situation: a government which is decentralising (as the Government of Kenya (GoK) is now doing) moves from a position that seemed too centralised although the available centralising instruments of influence and power available were never fully utilised in the first place. Yet this is puzzling, particularly where the underutilised instrument is the government's development budget.[1] Politicians and civil servants, as with their counterparts elsewhere, have commonly considered the projects and programmes within the development budget to be one of the chief vehicles for both rural capital formation and the consolidation of government power and influence in the countryside. It has been the development budget, however, which has been under-exploited for achieving these purposes, in that more funds could have been budgeted for projects and programmes, but were not. Why?

The answers commonly given to this question are a rebuttal of the view that more funds could have been allocated to development projects than has been the case. Past project underexpenditures, it is said, can be explained by the lack of sufficient implementation capacity in operating ministries. In this view, aggregate underexpenditures have formed a declining part of the development budget over time: the two-year ratio of net actual expenditures to their originally estimated levels increased

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[1]The GoK (Government of Kenya) financial year is from July through June. The government's annual budget is submitted in June to Parliament for its approval and is published as two separate documents--the Recurrent Estimates for the operating budget and the Development Estimates for primarily the capital development budget. The printed Development Estimates, which are the focus of this paper, are intended to be the compilation of all the Ministries' votes, each of which is further disaggregated into subvotes, heads, subheads, and items. It is at the head and subhead levels that one is meant to find many of the specific projects and programmes sponsored by the GoK.

from about 91% in 1970/72 to 97% in 1980/82. In terms of the underprovision of projects in the development budget -- a phenomenon difficult to document but known to be increasing -- it is the fact of having too many projects, some of them overdesigned, and too few funds which, it is said, explains this underprovision.

The problem with such explanations is that they are only partly correct and in this case a partial description distorts the real picture. There is still a significant degree of slack in the GoK development budget, which allows an entrepreneurially-inclined bureaucrat to increase his or her project's finances without creating conflict with others. The aim of this paper is to describe briefly how such entrepreneurship is exhibited in the GoK budgeting process, and to explain why such behaviour is not more prevalent throughout the bureaucracy. Indeed it is the lack of such bureaucratic entrepreneurship which explains why, in the author's opinion, a large portion of the development budget is underprovided for. The underexploitation of the development budget, in turn, has some implications for the whole issue of GoK centralisation and decentralisation which are discussed in the last section of this paper.

The views set out below are based on two years' involvement in the GoK budgetary process, first in following up the funding of a set of inter-ministerial, integrated rural development programmes and, more recently, through compiling a guide to GoK budgeting for the Ministry of Finance and Planning. The following perspective, thus, suffers from being based on first-hand experience for only two financial years for a narrow set of projects. It has been supplemented by interviews and file reading, but even here the view below is limited largely to one of "Finance and Planning," with a definite Treasury bias. In

these circumstances a paper such as this one can only indicate possible counter-explanations for the phenomenon of under-budgeting of projects.

Budgetary Politics

The budgeted amounts for the integrated rural development programmes known collectively as "Arid and Semi-Arid Lands (ASAL) Programmes" have increased at comparable rates with those of the overall development budget. The ASAL programmes increased some 36% between FY 1983/84 and 1984/85, while the estimated gross expenditures of the development budget as a whole increased some 32% during the same period. Yet there is a clear decline in the policy support given to Kenya's arid and semi-arid lands, as the government shifts its attention back to increasing the marginal productivity of the high and medium potential areas in these resource-scarce times. The reasons why these programmes are still faring well budgetarily is that the Ministry of Finance and Planning staff responsible for them have been willing to play "budgetary politics" in promoting their funding.

In general terms, what is striking about the GoK budgeting system is how relatively easy it is for a vigilant, entrepreneurial administrator, who maintains a good working relationship with his superiors and various finance officers, to increase funds for his or her project even in these times of a "serious financial crisis," as a recent Sessional Paper redundantly put it. The word "easy" is used deliberately since the very nature of the GoK budgeting process affords the bureaucrat multiple points of possible entry to sources of additional financing for his or her project, though more so in the past than in the present.

To play budgetary politics in Kenya starts with the recognition that there is a gap

that is reproduced throughout the development budget at all levels. The gap between what is in the text of the National Development Plan and what is reflected in the level and distibution of funds in the 5-year forward budget, the difference between what the Treasury in its annual ceilings and the operating ministries in their annual estimates take to be the donor availability of financing, the fact that the published estimates are not an accurate picture of real expenditure, and the disparity between warrants held locally authorising expenditure versus the government funds available there to honour these warrants--all point to a systemic discontinuity between the funds one wants and expects to get and what is made available for spending. Often this gap has been used to explain the poor project implementation rates in the field, particularly for projects which requested more funds than were eventually budgeted and which had even less funds to spend than than which showed up in the budget.[1] Yet the gap can be made to work for the advantage of a project: just because policymakers or planners do not support one's project does not mean that their views will get reflected in the budget. The people who compile the budget are a different cast of characters, with their own sets of bureaucratic prerogatives, protocols, and decision rules. If one is willing to learn these, they too can be exploited to a project's advantage. In this sense, budgeting in Kenya is very similar to budgeting "games" as apparently found in the U.S. Government and probably elsewhere as well.[2]

What are some of the strategems bureaucrats in operating ministries have used to advance

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[1]A review on what the recent District Development Plans had to say about poor budget implementation is discussed in the author's "District Focus and the Problem of Project Implementation," Rural Planning Project Discussion Paper, Nairobi, 1984.

[2]For the U.S., see Naomi Caiden, "The New Rules of the Federal Budget Game," Public Administration Review, March/April, 1984. The picture she paints of the U.S. budgetary process is fairly reminiscent of the problems outlined in the earlier book Caiden co-authored with Aaron Wildavsky, Planning and Budgeting in Poor Countries.

their projects through the Treasury review process? This is not the place to describe these strategies in full, but some of the more interesting and important ones deserve mention. There are two rather popular ways to increase the ceiling set by the Treasury within which a ministry's estimates are to be framed. First, an operating ministry may seek to allocate more of its development budget to projects funded by donors directly, rather than indirectly through donor reimbursement to Treasury, as direct payment saves Treasury shilling outlays it may well not have. Another way to increase the effective ceilings of a ministry is for the operating ministry to present Treasury with a fait accompli just after its next year's estimates have been approved by Treasury, e.g., by a Ministry's Permanent Secretary indicating in a written communication to a donor that he (there is no female PS in Kenya, yet) has accepted, on behalf of the GoK, the donor's project.

On the expenditure side, several donors are known to have direct "credit" lines to their expatriate project staff in the field, funds which are at times used for project development, even though they are never reflected in the Government's estimates or accounts. There are also the perfectly legal procedures for re-allocation of funds for shifting money from underspending projects to these projects needing more funds. Moreover, since donor financial years do not necessarily coincide with the GoK's budget year, some entrepreneurial bureaucrats keep an eye out for "donor flushes." It is not unknown, for example, for a donor to off-load its own unexpended funds at the end of a calendar year, just at the time when the administrator has a good idea as to whether or not his own project funds will last to the end of June. "Donor flushes" are excellent opportunities for picking up unbudgeted projects or pumping up existing heads/subheads.

It is probably the estimates, however, which present greater room for

manoueverability by the bureaucrat who wants to advance a project. Some of the observed strategems used by our own entrepreneurial bureaucrats in the estimates preparation and Treasury review process have been:

(1) First, one accepts the fact that Treasury will likely cut one's estimates, which necessitates some initial padding of figures. Although this perpetuates a vicious cycle, there is nothing yet in the bureaucracy which rewards the preparation and presentation of accurate cost figures. Moreover, the padding of other projects whose estimates are less severely cut than originally expected represent "windfall" funds which can be possibly reallocated to other projects later.

(2) The best way to defend a budget is for the defender to be well-prepared and briefed. No other strategy or rule of thumb is as effective in lessening budget cuts as a ministry official who has complete or consistent answers to the inevitable Treasury queries on items in the submitted project budget. Moreover, since Treasury can find so many ways to cut a budget submission, the burden is on the defender to show that there are good reasons for not cutting further. Thus, the best defenses are from those who really know a project and are willing to make an effort to keep the Treasury budget reviewer briefed periodically on a project's development.

(3) More specifically,

- Some bureaucrats deliberately understate the salaries line in an effort to get their submissions closer to the Treasury ceiling, since it has been common practice

that Ministry staff eventually get paid even if their salaries are initially underestimated.

- The number of item lines in a budget submission can be increased in on the assumption that Treasury will be less likely to delete a line completely in its cutting of sums; thereafter funds can be reallocated from the less important lines to the more urgent ones.

- The operating ministry's "hiding" of highly vulnerable items, such as the hire of casual labour, purchase of plant and equipment, or vehicle purchases, has been raised to an art form by some bureaucrats.

All of this legal behaviour is, of course, supplemented by unauthorized, illegal, and at times significant transfers of funds between projects or between donors and projects outside the approved GoK budgetary process. But the point to be reiterated here is that, while a number of options are open to our entrepreneurial bureaucrat in terms of obtaining extra project financing, in reality such behaviour is not found throughout the system. Entrepreneurial administrators exist and there are those, as indicated above, who raise budgeting politics to an art. But they are not the majority. In the absence of such entrepreneurship, projects which could be better financed go under-provided for.[1]

In the following section, the more important explanations for this lack of system-wide

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[1]There seems to be more bureaucratic follow-up in the expenditure side than in ensuring adequate provisions in the estimates. Last minute "spending sprees" by departments so as not to return funds to Treasury at the end of the financial year are common. And, as noted earlier, aggregate under-expenditures are going down. Still pockets of under-expenditure persist, some of which are accounted for, according to Treasury interviews by operating ministry bureaucrats who simply do not bother to try to reallocate funds.

bureaucratic entrepreneurship with respect to the development budget will be set out, some of which are well-known and will be touched upon only briefly. Several of the other explanations are less well-known and deserve more public scrutiny and discussion. All these reasons, however, for the lack of entrepreneurship shed light on the real nature of government centralisation in Kenya.

The Lack of Bureaucratic Entrepreneurship

When talking about the presence or absence of bureaucratic entrepreneurship in the GoK, one can easily turn the discussion into a comparative cultural analysis, where the "average" Kenyan bureaucrat is made to answer why he or she does not behave like the average bureaucrat in those countries whose conventional wisdom has him or her acting entrepreneurially. This will not be done here. Rather, our approach is to assert that Kenyan civil servants fall along some kind of distribution curve from low to high entrepreneurship in budgeting, where the question to be answered is this: Why are the bulk of the bureaucrats not acting as entrepreneurially as those falling on the high end of the distribution? We hypothesise six answers to this question:

(1) If it is system-wide entrepreneurship in budgeting that one is looking for, then the GoK bureaucracy is the wrong place to begin such a search. As is well-known, higher salaries and better conditions of service in the private, cooperative and parastatal sectors have drawn off all too many of the active, well-trained economists, accountants, and budgeters. Moreover, if it is one's objective to move money effectively and preferably a lot of money in the process, then it is not in government, but precisely in these other sectors where this is perceived to most likely occur. For example, while the latest set of 1984/88 District Development Plans show almost uniformly poor implementation rates in the GoK provision of, say, water and health projects, we read in sharp contrast of those

cooperatives which have achieved over 100% of their targets.[1] And this is not because a water project built by government is a more difficult enterprise than a coffee factory built by a cooperative. Bureaucrats working within the GoK may indeed be entrepreneurially inclined, but sometimes this behaviour is directed more to their own outside private pursuits than, say, to furthering their department's projects and programmes.

(2) An inertia has been created within the GoK by having a huge personnel establishment whose security lies less on performance criteria than on having schemes of service where performance often does not explain promotion. Quite simply, few are rewarded bureaucratically for being good budgeters.

(3) Some bureaucrats are overly cautious with funds. While moving money effectively towards development activities is just what most GoK administrators aspire to at some point in their careers, each one asks at one time or another the same question when authorising a commitment or expenditure. "How will I answer an audit query, if it arises?" is the unheard hesitation which dampens the budgetary effectiveness of some administrators and accounts for part of the returned funds to the Treasury. It is not only the lack of reward for entrepreneurial budgeting which characterises the budgetary process, but also the lack of management penalties against those who sit on government funds in the name of excessive caution. This fiscal conservatism is encouraged by Treasury which ultimately sees the under-expenditure of development funds as offsetting the over-expenditures in the recurrent budget.

(4) It is one thing to say that bureaucrats should take advantage of funding potentials in their ministry, but quite another thing to assume in the process that everyone

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[1]See, for example, the 1984/88 Meru District Development Plan.

knows both where these extra funds and options are or even how to take advantage of them. The cardinal characteristic of the GoK budgetary process is the pervasive institutional lack of information about budgets in general and in particular. Some administrators really do not know the balances of their accounts, let alone the debits and credits of others. Moreover, perhaps only a few more administrators are thoroughly conversant with existing budgetary and accounting procedures. Nor for that matter are general administrators really trained in the kind of budget management that persists in ministries. For an outsider, it is a bit surprising to learn just how few civil servants really know how budgets are put together, argued over, and actually implemented.

(5) As many others have noted about the GoK bureaucracy, it is highly personalistic, almost patron/client in the sponsorship by superiors of their subordinates. This point need not be belaboured except as it bears profoundly on the budgetary process: that is, what is learned about budgeting is "institutionalised" in the individual officeholder, not in the bureaucracy as a whole. Moreover, as others have reported, in this centralised and hierarchical bureaucracy the job duties and responsibilities of many individual officeholders are often blurred, unclear, and highly dependent on the personal characteristics of each officeholder in question. Unfortunately, it is just this lack of clarity and individualism in officeholding which, rather than encouraging administrators to act entrepreneurially on behalf of their departments (which organisationally may exist only on paper), has led at times to the personal abuse of government funds, thereby justifying the need for the constant threat of the audit query.

(6) Last, but not least, the lack of bureaucratic entrepreneurship in estimate submissions is partly explained by the fact that the GoK budgeting process is almost exclusively a defensive and hurried exercise. Drastic and arbitrary cuts are necessarily justified in the name of meeting deadlines. Moreover, since some Treasury cutting is

inevitable and made in a rush, padding becomes obligatory, as noted earlier, and thorough project costings are avoided by project staff who easily get discouraged when their detailed estimates are slashed and their explanatory notes ignored. Such defensive budgeting periodically needs a greater degree of surveillance than most bureaucrats are willing to give. Yet an administrator who misses just one budget review meeting or who cannot adequately defend a budget, lays his or her project open to irrevocable, often debilitating cuts.

These six reasons for the lack of a wider, more pervasive bureaucratic entrepreneurship, and the consequent under-exploitation of budget opportunities and enhanced financing of projects or programmes, also explain a wide range of other bureaucratic phenomena. In addition to their generality, they are equally hard to document with specific facts and figures, such that these explanations have to remain hypotheses for the time being. Moreover, another hypothesis might be that one of the major reasons why entrepreneurship in budgeting politics can work so effectively is precisely due to the fact that the bureaucracy as a whole is subject to the kinds of problems described above which work against system-wide entrepreneurship. The kind of budgeting politics we have described requires some organisational slack and excess resources to be taken advantage of, access to which might be less available if everyone were competitively opportunistic for his or her projects. Whatever, if the above description of the problem is a close approximation of reality, what are their implications for understanding the present nature of GoK centralisation and decentralisation?

Implications for GoK Centralisation

The type of centralisation found within the GoK is really a mixture of several different kinds of centralising tendencies. It is not uncommon to find ministry

headquarters making a number of field decisions without prior consultation with its field staff. In other cases, the centre maintains its policy of penetrating, controlling, and incorporating the rural periphery. Discussions on government centralisation has up to now largely focused on these two garden varieties of centralisation.

The above comments, however, suggest that these centralising tendencies may have been subservient to a less well-understood, though equally visible, kind of centralisation, largely internal and within the GoK bureaucracy itself: what has been centralised in government is power, authority, and influence into the hands of selected officeholders at the ministry headquarters.[1] Such an explanation also helps explain why some government actions have seemed to run counter to the first two centralising tendencies. For example, rather than seeing the centre intent on penetrating the rural periphery, vast and remote areas of the country remain unincorporated by government, precisely because there is vested interest in doing so by a number of senior civil servants and politicians representing the high and medium potential areas of the country. Similarly, rather than seeing central government officials make decisions on behalf of their often unconsulted field staff, one is just as likely to see some of these headquarters decision-makers withholding information and funds from others and deliberately not making decisions as a way of asserting personal power and reflecting its real distribution within the bureaucracy. And even when the GoK tries to stamp blueprint development projects across Kenya--e.g., the same "model"

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[1]Perhaps the best index of government centralisation is not cast in terms of centre versus periphery or Headquarters versus field staff, but rather is reflected in the fact that the job satisfaction of the vast majority of civil servants, whether in the field or at Headquarters, depends not on the intervention of the local people at the "bottom," but almost exclusively on the personnel decisions of those few at the "top" who are senior civil servants and politicians.

only the current financial crisis facing the government, but the growing recognition in some quarters that reliance on only the GoK budgetary system is just not the best way to provide an adequate and responsive level of many public services to the rural countryside.[1] If such services are to be provided for more effectively and efficiently they will have to involve the people in a more concrete fashion than has been the case in the past. Thus, the need is for better management procedures (not just for better budgeting and accounting) which will enable local groups and communities to operate and maintain these services in an improved fashion over and above their present level of provision.

Official discussion of such issues of increased citizen involvement has accelerated under the Government's new policy of District Focus for Rural Development. "Other things being equal" no longer applies as the government is now undertaking a number of new budgetary changes. While not directly a strategy for enhanced local participation of rural villagers, District Focus is a decentralisation initiative intended to delegate to local district development committees and district departmental officers more authority to plan, design and implement government-sponsored development projects. Through delegating to the districts those prerogatives formerly held at the centre, improved coordination and bottom-up planning is meant to result, which in turn should lead to better project implementation. It is too early to judge the District Focus strategy's performance. Its cutting edge, however, has been a series of budgetary improvements, which are intended to

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[1] What one report concluded about the GoK provision of water services could in fact be generalised over a number of sectors: "Experience in Kenya and elsewhere indicates that it is impossible to obtain an adequate level of funding for operations and maintenance through the budgetary process." (Water Use Study Team, "Recommendations on Water Use Policy," Ministry of Water Development, 1983).

approach to cattle dips, water supplies or group ranches, regardless of local diversity--this has often fallen far short of expectation largely because of the problems encountered in the budgetary process and bureaucracy as a whole. That is, the first two kinds of centralising tendencies are profoundly dampened by a budgeting process for development projects, which, moving along in fits and starts, is carried on the backs of dissatisfied staff working without adequate information and under pressure according to procedures more tolerated than understood.

Which, of course, may be a blessing in disguise. For it is undoubtedly the case that were the budgetary process improved, i.e., the six factors raised in the last section addressed and ameliorated, this, other things being equal, would strengthen government centralisation in its various forms, which many would find undesirable. On the other hand, it may well be unrealistic to expect these factors to be dealt with comprehensively, such that the more likely occurrence--again, ceteris paribus--is a government budgeting process only marginally less hobbled in the future than it is in the present. Fortunately, in either eventuality, the policy recommendation remains the same: calls for improved budgeting are better directed to those local institutions, organizations, and groups who are to be encouraged to take over the provision and management of services which the government has found and will probably continue to find difficult to budget for effectively in the near future.

It is increasingly accepted in government reports and memoranda that there must be a shift away from the assumption that government is sole provider of public services. The need for better cost recovery and sharing of these services by the local people is at the heart of the recently issued Fifth National Development Plan. Urging this shift on is not

facilitate project performance. Funds are now dispersed directly from the centre to the districts for a number of projects, rather than being routed through the provinces as before. Tendering and procurement procedures have been somewhat liberalised in the districts. More important, a number of national programmes have had their budgets disaggregated by districts, so that each district now both knows what its own allocations are and is meant to influence what sites in the district receive these allocations. In budget parlance, disaggregation has led to the creation of more district specific subheads for those national programme heads in the printed estimates.

But even in District Focus we see the countervailing forces of centralisation at work in the budget process. Concern over the expenditure control implications of District Focus has led to the introduction of a new payment voucher form in the districts which effectively takes away the prerogative of local warrant holders to authorise expenditures without the approval of locally-based GoK accountants and audit checks. Moreover, Treasury's traditional right to approve reallocation funds at the subhead level has been reinforced since such reallocations now would involve inter-district and not just intra-ministerial transfers of funds. Whether the centralising or decentralising forces of the budgetary reform that constitutes District Focus will prevail is not yet clear, however.

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Agricultural Administration Unit

Overseas Development Institute
10-11 Percy Street London W1P 0JB
Telephone: 01-580 7683

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The Performance of Extension Services in Botswana

by

Louise Fortmann

Dept of Forestry and Natural Resources, Mulford Hall, University of California, Berkeley, California 94720, USA.

with comments by Alan Kingshotte

Contents

1. Introduction

In 1977 Alan Kingshotte wrote a report for the Botswana Ministry of Agriculture on "The Posting of Extension Staff in Botswana." These recommendations and a consideration of agricultural extension in Botswana are more readily accessible in AAU Discussion Paper 1, "The Organisation and Management of Agricultural Extension and Farmer-Assistance in Botswana." (ODI, 1979).

These changes involved a restructuring of the Ministry of Agriculture to create a new Agricultural Field Services Department and within the new Department, Extension Areas for Demonstrators were established which allowed regular farmer contact supported by a supervisory structure at the District and Regional level. Further aspects of extension development concerned staff mobility, training and co-ordination with other extension agencies.

In 1982[1] a desk review of three rural extension cadres - Agricultural Demonstrators (ADs), the subject of Kingshotte's report; Assistant Community Development Officers (ADCOs) whose primary work is with the Village Development Committee (VDCs); and Family Welfare Educators (FWEs), who are primary health care providers and educators, was undertaken to determine factors which prevented a higher quality of extension services.[2] Available recent field data were utilized to provide an indication of the current quality

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1. This work was funded in part under AID/DSAN-CA-0183. The views expressed are those of the author and are not necessarily those of the University of Wisconsin Land Tenure Centre or USAID, or the Government of Botswana. The full text is available from the author on request.

2. Defining extension staff is a difficulty as the Government of Botswana defines even Literary Assistants and Community Service Workers (a sort of Youth Corps) as extension workers. The three cadres discussed here are considered to be the most important extension cadres. While the FWE's have clinical duties, they provide health education both in the clinic and during community home visits. They work with Village Health Committees and sometimes undertake the duties of the AD and ACDO.

of extension services but no thorough evaluation was undertaken. The review concentrated on some of the structural factors (identified earlier by Kingshotte) affecting extension work, omitting any consideration of the social or technical appropriateness of the programmes and practices extension staff were promoting. The initial findings of the reviewed were discussed by senior extension officials with the members of every District Extension Team (DET), a body composed of the District Head of each extension cadre and other District officials. This paper is a synthesis of the initial review and the comments of District staff.

2. Field Impressions of Extension Performance

For two periods of roughly three months each in 1981 and 1982, University of Botswana students lived in a total of 21 villages in four districts observing, among other things, the work of extension staff. All but three of the villages were in well populated, easily accessible areas. These findings are summarized in Table 1. The Table includes the students' subjective judgement of the effectiveness of the extension staff. Many of these judgements, particularly the negative ones, were later confirmed by District officials.

2.1 Agricultural Demonstrators

As can be seen in Table 1, eleven of the 21 villages had resident ADs. Three were new postings which could not be evaluated. Six of the remaining eight were considered effective. Of the seven villages served by non-resident ADs, one was receiving "effective service", five were not; and no judgement was made on one. Three villages received no service at all. Thus, of 21 villages, seven (33 percent) were said to be receiving effective services from an AD.

In the five villages of District 4 a random sample of 74 villagers and 14 headmen and wardheads were asked about their contact with extension workers. Contact was defined as 'having received a visit, assistance or advice from an extension worker.' Answers (see Table 2) indicated that respondents included advice obtained in group meetings.

Table 1
Extension Services in 21 Sample Villages (1981/1982)

District	Village	AD	ACDO	FWE	VET
1	1	Resident. Works with 3 groups. moderately effective.	Resident. Works with 5 groups moderately effective.	Resident. Effective.	Yes. Effective.
1	2	Resident. New posting. Works with 3 groups.	Resident. New posting. Works with 3 groups.	Resident. Effective	No.
1	3	No AD.	[a] Lives in village four. Rarely visits. Termed "destructive" contemptuous of community. Not effective.	Resident. Clinic work good. Community work poor.	No.
1	4	Resident. New posting.	[a] Resident. Works with 3 groups. Not effective.	Resident.	No.
2	5	[b] Lives 7 km. away. Visited once during 10 weeks observation period. Not effective.	[c] Lives 12 km away. No visits during 10 weeks observation period. Not effecitve.	No FWE.	No.
2	6	[b] Lives elsewhere. No visits during 10 week observation period.	[c] Lives elsewhere. Visits once a month. Moderately effective.	No FWE.	No.
2	7	Lives 6 km away. Has not visited for over 1 year. Not effective.	[c] Lives elsewhere. Visits irregularly. Considered "very active." Moderately effective.	Resident. "Doing an adequate job".	No.

Extension Services in 21 Sample Villages (1981/1982)

District	Village	AD	ACDO	FWE	VET
2	8	Lives elsewhere. Visits once a month. Works with 2 groups.	Lives elsewhere. Works with 2 groups. Effective.	Resident.	No.
2	9	Resident. Works with 4 groups. Effective.	Resident. New posting. Works with 1 group.	Resident. Effective.	No.
3	10	Resident. New Posting.	Lives 20 km away. 4 visits during 1980. Not effective.	Resident. Very effective.	Yes-Symbolic only.
3	11	No AD.	Resident. Strictly village based. Minimally effective.	Resident. Moderately effective.	Yes-Symbolic only.
3	12	Resident. Described as "stumbling block to development" "Appalling." Not effective.	& Resident. Not effective.	Resident. Effective.	Yes. Newly formed. Confused.
3	13	Resident. Moderately effective.	Lives 25 km away. One visit since March 1980. Not effective.	Lives 25 km away. Contemptuous of community. Not effective.	No.
3	14	Resident. Moderately effective.	& Lives 35 km away. Four visits in 1981. Not effective.	Resident. Effective.	Yes. Newly formed. Confused.
3	15	Lives 40 km away. Effective.	Lives 40 km away. Not effective.	Lives 40 km away. Not effective.	No.
3	16	Lives 15 km away. Not effective.	Lives 15 km away. Not effective.	Lives 15 km away. Not effective.	No.

Extension Services in 21 Sample Villages (1981/1982)

District	Village	AD	ACDO	FWE	VET
4	17	Resident. Moderately effective.	Resident. Not effective.	Resident. Effective.	Yes. Confused.
4	18	On study leave.	[e] Resident. Apparently does nothing. Not effective.	Resident. Clinic work good. Does not visit poor families.	No.
4	19	[d] Resident. Apparently does nothing.	[f] Lives 6 km away. 2 visits during 12 week observation period with Council Officials. Not effective.	Resident. Very effective.	No.
4	20	[d] Lives 9 km away. No visits during 12 week observation period. Said never to visit. Not effective.	[f] Lives 15 km away. 4 visits during 12 week observation period. Not effective.	Resident. Moderately effective.	No.
4	21	On study leave. Effective. [d] AD from village 19 filling in - lives 12 km away. 2 visits in 12 week observation period (one with National officials).	[e] Lives 15 km away. 4 visits during 12 week observation period. Not effective.	Resident. Very effective.	No.

a Same ACDO.
b Same AD.
c Same ACDO.
d Same AD.
e Same ACDO.
f Same ACDO.
g Same ACDO.

Table 2

Extension Contact in Five Villages of District 4

Extension Staff	% Ordinary Villagers Contacted (N = 74)		% Headmen/Wardheads Contacted (N = 14)	
AD				
Never Contacted	70		58	
Contacted in 1982	24)		14)	
Contacted but not in 1982	6)	30%	23)	42%
ACDO				
Never Contacted	82		71	
Contacted in 1982	12)		29)	
Contacted but not in 1982	6)	18%	0)	29%
FWE				
Never Contacted	42		42	
Contacted in 1982	46)		36)	
Contacted but not in 1982	12)	58%	22)	58%

Seventy percent of the villagers and 58 percent of the leaders reported no working contact with the AD[3]. Twenty-four percent of the villagers and fourteen percent of the leaders had working contact in 1982, most of this was with one very active AD.

The 21 villages were served by 15 ADs. Of these, four were considered to be useless drunks by the residents of the seven villages they were supposed to serve. Villagers said:

3. Kingshotte:

This results firstly from failure to implement the FIRST PRIORITY in my 1977 report, to bring the AD Extension Cadre up to strength. From the figures quoted there has been no improvement since I left. Far too many new projects and schemes, often of lower true importance but greater glamour, demand staff (and usually take the best). The second cause, apparent throughout the reports, is failure to use properly the planning and management system, supplemented by a decline in discipline. The fact that drunkards and sluggards can continue in employment, as emphasised in the report, affects adversely the morale of all. Distance was a prime factor in planning the deployment of extension staff but that it is not the key factor in effectiveness is shown in Table 1. An AD resident in a village is described as a "stumbling block to development" and "appalling"; another based 40 km away is described as "effective".

"The AD drinks beer and waits for his next salary. We may as well not have one."

"If you ask the AD to come to you, he'll always say, 'Yes, I'll come tomorrow,' but will never show up."

"Seeking assistance from the AD is a waste of time and effort for nothing."

2.2 Assistant Community Development Officers.

Eight villages had a resident ACDO. Two were judged to be effective. Two were new postings which could not be evaluated. The remaining four (50 percent) were judged not to be effective. Thirteen villages were served by ACDOs living elsewhere. Three were effective; ten (77 percent) were not effective. Thus of the 21 villages, only five (23 percent) were receiving effective ACDO services.

As can be seen in Table 2, the ACDOs had the lowest contact rate of any cadre. Fully 82 percent of ordinary villagers and 71 percent of village leaders in the District 4 sample never had contact with the ACDO. This is particularly remarkable in the case of village leaders since the ACDOs' duties require contact with them. The ineffectiveness of some ACDOs seems to stem both from a vagueness (which they share with villagers) about what they should be doing and from arrogance. Botswana researchers described the current situation this way:

"During the research she came only once, to attend a Parent and Teachers Association meeting . . . In the meeting her participation seemed very unsatisfactory. She rarely talked. When she did, her participation seemed very destructive. For instance, when she talked, she said her time was being wasted by useless meetings."

"He knows little about the activities of the villagers and few villagers know him."

"The people think that the ACDO is there to help them but they cannot see what he is helping them with. They say 'I know the ACDO but I don't know what is his job.'"

"According to the villagers she visits only when she has been invited and never of her own accord. During my stay in the village I have actually seen her on only two occasions in the company of some Council Officials who had come to address meetings. It cannot be said that she associates with either the rich or the poor, since everybody is highly critical about her activities."

The failure of the ACDO cadre is widely recognised in Botswana.[4] In addition to the recommendations made for all three cadres, some special steps need to be taken in regard to ACDOs. The most pressing of these is to reduce their post and amorphous job description. Instead of being asked to identify and treat the mentally ill, identify and organize care for destitutes, and work with all village organizations, their energies should be focused. The most appropriate focus would be the Village Development Committee.

2.3 Family Welfare Educators

Sixteen of the 21 villages had resident FWEs. Fourteen were judged to be effective. No information was available on two. Not a single resident FWE was deemed to be ineffective although in some cases the clinic work was considered to be better than the community work. Three communities were served by an FWE who lived elsewhere. None were considered effective. Thus at least fourteen of the 21 communities (67 percent) were receiving effective service from an FWE. The comparison between this cadre and the others is striking and as Table 2 illustrates, FWEs are reaching more villagers than any other cadre. There are complaints that they tend to work more with wealthier villagers and there is the occasional accusation (never proved or disproved) that some FWEs are selling rather than distributing donated food. Yet what is especially impressive about FWEs is that their community service

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4. Kingshotte:
It is obvious that the CD and the ACDDs have not changed. They still do not know what they are meant to do nor how to do it and if ADs are less effective than they should be (and, more important, could be) the performance of ACDOs, as revealed particularly in Table 1, is disastrous and an absolute waste of public monies; this should be said and repeated. While in Botswana I tried with the greatest of tact to help them re-define their role and even drafted Job Descriptions to replace the amorphous jelly of good intentions which were officially their guide. This was not part of my remit but their power to interfere, their desire to undertake agricultural and other tasks for which they lacked training and guidance and their better salary scale, housing and transport (all quite unjustified) were all potentially dangerous for the effectiveness and morale of the ADs.

often goes beyond their clinic and community health duties. It was common to find the FWE playing an active role in community organisations, essentially performing the role of an ACDO. In at least seven of the 21 villages they have started community organisations and/or take an active part in community affairs.

Although the indicators are admittedly quite crude, the FWE cadre appears to be the most effective development cadre. It is worth considering what factors may make them effective. They are, first of all, residents of the community in which they work. They are selected by and returned to that community. As members of the community, they are more likely to feel accountable to the community and to respond to its needs. In this light a proposal to begin transfering FWEs seems a sure formula for disaster. Second, they have a very specific job description and are responsible for a limited geographical area so their energies are focused.

2.4 Village Extension Teams

The Village Extension Team (VET) is intended to coordinate the efforts of all extension workers in the village. It should prevent duplication of effort and allow projects which require the combined skills of different workers to be undertaken. An immediately striking fact in Table 1 is that there is only one active VET in the 21 villages. Two additional VETs have been newly formed but are floundering in confusion. Botswana researchers found that few extension workers had a clear understanding, if any, of what a VET was.

The sole functioning VET provides an example of what cooperation among extension staff and community members can accomplish. Its Action Committee initiated the establishment of a Youth Training and Community Centre and helped the community obtain funds for it. This is not to say that VET is not without its problems. It has experienced tension with some VDC members who feel that the VET members act as educated elitists. Indeed, there is a real danger that a VET composed of people who are better educated and who have better Government contacts than the average villager may undertake projects without adequate involvement of the villagers.

The potential for imaginative and effective development development efforts by a VET is large. But their absence from most villages indicates the difficulties of coordination and cooperation among extension cadres. It is ironic that the very extension workers who criticize villagers for their inability to cooperate are themselves unable to cooperate.[5]

3. Factors Which Reduce Extension Worker Effectiveness

The factors which reduce the effectiveness of extension workers fall into five general categories: inadequate numbers and continuity of personnel, inadequate pre-service training, inappropriate extension areas, inadequate field support, and inadequate communication and cooperation. Again, it must be emphasized that the content of extension programmes, not discussed here, is obviously a critical factor.

3.1 Inadequate Numbers

The Department of Agricultural Field Services has an establishment of 230 Agricultural Demonstrators but only 179 are in post, a vacancy rate of 22 percent. In some Districts the AD vacancy rate is as high as 54 percent.

Four factors contribute to this problem.

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5. Kingshotte:
On Village Extension Teams I think it is insufficiently stressed that it is the Village Development Committees (VDCs) which are really important and the various extension cadres can best co-ordinate their efforts and promote the VDCs by each helping - but not overtly directing - the VDCs to the best of their ability. Coordination is a popular buzz word but - contrary to the apparent views of many - it is not an end in itself. Areas where coordination will definitely produce greater results than independent activities must be carefully selected. Coordination has costs which may be high (time, particularly) and if it leads to the VCDO or FWE giving wrong advice on the control of nematodes or the AD counselling on the treatment of scarlet fever, may be counter-productive. In particular Civil Service hierarchies work against it at most levels: the ACDO may be chairman of the local VET, but cannot give orders to nor call to account the VA, AD or FWE. The coordinator without power is usually ineffective. It must, however, be recognised that there have been examples in Botswana where a nationwide programme with specific goals has successfully involved many agencies in a coordinated campaign, eg. TGLP consultation.

The first is the low output of training institutions. Until 1981, the Botswana Agricultural College (BAC) only produced an average of 30 ADs per year, not all of whom were assigned to field positions. Only some 25 ACDOs and CDOs are produced yearly.

A second factor in the case of ADs is increasing pressure from the Western Districts for agricultural extension services. This increases the total number of posts to be filled and decreases the likelihood that the vacancy rate in the east will be substantially alleviated.

A third factor is the drop-out rate of extension workers. The Department of Agricultural Field Services, for example, loses officers to other government departments and private industry. This appears to be the result of poor working conditions such as lack of housing and transport, low salaries and lack of advancement.[6]

A final factor is the increasing budgetary constraints experienced by the Government of Botswana.

3.2 Inadequate Pre-Service Training.

A chance to improve the extension workers exists from the moment they are recruited and enter training.

Most FWEs (all but 11+ out of 400+, or 97 percent) are women.

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6. Kingshotte:

Government made a major mistake in, I think, 1977 when they introduced standard and abbreviated salary scales. An Extension Service necessarily is a broad-based pyramid with limited opportunities for promotion and many excellent ADs would make poor supervisors. A long to very long salary scale, albeit with efficiency bars, is essential.

Some men have been recruited because men feel more comfortable talking to a man about health problems. There is no information as to how comfortable women feel with male FWEs. Of the ACDO and the CDO cadres for which the information is available, 58 percent are women and 42 percent are men.

Out of a total of 147 ADs in post as of November 12, 1981 only 13 (9 percent) were women. Experience in other African countries has shown that female agricultural extension agents are better able to work with women (some 30 percent of rural households are female-headed) than are male extension agents and that they have no trouble working with male farmers. Female extension agents have the further advantage of rarely having drinking problems, a complaint which is not uncommon among male extension workers. (Women do get pregnant, but are actually prevented from working for only a very short period of time as opposed to the alcoholic who is more or less continuously disabled.)

The imbalance in the agricultural extension service is in large part a result of discriminatory recruitment. It has been observed by Faculty that many women in the Botswana Agricultural College (BAC) in the Agricultural Certificate course are far better students than the men. Indeed, some faculties have observed that women are being turned down who are much better qualified than the men who are accepted. The reason for this is that there is not enough dormitory space for women. When the quality of a crucial extension cadre is at stake, it is difficult to understand why the very best candidates are not recruited. If merit-based recruitment results in more women than there is dormitory space, a men's dormitory should be converted to a women's dormitory.

Although students are exhorted to work together in the field, they are never brought together in a single classroom (or a series of classrooms) when they are all together in the confines of BAC. Thus, students are never given the opportunity to practice cooperation or coordinated planning. If separatism rather than coordination is the practice at this minimal (and logistically optimal) level, separatism cannot help but be the practice in the field.

There are overlaps in courses at BAC offering an opportunity for training students in different curricula together. Both ADs and Veterinary Assistants (VAs) received training (although not identical) in engineering, animal production, anatomy and physiology of livestock, animal nutrition, genetics and animal breeding, range management and animal diseases. ACDOs receive instruction in marketing, making vegetable gardens, small orchards, poultry keeping and keeping small animals in addition to their more "social science" curriculum. All three courses include classes in extension and communication. ACDO and FWE training overlap in the following areas: nutrition, family planning (a major task of the FWEs), communicable diseases, immunization.

The major emphasis in BAC training is on technical skills. But an extension worker who knows only technical points is of less use to a village than one who also understands adult learning, can mobilize groups and who knows where to ask for technical advice.

The Ministries and District offices are filled with technical experts who could and should backstop field personnel. With technical expertise on tap, more emphasis can be placed on training extension workers in how to utilize technical information in group development, how to work with adult learners and how to mobilize community resources. This requires an alteration in approach from only training students as technicians to training them as change agents and facilitators as well.

3.3 Inappropriate Extension Areas

The size of an extension area can be measured by three criteria: physical area, number of villages to be covered and/or by the number of households to be covered. By each standard the average extension worker is faced with a daunting task.

The size of extension areas varied greatly by district. Using rough estimations, on average, an AD must cover an area which is 26 by 16 kilometres in Kgatleng District, and 10 by 16 kilometres in North East District. On a bicycle in bush conditions, a person in average health can cover between 6 and 9.6 kilometres in an hour. Thus it could take five hours in North East District for

an average AD just to go across the extension area and return on a bicycle, and even longer under adverse environmental conditions.

ACDOs have an even worse time. The same figures for an ACDO average are 51 by 23 kilometres (ten to seventeen hours for a round trip) in North East District. The effect of such large areas is that either the extension worker must spend nights out (as some do) or they simply do not cover their territory.

With the exception of FWEs the average extension worker must cover a number of villages. Generally FWEs are responsible for one village. ADs are responsible for an average of, from 1.4 to 3.5 villages. ACDOs are responsible for an average of, from 2 to 4.5 villages. If the ACDO were to do nothing but attend a monthly meeting of the VET and of the VDC (supposing such things actually occurred) for each village in the average extension area, this would take up between four and nine days out of a twenty-two day working month. It is not surprising that ACDOs are perceived as not doing an adequate job of supporting these organizations, the physical task of travelling about to offer minimal support is staggering.

The effect of the vacancy rate described above is to alter the apparently favourable AD to village ratio. When the vacancy rate is taken into consideration, the average AD is responsible for, from 2 to 4.4 villages. Thus the area which an AD must cover is much larger than it would appear at first glance. This in fact makes the AD's task far more difficult than that of the ACDO, since many ADs must cover scattered farming areas and not just the central villages.

Members of different cadres do not always live in the same place and their extension areas may be different. This makes coordination difficult. If a meeting of the VET is to be scheduled, it is clearly easier to do if all members live in one place. But as Table 1 shows,

a full team of potential VET members was resident in only 28 percent of the villages. It is unlikely that there will be a full complement of extension personnel for every village in the near future. The next best alternative would be to have the same extension areas for all cadres. If an AD and an ACDO cover the same set of villages, they can coordinate their schedules. As it is, one ACDO may work with four ADs. The effort involved in chasing after such people may well be the major factor in explaining why the VET is a very rare organization.

3.4 Inadequate Field Support

Inadequate support for extension workers can have adverse consequences. It can demoralize workers, leading them to cease trying or to quit. It can reduce their effectiveness either by making their work more difficult or by diverting their attention elsewhere. Three key areas of support are: housing, transport and supervision, and rewards and incentives.

Adequate housing is a major problem facing extension workers. The DETs expressed very strong feelings on this issue noting that the problem has been well known for a very long time. Three basic issues were raised by the DETs: the right to housing, quality, and standardization. They recommended that Government programmes should ensure that suitable accommodation is provided before an extension worker is posted to an area. This is a particular problem in the Western Districts (Kgalagadi, Ghanzi and Ngamiland) where four workers have been unable to take up their posts due to lack of housing. In the Eastern Districts it is often possible to find suitable private accommodation. This is rarely if ever the case in the Western Districts.

The quality of housing is also an issue particularly for ADs. AD housing was frequently referred to as "Tin Trunks". Lack of toilets is also a complaint. One AD waited for months while the village squabbled over who should repair the roof which had blown off his house. Extension workers who are struggling to get their roof repaired are unlikely to be giving full attention to their work.

The disparity between Central Government housing and houses provided by District Councils was also commented on. While ADs alternately swelter and freeze in their little "tin trunks", ACDOs enjoy the comparative comfort of a Council Stage III house even though both cadres were trained for the same length of time at the same institution.

Lack of transport compounds the effect of long distances hindering the effectiveness of extension workers. After two years an AD is eligible for a Government motor vehicle subsidy loan with which to buy a motorbike. Until then an AD must use personal funds for transport which in effect means using public transport, buying a bicycle or walking.

Public transport is not available on a regular basis in the Western Districts. Nor is it a practical option for extension workers who must travel among widely scattered homesteads and lands areas rather than simply from village to village. Bicycles are not practical where roads are sandy or muddy, where there are dangerous wild animals, or where distances are great.

Motorbikes have been recommended. The problem with motorbikes is that ACDOs and FWEs are not eligible for the Motorbike Advance Scheme. In the Departments which have a Motorbike Advance Scheme, the lack of training facilities for motorbike riding (a motorbike driving licence is a requirement for the loan) prevents most extension workers from taking advantage of this opportunity.

Information on the number of supervisory visits extension staff in seven sample villages received during a three month observation period in 1982 is presented in Table 3.

Table 3

Number of Supervisory Visits to Extension Staff
During a Twelve Week Observation Period 1982

Number of Visits to:

Village	AD	ACDO	FWE
1	None	1	None
2	-	Don't Know[a]	Weekly Visits
3	-	1	None
4	1	Don't Know	1
5	None	None	None
6	1	1	Don't Know
7	None	-	1

a "Don't know" means a supervisor did not accompany the extension worker to the village under study. It does not necessarily mean the worker received no supervision. - No information.

The information was available on only 15 workers as not all extension staff were actually resident in the village. Seven of the fifteen workers (47 percent) received no supervision at all. If the worst is assumed and the "don't knows" are counted as no's, then 56 percent received no supervision in the twelve week period. Since the observation period was during the dry season when travel is easiest, it is probably not too risky to conclude that approximately half the extension staff are not even visited quarterly in the field. For some staff the last visit had been some ten months before.[7]

7. In 1977, Kingshotte recommended: "Every AD should meet the DAO and/or Supervisor District Officer twice in each month. Once at the monthly meeting, the other time when he is visited at his station and his work is inspected, local farmers visited and advice given. . . Visits to AD must not be just for a brief chat and often DAO or Supervisor should plan to spend 1-3 nights with an AD, really getting to know his problems. . ."all too often ADs may go three months without a useful visit and this must be changed.

There are two major factors which affect the quality of supervision extension workers receive. First, most supervisors are over extended.[8] Even with the existing vacancy rate, many District Agricultural Officers (DAOs) must supervise eight or more ADs compared to the recommended five. The second problem is that many supervisors have never received any systematic training in how to supervise.

Kingshotte commented in 1977 that a great deal of valuable time was wasted because Regional Agricultural Officers (RAOs) and DAOs had to spend days of every month on clerical and stores tasks because their staff could not. Five years later the level of executive and clerical support is often still severely lacking. If supervisory staff are to be expected to play a greater role in the field, the often scandalous quality of clerical and other supporting services must be remedied.

3.5 Communication and Cooperation Among Extension Workers

Communication within and between extension services is often poor, and rivalry rather than cooperation is often the order of the day at the village level. The problems of both information flow and structures retarding communication are considered here.

Sometimes in the midst of the excitement of policy formulation, district (and more often national) staff forget that ultimately it is in rural areas where things happen. The staff of some programmes have an almost countrywide reputation for pulling into a meeting in

8. Kingshotte:
A basic concept was that in all but the smallest District the HQ team should be DAO and Supervisor and that they would share field supervision. Even if there were 16 ADs in a District, in 8 working days each could be visited for a full day by DAO or AS. This is surely not onerous and I conclude that there are failures of management and direction.

their landrovers and speeding off the instant their presentation is done.

The present style of communication is top down. Speeches and pronouncements predominate. It is not at all clear whether these techniques succeed in imparting information to others. It is quite clear that they do not succeed in gathering information from others. All DETs recommended that national and district staff should (or should try to) spend more time eliciting information and opinions from lower level workers.

Over time a fair amount of information has been produced and lost. Although opinions differ, it appears that at one time maps were made of ADs extension areas. These can be found in only a few places. None appear in the offices at headquarters. Similarly, ADs' monthly reports are diligently sent to Ministry of Agriculture headquarters where mysterious things are done to them in the registry. A concerted search in 1980 resulted in the unearthing of precisely three reports. Likewise, information on ACDO postings for this report was available only in individual District offices, not in the Ministry of Local Government and Lands Social and Community Development Division.

These information gaps and losses are wasteful in several ways. First, it is a waste of time for workers to fill in forms which are promptly lost. Second, decisions made in the absence of field information are not always the best. And finally, lost information sometimes requires duplication of effort as anyone who has read volumes of government correspondence knows.

Yet another problem is the lack of follow-up. Guidelines are sent down, seminars are held and then the process stops. Further, communication within and among the Districts as well as between the Districts and the Central Government level, is a complex and difficult process. If different sources of communication provide inconsistent interpretations of the policies and programmes, over time, implementors will find it even more difficult to carry out the intentions of the policy. The major source of such an understanding is communications from village level extension workers and villages

themselves.

The lack of cooperation at the village level has its roots at higher levels. In a 1980 workshop on the VET in North East District, the participants asked "When has the DET as a team visited our village recently?" One could stick a pin into a map of Botswana at random and say, with 99 percent accuracy "never". There is relatively little coordination at all levels of Government outside of the committee room. It is difficult to imagine officials from different Ministries arriving at the same event in the same vehicle, no matter how distant it is. Indeed, on occasion officers from the same Government office express surprise on finding their colleagues in the same village for the same meeting. It is hardly surprising that village level efforts are not coordinated when efforts at the district, regional and national levels are similarly uncoordinated.

One apparent cause of conflict at the village level is overlapping job descriptions. One line on the ADs' annual work plan reads "VDC, Kgatla, Community Work", something which is clearly similar to the major duty of the ACDO. In one village, the ACDO has begun a demonstration vegetable garden, clearly a project which the AD might be expected to undertake. The FWE in a number of villages is the major driving force behind many villages development efforts and holds offices in organizations the ACDO should be guiding. Animal Health Certificate students once complained bitterly (whether accurately or not is unclear) that Radio Botswana had broadcast the advice to "see your AD if you have problems with your cattle". No one, they complained, could imagine an announcement to the effect that you should "see your VA if you were having trouble with your cabbages."[9]

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9. Kingshotte:

The advice from Radio Botswana was correct. There are more village-based ADs than VAs and ADs have prime responsibility for animal husbandry. If the farmer goes first to the AD the latter should call the VA if there is an animal disease or sickness outside his competence. The job descriptions of ADs and VAs made the basis clear. Conflict primarily arises from the ill-defined role of CD staff, empire-building and poor management.

Part of the ACDOs job is "organizing. . . all village organizations", but it is the FWE with other clinic staff who undertakes to organize village health committees and it is the head teacher and other teaching staff who generally are involved in the PTA.

DETs, however, were of the opinion that overlap was actually a positive thing. Such overlap, they argued, was a bsis for cooperation and necessary given shortages of extension staff. Conflict, they said, arose from attempts to impress supervisors.

3.6 Absence of Local Participation

The National Development Plan V states that the Government is committed to the delegation of greater responsibility of development planning and implementation to the local authorities. The question of local participation in the development process has been central to the Government's decentralization policy and the consequent establishment of the District Extension Teams as a consultation machinery.

If communities are to have increased responsibility for their own development then they must also control the necessary resources. Included in these resources are extension workers. At present communities have neither means to reward good workers nor to rid themselves of bad ones. They have no way of ensuring that extension workers address the problems of major concern to the community or even that they work at all. It is, after all, the community which is in the best position to judge the dedication and effectiveness. It would be a positive step to make extension workers primarily accountable to the local population rather than to the Government. [10]

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10. Kingshotte:

The system adopted by AFS was designed to increase local participation in planning and management and the planning forms showed the emphasis placed on village and group activities. This is vastly more important than District Extension Teams or whatever. Likewise a village will soon inform the authorities if an AD is a drunken layabout. I found DAOs always had good knowledge of the limitations of their staff. However, even where they were willing to take disciplinary action they were often not supported by their supervisors.

If communities are to be given such responsibilities, a concerted effort must be made to help them develop the necessary skills to be effective. One part of this is providing information in a usable form. It is often forgotten that simply translating something into Setswana does not guarantee that it will be intelligible to a rural resident. A related problem is the approach which extension workers use with villagers. Traditional leaders and other villagers may feel threatened by extension workers and may be loathe to cooperate with them.

It has been noted that FWEs who are posted to their home village are often the most active extension workers in local organizations. Posting to home village has a number of potential advantages. The need for orientation is reduced as the worker already knows the community and they know her/him. The community may be more willing to participate freely with someone whom they know. The worker's ties to the community should also subject him/her to community social control possibly reducing undesirable behavious. The worker should have a commitment to his/her own community which should provide a motivation to do good work. Finally, posting to one's home may provide a solution to the housing problem.

Agricultural Administration Unit

Overseas Development Institute
10-11 Percy Street London W1P 0JB
Telephone: 01-580 7683

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AGRICULTURAL DEVELOPMENT AND PLANNING IN A SOUTH PACIFIC ISLAND

by

Marcel Zollinger

1. INTRODUCTION

Planning is often treated in a derogatory sense with an image of 'theorists' sitting in an ivory tower, totally removed from reality. My understanding of planning is more akin to "thinking", and it may make it a more acceptable concept that there should be some thinking before the doing. In fact, when projects that have gone wrong are analysed, (which should happen more frequently), it is often found that the technical aspects were sound, but the "thinking" aspects were faulty.

I have been privileged to work in two of the very few genuinely democratic Third World countries, Botswana and Papua New Guinea, and while I am not at all sure that democracy is the best form of government in developing countries, such a system presents some special challenges to development work. In such a democratic framework, it is less acceptable for government to impose development from above, but rather it is village people that have to make decisions of what should (or should not) happen. And since many development projects in the end depend on the active co-operation of small-holders, village people and landowners, it is obviously better anyway to involve them from the start and set up a development programme that they can identify with, rather than impose development from outside, and then have difficulties later on with the people involved.

My experience in Papua New Guinea, over a four-year period, covered a complete development process from goal definition to project completion.

2. THE BACKGROUND SETTING OF MANUS PROVINCE

Papua New Guinea basically consists of four distinct regions, the Papuan south coast, the New Guinea north coast, the inland Highlands, and an arc of islands. These form a continuous chain starting from New Caledonia in the south and end with Manus Island in the North. Manus main island is about 80 km long and 30 km wide, but the province includes several hundred smaller islands that are spread over a distance of more than 300 kms. Its population is scattered across these islands, the 25,000 people live in 150 villages, which often number only between one hundred to two hundred people. The tropical lowland climate and the nearness of the sea give the people most of what they need, and while subsistence is often used as a derogatory term, in Manus the term "subsistence affluence" is quite applicable.

3. THE APPROACH TO PLANNING IN MANUS ISLAND PROVINCE

The guidelines set by Manus Province for the project were that the Plan should reflect the genuine aspirations and detailed views of all Manus people; be set in the framework of the social and cultural situation as well as the technical considerations of resources and economic reality; include the whole Province, cover all aspects of Government involvement and be integrated with the Provincial Administration.

These ambitious guidelines could not be fulfilled by the approach used in other Provinces. In order to cover all aspects of Government services, a much larger team was needed, and in order to carry out adequate consultations a longer timespan was necessary. In order to integrate with Government, the Planner was to work within his government division, and in order to carry out consultations with village people, he would have to have both the time and the interest to do this. Financially this would have been very costly. Such a request could only be resolved with a less experienced, less qualified, but probably more committed person. The Canadian Volunteer organisation CUSO became a partner in the Planning project and offered to recruit former volunteers, at a salary set at the local pay rate rather than the expatriate scale, which is almost double.

Thus the Planning Team consisted of six planners, covering Transport and Land, Commerce, Agriculture, Economy and Finance, Education and Sociology, while Health was covered by the already present expatriate doctor. Each planner was positioned as counterpart to the Assistant Secretary and worked with him in the respective Division. This way he was able to become familiar with all levels of staff and their tasks, achievements and problems. The leadership of the Team was provided by a "Steering Committee", with the Provincial Secretary as chairman, and planners and Assistant Secretaries as members. The planning project was to be completed in 18 months, when the Team would present an integrated development plan with project description and funding requirements.

The planning period was broken up into several phases:

A. Inventory of human and natural resources and compiling of statistics and information.

B. Extensive consultation with politicians, civil servants, traditional leaders and village people.

C. Discussion of major issues and formulation of provincial objectives, goals and policies.

D. Presentation of a Situation Report and the formulation of specific policies.

E. Detailed description of work programmes and project design.

F. Staffing and financial requirements for implementation.

G. Outline of both a monitoring system for the implementation and a feedback mechanism.

Most projects elsewhere in developing countries limit their emphasis to E and F, generally the technical design of a project, and its financial requirements. A well-written project may also cover aspects of A and D, ie. give some background, and may even touch on G, the evaluation, but rarely does a development project cover B and C. Yet in the context of our task for Manus Provincial Government, it was these areas that we were asked to concentrate on, and treat the actual Plan as a logical consequence of these. As a result, most of one year was spent on the topics A, B and C, and while this could have been considered a waste of time, the subsequent writing of the development plan logically grew from this foundation and it gave the Planners the solid background with which to substantiate the choice of type, scale and scope of their recommended projects. If Manus was different from other planning projects, it was principally so in these areas and this therefore merits a bit more elaboration.

4. INTEGRATED DEVELOPMENT WITHIN THE SOCIAL/CULTURAL FRAMEWORK

Manus Province presented itself in many ways as an atypical situation. The impact of the second world war gave the biggest incentive to the development of self-government, and put additional emphasis on health and education. Manus still leads the country in these aspects, with universal primary school education, and over 40% of primary school leavers admitted to secondary school. In health, few people have to walk more than 30 minutes to reach basic health care, and rural clinics, doctors and health staff per capita are highest in the country. Unfortunately, these also have been the cause of some detrimental developments. Emphasis on social services was to a large extent at the expense of investment in economic development, with the result that it has generated a "welfare state" without the means to pay for it. The other problem it caused for Manus was the

"braindrain". The high level of education combined with a lack of local employment opportunities meant that young people were forced to leave their Province, not as cheap migrant labour, but as a high quality human resource, that today makes a considerable contribution to the leadership of the country in civil service and private industry. But, unlike elsewhere, Manus culture has been able to keep their young strongly tied to their roots, with the result that they send back a considerable part of their earnings. In fact, remittances represent about four times the total earnings from cash crop agriculture.

The effects of such a situation are quite surprising. Although Manus has limited resources, the existing ones were hardly used. About half the cocoa was harvested, less than a quarter of the coconut plantations were used, and only 5% of the rubber trees were tapped. No use was made of either the forest or the marine resources beyond subsistence. Thus clearly the "welfare state" situation allowed a reasonable level of living with minimal effort. Government compounded this, as over 90% of the Provincial Budget came from National Government funds, and was largely spent on Health, Education and the Civil Service. Thus, it became quickly obvious to the Planners that such an imbalance had to be corrected. This could have been done more easily in a country with strong centralised decision-making. Here we had the task of writing a Plan based on genuine grassroots opinion, rather than on our own views.

When asked, village people felt strongest regarding further improvements to health and education, but had very little inclination to become more active economically. When economic development was discussed, it was always Government that had to do everything. Yet this model had clearly failed, as the example of Australian agriculturalists planting smallholder rubber blocks that have never been used, demonstrates. From such a contradictory situation the most difficult part of the work became the formulation of objectives and goals. As planners we knew the direction the Province should take, but to impose our own view would have been contrary to our terms of reference. So who were we to ask, and how does one ask in order to get a valid response? The various segments of the population were all consulted but very soon the limitations became apparent:

- Discussions on a casual basis with ordinary village people gave many valuable insights, but were limited because of their obvious lack of education and their narrowness of horizon.

- In formal meetings with village people, it was automatically their spokesman that took the floor, and their speeches reflected far more often the speaker's own political/social ambitions than an honest expression of genuine needs of their community for the planner's benefit.

- The modern young educated segment of the population had often been in the cities, and either presented their claim to leadership against the older leaders, or insisted on radical solutions that were rarely thought through nor acceptable to the traditional village leaders.

- The obvious political representatives were the elected members of the Provincial Government. They basically were the people appointed by their electorate to formulate policy and make decisions. But due to the newness of the system, their lack of education and misconceptions of what their task was, they were never willing to give an opinion on any major topic.

- The civil servants had the experience and the education, but many grew up under the colonial administration, and were never able to adjust mentally to Independence. They were more concerned with maintaining the status quo than taking on new and bolder ideas.

The Planning Team learned over time to filter out certain opinions, to read between the lines and to synthesise a lot of fragments into a coherent structure. And once general goals and objectives were formulated, the biggest hurdle was taken, and projects could be designed that were consistent with these objectives. One other aspect of the planning task needs mention. Manus Province was not an under-priviledged society, at least in social service parameters. Because of its smallness and remoteness it has little bargaining power, and since its population is only 10% of any other province, it was clear that financial inputs could be limited. Thus despite promises of generous funding, we planned from the start for the possility of receiving little. This meant much more emphasis on education at every level. It also resulted in a separation between what we called "Programme" and "Project". By our definition a Programme was an outline of a workplan based on staff and resources present. A Project then was a specific subset of the programme that needed financial inputs. Thus a programme could be carried out independently of the money available, and financial inputs would only alter the timing, speed and depth of the programme. This cautious approach was in the end more than justified.

5. OVERVIEW OF AGRICULTURAL DEVELOPMENT IN THE PLAN

The main considerations at the planning stage were thus, that:

- the remoteness and smallness of the Province presented considerable constraints

- in the past little emphasis had been given to economic development

- there was little incentive to make a bigger effort in all economic activities

- finances were likely to be limited

- the opinion of the population had to have a major influence on the formulation of the plan.

In agriculture it was a very difficult task to envisage programmes in which village people would participate, and there was a temptation to come up with projects that could be undertaken outside their involvement. Not only would this have violated the terms of reference, but it was also impossible because of the land ownership pattern, where the clans control all land, and where land has such a central cultural value, that land sales or leases are impossible. This meant accepting a 'smallholder approach', that took into consideration the village value system and its constraints such as transport, labour or land-ownership.

Top priority in agricultural development had to go to an unlikely field, subsistence food production. The team assessed that over 80% of each family's needs are met from their own gardens and forests. Subsistence production was the core of the economy, and thus the Plan had to strengthen subsistence, rather than to replace it with specialisation and a cash economy. As this agricultural activity obviously takes place in every village, the practical solution for improvements was very difficult. A two-pronged approach was taken. Effort was directed both towards the supply of better cultivars for all generally grown crops, and fruit and nut tree seedlings; and simultaneously towards extension education. It was considered that better cultivars and improved methods could increase the output and decrease the effort enough to maintain the viability of the system that literally still feeds the population.

Associated with food production is livestock. Due to remoteness, export of produce is not viable, and the cash-economy consumer base is very narrow. Thus the goal had to be self-sufficiency in meat and eggs for the urban population, and to increase the production of meat and poultry in the subsistence sector. It was estimated that a provincial herd of about 400 head could satisfy market demand. The major task here was to set up a small slaughter facility. For poultry several small urban broiler and layer projects were adequate to satisfy demand, but the subsequent dumping of Australian eggs caused a serious setback. Making available eight week old Australorp dual-purpose chickens was considered the best way to improve the productivity of village chickens.

Pigs are always associated with Papua New Guinea, but this refers more to the Highlands than to Manus. Intensification of pig production is very difficult, as homegrown feed is extremely labour-intensive, while purchased pigfeed is uneconomical due to high transport costs. On the other hand, one or two pigs can be raised by each family with minimal extra cost or effort. In order to increase output, a slightly subsidised government project provided for an increased number of reasonably priced quality weaning piglets. Surplus pigs could then be channelled through the slaughter house into the town market, but for the near future, prices to be paid in the traditional system would be far in excess of the pig's worth in meat.

While strengthening the subsistence sector, modern life has also brought increasing needs for cash. But few Manusians at present are willing to put all their effort into the generation of cash, with which they would then purchase food from stores. Cash income had to be seen to supplement subsistence, and the relative input of resources of land and labour by village people is distributed accordingly. Nevertheless cash needs are increasing, for radios, school fees, out-board motors and fuel. Thus the Plan had to provide for the opportunity to earn cash . Yet it always had to be kept in mind that remittances formed an alternative income source at a much lower level of effort.

For the three cash crops copra, cocoa and rubber, some of the same principles apply. There is a whole set of disincentives within and without that make cash crop production very unrewarding: This includes a very low return for labour input; substantial fluctuation of prices; a high cost of marketing; the demands of processing and quality; the lack of available labour and difficulties in management, organisation and scale. If the resources were not used, it made little sense to plan for the planting of more cash crops. Under the present problematic marketing structure and the world cash crop pricing system, an expansion is anyway not an easily defendable position. The answer thus had to be found through a comprehensive analysis of the disincentives, and the formulation of a plan to remove, or at least to reduce them. Manus Province produces about 1500 Tonnes of copra, mostly on outlying islands, and transport costs have in the past eaten up as much as 50% of the sales income. To remove this disincentive, one of the major projects was the purchase of a 20 metre cargo ship that could regularly serve all outlying islands and coastal points, and among many other tasks, purchase copra. Due to land disputes and management conflicts, many copra plantations have been abandoned after takeover from foreign owners. Only a patient sorting out of problems can bring them slowly back into production again. A project run by a Canadian volunteer couple was set up to teach management on one plantation, and this is now being expanded to bring in two more plantations per year. Such work is hardly agricultural, but is a basic prerequisite to increasing output.

Cocoa production has been set back by the need to ferment and dry cocoa beans in the village. Traditional social constraints make the formation of producer groups or co-operatives impossible, and therefore the production unit had to be very small. This called for the design of a fermentary system suited to the production level of one family. The other limiting factor was the very restrictive regulations and licensing rules by a marketing board who wanted to ensure a high quality product. It was our task to prove that high quality cocoa could be produced on a small scale, and over time we were able to reduce or circumvent some regulations. Since then production has tripled.

Lastly, rubber was the biggest problem. Some fifteen years ago, well-meaning extension officers persuaded villagers to plant rubber blocks. After independence, the pressure was removed and only one of 150 owners continued to produce rubber! The model of a village work group was never acceptable, and processing by individuals was so difficult that few tried. We therefore had to change the system, and were fortunate to have a TSR rubber factory in a nearby Province, so that a system of cuplump rubber could be introduced. This proved acceptable, but overheads were so high and the 'farm-gate' price low, that production incentive was limited. It was however the only option.

Fisheries and Forestry also came under my control. Here development was largely outside the control of the Province, and it took much hard work to convince National Government that the co-operation of Provincial Government and the village people should be a prerequisite to any successful project.

In Forestry the response by National Government was very favourable, and this helped set up a new and different approach. In the past frequent visits by timber company representatives had been full of promises, but very short on technical and financial information. Such companies always seemed to be in the business of building roads, schools, hospitals and wharves, while on the side they might be cutting a few trees down. The Provincial Plan was able to turn the process around, so that we asked interested companies to tender for a management contract under a nationally controlled company, obviously with adequate financial incentives for them. Other aspects of the project were a 25% shareholding minority by landowners to give them at least one director's position, and a reforestation component that was part of the production costs with money set aside beforehand.

In Fisheries, on the other hand, the Nationall Government continued to be reluctant to work together with the Province. On the smaller scale, the province was successful by building a Coastal Fisheries Station that worked well. It was based on the premise that the fishermen are quite capable of catching fish, but what they could not do was to market them. Thus the project was not a fishing project, but a fish marketing project. A small boat with a

two tonne freezer capacity would go for five days to a village, where the whole population would catch fish and sell directly. The following week the boat would go to a different area, on request by village leaders. This system enabled people to carry on their normal lives, and due to the low intensity of catch the reef was protected from over fishing.

On a larger scale, the sea north of Manus is a major Tuna catch area, and for some eight years discussions have been going on regarding the construction of a fish cannery. Promises to build such a cannery allowed a foreign company access to the fish, while stalling the project was a convenient way not to commit any finances.

6. IMPLEMENTATION OF THE PLAN AND EVALUATION OF THE EXPERIENCE

As many of the programmes did not require extra financial inputs, they could be implemented immediately. Then, as the Provincial budget was prepared, all available money was used for funding further projects. If and when extra plan funding becomes available, it will be used to accelerate a process that has already been well established. As things turned out, it became apparent that the amount of funding promised would not materialise. This was a disappointment for the few people who saw the Plan Project simply as another means of extracting money from National Government. Luckily, results were not only measured in terms of money received.

One of the main benefits of the Plan was to give direction. Before, all the branches of Government kept moving for motion's sake, and the budget was spent so that there would be no money left at the end of the year. Now staff at all levels know where they are going. In addition, they participated in the decision-making process defining that direction.

Another benefit has been a general change of attitude from the earlier mentality of dependency to one of increased self reliance. This came from a shift of emphasis from pulling in outside resources to making better use of resources already present. This applied as much to more efficient use of particular government officer's skills and time, as it did to a wiser and more result-orientated allocation of Government finances.

The Plan Project also helped to improve the relationship between Government and village people. In the colonial period, a level of antagonism was to be expected, but it was unfortunate that after independence this relationship did not seem to change. Even now it is largely an "us versus them" situation, in an atmosphere of distrust and suspicion. The widespread consultation for the Plan had the effect of changing this situation. And once the process of implementation was under way village people became aware that the old situation was being replaced by a spirit of working together.

As a conclusion it might be interesting to look at some of the lessons learned from the problems and failures that were obviously part of the provincial Plan Project:

i) The value of Money

Our experience showed clearly that much can be done without massive financial inputs. In development it is always easy to throw money at a problem, and when the problem does not go away, to follow it with more money. In Manus we found that with a different approach, results could be achieved without large extra financial inputs. Better management, improved efficiency and a more reponsive leadership can make a civil service more result-orientated, and tangible achievements in turn help to generate a new attitude towards their work. Moreover with a longer-term development programme funds could be allocated more efficiently. The 'Programmes' have been far more important than the 'Projects'.

ii) Grass Root Planning

Since it is ultimately the people that are both contributors to development and beneficiaries of the process; the active co-operation and participation of village people is ultimately a deciding factor in the success or failure of a development project. Except maybe in the case of some capital-intensive projects, the implementation of the Plan could not have been successful without this co-operation. This said, it was difficult to decide who 'the people' were. Coming as foreigners into a different culture made it hard to determine exactly what local people perceived their needs to be. It is clear that much has still to be learned as to how to tap local opinion most efficiently.

iii) Generalist - Specialist

The Planning Team was to consist of a specialist in every field, in order to give the best knowledge of all areas. This was achieved by employing seven planners, but there was a considerable cost. The seven had vastly different opinions on almost any subject, and thus consensus among the team was rare. Because of this, our Steering Committee Meetings became less and less frequent. Towards the end, when only one plan was to be written, synthesising the seven opinions, the task became impossible. This raises a number of questions regarding the utility of specialists as opposed to 'generalists'. Unfortunately our education system always tries to produce specialists, and yet especially on the provincial level and in planning, a planner or senibr officer often must cover areas where he has neither training nor working experience.

iv) Defensive Development

Papua New Guinea is in the unfortunate position of having some of the last untouched natural resources in the world. This causes a problem that is compounded by its geographical situation, sandwiched between Australia in the south and the resource poor industrial countries of East Asia. It is thus not surprising to find the hotels of Papua New Guinea full of businessmen from Korea, Japan, Taiwan, Hong Kong and Singapore. And while it is unfair to generalise, most of them are interested in setting up exploitative natural resource projects such as, forestry, fisheries or plantations. As a result there is no shortage of development proposals. In Manus planners always had to be prepared for the worst, and, as a result, we learned to practice 'defensive development'. Here we were cast in the role of defending local natural resources, and government finance against the wrong type of development. This meant that the Planning Team was open to the accusation of conservativism, in blocking projects that we considered to be against the longer-term interests of local people. One consequence was that we were forced into projects in a 'preventative' way, in order to ensure that the opportunity no longer existed for an undesirable type of project based on the exploitation of local resources.

v) Frame of Reference

Every person and every society must function in its own frame of reference. Village people in Manus are no different. They have their natural resources, their time, their labour and their culture, and with all these they try as best they can to make a living. To do so they have to be shrewd judges of the relative merit of a particular input in relation to all possible alternatives. And they are very aware of the relative output of a specific allocation of one of their resources. The system works, and has done so for a long time. We learned that you can only introduce changes into such a system, if you can show that a new input produces a more desirable or beneficial output. If this can be shown, then very little effort is needed to induce change. But in development, people mostly try to introduce things that make sense only in our own frame of references, while they are detrimental or nonsensical in a villager's view. Thus, for example, an extra input of labour into cash crop production may only be necessary if no alternative earning opportunities exist, because in cash crop production the return per unit effort is consistently low.

We have thus had to design a development plan that was based both on the economic reality of the island, and on the desires and aspirations of its people. If their desires did not always coincide with what we thought was good for them, we had to accept that the people of Manus Province had the right to make wrong decisions and learn from them.

Agricultural Administration Unit

Overseas Development Institute
10-11 Percy Street London W1P 0JB
Telephone: 01-580 7683

AGRICULTURAL ADMINISTRATION NETWORK

NEWSLETTER 13 MARCH 1985

CONTENTS

I DISCUSSION PAPER NO 14

The Training and Visit Extension System:
An Analysis of Operations and Effects

This paper was written by World Bank economists and it is one of the few attempts to quantify benefits from investment in extension, whether T and V based or not, and to compare the importance of publicly-provided direct farmer advice (ie 'extension') to other forms of information acquisition. It would be useful to hear of any work which attempts a similar type of analysis.

The paper analyses several aspects of the operation and effects of the T and V extension system based on evidence from India. Specific questions relate to the supply of, and demand for, extension agents (VEW) visits; the prevalence or absence of farm size bias in VEW visits; seasonal and longer-term variations in the pattern of VEW visits; the relative importance of the VEW as a source of information to farmers; and the crop yields obtained by farmers in relation to their main sources of agricultural advice.

The paper draws the following main conclusions. Most (85%) contact farmers are visited regularly and the majority of non-contact farmers also have some interaction with VEWs, suggesting that the supply of extension services is adequate. Although a statistically siginificant bias in favour of larger farmers is detected in the pattern of VEW visits, the absolute size of this bias is very small. VEWs appear to be more active in the dry season than in the rainy season and this may be attributable to the past tendency of the research system to concentrate on irrigated crop technology. As experience with the T and V system increases contact farmers appear to receive less visits from VEWs but visits to non-contact farmers increase. Overall there is an increase in the absolute number of farmers receiving visits from extension agents. VEWs play a more important role as disseminators of information in areas operating the T and V system than

in areas relying on the older community development system of extension. The role of the VEW also increases in importance the more expensive or costly the recommended cropping practice. Finally, crop yields in farms that rely on the VEW as the main source of information are higher than in farms that rely mainly on other sources of information.

II RESPONSES TO DISCUSSION PAPER NO 13

In this section, I include five items from letters and notes received following my paper on Conditions for Successful Extension Management. I also include a note which I wrote following a visit to India in September as part of a joint University of Reading/Tamil Nadu Agricultural University project on credit for rural development.

T and V in Lesotho

R J G Steele has recently completed five years of work in the Ministry of Agriculture in Lesotho. He is particularly concerned that the proper preparation takes place before T and V (or any extension improvement) is introduced. He writes:

> 'Having been closely involved in the process of introducing T&V in Lesotho, I have some idea of the background difficulties and the temptation to use T&V as a scapegoat for endemic problems. In our case existing weak institutions were the root cause but T&V (in requiring a new degree of commitment to planning and schedules) highlighted deficiencies and thus became rather unpopular. With this in mind, I would like to offer a seventh condition for your list (see Discussion Paper No 13 pp8-9). To some extent it is

designed to meet factors which you may feel belong to the non-specific T&V group of issues, but which I believe are fundamental to the success of any programme. This condition covers the grey area of serious commitment to any new initiative and once commited, the confidence to follow through in the face of new advice and influence.

The management system should be preceded by quite a long period of consultation and education of soon-to-be-affected staff by a team working within the country itself. The pre-project period could be as long as two years and result in a programme drawn up by the target Ministry rather than imposed from outside. The team assisting with the planning would also be in a position to assess just what is possible and what is not, so that the country-specific constraints could be recognised in advance. This feature should, in turn reduce the chances of frightening off staff by asking them to change too quickly.'

Mr Steele then goes on to look once again at my six conditions:

'Your list of conditions brought to mind some points mainly resulting from experience in Lesotho.

1. Yes - a fixed schedule but one geared to reality. This was a mistake we made by filling up the working week on the assumption that five days were available for visits or training. (The agents thought otherwise).

2. Yes, regular meetings. We only have them monthly and a lot of administration is discussed but this does meet a need. See comments on research for means of brightening meetings.

3. Training. Very dependent on research. Early on the lack of reasonable messages was so apparent that ODA funded an agronomist to conduct adaptive research at the district level. See research comment.

4. We believe (agronomist and I anyway) that the extension service should be and could be very much more involved in research. We have tried to use the extension assistants (EAs) to provide suggestions (after all they meet the farmers) and to help conduct trials.
Being an adaptive research programme the trials take place on farmers' fields and so the EA has a recruiting, assisting, and supervisory function. It does not take up a lot of time (ref page 4 of your paper) and gives the EA an active role to play. This job is well within the reach of most EAs given the presence of a trained supervisor to handle trial design, input supply and management. Not all EAs have a trial in their area (such a large programme would not be possible) but they are all taken out on field trips to the trials which are planted in their locality and which are based on problems that they have encountered and reported back upon.

5. The quality of suddenly designated SMSs has been a real problem. We quickly found that they had very little practical or practicable advice to pass on. The EAs, fresh out of college, soon became fed up with the training sessions.

6. The establishment of a unified field service as a precondition for T&V in Lesotho really put the cat among the pigeons. Staff at all levels felt threatened by the change which was very badly implemented and presented as an imposition from outside. Once underway the new chain of command has largely ignored the middle rank Area Extension Officers. This process has not resulted in everyone attending meetings, receiving orders direct and reporting individually.'

Field Services in Mali

Neil Parker has been an adviser to a Rural Development Agency in Mali for the past two years. He has also worked in Sri Lanka and Guyana. His first comment is of a general nature with an interesting prescription for recategorising field services into extension proper and input supply work.

'Like bad teachers, bad extension workers are a menace - not even worthless, they tend to be counterproductive. Yet it is often difficult or impossible to get rid of them, and in any case they can be quite useful in carrying out simple yet important tasks (such as the distribution of inputs).

Can we make the best of a bad job by keeping them on to do the little that they can do, but most importantly, by ensuring that they do not attempt to do what they are bad at? One possible solution is outlined below. It would be interesting to hear if it has been tried anywhere.

Existing (and even potential agricultural agents) would be classified into two categories - those capable of effective extension work and those not. Those capable would carry out extension work as well as the other tasks which they would normally be required to perform and would cover an area which they could handle efficiently. These would be termed 'agricultural development agents'.

Those not capable of carrying out extension would not be allowed to do so - their activities being limited to simpler, more quantifiable, and hence controllable, tasks such as the provision of inputs and the collection of data. They would be termed, perhaps, 'agricultural service agents'. Due to the nature of their work, they would cover a much larger area (and number of farmers) than the development agent.

What then about the provision of agricultural extension services to those farmers covered only by 'service agents'? Well, they would not have any, but at least they would be seen not to have any - surely a more realistic situation than that which tends to exist. They could, however, be provided with an advisory service if one accepts the definition of the latter as providing advice when solicited. This contrasts with an 'extension' service which actively goes out to convert farmers attitidues. This advisory service could be provided by a capable SMS based at a district centre and covering numerous supply agents' areas (as well as backstopping the real development agents). Farmers in need of advice would be asked to travel to the district centre to obtain it.

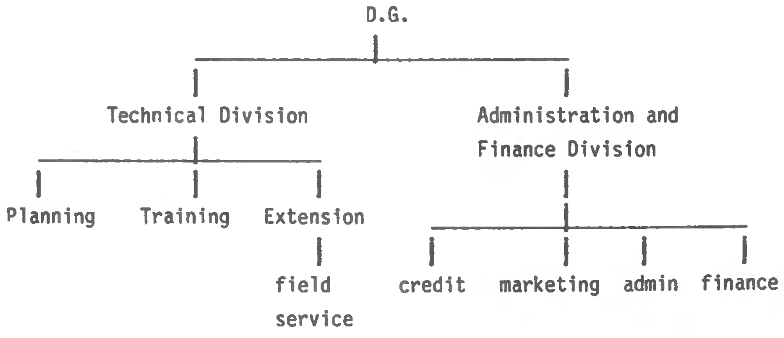
To help reduce opposition and resentment to this categorisation, the official status of all agents would be that of 'service agents'. Those who were found capable would be placed on a parallel incremental salary scale for the period until the next staff evaluation. Significant benefits would accrue to those 'development agents' on this parallel ladder. They would be the only ones to benefit from such incentives as substantial bonuses, promotion possibilities, advanced training and travel. Service agents would still have the possibility of incremental advances within their grade and the possibility of further training sufficient to enable them to be converted to 'development' status.'

Parker then goes on to consider the case of Mali and the issue of 'single line responsibility' for field service agents.

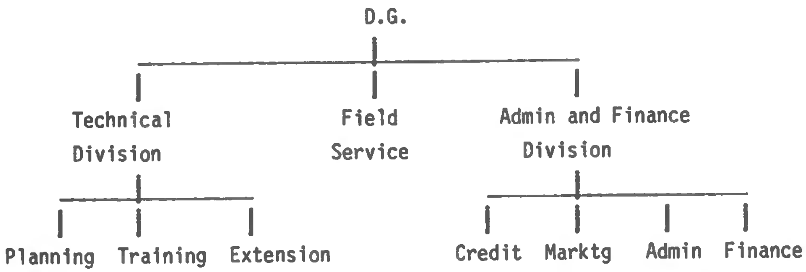
'In the RDA in Mali, a major contributing factor to the difficulty of working in a single line of authority efficiently was the fact that the field service was associated more closely with one of the activities (extension) than with others (data collection and particularly agricultural credit). In fact the field service was called the 'extension' service. Initially, when management was poor across the board, line of

authority problems did not seem to stand out. As improvements were introduced, however, success was achieved considerably faster in such subjects as credit and data collection, while little or no improvement was noted in extension. This is not terribly surprising. The former two subjects are conceptually simpler and more easily quantifiable. They therefore lend themselves to quick improvement.

Improvement in the credit programme required, and in fact caused, a considerable shakeup in the extension service, providing as it did the first real basis for the evaluation of field staff. A reaction on the part of the field staff occurred as was to be expected - but more unfortunate was the negative reaction on the part of those reponsible for the field service who felt that the new pressures to improve discipline and effectiveness were a reflection on their capabilities (which of course it was to a certain extent). One reaction discernible on the part of those responsible for credit, on the other hand, was to attempt to obtain direct authority over the field extension staff, a situation which, if it had succeeded, would have eroded the 'single line of authority' principle. The organogram under which these problems arose can be presented in simplified form as follows:



The lesson to be learnt, I feel, is that the field service should not be identified particularly with just one of the functions that it is called to implement. In the case of the RDA in question, a separate division for the field service would need to be created, which would channel development activities of other supporting division (DAF and technical) to the field. If, for example, the extension section was not able to establish a credible extension programme, that programme would not be implemented and the Field Service would continue to provide a range of development services to the farmer which excluded extension until such time that a credible extension programme was established. Such an organogram would look like this:



Those managing the Field Service would be just that, managers. They would rely on the supporting divisions and sections (including extension) for the content and backup for the programmes that they operate.'

T and D in Nigeria

Richard China has been working in Bauchi State, Nigeria as Chief Extension Co-ordinator. He has written enclosing a description of his work (jointly written with Peter Langmead, a media specialist), explaining the reasons for the emphasis upon demonstration work in extension (thus T and D rather than T and V).

'Bauchi State ADP was established in 1981 by the Nigerian Federal and Bauchi State Governments with the assistance of the World Bank. The objective of BSADP is to increase State agricultural production by 3-5% per annum over a five year term. This is being achieved by the development of an effective extension service and by providing easy access to agricultural inputs and markets through construction of village sales points and farm-to-market roads.

The programme covers 66,000 square kilometres of mostly Northern Guinea Savannah and serves half a million families with an average farm size of three hectares. The main crops are millet and sorghum. Other important crops include maize, groundnuts, cowpea, cotton, rice and vegetables. Most farmers cultivate by hand but the use of draft oxen is increasing. All farmers keep small numbers of livestock.

In early 1982 the entire Ministry extension service with a village extension agent to farm family (VEA:FF) ratio of 1:1659 was seconded to BSADP. Low pay, inadequate transport and poor conditions of service had not attracted good extension staff. The average age of VEAs was 25. The majority were primary school leavers who had taken a one year

pre-service certficiate course at either the Bauchi School of Agriculture or the Farmer Training Centres at Dadin Kowa, Ningi and Darazo. All these institutions were very run down and the training provided was too theoretical and concentrated on sole cropping when the majority of farmers practise mixed cropping. This reflected the views of most agronomists that sole cropping was superior to mixed cropping and ignored the evidence from Nigeria and other countries, that as well as reducing the risk of total crop failure farmers' mixed cropping systems were more efficient in their utilisation of labour, water, light and nutrients. Moreover, VEAs were poorly supervised and expected to convince farmers to adopt sole crop packages by theoretical instruction only. As a result VEAs commanded little respect among farmers and made little impact.

To mould the extension service into an efficient and effective force the BSADP, like all World Bank assited ADPs in recent years, was expected to implement the T & V system. All extension staff were briefed, and provided with a manual, in how the T & V system would be implemented. A Media Centre was established to support the extension service and courses to increase understanding of traditional cropping systems were conducted. However, in 1982 BSADP ran into serious financial difficulties and T & V could only be implemented in Eastern Zone. The experience taught us several important points:

1. EAs find it difficult to keep up with their schedule of visits - either because of the scattered nature of settlements and inadequate transport or because of problems such as delayed payment of salaries, public holidays etc.

2. Farmer attendance at successive meetings of any one group is constantly changing.

3. It is doubtful that target farmers pass the messages on to their contact farmers.

4. The rigid system of farm visits was not successful. In Northern Nigeria the majority of farmers practise multiple cropping systems. Farmers decisions on crop combinations, spacing and timing of operations depend on how the rainy season unfolds. The amount and distribution of rainfall varies not only from year to year and from north to south but within very small areas. Any system which relies upon sequences of pre-planned technical messages passed on by cyclical farm visits is clearly too inflexible.

At the beginning of 1983, with improved funding, significant modifications were introduced and the system - re-named Training and Demonstration (T & D) - was introduced statewide giving greater emphasis to practical demonstrations.

Four hundred VEAs are assigned to 232 village sales points. VEAs plus their supervisors are divided into small groups and, as in T & V, receive topical training one day every fortnight from 17 trainers at 70 selected sales points called Extension Group Centres (EGC); however, in T & D, training concentrates on the practical skills of how to demonstrate new methods on farms, and each training session is supported by a mobile video unit.

Every fortnight the trainers are briefed by the Extension Specialist on the current package. These packages contrain simple illustrated notes for VEAs; video dramas, which com-

municate not only the T & D message but also illustrate the approach that VEAs should adopt in their dealings with farmers; audio cassettes for VEAs to play to farmer groups; demonstration samples such as new seed varieties in labelled specimen bottles and various chemicals; pesticide sprayers and the other inputs necessary to establish demonstration plots.

Before the planting rains VEAs demonstrate seed dressing, how to use fertilizer and pesticides in mixed crops. During the rainy season each VEA establishes his own plot, to further practice skills learnt in training, and assists up to eight farmers in different hamlets establish mixed crop demonstration plots with improved seed. fertilizer, herbicides and insecticides. The size of plots varies from 0.1ha up to 0.2ha. Large plots are necessary to keep farmers interested in maintaining them. To distinguish plots from surrounding crops, and to attract other farmers' attention, each plot is marked with a large BSADP flag. After harvest VEAs demonstrate crop storage chemicals, conservation of crop residues, and how to mix concentrates for livestock feeding. During the dry season, to reduce disease build up and market saturation from continuous cropping of traditional vegetables, farmers in the flood plains will be given samples of exotic vegetable seeds.

Demonstrations are conducted in groups and mini-field days organized on successful plots so that that other farmers can see the results of using new methods. The aim of the plots is not to show farmers how to farm but to give farmers an opportunity to observe how a wide range of improved technology can be incorporated into crop mixtures and how these methods perform under their own conditions. Not everything included in the plots is absolutely right for all farmers and

not all demonstrations work out as intended. Farmers are encouraged to discuss what they like, what they do not like and the reasons why. Feedback from these discussions helps to determine the next years extension plan and which seed varieties and chemicals should be made available in greater quantities.

Supervisors, as well as ensuring VEAs maintain standards, conduct on-farm adaptive research trials. The function of these trials is to see how new ideas gleaned from research institutes and other sources work in the field. Successful practices which gain farmer approval may then be included in VEAs demonstration farmer plots the following season.

In T & D (while we accept the value of fornightly topical training) the aim of training is to teach EAs how to demonstrate technologies appropriate to the ecological zones within Bauchi State and which farmers can reasonably be expected to incorporate into their cropping systems. Training is conducted well before it needs to be put into practice and EAs are given the flexibility to time their visits to demonstration farmers based on prevailing conditions which, as mentioned above, are subject to a high degree of variability.

At this stage it is difficult to assess the long term impact of extension on agricultural production when annual yields vary by 50% or more due to fluctuations in rainfall. However, here is no doubt that the discipline of the fortnightly cycle with emphasis on practical demonstrations supported by in-house media production has rejuvenated the extension service. Farmers confidence in VEAs has increased and extension is making an impact on farmers vis-a-vis the adoption of new farming methods.(Sales of fertilizer, seed and chemicals have risen sharply).

I also include in this newsletter a note on the technologies that are being demonstrated in Bauchi. There are two particular packages for the forthcoming season.

1. ITA 60 (day) cowpea double cropped sprayed with Fusilade herbicide, Pirimor aphicide and Cymbush Dimethoate insecticide using the Electrodyn ULV.

2. Alternate rows of TZE (90 day) maize and short season sorghum (eg KSV12/Yar Washa) sprayed with Gardoprim herbicide followed by local cowpea sprayed with Pirimor and Cymbush Dimethoate.

Assessing Extension Programmes

In December, an agricultural consultant, Martin Adams, was engaged to examine extension programmes in Ethiopia (the former CADU programme - now ARDU - and a pilot World Bank-supported programme). He has written setting out the framework that he adopted, drawing in part on Discussion Paper No. 13.

'A Issues External to Extension

1. Is the research system functioning and capable of producing technical advice?

2. Are the inputs, essential to increased production, readily available and at a price consonant with their use?

3. Do crop and livestock prices and the marketing infrastructure facilitate adoption?

4. Does the farmer have security of tenure (and adequate and timely irrigation supplies)?

B Extension Issues

1. Do non-extension functions undertaken by the extension staff constrain or reinforce their effectiveness in supporting farmers?

2. Are the Village Level Agents and SMSs properly trained for extension work, especially in practical skills?

3. Is the scope and areal coverage of the programme compatible with the availability of trained staff.

C Management Issues

1. Is the extension agent's daily schedule practicable? Does it meet the needs of farmers and supervisory staff?

2. Are regular group meetings held between agents, their AEOs and SMSs for exchanging information on technical and administrative matters, and for upgrading the technical competence of field agents?

3. Is there adequate feedback of technical problems to research?

4. Does the organisational structure conform with management principles (unity of command, authority matched to responsibility and span of control)?

5. Are the extension staff motivated to make the necessary effort to achieve the goals of the organisation?'

With extension improvement now a priority area for many donor agencies and governments, this sort of review exercise is becoming

more common. Any similar attempts at checklists would be received with interest.

T and V in Rural Credit Administration

In India, the National Bank for Agricultural and Rural Development (NABARD) is currently engaged in an interesting pilot project (in three Districts) designed to strengthen 'credit delivery' by improving the performance of loans officers along T and V lines. The basic assumption is that poor loan identification, appraisal and supervision are a major factor in inadequate loan recovery and failed investments. Thus a priority need in credit administration is to improve the number of loans officers, their calibre, their supervision and their regularity of contact with borrowers.

In a number of countries (and some would say in India itself) there would be doubt about whether poor loan recoveries - or bad lending generally - has very much to do with the performance of field staff, but let us leave that issue to one side, and simply describe the 'T and V' credit system in India.

Under the projects, one field officer normally handles around 500 accounts (the figure is often 2000 or so outside the project districts). At the bank branch headquarters (the project is being administered by commercial and co-op banks) there is a development officer responsible for 10 field officers. The field officers are expected to spend four days per week in the field visiting their borrowers on a regular and pre-arranged basis. The field officers - in groups of around 30 - meet regularly (every four weeks) for training and exchange of information.
These meetings involve all the participating banks in the project area. In the case of primary co-operative societieies, the Secretaries are included as the field officers.

The training itself covers agriculture, irrigation, extension work etc as well as banking practices. For this, SMSs are brought in from the Department of Agriculture and from other government agencies. Overseeing the entire operation are the Senior Development Officers responsible for eight Development Officers in their own banks. Co-ordination at present is through a NABARD District Project Officer, but the SDO of the Lead Bank in the District could eventually assume this role if the system becomes established.

The project clearly involves an increased level of investment. In addition to staff increases, there are the costs of a higher level of field mobility (jeeps, motor bikes, bicycles). The project has also meant some policy changes in lending. Less attention than previously is given to contract producers (eg dairy farmers) and those 'used to credit disciplines'; more time is now spent on investment appraisal; less time is spent on seasonal loans - medium and long term lending (especially under Government of India subsidy programmes such as the IRDP) is given priority.

This, at least, is how it was described to me. I am sure there are Indian members of the network who can give a fuller account and some indications of achievements. Non-Indian networkers may want to suggest similar efforts at managing field personnel. For example, I believe that in Zambia, the Barclays Bank Lima loan scheme has anofficer:borrower ratio of 1:200; a regular system of farm visiting: regular staff training organised by local branch managers - and a 90% repayment record.

Agricultural Services in Kenya

Michael Schluter, author of Constraints on Kenya's Food and Beverage Exports (IFPRI Research Report No 44 April 1984) has had several years experience in field level extension in both the public and private sector. He believes:

> 'The single greatest problem in extension is evaluating results. Without being able to demonstrate success, it is difficult, if not impossible, to get large-scale continuing financial support for the enterprise. Probably as a consequence of this, it is notable that almost all successful extension in Kenya to date has been commodity-based, which does allow results to be measured. However, there is a special problem with measuring the effects of extension on food crop production where home consumption and parallel markets complicate measurement of results. For food crops in high potential areas, my belief is that the most effective extension method is to tie information to input sales. This allows the measurement of results in terms of input distribution. If the inputs are being sold commercially, correct information will boost long-term sales by increasing the returns that farmers get from the application of the input.

Turning to service provision, Schluter writes:

> 'The biggest problem to the use of the private sector in fertilizer distribution leads one quickly to the central problem in African development, which is the lack of an institutional form which is both efficient and socially acceptable. Briefly, I believe the answer lies in a rather radical new approach to institutionalising the extended family networks in Africa, rather along the lines of the Lebanese 'family associations'.(Again, refer to the IFRPI report for a full explanation of this line - ed.)

III OTHER PAPERS OF INTEREST

William M. Rivera, Comparative Extension: The CES, T and V and FSR/D This paper is one of a series produced by the Centre for International Extension Development (University of Maryland). It usefully links an analysis of T and V and Farming Systems Research to the US Co-operative Extension Service system, arguing that the lessons of the CES have not been adequately reflected in current LDC extension thinking. For a copy of the paper, Network members should write direct to Professor William B. Rivera, College of Agriculture, University of Maryland, College Park, Maryland 20742, USA. For similar arguments see also the first paper in the University of Illinois INTERPAKS series by Claar, Dahl and Watts (The last newsletter contained an item on INTERPAKS)

ISNAR, Newsletter The first issue of ISNAR's newsletter was issued in late 1984. It contains an account of the ISNAR/IFARD survey of national agricultural research systems. Available from PO Box 93375, 2509 AJ The Hague, Netherlands.

FAO, Organisation and Management Structures for Rural Development: Agricultural Services to Small Farmers. This is a report of an expert consultation held in December 1983. It is available from FAO Publications, but for the background papers - by Jon Moris, Guy Hunter, Hari Mohan Mathur and S. Ramakrishnan - write to Alec McCallum of the Human Resources, Institutions and Agrarian Reform Division.

Alastair Sutherland, Extension Workers, Small-scale Farmers and Agricultural Research: A Case Stuidy in Kabwe Rural, Central Province, Zambia. This report was produced by a member of the Ministry of Agriculture and Water Development's Adaptive Research Planning Team, who is also an Overseas Development Institute Research Fellow. The paper contains a number of policy recommendations relevant to T and V extension development. Network members can write directly to Alistair

Sutherland at the MAWD research station,(Mount Makulu, Chilanga, Zambia) but an edited version will be circulated as a Discussion Paper once Government of Zambia clearance has been obtained.

IV NEWS OF THE AAU

The AAU has received financial support from the Ford Foundation and the Aga Khan Foundation (UK) to establish a new network concerned with Social Forestry. Dr Gillian Shepherd has been appointed to a new Research Officer post in this field. She has previously worked at the University of London as a lecturer in social anthropology and she has been a consultant to ODA, Oxfam and, most recently, to the Government of Botswana.

The Irrigation Management Network has issued the following papers in recent months:

Series 10 November, 1984

Paper 10b Groundwater Development in Bangladesh - Farmer Organisation and Choice of Irrigation technology (9pp)
Nick Chisholm 'Socio-economic Change in Irrigation Pumpgrounds in NW Bangladesh' with comments by Mick Howes and a note by Anthony Bottrall.

Paper 10c Developing the Role of Farmers Associations in Sri Lanka and Northern Thailand.(25pp) A.S. Widanapathirana 'The Gal Oya Experiment' J Jayewardene 'The Mahaweli Programme'
G N Kathpalia 'The Nong Wai Irrigation project, Thailand'

Paper 10d Ian Rule Designing for Easy Maintence (pp4)

Paper 10e Tank irrigation in India and Thailand: Problems and Prospects (16pp)
K Palanisami and K William Easter 'Irrigation in India and Thailand: Problems and Prospects.
R.K. Sivanappan 'A Case Study in Chingleput District, India'

Paper 10f Introduction to Discussion on Water Rates (7pp)
P K Rao 'Comments on Cost Recovery and Irrigation Water Pricing' Anthony Bottrall 'Comments on Management Structures for Irrigation'

The Pastoral Development Network has issued:

Series 18 September 1984

Paper 18b R Morgan, M Iles and J Dickey, Comments on Pastoral Network Paper 17b (pp9)

Paper 18c J Swift, A Maliki, A cooperative development experience among nomadic herders in Niger (pp25)

Paper 18d C White, Herd reconstitution: the role of credit among Wodaabe herders in Central Niger (pp14)

Series 19 February 1985

Paper 19b Comments on Pastoral Network Paper 18c & 18d
'A cooperative development experience among nomadic herders in Niger' and 'Herd reconstitution: the role of credit among Wodaabe herders in Central Niger'(pp14)

Paper 19c Richard Hogg Re-Stocking Pastoralists in Kenya: A Strategy for Relief and Rehabilitation. (12pp)

Paper 19d Anthony Fitzherbert Understanding and Promoting Range Management by Herders in Eastern Turkey (51pp)

Paper 19e Roger Blench Pastoral Labour and Stock Alienation in the Sub-Humid and Arid Zones of West Africa. (21pp)

Paper 19f Clare Oxby Settlement Schemes for Herders in the Subhumid Tropics of West Africa: Issues of Land Rights and Ethnicity. (17pp)

The book, Recurrent Costs and Agricultural Development (editor John Howell) will be published on 2 April 1985, price £11.95 (plus £1 surface postage: £3 air mail postage). It is available to network members direct from the ODI Publications Officer at a 20% discount price of £9.55 plus postage.

The book is based on papers presented at the Workshop on Financing the Recurrent Costs of Agricultural Services, mentioned in earlier newsletters.

John Howell
March 1985

Agricultural
Administration
Unit

Overseas Development Institute
Regent's College Inner Circle
Regent's Park London NW1 4NS
Telephone: 01-935 1644

AGRICULTURAL ADMINISTRATION NETWORK

NEWSLETTER 14 MARCH, 1986

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Agricultural Administration Unit, Overseas Development Institute

The Overseas Development Institute (ODI) is an independent, non-profitmaking research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British aid programme. Its mandate is to widen the state of knowledge and the flow of information concerning the admin-istration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these had between 600-900 members in 1986 and is drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other relevant events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

I NEWS OF ODI AND AAU

ODI moved in December to the site of the former Bedford College in Regent's Park. The college is now Regent's College and it is primarily a university institution serving a number of US colleges with teaching programmes in London. ODI is one of a number of independent research institutes and professional associations occupying offices within the College site. Members of the network visiting London will find us only a short walk from Baker Street underground station. The AAU library is now housed in a separate room within the college library and, as before, networkers are welcome to use this facility.

We have appointed Jon Moris to a full-time post in the Unit. Many members of this network will know of Jon Moris's work on rural development management and agricultural extension, particularly in East Africa. In joining the AAU, Jon will be responsible for the programme of work on pastoral development, replacing Clare Oxby who left us in September.

We have also appointed Martin Adams to the post of Research Associate. Martin has had a long association with the work of the Unit and most recently led an ODI evaluation and planning mission to Turkana District in Kenya. We have also appointed a part-time Research Officer, Camilla Toulmin, to work with Mary Tiffen on irrigation management now that we have formalised a joint working arrangement with the International Irrigation Management Institute, based in Sri Lanka.

II FUTURE DIRECTION OF THE NETWORK

The Agricultural Administration Network was the first network established by the Agricultural Administration Unit and - in the network papers available on demand - it has always covered a wider subject area than the three networks which developed subsequently on Irrigation Management, Pastoral Development and Social Forestry.

This is particularly the case in terms of the papers sent in to me by network members or presented at lunchtime meetings. But as far as the newsletter itself and the selected discussion papers are concerned, the emphasis has been narrower, reflecting changes in the research emphasis within the Unit itself. In the last three years the main emphasis has been on the organisation of agricultural field services, and in particular, approaches to agricultural extension.

It is now my intention to alter the direction of work away from extension and towards the organisation and management issues in agricultural research and the links between research and extension and farmers themselves. More on this below but first a note on agricultural extension networking.

In 1984 the Association for the Development of Rural Extension (AREX) was formed following a major international conference in Holland on 'Strategies for Agricultural Extension in the Third World'. The Association itself is in the process of attracting financial support sufficient to establish a permanent paid secretariat which will be able to provide information on research services to those engaged in rural extension and training activities.

The Association, through the International Agricultural Centre at Wageningen, is already issuing a newsletter. At present this is primarily concerned with the mechanics of establishing a new international association and describing the activities of collaborating institutions. But it is a natural home for research

reports and other papers on agricultural extension which appear to justify widespread distribution and which invite comments. In short, AREX would welcome the contributions on extension that have come to the Agricultural Administration Network over the past few years and I shall be passing on papers of potential interest to them.

For more information on AREX and its newsletter, please write to: Bertus Haverkort, Editor, AREX Newsletter, c/o International Agricultural Centre, Postbus 88, 6700 AB Wageningen, Netherlands.

Turning to agricultural research, the first point to make is that there are already several useful newsletter in the field of agricultural research organisation and management. Two specifically address the issue of how to bring concerns of farm management and sociology into research design and experimentation. In shorthand, they have a farming systems focus. The Farming Systems Newsletter covers mainly Eastern, Central and Southern Africa and is issued by: CIMMYT East African Economics Programme, PO Box 25171, Nairobi, Kenya. The Farming Systems Support Programme Newsletter has a wider geographical coverage and is particularly strong on South America and West Africa. It is issued by Institute of Food and Agricultural Sciences, University of Florida, Gainesville, Florida 32611, USA.

There is also the newsletter of the International Service for National Agricultural Research (ISNAR), which is primarily concerned with describing ISNAR activities, reports and publications. It is available from: ISNAR, PO Box 93375, 2509 AJ The Hague, Netherlands.

In the Agricultural Administration Network, the focus of research interest will be upon the ways that agricultural research and extension can be more effectively organised to support farmers currently barely touched by the system of publicly-provided inputs based upon improved technology and regular advice on its use. There are two, often overlapping, challenges: those difficult

physical environments where neither the technology nor the regular advice are available to farmers to improve low levels of output; and those relatively favourable environments which contain large numbers of individual, poorer, farmers who remain largely outside the research/extension system.

'Difficult environments' includes areas of poor and possibly fragile resources, (such as hill farming in parts of South Asia and much of the arid and semi-arid regions of sub-Saharan Africa) but I also include those areas of sub-humid regions with limitations such as poorly-developed market structures or widely dispersed settlement.

In looking at ways of making research more effective, in terms of such currently disadvantaged farmers, two lines of enquiry will have priority: (a) an examination of the relationship between the effectiveness of research and the organisational structure within which research is decided upon and implemented; (b) an examination of experiences in developing more effective methods of research - especially in bringing research scientists, extentionists and farmers closely together in the design and implementation of formal research work.

On research structures, there are general issues of national organisation and agricultural research's role within the government system as well as specific issues on the functional deployment, staffing and financing of research stations themselves. An illustration of the latter point comes in Farming Systems Newsletter No.22 (September 1985) which contains a short paper on 'Building On-Farm Research into Existing Agricultural Research and Extension Institutions - Some Alternatives'.

On research organisation methods, Nigel Roberts (in this Newsletter) mentions developing the research-extension link as one of the major outstanding challenges facing World Bank-assisted projects; and Alistair Sutherland (in the attached Discussion Paper) discusses work in this area in Zambia's Central Province.

Taking a different view to what they regard as the prevailing 'transfer-of-technology' orthodoxy, Robert Chambers and Janice Jiggens (in an as yet unpublished paper) argue that major changes in research methods are needed as scientist's perceptions of poor farmers problems and opportunities are inherently inadequate and often simply wrong. They argue instead for mechanisms to develop research priorities instigated by poor farmers themselves. For further information, write to Robert Chambers at IDS, University of Sussex, Brighton BN1 9RE.

III THE WORLD BANK AND AGRICULTURAL EXTENSION

As this is the final issue of the Network which will deal explicitly with T and V extension, it is appropriate to leave the last word with the World Bank which has done so much to raise the issue of agricultural extension management in promoting smallholder agriculture. The following comments are drawn from a presentation by Nigel Roberts* of the Agriculture and Rural Development Department. Nigel Roberts is concerned with putting the Bank's work in T and V extension into a wider perspective of agricultural development.

First, he looks at extension in South Asia in recent years:

> 'It is worth considering for a moment why T&V has had such an appeal to India over the last decade; understanding this will be important when we come to consider the relevance of T&V to Africa, where conditions are so different. Many people agree that extension was the weakest link in the small-farmer agricultural development package in India in the early 1970s, while in other respects the agricultural environment was conducive to the dissemination of new technologies. A backlog of poorly-disseminated research results were in existence (based in particular on emergent green revolution technologies); inputs and credit were freely available, thanks to a well-developed private sector; grain markets functioned reasonably efficiently; input/output price relationships were attractive enough for farmers to invest in new technologies; and the country's infrastructural base was sound. An effective technology transfer system was lacking, however. Extension services had little direction, no credibility, and insufficient funds. T&V entered the arena at a time when extension reform was a priority item on the agricultural development agenda; and because the preconditions for successful extension were in place, T&V was able to deliver results -- to complete the circle, as it were, and therby to boost

production. Visible results were often achieved early -- and agriculture policymakers, seeing these, became advocates both of effective extension and of the system that embodied it. This system appealed to policymakers because it proposed a way of mobilizing large and moribund extension organizations at a small incremental recurrent cost when compared to existing recurrent costs. T&V aimed to put extension personnel to work by means of a tightly-organized management approach -- something extension had lacked in India and in most developing countries. The increased efficiency was obvious, and the impact on production seemed apparent.'

He then goes on to discuss, and partially accept, some criticisms of T and V:

'There is the criticism that T&V cannot operate successfully in the absence of an effective research program. Most proponents of T&V would agree: the system is designed to transfer technology, not to create it; T&V assumes that there <u>is</u> a functioning research apparatus in place. This particular criticism has no doubt been encouraged by our mistakes: T&V programs have on occasion been established in situations where research institutions were inadequate, and where no sufficient technology base for productive extension existed. Nowadays, though the World Bank is very wary of establishing new T&V projects in areas with a poor adaptive research capacity. Normally we would look for a pre-existing or concurrent donor investment in research development as a precondition for our involvement in extension.

Another complaint is that T&V cannot deliver increased production without the complementary parts of the small farmer development package to which I alluded previously -- inputs supply and credit, marketing mechanisms, price incentives.

Again, this is something few T&V advocates would dispute. Again, perhaps, some T&V designers have overlooked the importance of such factors -- but not often; and very rarely now. In Ethiopia, for example, World Bank involvement in national extension development has been held up for two years because in our judgement officially-determined grain prices are too low to encourage the uptake of available new technologies. I think that all of us in the World Bank recognize that extension is only one cogwheel in the agricultural machine, and rarely the most important one at that.'

Nigel Roberts also recognises the more general criticisms made of T and V:

'Above all, though, the controversy surrounding T&V has been generated by a perception that the World Bank is selling the methodology as the Universal Extension System, often inflexibly, and with little sensitivity to the needs of particular situations in individual countries. When this has happened I attribute it in part to over-enthusiasm, in part to the instinct in all bureaucracies to replicate successful experiences without looking out of the window, and in part to the inexperience of people like myself in the early days, as we brought T&V out of Asia into a new environment. Because of our inexperience, we did not always distinguish between the forms of T&V found in India (the fortnightly visit, the monthly research-extension workshop) and the principles underlying these forms (the need for regular on-farm visits, or systematic contact between research and extension). As a result, there have been instances of unnecessary rigidity in the design of certain T&V projects outside India.'

He then sums up his views on what T and V can offer:

> 'T&V offers the extension designer not a blueprint for a new extension system, but rather a respository of extension principles from which he can draw -- principles that should underlie any effective extension organization in a developing country. In the African context, there are a number of features that I would hope to find in a public-sector extension system -- regular visits to identified farmers or farmers' groups; regular and frequent staff training; in-the-field collaboration between researchers and extensionists on technology generation; a clear chain of command in the extension service; and the provision of adequate means and incentives to staff (including transport and personal allowances). Where donors are involved, I would also hope to find evidence of a design process marked by true collaboration between donor technicians and governments (through joint task forces, project preparation workshops and the like), as well as a commitment to testing new systems out on a pilot scale prior to national replication; both of these courses of action diminish the risk of implanting inappropriate methodologies. Also of great importance -- donors should be prepared to commit themselves to 10 or even 15 years of support for a new extension approach; part of the chaos in African extension can be attributed to erratic and unpredictable donor support, a situation in which no new methodology, however sound, is likely to flourish.'

Finally, Nigel Roberts discusses a question that he feels has not been satisfactorily handled in extension programmes:

> '...in practice it is not uncommon to find extension staff distributing undifferentiated "blanket" recommendations to farmers, with no concessions to their varied economic capacities and widely different farming systems. This is

because recommendations are frequently drawn not from farmers' expressed needs, but from the bureaucratic and academic imperatives that drive much of developing country on-station research; and because extension "subject matter specialists" are insufficiently expert to modify these recommendations to fit with local requirements. Where this is occurring, it signals a fundamental breakdown in the extension process, which should indeed be a two-way communication system. I would tend to agree with Dr Michael Collinson of CIMMYT, and other proponents of farming systems research, who point out that the critical break in the research-extension-farmer chain occurs not between research and extension, but between the research and extension establishments on the one hand, and the farmer on the other.

Participatory, or 'democratic' research and extension approaches, like the French IRAM methodology used in the Comoros and Rwanda or the CIMMYT or USAID Farming Systems Research approaches, aim to generate a cooperative relationship between researchers, extensionists and farmers through intensive dialogue and shared work at the farm level. Such approaches, with their capacity to break down institutional barriers, to identify specific production problems and to involve farmers in designing solutions to them, have much to offer T&V (not least as a school in which extension's 'subject matter specialists' can over time be turned into true experts). Likewise, T&V with its ability to organize public servants for the dissemination of information on a national or regional scale, can serve as a powerful tool to publicize relevant local results deriving from participatory farming systems research. The World Bank and USAID have emerged recently as the two most significant donors in the research and extension sub-sector in East Africa, and tend to be associated on the one hand with T&V and on the other hand with FSR. I feel that it is

time for a systematic attempt to be made to see if T&V and FSR can be married up as an integrated extension methodology and I also feel that much could be gained through a joint effort by ourselves and USAID in this direction. Rather than by committees or discussion groups, the work should be done through experiments at the field level in countries where the Bank has a T&V involvement, and USAID is promoting FSR. In time, lessons learned from these experiments could be analyzed on a regional basis, and some common principles derived from the work.'

*'The World Bank and Agricultural Extension: The Training and Visit System in Sub-Saharan Africa' address given to a conference on The International Role of Extension: Future Directions, Michigan State University, 31 March-1 April, 1985.

IV DISCUSSION PAPER 15

Extension Workers, Small-Scale Farmers, and Agricultural Research: a case study in Kabwe Rural, Central Province, Zambia

The discussion paper enclosed with this newsletter was written by Alistair Sutherland who has recently completed an assignment as an ODI Overseas Research Fellow attached to the Ministry of Agriculture and Water Development in Zambia and the University of Zambia's Development Studies Research Bureau. In the Ministry, he worked as a consultant rural sociologist with the Adaptive Research Planning Team (ARPT), Zambia's farming systems programme. The paper presents a case study of field extension workers (EWs) and their relationship with small-scale farmers on the one hand, and the agricultural research and extension hierarchy on the other.

The objective of the study was to generate more information on the activities of field EWs, the T and V system and linkages between extension and research at the provincial level, in order to more effectively plan farming systems research and extension in Zambia. Central Province was chosen as the focus because it was the first province to have a research-extension Liaison Officer, working as an ARPT member. Findings reveal considerable variation between agricultural camps in the extent of coverage and both the extent and style of operation of the T and V system. These variations have related mainly to differences in staffing levels and transport resources, but individual motivation of EWs is also a factor. In spite of this variation, certain common features and issues emerge from the study. These can be grouped in four categories:

1. Role of Extension and Technical Adoption

   (a) Farmers saw extension primarily as a government agency which should assist by providing good advice, rather than credit or inputs.

(b) Farmers valued the extension service for its technical advice potential, but also relied very much on advice from friends and neighbours. About one in four farmers reported EWs as the reason why they adopted a new technology.

(c) Most new technologies were adopted, to begin with, under the direction of the local EWs, along with the official recommendations. However, in most cases widespread adoption was accompanied by considerable modification of the official recommendations.

2. Extension Methods

(a) Both EWs and farmers tended to prefer individual visits rather than group meetings to deliver technical advice. In part this can be explained by the degree of heterogeneity within the farming community and the unsuitability of some of the technical messages.

(b) Extension staff often had difficulty in understanding the difference between an extension demonstration and an on-farm experiment.

3. The Performance of T and V Systems

(a) The T and V system operated most vigorously in areas where staffing levels were highest, transport was available, staff were motivated and the technical message was appropriate.

(b) In areas where the extension services had been recently introduced, attendance of meetings was better and staff were also better motivated.

(c) On the whole field EWs showed evidence of being inventive and flexible in the operation of T and V and in the delivery of technical advice. More experienced EWs relied substantially on learning from the more successful small-scale farmers in their areas.

(d) Field EWs felt distanced from specialist extension staff and neglected by administrators at the District and provincial levels. However, extension staff had a good linkage with the provincial farming systems team but felt out of touch with small scale farmers, field EWs and specialist scientists in tesearch.

4. Questions about the Effective organisation of research and extension

(a) What adjustments - including staff training - to T and V are needed to make the method effective in a heterogenous farming community?

(b) What, from the point of view of extension, is the best way of dealing with a situation where the existing stock of technical recommendations is inadequate, and farming systems research programmes have several years to go before producing adequate recomendations?

(c) How can farming systems research programmes make better use of the organisation and information potential the T and V system offers?

(d) How can farming systems research programmes make better use of the organisation and information potential the T and V system offers?

(e) And - a much wider question - is the normal T and V operation compatible with a farming systems approach.

V ODI PUBLICATIONS ON AGRICULTURE

Last year I was engaged as the specialist adviser to a Working Party of British MPs from the All-Party Group on Overseas Development. Their report on UK Aid to African Agriculture (64pp) has been published by ODI and it is available from the Publications Officer at £2.95 plus 50p postage outside the UK (seamail).

Another job I was involved in last year concerned the organisation of a joint ODI/Tropical Agriculture Association conference on Agricultural Development in Drought-Prone Africa. The papers of this conference have now been edited for publication by John Foster of the TAA. The contributions are primarily on technical possibilities for crops and livestock production in semi-arid and arid regions and include papers on groundwater resources (Ed Wright), soil and moisture conservation (Mike Jones), plant breeding (Hugh Dogget), plant nutrition and protection (J C Davies), and livestock (Barry Nestel). There is also an overview paper by John Howell and Nick Chisholm surveying some of the evidence on 'non-technical' constraints.

Publication will be in April 1986 and we do not yet have a price to quote but for further information please write to the Publications Officer.

ODI will also be publishing a third book dealing with African agriculture. This will be based on papers presented at the ODA Natural Resources Advisers Conference held at Wye College, July 1985. These papers included overviews of trends in climate, population, technology development, economic performance etc. and a number of case studies of ODA-assisted projects in Sudan, Kenya and Botswana.

In this case ODI is publishing on behalf of ODA and a limited number of copies will be available free-of-charge to network members. Anticipated publication date is May 1986. There is no title as yet but cite ODA NR Conference in any requests to the Publications Officer.

VI OTHER PUBLICATIONS OF INTEREST

Peter von Blanckenburg, Agricultural Extension Systems in some Asian and African Countries. FAO Economic and Social Development Paper No 26. FAO:Rome, 1985. This paper draws upon detailed reports commissioned by FAO and the Commonwealth Secretariat. It provides valuable source material on the diversity of objectives of extension services and the wide range of organisational forms that extension takes. On this evidence, the provision of extension services remains an extraordinarily experimental field of public administration.

Steve Wiggins, The Management of Rural Development Projects in Developing Countries. This paper argues that most public administrations in developing countries are inappropriately established in their structure, procedures, and organisational culture to meet the peculiar managerial challenges of rural development. The paper reviews some of the suggestions that have been made for improving the administration of rural development, looking at: staff management; information flows; finance and procurement; special administrative units; decentralisation; matrix structures; and changing the character of public organisations from a mechanistic to an organic approach. Copies are available at £2.50 from: Publications, Department of Agricultural Economics and Management, University of Reading, Box 237, Reading RG6 2AR, United Kingdom.

Stephen Biggs and David Gibbon, Agricultural Research to Help Poor People in Developing Countries. Development Studies Occasional Paper No 28. UK:University of East Anglia, 1985 (96pp). This is a compilation of papers given to a workshop in 1983 and includes the Biggs and Gibbon paper on 'The Role of on-farm research in strengthening agricultural research systems' and a paper by Matt Dagg of ISNAR on 'The framework for organisation and management of agricultural research with a farming systems perspective'. Research practitioners may also be interested in a new book by Hildebrand and Poey on On-Farm Agronomic Trials in

FSR/E which has many of the characteristics of a good guide-book. Available from Lynne Reinner Publishers, Boulder, Colorado, USA.

The twentieth anniversary conference of the Agricultural Extension and Rural Development Centre at Reading University, Investing in Rural Extension, has been widely reported and the Centre will be publishing the proceedings later this year. For advance information on publication, write to Gwyun Jones, AERDC, The University, London Road, Reading RG1 5AQ, UK. For a good overview of current extension issues as seen by AERDC you could also ask for a copy of the paper 'The Dimensions of Rural Extension' by Maurice Rolls, Gwyn Jones and Chris Garforth.

Agricultural Administration Unit

Overseas Development Institute
Regent's College Inner Circle
Regent's Park London NW1 4NS
Telephone: 01-935 1644

AGRICULTURAL ADMINISTRATION (RESEARCH AND EXTENSION) NETWORK

NEWSLETTER 15 OCTOBER, 1986

CONTENTS

Agricultural Administration Unit, Overseas Development Institute

The Overseas Development Institute (ODI) is an independent, non-profitmaking research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British aid programme. Its mandate is to widen the state of knowledge and the flow of information concerning the admin-istration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these had between 600-900 members in 1986 and is drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other relevant events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

I THE NETWORK REGISTER AND MEMBERSHIP

Enclosed with this Newsletter is a form I would like completed and returned. It has three purposes.

1. It will provide us with the information we require for computerised mailing and for a new issue of the Register of Members.

2. It will allow us to identify any professional and geographical gaps in the network.

3. It will allow us to provide a service to network members wishing to locate particular categories of expertise and interest. There are currently around 750 members of the Agricultural Administration Network. A number of names are likely to be deleted following this current questionnaire exercise (ie most non-respondents will be dropped) but over the next year or so we shall be adding members as a result of our new programme of work on agricultural research.

There are around 50 members who have joined in the past year. I am sorry to put them to trouble so soon after filling in Registration forms which are now being replaced.

II DISCUSSION PAPERS

With this Newsletter there are three Discussion Papers.

Discussion Paper no 16: Stephen Biggs. Agricultural Technology Generation and Diffusion: Lessons for Research Policy.

Discussion Paper no 17: Mike Collinson. On Farm Research and Agricultural Research and Extension Institutions

Discussion Paper no 18: P.G. Cox. Decision-Making on Research Applications: Coffee Leaf Rust in Papua New Guinea

These are very different types of paper.

In Discussion Paper 16, Stephen Biggs looks at the mixed record of agricultural research and development and draws a number of lessons, including reasons why national and sub-national research institutions are more important than the international centres in developing technologies for labour-intensive production systems. He also examines a set of biases in agricultural research which have inhibited the development of technologies appropriate to farmers with poor resource endowments, and sugests - among other things - a shift in emphasis towards more 'informal' research systems.

Mike Collinson - in Discussion Paper 17 - starts with the assumption that there are Ministries of Agriculture which are open to incorporating some of the ideas described in the Biggs paper and to the formal adoption of farming systems or research 'systems based on farm research.' Yet he shows the FSR does not always fit comfortably into established research structures. He describes some of the institutional alternatives employed in eastern and southern Africa and sets out the criteria that should be used in design of agricultural research which incorporates a FSR component.

Discussion Paper 18 by Peter Cox is a more specific case study in decision-management from Papua New Guinea. It is a particularly vivid example of the importance of organisational structure and consistency in research management decisions. This case does not deal with research management decisions in the strict sense but with research station and field services management. Peter Cox also argues for an alternative 'farmer-oriented' approach to managing coffee disease involving discussion and dissemination of practices of pest management with coffee growers together with selective rehabilitation (stumping and replanting). He contrasts this with what appears to have been a somewhat panicky reaction of uniform, regulated spraying and movement restrictions.

III MEASURING EXTENSION IMPACT

Discussion paper no 14 by Feder, Slade and Sundaram on 'The Training and Visit Extension System' examined survey data from Haryana State (India) which lent valuable empirical evidence on the operational consequences of introducing T and V extension and on the impact that such extension advice has had on farm yields.

In response to this, Nick Chapman has prepared a note on his own involvement in assessing extension impact in a World Bank-assisted project in Somalia. (He has also written a longer paper on T and V in Somalia which we are planning to publish in a different format early next year: see item V below). Nick Chapman's note on the impact of extension messages on crop production is reproduced below.

The Impact of Extension on Crop Production in Somalia

The estimation of the impact of extension contact on farm production is a problem common to many agricultural projects. Feder, Slade and Sundaram provide one analysis comparing sources of advice (extension and other) with yield indices (1). In their conclusion they state that prima facie those farmers using the T & V extension agent as the main source of advice have yields that are substantially higher than those relying on other sources. Unfortunately, in this instance their analysis is constrained by the lack of evidence for a clear association between extension contact, the adoption of recommended practices and farm output. It may be possible in other cases, however, through careful use of project survey data, to define a more accurate relationship between T & V advice and crop output.

T & V in Somalia

Somalia's first major funding programme for the development of a T & V based extension service, the Agricultural Farm Management and

Extension Training Project (AFMET), has operated under the contention that significant increases in farm production would be achieved if the project extension service could transmit a set of relatively low-level farming techniques to the target population. Extension operations were concentrated in three Regions in the first phase of funding from 1981-86, two of which (Lower and Middle Shebelli) are characterised by irrigated maize production, and the third (Bay Region) is a largely rain-fed sorghum area.

The improvements introduced focussed on modifying the existing planting and cultivation techniques of smallholder Somali farmers, particularly by:

- the use of regular plant spacing
- the use of row planting
- two or more weedings
- early planting

The task of measuring the impact of these recommendations is broken into two stages:

(1) Ascertaining the extent to which the recommended practices can be associated with crop yield.

(2) Determining the impact the incremental yield of the adopting farmers has had on total crop production in the project area.

The Relationship between Adoption and Yield

Using multiple regression analysis it is possible to illustrate the varying degree of association between practice adoption and crop yields. The data used in the analysis are drawn from a 1985 AFMET crop-cutting survey [2] which recorded the presence of the four key practices listed above and sole-crop yields for a sample of 240 farms, sub-dividing the findings by extension contact and Region. The multiple regression analysis used the four practices as independent variables and the yields for irrigated maize and rain-fed sorghum as dependent variables.

In the three data groups analysed (Lower Shebelli and Middle Shebelli Region maize yields, and Bay Region sorghum yields), the amount of variation in the yield associated with the variation in the adopted practices data is poor to moderate (with r^2s of 0.39, 0.30 and 0.59 respectively, significant at the 0.05 level). The amount of unexplained variation is highest in the irrigated crop results from the Shebelli respondents, indicating that here other factors, such as the availability of water and of other purchased inputs, may play a more important role in determining the respondents' yields. The rain-fed sorghum crop in the Bay Region has the best association with the selected practices. Here, the availability of other inputs particularly irrigation water and hired labour are less critical to the productivity of the adopting farmer and the influence of the extension-related practices more clearly apparent.

Assessment of Project Benefits

If a relationship exists between the adoption of improved practices and increased yields (and noting the role of other inputs in irrigated areas), the next step is to assess the impact which the incremental yields of the adopting farmers have had on the overall output in the project area.

In the project SAR(3), it was assumed that 3% of all farm families in the target area would adopt the simplest improved practices (termed Level 1) from extension, and that half of these would also adopt animal traction (Level 2) by the end of the first phase. A more progressive group would at a later stage also use most of the marketed inputs (Level 3) with the improved practices. The total incremental production from Level 1 and 2 at the end of year 5 was calculated at 7,337 tonnes of maize and sorghum, derived from over 78,000ha under improved management.

The comparative model developed here calculates the incremental benefits from the same crops using not the farming population as a whole but the contact and follower farmer population. By using the

information available from the project's own surveys, a more accurate estimate can be made of the increased crop production that has accrued directly from AFMET's activities between 1981-85.

In the model, the SAR's Level 2 group is discarded since the spread of animal traction during the first phase has been minimal. Level 3 adopters have emerged sooner than expected, however, and from input sales figures they can be estimated at around 10% of the adopting farming group. Level 1 farmers, who have learnt or can afford only the basic set of planting and cultivation practices, account for 90% of the group.

Of the 170 agents that have been conducting T & V operations throughout the project area, it is estimated that 70 (41%) are working in the irrigated area and 100 (59%) in the rain-fed. In addition, the crop-cutting sample survey estimated that an average of 60% of the sample of the sample of contact farmers adopted the basic set of four improved practices given above, as had 25% of other farmers from the same villages. Assuming each agent has a total of 48 contact farmers (6 groups with 8 farmers per group) and 480 follower farmers, the total project adopting population in Year 5 can be taken as:

$$170 \times 48 \times 0.6 = 4{,}896 \text{ Contact farmers}$$
$$170 \times 480 \times 0.25 = \underline{20{,}400} \text{ Follower farmers}$$
$$\text{Total} = 25{,}296 \text{ All farmers}$$

Of which:

Irrigated farmers (41%) = 10,371

Rain-fed (59%) = 14,925

Since accurate farm size measurements are not yet available from the crop surveys, the only available figure for the area under improved cultivation is the farmers' own estimate of the size of the farm (field) used for the crop-cut survey. In 1985, this was approximately 1ha, giving a total area under improved cultivation of 25,296ha. Whether the farmer uses the improved practices on his other fields is

not recorded in the survey, but it is possible in the model to test the effect of a larger area of improved cropping per farmer.

The incremental yields for the Level 1 crop regimes are assumed to be the same as in the SAR. However, the Level 3 yield increments used are significantly higher than in the SAR. Evidence from the crop-cut surveys, and from the adaptive trials and farming systems research conducted over the past year indicate that incremental yields of up to 900kg are being obtained over the Gu cropping season by farmers using improved cultivation practices along with pesticides, improved seed, fertilizer and other inputs.

Table 1 (on p8) sets out the results of the model. The total incremental production achieved is 5,511 tonnes. At the average holding size of 2.5ha per adopting farmer, the incremental production would be 13,777 tonnes. Given that the assumptions in the model are correct, the current evidence indicates that extension can be held in large part responsible for this increment, particularly in the rain-fed areas.

References

1. Feder, G., Slade, R. and Sundaram, A. The Training and Visit Extension System: An Analysis of Operations and Effects. Agricultural Administration Network Paper 14. London:ODI, 1985

2. Crop Cutting Survey Report: Gu Season, 1985. PMU, AFMET, Somalia, December 1985.

3) Somalia Agricultural Farm Management and Extension Training Project, Staff Appraisal Report, World Bank EAR NAD, Report 2170a-SO, April 1979.

TABLE 1: INCREMENTAL PRODUCTION - PLANNED AND ACTUAL FOR YEAR 5

PLANNED (1)	Area under improved management (hectares)	Incremental Production (2) (tonnes)
Level I		
Sorghum	46,000	1,150
Maize	22,000	550
Level II		
Sorghum	7,100	2,662
Maize	3,400	2,975
Total	78,500	7,337
ACTUAL (2)		
Level I (90%)		
Maize	9,334	1,231
Sorghum	13,433	1,938
Level III (10%)		
Maize	1,037	1,050
Sorghum	1,492	1,292
Total	25,296	5,511

(1) From SAR, Volume II, Annex 3

(2) Incremental yields: level 1 irrigated maize 125 kgs;
rain-fed sorghum 150 kgs;

level III irrigated maize 960 kgs;
rain-fed sorghum 900 kgs.

IV NEW APPOINTMENT IN AGRICULTURAL RESEARCH

We have appointed John Farrington to the post of Research Officer in Agricultural Research Management and Organisation. He is currently Principal Scientific Research Officer at the Tropical Development and Research Institute (TDRI) in London and he expects to take up his appointment in January 1987. He will be jointly responsible for this Network.

John Farrington was a lecturer in Economics at Malawi Polytechnic in the early 1970s where he worked on labour productivity in peasant agriculture. He was subsequently employed by the Centre for Overseas Pest Research primarily working on the economics of insect pest control. He took a post in Sri Lanka in 1978 and became major contributor to the influential Reading/ARTI study on Farm Power and Water Use. He also completed a PhD on this subject. From 1983-5 he worked in Bolivia as a Senior Agricultural Marketing Adviser, and since 1985 he has been engaged at TDRI on matters such as grain storage, fisheries technologies and the international marketing of high-value tropical fruits and vegetables. He brings to the AAU, therefore, some 15 years of genuinely international experience in technology development policy for both pre- and post-harvest aspects of small farm agriculture.

V FORTHCOMING ODI PUBLICATIONS ON RESEARCH AND EXTENSION

Long-established network members will know that from time to time the Unit has produced Occasional Papers: priced publications drawing largely upon contributions to the network which appear to us to warrant a more permanent, 'collected' form. For information these have been:-

1. Stimulating Local Development, Guy Hunter and Janice Higgins (out of print)

2. Extension, Planning and the Poor, Guy Hunter, Janice Higgins, Paul Devitt. (out of print)

3. Institutions, Management and Agricultural Development, John Howell et al. £2.00

4. Enlisting the Small Farmer: The Range of Requirements, Guy Hunter. £2.00

5. Managing Large Irrigation Schemes: a Problem of Political Economy, Anthony Bottrall. £3.95

Early in 1987 we are producing simultaneously three further Occasional Papers and these represent a slight change in policy in the use of the OP format. The first, edited by John Howell, is in the established format. It is concerned with the Training and Visit system of extension and it will include revised versions of papers originally issued in this Network, together with some new country-specific papers. The second is a paper by Jon Moris on alternative approaches to African extension and it will look particularly at extension services under conditions of economic stringency. The third Occasional Paper is based on a

research report prepared at ODI by **Alistair Sutherland** on guidelines for incorporating a socio-cultural perspective into eastern and southern African farming systems research and extension. Details of these publications will appear in the next newsletter. Meanwhile networkers are reminded of other ODI publications which are available:

L J Foster (ed), Agricultural Development in Drought-Prone Africa. 88p, 1986. £4.95.

The Agricultural Dilemma in Africa: Papers of the 1985 ODA Natural Resources Advisers' Conference. ODA: Overseas Research Publication Series No.28. 77p, 1986 (available free of charge).

John Howell (Ed), Recurrent Costs and Agricultural Development. 223p, 1985. £11.95.

VI NEW CORRESPONDENCE COURSE

Enclosed with this Newsletter is a brochure on a new post-graduate course which is being established by Wye College. It is a course at the MSc and Diploma level primarily aimed at those working in agriculture in developing countries. Its great novelty is that it will be taught by correspondence. A number of entirely new texts are under preparation, and one of them will be on Agricultural Extension and Administration.

Agricultural
Administration
Unit

Overseas Development Institute
Regent's College Inner Circle
Regent's Park London NW1 4NS
Telephone: 01-935 1644

AGRICULTURAL ADMINISTRATION (RESEARCH AND EXTENSION) NETWORK

NEWSLETTER 16 JUNE, 1987

CONTENTS

I NOTES ON DISCUSSION PAPERS

Discussion Paper No 19

Farmer Participatory Research: A Review of Concepts and Practices
John Farrington and Adrienne Martin (ca.90pp)

Pressures from several quarters have recently been mounting for greater involvement of farmers in the process of technology development: there is concern that technology developed elsewhere and transferred to specific environments will be either wholly inapplicable, or adoptable by only the better-endowed farmers if local conditions are not fully understood. At the same time, the conditions under which poor farmers operate are both location-specific and often highly complex; to understand them adequately would place an impossible burden on research services.

'Farmer participatory research' (FPR) has arisen in response to these pressures and Discussion Paper 19 (enclosed with this Newsletter) examines how it is conducted and what it has to offer. FPR is conventionally seen as the management of on-farm trials by farmers and reseachers jointly, but in practice has a number of additional aspects, including: consultations with farmers on the problems to be researched; evaluation by farmers of the output of research (which, itself, helps to determine issues for further research) and the dissemination of new technology by farmers to farmers.

Discussion Paper 19 examines what farmers have to offer in the research process. Farmers' indigenous technical knowledge is perhaps the most important contribution they can make to FPR, but it seems unlikely to develop evenly among individuals or across communities. The paper examines why this should be the case, and what the implications are for FPR.

The main part of the paper comprises a review of recent field experience with FPR. Some 120 enquiries were made to agricultural and social science researchers thought to have direct experience

of FPR. At the time of writing, over 60% of those contacted have supplied papers and reports describing their experiences. These form the basis of the review, which analyses the methods used, and degree of success achieved, according to type of technology being developed and to the phase of the research process to which each example most directly relates.

According to type of technology, it was found that most FPR seeks farmers' views on the desirability of various characteristics of genetic material, though important examples also relate to crop management and post-harvest practices. According to phase of the research process, most participation relates to the definition of problems for research - either in the form of initial discussions with farmers, or by researchers learning from what farmers accept or reject in currently available technologies, though important examples of FPR are also found in the direct management of trials and in farmer-to-farmer dissemination.

In institutional terms, most FPR has been conducted hitherto by the international centres, universities and voluntary organisations, with few examples from the national research services. Views from Networkers on the reasons for this would be appreciated: is it related to some lack of flexibility in national services, or to a feeling that the benefits of FPR are still not proven, or to a fear that the costs of the approach, if applied on a wide scale, might outweigh its benefits?

Other unanswered questions concern the uneven distribution of FPR: for instance, we received very little material on FPR in the development of farm equipment or use of agrochemicals. Is this because researchers have not tried FPR in these areas (if not, why not?), or have attempts been made and met with failure (if so, for what reasons?). On the whole, failures in innovative research methods (of which FPR is an example) are rarely reported, yet they can offer a great deal of insight into where the boundaries of a

method's potential lie. In addition to reports of successful FPR, we therefore wish to receive from Networkers any reports of failures of the participatory approach, particularly since it depends for its success on farmers' indigenous knowledge which itself is likely to be unevenly distributed.

Another area largely disregarded in the available documents is the role of extension services in situations where farmer and researcher have been drawn into closer contact through FPR. The views that do exist are conflicting: some have suggested that extentionists retain an important role in the design and management of trials; others see them concerned more with other issues such as the supply of inputs. Networkers' views on the respective roles of researchers and extensionists in FPR would be welcomed.

Finally, we have found that in principle - and to some extent in practice - farmers' views on research priorities can be fed back into on-station commodity or input programmes. We need more material on how far this has had an impact on research programmes in practice, and on precisely how this farmer-to-reseacher communication took place.

In addition to Discussion Paper 19, a Network Paper (No 22) is being produced on the same theme. This consists of abstracts of the major research papers reviewed in the process of preparing Discussion Paper 19, and, is available on request from the Administrative Secretary of the Agricultural Administration Unit. It is authored by Adrienne Martin and John Farrington and entitled Abstracts of recent field experience with farmer participatory research.

Discussion Paper No 20

The Organisation and Management of Agricultural Research: Current Research Issues. John Farrington and John Howell

In writing Discussion Paper 20 we have two objectives. First we survey what appear to be the major current concerns over the organisation and management of agricultural research in developing countries: and we categorise these concerns as:

(a) methods of research and research planning;

(b) enhancing the role of farmer demand in research design and priorities;

(c) developing analytical approaches to the assessment of national agricultural research systems and their improvement;

(d) developing the effectiveness of international centres in supporting national agricultural research;

Our survey is bound to be incomplete and it is probably influenced too much by our access to material from the international centres. We hope that Networkers will respond to correct this imbalance and to indicate any areas of interest that we appear to be neglecting.

A second objective in writing this paper is to gauge reactions to the direction of ODI's own research and to elicit from members of the Network some ideas on how we might develop a programme that is complementary to existing work or which can be undertaken in collaboration with work elsewhere. As Discussion Paper 19 indicates, our current interests are in research methods but we hope that over the next few years our Newsletters and Discussion Papers will reflect a much broader spread of concerns.

II NEWS ON AGRICULTURAL RESEARCH MANAGEMENT

Special Programme for African Agricultural Research (SPAAR).

A group of fifteen international donors have set up SPAAR to strengthen the research capability of African agricultural research systems; to increase the effectiveness of funds contributed by donors through improving donor co-operation; and to provide for a gradual increase in external assistance to African countries. At a meeting in Paris in June 1986, donors agreed to proceed with five main activities:

(a) guidelines for the reinforcement of national research capabilities (now prepared by ISNAR);

(b) a SPAAR Information System (SIS) on the research projects/programmes funded (or to be funded) by donors;

(c) collection and assessment of information on promising technologies (Senegal and the Sudan were chosen as case studies);

(d) organisation of regional research networks among national centres in Africa, the International Centres funded through the CGIAR, and the international scientific organisations; and

(e) increase in the number of small grants available for African researchers.

To manage the activities of SPAAR, a Secretariat was created. For further information contact: Dr Roger Fauck, SPAAR, The World Bank, 1818 H Street NW, Washington DC 20433, USA.

Farming Systems Research Symposium

The Seventh Annual Meeting will be held at the University of Arkansas from 18-21 October 1987, in collaboration with Winrock International. The theme is 'how systems work', with reference to five areas:

- Information and Communications
- Macro Systems
- Agroforestry Systems
- Crop/Livestock Systems
- Crop Systems

It is proposed to hold special training sessions immediately before/after the symposium; themes remain to be defined but will probably include micro-computing and agroforestry.

Details can be obtained from: FSR/E Symposium, PO Box 2100, University of Arkansas, Fayetteville, Arkansas 72702, USA. Telex: 314000.

Seminar on Farmer Participatory Research Methods

Robert Chambers is organising a seminar at the Institute of Development Studies at which the practitioners of farmer participatory research from countries in Africa, Asia and Latin America will present details of the participatory methods they have used. The seminar will take place in the week 27-31 July 1987 and proceedings will be published.

Further details from Dr R Chambers, IDS, University of Sussex, Brighton BN1 9RE, UK.

New Journal

The first issue of the **Pakistan Journal of Agricultural Social Science** appeared recently. This is a bi-annual journal published by the Pakistan Africultural Research Council, Islamabad and intended as a forum for work in the social sciences as applied to agriculture. The first number includes articles on crop technologies for multiple cropping systems, an integrated farm management survey of Pakistan, organisations and institutions in Pakistan's agro-industry and the impact of farm tractorisation. Further details from: The Editor, Pakistan Journal of Agricultural Social Sciences, PO Box 1031, Islamabad, Pakistan

III AAU OCCASIONAL PAPERS ON RESEARCH AND EXTENSION

There are three new AAU Occasional Papers in preparation. All can be ordered from the Publications Officer at ODI, price £3.95 (or £4.95 for OP8) plus postage and packing (£1 seamail and £4 airmail).

Occasional Paper 6: **Alistair Sutherland,** Sociology in Farming Systems Research.

This paper is based on experiences in central and southern Africa and suggests ways of incorporating sociological perspectives and professional inputs into farming systems research and extension programme design.

Occasional Paper 7: Jon Moris, Extension Alternatives in Tropical African Development.

This paper describes different types of extension agency - ministries, parastatals, training institutes, enclave projects, farmer associations, and commercial firms - and shows that all are subject to special constraints in dealing with low-resource smallholders. These constraints explain both the relatively low productivity of mass extension, and the diverse forms of extension in different African countries. The paper argues that extension reform needs to pay closer attention to low transaction costs, better technical packages, and more effective involvement of women.

Occasional Paper 8: John Howell (ed) Agricultural Extension in Practice.

This paper includes some revised versions of discussion papers circulated previously and a number of entirely new papers. They are linked by the theme of technical recommendations: their design (and the links between the design, extension and on-farm research); their impact within improved extension management systems (notably T & V); and their relevance in different conditions (from very low improved input availability and use in drier parts of Africa to the 'post-green revolution' farming in parts of South Asia described by Byerlee).

The contributions are: Derek Byerlee, 'Agricultural Extension and the Development of Farmer's Management Skills; Ben Cousins, 'Agricultural Extension and the Development of Technical Messages in Zimbabwe'; Nick Chapman, 'The Impact of T and V Extension in Somalia'; Alistair Sutherland, 'Extension and Farming Systems Research in Zambia'; Gershon Feder and Roger Slade, 'T and V Extension Impact in northern India'; John Howell, 'Making Agricultural Extension Effective: Lessons of Recent Experience'.

IV OTHER PUBLICATIONS OF INTEREST

The Study Paper Series of the Consultative Group on International Agricultural Research. Twenty papers have been published in this series to date. Four of the papers have a general application: Nos (1) 'Technological Innovation in Agriculture'; (2) 'Modern Varieties, International Agricultural Research and the Poor'; (17) 'Gender-related impacts and the work of the IARCs'; and (21) 'The Impact of Agricultural Research in Tropical Africa'. The country studies cover: No (4) Costa Rica; (5) Guatemala; (6) Zimbabwe; (7) Nepal: (8) Bangladesh; (9) Brazil; (10) Indonesia; (11) Ecuador; (12) Peru; (13) Syria; (14) Cuba; (15) Philippines; (16) Thailand: (18) India; (19) Burma; (20) Chile.

The following summary of the Ecuador country study indicates the typical scope of these: Rafael Posada Torres, Ecuador and the CGIAR: A study of their collaboration in agricultural research. CGIAR Study Paper No 11. 'This report describes the existing constraints on relations between the national research system and the international centers. It looks at the main types of interaction that have taken place in Ecuador: the exchange of genetic material, the exchange of information; personnel training; advisory assistance by scientific personnel; and equipment and financing. A product-by-product analysis of the relation between the national program and the corresponding international centers focuses on potatoes, wheat, rice, maize, beans and other legumes, pastures and livestock, sorghum, oil crops, and cassava. The paper also discusses the activities of other bilateral and multilateral agencies in Ecuador that work in agricultural research and technology transfer'.

The papers published in this series are available from: The World Bank Publications Sales, 1818 H Street NW, Washington DC 20433, USA.

Susan Poats, Marianne Schmink and Anita Spring (eds) Gender Issues in Farming Systems Research and Extension. (ca. 320pp). The issues of increasing agricultural productivity for small-scale farmers and the critical role of women in agriculture are brought together. Based on the 1986 University of Florida conference of the same title, this volume includes theoretical and methodological papers, as well as case studies examining the topics of geneder, intra-household dynamics, labour allocation, and crop and livestock systems in agricultural production, research and extension.

Vernon W Ruttan and Carl Pray (eds) Policy for Agricultural Research. (ca. 200pp). Based on the Agriculture Research Seminars held annually at the University of Minnesota, the contributions to this volume examine the role of government, multinationals, and the emerging private sector (in both domestic and international contexts) in determining agricultural research policy.

Both publications will be available in September 1987, priced $29.50 from Westview Special Studies in Agriculture, Science and Policy, 5500 Central Avenue, Boulder, Colorado 80301, USA.

Peter E Hildebrand and L Rienner (eds) Perspectives on Farming Systems Research and Extension (167pp). This collection of reading provides a background on farming systems and extension services, using a multidisciplinary approach taken from the biological, social and economic sciences. Some articles were written specifically for this book.

This publication is available from Centro Internacional de la Papa (CIP), Apartado 5969, Lima, Peru, priced US$20.

Michael Cernea, John Coulter and John Russell (eds) Research, Extension, Farmer - A Two-way Continuum for Agricultural Development

This explores Asian experience with the 'continuum' covering India, Indonesia, Bangladesh, Pakistan, Sri Lanka, Thailand, in relation to four themes: Policy and institutional issues; Identification of farmers' production problems; The generation of improved technology and its on-farm validation; The formulation of extension recommendations. The final fifth section is an overview by Don Pickering, in which he summarises the roles of FSR, of subject matter specialists and comments on monitoring adoption rates and the development of farmer participation under the general title 'Sustaining the Continuum'.

Available from The World Bank Publications Sales at the address above.

Norman Clark and Edward Clay, The Dryland Research Project at Indore, 1974-80: An international innovation in rural technology transfer. IDS Discussion Paper No 222, November 1986.

This paper documents the progression from an initial 'top-down' transfer of technology approach by researchers in the Indore project to a participatory approach in which solutions were sought and evaluated jointly by researchers and farmers. A review of the paper by John Farrington will be appearing in Agricultural Administration & Extension Vol 27 No 3.

The paper is available from: Institute of Development Studies, University of Sussex, Brighton BN1 9RE, UK.

Michael Cernea and Scott Guggenheim, Is Anthropology Superfluous in Farming Systems Research? The authors answer 'no', and this paper - originally published by Kansas State University's Farming Systems Research - is available in the World Bank reprint series (either from Michael Cernea in the ADR Department or the Publications Department, citing Reprint No 367)

Douglas Daniels (ed), Evaluation in National Agricultural Research. Proceedings of a Workship held in Singapore, July 1986. (162pp). This volume reviews the state of the art of evaluation - principally of the outputs of specific research projects and programmes, rather than the institutions and mechanisms established to deliver these outputs. Geographical coverage includes the Philippines, India, Thailand, Malaysia, Indonesia, Southern Africa, Peru, Colombia and the Caribbean. Topics include the need for evaluation, its organisation and implementation, and maximising the benefits of external evaluations. National level evaluations were found to be highly variable in depth, scope and conceptual foundation. In general they were poorly followed up and failed to exploit opportunities to generate public support for agricultural research. This report, No IDRC-2540, is available from IDRC, PO Box 8500, Ottawa, Ontario, Canada K1G 3H9.

ISNAR, Improving Agricultural Research Organization and Management: Implications for the Future. Report of a Workshop held in The Hague, September 1986. This volume contains presentations on various aspects of ISNAR activities, and on measures for strengthening national agricultural research services in the areas of management structure and organisation, budgeting, evaluation, information systems and human resource planning. It also contains papers on the structure, organisation and management of research services in six African and two Asian countries. Available from ISNAR, PO Box 93375, 2509 AJ The Hague, Netherlands.

V THE REGISTER

This issue of the Newsletter is being sent to around 400 Network members. Almost all members currently enrolled have completed our questionnaire forms, and their names, addresses and professional interests will be compiled into a Register that will be circulated with the next Newsletter later this year.

If former members come across this Newsletter and wish to renew their enrolment, they should write to ask for a registration form. As before, the right to accept individuals or document centres into network membership rests with the Newsletter's editors.

Agricultural Administration Unit

Overseas Development Institute
Regent's College Inner Circle
Regent's Park London NW1 4NS
Telephone: 01-935 1644

AGRICULTURAL ADMINISTRATION (RESEARCH AND EXTENSION) NETWORK

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Network Paper No. 22

ABSTRACTS OF RECENT FIELD EXPERIENCE WITH FARMER-PARTICIPATORY RESEARCH

by

Adrienne Martin and John Farrington

Abstracts of recent field experience with farmer-participatory research

This Network Paper contains almost 100 abstracts of reports on the general theme of farmer participatory research (FPR). This represents material received in the course of preparing Discussion Paper 19 'Farmer participatory research: A review of concepts and practices'. The fact that much of it remains in unpublished form prompted preparation of these abstracts. Apart from giving Networkers an insight into the range of work in progress under this theme, the abstracts will, when used in conjunction with the list of researchers and projects active in this field (Annex to Discussion Paper 19), permit them to request unpublished material from authors directly.

To prevent the volume of material reviewed from becoming unmanageable, two broad criteria were used in preparing the abstracts:

(i) the emphasis was particularly on adequate coverage of unpublished material. Though much published material is also abstracted, the paper cannot claim to be comprehensive in this regard;

(ii) where a researcher has authored several papers on the same theme, accessibility and lucidity were criteria in selecting from these.

Discussion Paper 19 covers both conceptual and methodological issues in FPR. While certain key papers treating conceptual issues have been abstracted here, the emphasis is on methods developed through field experiment. Published material relating to the conceptual areas is readily available and Discussion Paper 19 provides references which lead into the literature.

Finally, it should be emphasised that although wide, the coverage provided by the abstracts cannot claim to be comprehensive. Material is still being received in response to the postal survey conducted in the early stages of preparing Discussion Paper 19. Further, many projects in this growing area of research are still in their early stages and have not yet reported. This Network Paper is, therefore, restricted

both in time and, to some extent, in scope. It should, nontheless, provide a useful overview of the main areas in which participatory methods are being developed.

Agrawal, B.D., Maize On-Farm Research Project: Report for 1979. Pantnagar: G.B. Pant University of Agriculture and Technology, 1979.

Through surveys and OFT's the project promotes dialogue between researchers and farmers, to better identify problems limiting maize productivity, and to monitor and direct research activities and extension recommendations. Scientists were closely involved with both OFT and station research. The latter was redirected by OFT results and extension recommendations were changed.

* * *

Ahmed, K., Bailey, C., Mondal, M., Bottrall, A., Elias, S., Review report on the progress of project 'Strengthening Farming Systems Research'. Bangladesh Agricultural Research Institute, 1986.

The on-farm research division at BARI, established in 1983/84 develops scientists' skills in communication and research with farmers by training in FSR methods and priniciples, while encouraging practical self reliance. Main features are: gaining local knowledge and problem diagnosis through case studies and discussion with farmers in different economic and ecological categories; attention is given to deviant cases to identify the rationale behind practices; study of homestead production by women scientists; stress on scientists' accountability to farmers; documentation of farmers' hypotheses.

* * *

Ashby, J.A., 'Participation of small farmers in on-farm testing', 1983 (mimeo, draft).

This paper reports on a project to implement and compare three types of farmer participation in on-farm testing of fertilizer technology in the IFDC/CIAT Phosphorus Project, Colombia, South America. The

first section of the paper discusses the need for participatory research methods in technology assessment for small-farm systems and their implications for the organisation of research. Then the objectives, research design and methods of the project are presented. Some basic findings of the research are discussed with reference to their implications for designing on-farm research strategies.

* * *

Ashby, J.A., 'Methodology for the participation of small-farmers in the design of on-farm trials.' Agricultural Administration, Vol.22: 1986, pp.1-19.

This paper evaluates three approaches to farmer participation differentiated by the extent to which farmers participated in defining criteria for the design of on-farm fertilizer trials. The three methodologies are described, and the resultant experimental designs are compared in terms of their criteria for testing fertilizers under small farm conditions. The results show that increased scope for farmer participation produced significant changes in the design of on-farm trials due to important insights into how farmers themselves would evaluate fertilizers, and raised basic research questions about improvements in the technology. The paper concludes that farmer participation in experimental design for on-farm trials requires fewer resources and less time than diagnostic survey research while qualitatively improving feedback between scientists and farmers.

* * *

Ashby, J.A., 'The effects of different types of farmer participation on the management of on-farm trials'. Agricultural Administration and Extension, Vol.24, 1987, pp.235-252.

This paper reports an approach which introduces farmer participation at an early stage of on-farm testing. Farmers participate in setting objectives for the design of trials, and a qualitatively different style of trial management. It was found that crop management and yields for identical experimental treatments differed when farmer participation involved their autonomous decision-making over trial management, than

when farmers and researchers were consulting together. Testing of technology in trials with a 'Farmer Design' developed with farmer participation, and managed by farmers making autonomous decisions, produced different results and conclusions about technology than were obtained from a conventional approach to farmer participation. The findings show how important it is for on-farm research programs to train their staff in methods for implementing farmer participation when the objective is to test technology under 'farmer managed' conditions, in order to avoid bias in conclusions about recommended technologies.

ATIP, Farming Systems Activities at Mahalapye: Summary 1982-85. ATIP Research Report No.1, Agricultural Technology Improvement Project, Ministry of Agriculture, Gaborone, Botswana, 1986a.

ATIP, Farming Systems Activities at Francistown: Summary 1983-85. ATIP Research Report No.2, Agricultural Technology Improvement Project, Ministry of Agriculture, Gaborone, Botswana, 1986b.

The Agriculture Technology Improvement Project was established in response to a need to improve and expand the capacity of national research and extension systems to develop and extend farming systems recommendations relevant to the needs of small farmers. Institutionalisation of the farming systems approach is a central feature of the project. The project was established on the premise that earlier R&D with a component of OFT had not adequately focussed on farmers' problems or taken farmers' criteria for evaluation adequately into account. The two reports summarise activities at the Francistown and Mahalapye locations.

* * *

Bangladesh Agricultural Research Institute (BARI), Internal Review Workshop and Research Program Planning, July 5-10, 1986. BARI, On-Farm Research Division, Joydebpur, Gazipur, 1986.

There is a need for study of traditional knowledge and development of hypotheses based on farmers' practices. Allocation of research resources should reflect the needs, aspirations and practices of the majority of poor farmers. Recommendations are made for more systema-

tic organisation, communication, reporting and analysis of OFTs. Fieldmen and assistants are considered as colleagues in research planning and activities and the principle of accountability between scientists and farmers needs to be established.

* * *

Bernstein, R.H., Fitzhugh, H.A., Knipscheer, H.C., 'Livestock in farming systems research'. (mimeo), undated.

This paper reviews the contribution of livestock to farming systems and national economies and draws attention to the need for explicitly including a livestock component in FSR/D projects. A typology of livestock systems is presented to provide a general framework for describing the diversity that characterises agricultural systems and the role of livestock. Several ongoing programs, networks and projects that focus on the livestock component of the farming system are briefly described. Using the generally accepted stages in FSR/D project as a guide, problems that are encountered in utilising elements of the conventional cropping systems methodology to implement livestock systems projects are discussed and adaptations to livestock farming systems are suggested. Finally, future directions in FSR/D are proposed, with particular reference to the livestock component.

* * *

Biggs, S.D., 'Generating agricultural technology: Triticale for the Himalayan Hills'. Food Policy, February, 1982, p.69-82.

This article is concerned with the process of generating agricultural technologies in public sector research and development (R & D) institutions. The case study examines a research programme to develop triticale as a food crop for the people of the Himalayan hills. It explains how significant changes occurred in the priorities and organisation of a triticale improvement programme in India as a result of the timely analysis of information from on-farm trials and surveys, a review of past triticale data and a field workshop in the Himalayas.

* * *

Biggs, S.D., 'Monitoring and control in agricultural research systems: Maize in Northern India'. Research Policy, vol.12: 1983a, pp.37-59.

This paper examines the ways in which an on-farm maize research project influenced, over a four-year period, the overall priorities and programmes of a maize research programme in Northern India and also generated information for agricultural extension systems. Special attention is given to analysing the way in which the three components of the on-farm research project (trials, surveys and communication methods) provided a learning and feed-back linkage from village level situations to experiment station research. Lessons from the case study include the importance of (1) having the on-farm research and experiment station research under the same research decision-maker; (2) conceptualising research as a dynamic and adaptive process with even major changes taking place between years; (3) being able to change easily in response to farm level information, the research priorities and the allocation of research funds between disciplines, research stations, etc; and (4) allocating at least a minimum of research resources to the on-farm research component of an overall programme.

* * *

Biggs, S.D., Agricultural Research: A Review of Social Science Analysis. Discussion Paper 115, Norwich: School of Development Studies, University of East Anglia, 1984a.

The review is for agricultural research policy makers and planners concerned with the role of social science analysis in agricultural research. It assesses a broad range of different types of historical (ex-post) and planning (ex-ante) literature. Studies of international, national and informal research and development (R & D) systems are covered. The technologies discussed mostly concern seed varieties, agronomy practice, agricultural chemicals and different forms of mechanisation.

* * *

Biggs, S.D., 'Institutional innovations by agricultural researchers'. Paper prepared for workshop on Farming Systems Research for Resource-Poor Farmers in East India, L.M. Mishra Institute and Rajendra Agricultural University, Patna, 24-28 November, 1986.

Although the principles of FSR are of wide potential validity, differences between institutions in historical, political and socio-economic setting, and in combination of disciplines and access to research resources means that each would have to be innovative in developing its own techniques for performing the different functions of FSR. It is becoming recognised that researchers are responding to this requirement, thereby playing a critical role in 'de-packaging' and selectively using only parts of methods and models used in other situations.

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Biggs, S.D., and Clay, E., 'Sources of Innovation in Agricultural Technology'. Paper prepared for the Development Studies Association Workshop on Science and Technology, Oxford, March 1980, mimeo, draft).

This paper focusses attention on environmental and biological characteristics of agriculture which shape the process of technical innovation. The interaction of natural selection and human purposive selection and experimentation is shown to be the primary source of a continuous process of innovation placing farmers as well as the formal R and D system in an innovative treadmill. The importance and limitations of farmer informal R and D are reviewed. A discussion of the characteristics and potential of the formal R and D system leads to the identification of some major problems of policy inherent in, and specific to agricultural R and D. These include: genetic vulnerability, choices between environmentally specific or widely adapted technologies, the location of research activity and the links between agricultural producers and scientists.

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Biggs, S.D. and Clay, E., Generation and Diffusion of Agricultural Technology: A Review of Theories and Experiences. World Employment Prog. Research Working Paper, Technology and Employment Programme, Geneva: ILO, 1983.

This review of theories of agricultural technology generation and diffusion attempts to identify major sets of themes and preoccupations which have resulted in different types of theory and policy action. It identified five different themes - world economy, distributionalism, national factor endowments, environmental, research and extension institutions - which came in response to the preoccupations of and the policy action in the 1950s and 1960s of modernisation and transfer theory. Priorities for future research funding include conservation of non-renewable resources, selective labour intensive technologies and stability in farming systems. The analysis of research and diffusion institutions is a major area where research is needed.

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Biggs, S.D. and Gibbon, D., 'The farming systems approach: Success or otherwise?' Norwich: School of Development Studies, University of East Anglia, 1986. (mimeo). A much-reduced version was published in SPAN, Vol.29(2), 1986, p.53.

Biggs and Gibbon consider that FSR is an approach to organising agricultural research and extension, rather than a set of techniques. It should adapt to specific social and political situations, taking into account environmental impact, effects on employment, marginal groups and gender issues. It should strengthen linkages between different sections of the ARE system and encourage on-farm participation and innovation by local scientists, and the participation of farmers in setting research priorities and the management of on-farm research.

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Brammer, 'Some innovations don't wait for experts: A report on applied research by Bangladeshi peasants'. Ceres, Vol.13(2): 1980.

Brammer describes an unofficial research and extension network amongst farmers, operating independently of the official programme. It has a practical orientation, and is capable of dealing with highly complex

cropping systems and adaptations appropriate to specific micro-environments eg. rice varieties in relation to anticipated flooding depth and planting methods on saline capped soils.

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Bunch, R., Two Ears of Corn. Oklahoma: World Neighbours, 1985 (first published 1982).

Bunch argues that effective approaches to agricultural development have been based on experimentation by farmers in their own fields. Projects should aim to assist farmers in developing their own agriculture, through farmer involvement in problem identification, programme planning and research agenda, and development of village-run extension training. Criteria for choosing appropriate technology for small scale experimentation, and for institution building are discussed.

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Bunch, R., 'Case study of the Guinope Integrated Development Program, Guinope, Honduras.' For presentation to the International Institute for Environment and Development's conference on Sustainable Development, London, April, 1987.

Beginning in 1981 the programme worked with villagers on soil conservation, technology for increasing maize production, extension training and vegetable production. A loose knit federation of village agricultural clubs was established, to coordinate experiments and share results.

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Byerlee, D., Biggs, S.D., Collinson, M.P., Harrington, L., Martinez, D., Moscardi E. and Winkelmann, D., 'On-farm research to develop technologies appropriate to farmers'. Paper presented to International Association of Agricultural Economists' Conference, Banff, Canada, September 1979.

Based on CIMMYT's experience with National Research Programmes, the authors advocate the collaboration of technical and social scientists in OFR. Representative practices, priorities and problems are diagnosed with farmers through interviews, informal and formal surveys. Rapid analysis of this data allows delineation of recommendation domains. Solutions may be based on the practices of innovative farmers and are evaluated with a view to their short run pay off, social and economic consequences, level of risk and consistency with national policy. On-farm experiments should be conducted under farmers' conditions and actively involve farmers and extension workers to permit proper evaluation. OFTs can help establish priorities for experimental station research, policy making and extension. The need for practicable and replicable methodology in the context of scarce research resources is emphasised.

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Byerlee, D., Harrington, L. and Winkelmann, D.L., 'Farming systems research: Issues in research strategy and technology design'. American Journal of Agricultural Economics, December 1982, pp.897-904.

On-farm research with a farming systems perspective can deal effectively with the complexities of the physical and social environment of farming households. Long-term research, attuned to farmers' problems is needed, but efficiency in costs, data processing and personnel time is important. The authors suggest a focus on the few most promising and feasible opportunities to increase productivity in different recommendation domains, consistent with policy objectives. Sequences of data collection are outlined, and suggestions for training of economists in skills for OFR are made.

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Canadian Universities Service Overseas, Seminar Report: Rainfed Rice-Fish Farming in Southern N.E. Thailand, Surin, 1983.

The seminar reported here was held at the Surin Agricultural Technology College, N.E. Thailand, 9-11 November 1983, with the objec-

tives of providing a forum for farmers to exchange ideas on rice-with-fish farming, for researchers and extensionists to learn from farmers, and for the future directions of rice/fish R & D to be determined. Discussion groups were arranged in which farmers could interact with others - including those new to the technique - in their own dialect.

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Chambers, R., 'The small farmer is a professional'. Ceres, Vol.13(2): 1980.

Outlines the biases and limitations in conventional single-discipline approaches to rural technology development. Urges a revised approach seeking to understand farmers' situations in a holistic context which value ITK, avoid excessive data collection and avoid on-station bias. The approach should be interdisciplinary, acknowledge the value of learning from small farmers and of learning by doing.

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Chambers, R. and Ghildyal, B.P., 'Agricultural research for resource-poor farmers: The farmer-first-and-last model'. Agricultural Administration, Vol.20, 1985, pp.1-30.

Claims that the normal 'transfer-of-technology' (TOT) model for agricultural research has built-in biases which favour resource-rich farmers whose conditions resemble those of research stations. TOT approaches have been modified through on-farm trials and demonstrations but the basic model and approach remain the same. A second emerging model is 'farmer-first-and-last' (FFL). This starts and ends with the farm family and the farming system. It begins with holistic and interdisciplinary appraisal of farm families' resources, needs and problems, and continues with on-farm and with-farmer R and D, with scientists, experiment stations and laboratories in a consultancy and referral role. FFL fits the needs and opportunities of resource-poor farm families better than TOT, but there are obstacles to its development and introduction. These can be tackled step-by-step, through

combinations of methodological innovation, interdisciplinarity, including the social sciences, and provision of suitable resources, rewards and training.

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Chambers, R. and Jiggins, J., Agricultural Research for Resource-Poor Farmers: A Parsimonious Paradigm. IDS, University of Sussex: Discussion Paper 220, 1986.

With the transfer-of-technology (TOT) model of agricultural research - part of the normal professionalism of agricultural scientists - scientists largely determine research priorities, develop technologies in controlled conditions, and then hand them over to farmers via agricultural extension services. The TOT model has been adapted and extended through multi-disciplinary farming systems research (FSR) and on-farm trials.

In contrast, the farmer-first-and-last (FFL) model transfers initiative to resource-poor farmers. The authors argue that FFL fits the diverse and complex conditions and needs of RPFs better than TOT, and makes more sparing and cost-effective use of scarce scientists. A parsimonious form of FFL avoids multidisciplinary teams and much data gathering and analysis by relying on farmers' knowledge and self-interest.

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Chavangi, N.A., Engelhard, R.J., Jones, V., 'Culture as the basis for implementing self-sustaining woodfuel development programmes'. The Beijer Institute, PO Box 56212, Nairobi (mimeo, draft), 1985.

Fuelwood shortages in Kakamega District, Kenya, were due not to a shortage of woody biomass but to the social and cultural forces within households which determine access to wood produced on farms. Discussions with men and women allowed potential intra-household conflicts to be avoided by identifying and promoting a plant capable of producing woody biomass to which conventional taboos and customs do not apply.

Colfer, C.J.P., Gill, D. and Agus, F., 'Indigenous agricultural models: a source of insight for soil science', 1987b (mimeo, draft).

This USAID-funded project studied aspects of traditional agriculture prior to establishing agricultural development projects with transmigrants, in particular the indigenous soil and land classification systems. Soil sampling was based on indigenous definitions: household surveys including land ownership, income and labour distribution were undertaken.

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Collinson, M.P., 'A low cost approach to understanding small farmers'. Agricultural Administration, Vol.8, 1981, pp.433-450.

In view of the high cost of research, a broad focus is advocated rather than a narrower in-depth study. Procedures for establishing recommendation domains are illustrated with reference to Central Province, Zambia - including zoning, exploratory survey, and verification survey. An attempt is made to assess time/manpower requirements.

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Collinson, M.P., Senior Agricultural Administrators' Networkshop on Farm Research. Lesotho, November 1985

The role of OFR and its linkages with agricultural research and extension institutions, policy and planning, is discussed. Types of farmer participation in experimentation are classified and the involvements of different participants over the various stages of the research cycle are outlined.

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Cornick, T., Alcober, D., Repulda, R. and Balina, R., 'Farmer participation in OFR & E: Some farmers still say "no". Lessons from the FSDP Eastern Visayas', Farming Systems Research Symposium, Kansas, 1985.

Social structure and cultural norms make it difficult to identify when farmer participation is genuine. The provision of material incentives is likely to confuse the issue further. Case studies of 2 villages in the E. Visayas project (Philippines) showed wide variations in uptake of the technologies on which agreement had earlier been reached. Differences in the suitability of the technology, in the farming communities and in the way the trials were initiated account for these variations.

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Davidson, A.P., 'Does farming systems research have a future?', Agricultural Administration and Extension, Vol. 24, 1987, pp.69-77.

Davidson distinguishes FSR activities intended to generate information useful for infrastructural planning and policy making, from the more frequently emphasised technical research geared towards evaluation and delivery of a technology. He argues that micro-level research should be placed within a macro-level context, on both practical and theoretical grounds, and that FSR necessarily has a wider social and political dimension.

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de Guia, O.M.J., Sevilla, P.M., Posas, O. and McDowell, R.E., Report on Livestock Research and Development for FSDP, Eastern Visayas, Philippines. FSDP, Report No.21, 1984.

Collaboration with farmers' groups allows better understanding in traditional livestock/crop systems, joint problem definition and description of sub-systems. It facilitates analysis and evaluation of local feed resources, design and testing of a few low-cost interventions centered on on-farm resources, monitoring through visits, measurements and data collection and awareness of institutional and cultural constraints.

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Dommen, A.J., 'The bamboo tubewell: A note on an example of indigenous technology', Economic Development and Cultural Change, Vol.23(3): 1975.

Describes how, in response to the high cost of steel pipe for tubewells, an innovative farmer in Saharsa District, Bihar, experimented with a bamboo and coir tube. This proved successful, and within 4 years 33,000 bamboo tube wells were in use in Bihar.

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Fernandez, M.E., 'Participatory-action-research and the farming systems approach with highland peasants'. Technical Report Series, Small Ruminant Collaborative Program, Department of Rural Sociology, University of Missouri, November 1986.

This study attempts to critically analyse experiences in the high Andes where participatory-action-research is being carried out on production problems defined by peasant farmers. Alternative solutions are selected or designed from the perspective that the production unit is an integrated interacting system.

The reasons for choosing particular methodological tools and how they have been used in community situations are discussed. A series of case studies illustrate the possible implications of these tools for research and extension efforts.

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Fernandez, M.E., Salvatierra, H., ' The effect of gender related production management on the design and implementation of participatory technology validation': Selected Proceedings of Kansas State University's 1986 Farming Systems Research Symposium, (eds) C.B. Flora and M. Tomecek, 1986, pp.739-750.

The authors consider that agricultural production in communities cannot be understood as merely the sum of single enterprises under the direction of male household heads. They distinguish additional groups with varying degrees of experience and decision making power, eg. managers of sub-units, 'task implementors' and reciprocal work groups, which must be involved in participatory research.

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Galt, D.L. and Mathema, S.B., Farmer Participation in Farming Systems Research, FSSP, Networking Paper No.15, 1987

In more sophisticated FSR approaches farmers are considered as partners in agricultural research and extension yet shorter and more cost effective methods for including farmers as participants are needed. The article addresses a number of more frequently posed questions on FPR including: Why FPR? Do farmers really perform research? What can researchers learn from farmers? Should FPR be restricted to the design of trials? Should FPR be at individual, group, village or higher levels? What should be the pattern and frequency of monitoring of household decision-making? What is the role of extension in FPR?

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Ghildyal, B.P., 'Rethinking soil physics research', Journal of Indian Society of Soil Science, Vol.32, pp.556-574, 1984.

Ghildyal cites areas of tropical agro-ecosystem research which he argues are in need of greater attention, namely soil and climate interaction, and soil fertility problems affecting marginal and subsistence farmers in rainfed systems.

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Gibbon, D.P., 'On-farm research: some alternative approaches'. Paper for symposium on Farming Systems Research and Extension, Kansas, October 13-16, 1985.

An assessment is needed of the relative merits of different approaches to OFR with respect to their contribution to overall research, government objectives, problems and needs of farmer clients, and environmental issues. Much OFR has focussed on a single crop or livestock type whereas a broader perspective which considers biological and organic systems and places farmers in the context of social structure and the political economy is necessary.

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Gupta, A.K., 'Strengthening Farming Systems Research Project'. Half yearly report, No.2, 1986a (mimeo).

Gupta outlines the activities of the project at the old and new FSR sites of the Bangladesh Agricultural Research Institute, and the work of female scientists in the homestead study. Important aspects are: farmers' involvement, scientist learning through discussion and case study, workshops with extensionists, self-criticism by scientists, attention given to traditional knowledge and management of household production and resources.

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Gupta, A.K., 'Matching farmers' concerns with technologists' objectives in dry regions: an exploratory study of scientific goal setting'. Ahmedabad: Indian Institute of Management, 1987 (mimeo, draft).

Inter alia seeks to understand for India what determines the bias in choice of doctoral dissertation topics in agriculture-related subjects towards the better-endowed areas. Important factors include the socio-economic background of students and the desire to avoid the risks of experimental failure as a result of uncertain climatic conditions in resource-poor areas.

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Hatch, J., 'Peasants who write a textbook on subsistence farming: Report of the Bolivian Traditional Practices Project'. Cornell University: Rural Development Participation Review, Vol.2(2), 1981, pp.17-20.

The project enabled two groups of peasant farmers in difficult agroecological environments to write a 'textbook' of their indigenous production systems and subsistence strategies. Participating households kept a daily journal of their crop, livestock and other activities. Bolivian scientists made regular visits to compile the data and to learn from farmers through 'task narratives', ie. farmer-planned and conducted classes. Three female technicians worked with women. The information was intended to generate insights to guide use of pre-

sent resources and to explore potential for transforming production by a combination of traditional practices and science.

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Heinrich, G.M., Gray, R., Masikara, S. and Worman, F., 'Farmers, extension and research link-up for agricultural development'. Botswana: Agricultural Technology Improvement Project, 1987 (mimeo).

Describe work with groups of farmers at 3 villages in Tutume District as part of the ATIP. The purpose of group activity is to identify researchable problems, extend known technologies and develop improved FS. Farmers conduct their own trials and report back to the group at monthly meetings attended by research and extension staff. An evaluation of the approach is not yet available.

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Hildebrand, P.E., 'Combining disciplines in rapid appraisal: the Sondeo approach'. Agricultural Administration, Vol.8, 1981, pp.423-432.

In Guatemala a reconnaissance survey team of ten, equally split between socio-economists and technologists and operating in pairs, has been used to assess farmer constraints and technology needs in advance of agricultural research. On each of four days the pairing changes. Quantified information and questionnaires are not required and the survey lasts only one week. Daily post-survey team discussions are regarded as essential. Each member of the team prepares a report and these are finally amalgamated into one joint report. Experience has shown that combined disciplines can, if well managed, produce incisive and efficient diagnoses of rural conditions and needs and educate the participants in multidisciplinary thinking.

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Hildebrand, P.E., 'On-farm research: organised community adaptation, learning and diffusion for efficient agricultural technical innovation', FSSP Newsletter, Vol.3(4), 1985.

The importance of the cumulative process of community learning and adaptation of technology through observation and experience is empha-

sised. On-farm trials conducted over a wide range of environments and diffusion domains facilitate information flow and increase farmers' opportunities for direct experience of new technologies.

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Horton, D.E., Social Scientists in Agricultural Research: Lessons from the Montaro Valley Project, Peru. Ottawa: IDRC, 1984.

Describes 1977-80 CIP farm-level interdisciplinary research in the Mantaro Valley, Peru. The objectives were to sensitise CIP and national programme scientists to the value of OFR, to develop and field-test procedures for OFR with potatoes and to train national programme staff in the use of OFR techniques. Stresses that OFR requires flexible and adequate resources, that informal surveys have many potential advantages and that many results can be extrapolated. Examples stress the innovativeness of small farmers, and their willingness to adapt recommended practices to their circumstances.

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Horton, D., Prain, D., 'CIP's experience with farmer participation in on-farm research'. Paper presented to the Taller para America Latina sobre Investigacion de Frijol en Campos de Agricultores, CIAT, Cali, Colombia, 16-25 February 1987.

Outlines how FPR has strengthened OFR in five areas. It has:

(i) improved scientists' understanding of farmers' conditions and their simulation in OFT;

(ii) improved agronomic and socioeconomic analysis;

(iii) enabled farmers to assess results for themselves;

(iv) facilitated the diffusion of information;

(v) improved linkages between the formal and informal R & D systems.

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Jiggins, J. 'Farming systems research: New name for old habits or the key to increasing farm productivity?' An exploration with reference to Sub-Saharan Africa, 1981 (mimeo).

Jiggins notes some of the major criticisms of FSR - poor 'customer' identification, lack of relevance, limited awareness of holistic context of productive activities. She emphasises the relevance of internal household structures for explaining poverty and productivity and advocates micro-research methods with strong farmer participation, although recognising that these methodologies need elaboration.

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Jiggins, J., Gender Related Impacts and the Work of IARCs. CGIAR Study Paper No.17, 1986.

Jiggins identifies a major theoretical weakness in the study of gender issues - the absence of a conceptual framework linking gender relations of production and reproduction between the public and domestic domains. She finds gender bias perpetuated and institutionalised at IARCs - through training programmes, sources of information and survey procedure and participant selection for on-farm trials.

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Jintrawet, A., Smutkupt, S., Wongsamun, C., Katawetin, R., and Kerdsuk, V., 'Extension activities for peanuts after rice in Ban Sum Jan, North East Thailand'. Khon Kaen University: FSR project, June 1985.

Reports on farmer-participatory techniques for inter-community transfer of existing techniques of growing peanuts after a rice crop. Two techniques were used: ten farmers having suitable agro-ecological conditions were shown slides of the techniques and asked for their reactions. They then participated in on-farm trials. Two of these were selected for a visit to the technique's place of origin.

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Johnson, A.W., 'Individuality and experimentation in traditional agriculture'. Human Ecology, Vol.1(2), 1972.

In contrast to the popular perception that traditional agriculture is characterised by conformity to traditional rules, Johnson notes the diversity of individual practices, and argues that systematic, low-risk experimentation is the norm. With the introduction of modern technology, there is a need to preserve the low risk experimentation approach, to maintain diversity and test under local conditions.

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Jones, S., Fleming, E. and Hardaker, B. 'Perspectives on Agricultural Research: A potential role for economics and social science ' South Pacific Smallholder Project Working Notes No. 10. Solomon Islands: Ministry of Agriculture, 1986.

The project aims to develop and extend technologies for food and cash crops for smallholders, through on-farm research, based on ITK. On-farm work should also identify problems to be researched in the formal research system. Meetings, on-farm trials, extended visits and discussions are held with cooperating farmers in five villages in different agroecological zones. Transfer of local varieties between agroecologically similar areas in different parts of the country is promoted.

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Knipscheer, H.C., and Suradisastra, K. 'Farmer participation in Indonesian livestock farming systems by regular research field hearings (RRFH)". Agricultural Administration, No.22, 1986, pp.205-216.

Factors such as mobility of animals and their long life-cycle, lack of synchronisation of experimental units, non-divisibility and size of units, multiplicity of outputs and high statistical variability constrain livestock-oriented FSR and aggravate the problems of on-farm livestock research. During the testing stage of FSR, Regular Research Field Hearings (RRFH) can improve communication between scientists and farmers, thereby increasing mutual understanding and willingness to collaborate in evaluating potential technologies, and test results. Attendance records and discussion-participation rates indicate that RRFH have been successful in Indonesian small-ruminant research.

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Korten, D.C., 'Community organisation and rural development: A learning process approach'. Public Administration Review, September/October 1980.

Effective community controlled social organisations are important instruments enabling the rural poor to give meaningful expression to their views, to mobilise self-help activities and enforce demands. Past community development programmes have often lacked participation by the rural poor in planning and implementation. Korten argues that funding should take account of the need to develop this institutional capacity, and not be geared solely to immediate results.

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Kujawa, M.A. and Oxley, J. 'Methodologies for conducting on-farm livestock research with mixed farming systems': Selected Proceedings of Kansas State University's 1986 Farming Systems Research Symposium, (eds) C.B. Flora and M. Tomecek, 1986, pp.532-549.

This review of on-farm livestock research suggests that, because OFLR is relatively recent and methodologies are still developing, no clear set of guidelines exists. With such diversity and variation found at each research site, success in farming systems research will depend on an ability to modify experimental procedures to 'fit' the research environment and objectives. For example, much OFLR is oriented towards determining statistically significant differences between treatments. If much variation exists between experimental units, tests for significance are best left to on-station research. OFLR should be limited to farmer managed trials using their criteria.

Publications of OFLR should include explicit descriptions of all methodologies used. Additional study into the effectiveness of research methods is needed.

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Lightfoot, C., 'On-farm experiments in farming systems research'. (mimeo, undated)

This paper argues that the conventional on-farm experimental methods employed by many Farming Systems Research programmes are inappropriate to FSR because they lack its essential components. It is suggested tha on-farm experimental methods which do have the unique characteristics of FSR should be developed. Conventional on-farm experimentation and the unique characteristics of Farming Systems Research are first described. Examples from FSR programmes in Southern Africa show how conventional on-farm experimentation does not satisfy the special requirements of FSR. An experimental method based on the superimposition of treatments on to existing crops is then described which shows how on-farm experimental methods can incorporate the characteristics of FSR.

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Lightfoot, C., A report on the principles and practices of FSR used by Farming Systems Development Project. Eastern Visayas, Philippines, Report No.42, Cornell University, 1986.

The report, arising from FSR training lectures, outlines the development of concepts to guide field researchers. Research is an iterative process: involving description by farmers of their problems and classification systems, diagnosis of cause and effect, design of solutions involving farmers, on-farm testing which must be understood and implemented by farmers and assessed by them, and extension. The object is to build farmers' capability to judge and adapt technologies.

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Lightfoot, C., 'Indigenous research and on-farm trials'. Agricultural Administration and Extension, Vol.24: 1987, pp.79-89.

The combination of conventional and indigenous research methods allows farmers to adapt technologies to their own specific conditions, and generates better feedback on appropriate research needs. Indigenous

research can be the basis for OFT, and formally designed trials may be unnecessary where farmers have their own methods. There are problems: skills needed to elicit farmer knowledge, the slow pace of indigenous research and risks borne by farmers. Lightfoot argues for balanced participation of farmers and researchers.

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Martin, A.M., Gibbon, D., On-Farm Trials 1977/79. FSR Programme, Research Report No.8, ICARDA, Aleppo, Syria, 1980.

The paper describes farmers' involvement in and perceptions of the cereal programme's field verification trials at ICARDA. Secondly, it gives an account of three farmer-requested on-farm trials run by the FSR programme in their study villages and the problems and issues raised. Thirdly, recommendations for future on-farm trials work are are made.

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Mathema, S.B. et al., Report on the process of the group survey and on-farm trial design activity, Naldung Village Panchayat, Kavre District, Nepal. Khumaltar:Department of Agriculture, Socio-economic Research and Extension Division, 1986.

Describes treks conducted jointly between agriculture, animal health and forestry department staff to identify problems requiring research, propose quick 'opportunistic' trials, and feed information back to commodity and disciplinary agricultural researchers. Interviews with groups of farmers organised by local ward chairmen proved more efficient than individual interviews. In identifying problems, scientists tended to focus on those resolvable at an individual farm level, whereas local leaders saw community-level problems as more important. The treks opened the way for discussion of future interdisciplinary work, on such issues as what the composition of a trek team should be and how the views of women might more adequately be solicited.

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Matlon, P., Cantrell, R., King, D. and Benoit-Cattin, H., (eds) Coming Full Circle: Farmers' Participation in the Development of Technology, IDRC, 1984.

These proceedings of a meeting of natural and social scientists at Ouagadougou, 20-25 September 1983, conclude that farmers can assist in the analysis of their farming systems, act a source of technology, modify and evaluate OFT. Increased farmer participation can be achieved if researchers respect and make use of farmers' knowledge, ensure they understand the purpose of experiments and allow farmers to modify experiments. The promotion of farmer-to-farmer interaction is endorsed, as is a cross-fertilisation of ideas between NGOs (who have participatory experience) and other research institutions (which, at the time of writing, did not).

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Maurya, D.M., 'On-farm rice research for resource poor farmers of Eastern Uttar Pradesh, 1984-86'. Department of Genetics and Plant Breeding. Narendra Deva University of Agriculture and Technology, Faizabad, Uttar Pradesh, India, 1986.

Emphasises the importance of understanding local agricultural systems in developing appropriate rice technology for resource-poor upland rainfed rice farmers, through OFT. He suggests farmers should be allowed to select, test and perfect alternatives from a range of new technologies according to their own criteria and objectives. More work is necessary on the design of statistically valid trials appropriate to conditions of high variability.

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Maxwell, S., 'The role of case studies in Farming Systems Research'. Agricultural Administration, Vol.21: 1986, pp.147-180.

Maxwell advocates the study of a small number of 'cases' as complementary to rapid appraisal techniques, particularly where long-term, sensitive data of a causal or complex nature is needed. He outlines the advantages and problems, arguing that case studies permit better

multidisciplinary contact and are cheaper than large scale multi-visit surveys.

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Maxwell, S. 'Farming Systems Research: Hitting a moving target'. World Development, Vol.14(1), 1986, pp.65-77.

The paper argues that although targetting is a key element in farming systems research, neither the concepts nor the procedures take sufficient account of the fact that farming systems are in constant flux: the 'target' is not static, but continuously on the move. A framework is presented for the analysis of change and the practical implications for farming systems research are analysed.

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McDowell, R.E. 'Systems approach to livestock production'. Cornell International Animal Science, No.7: 1984.

Guidelines are given for developing a strategy for planning and implementation of change-oriented livestock programmes. Working within a farming systems context, the stages of research are discussed and problems of institutional, cultural and economic constraints are raised.

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Moran, E.F., 'Socio-economic aspects of research on tropical soil biology and fertility'. Indiana University (mimeo).

Farmers' local knowledge and soil conservation practices make an important contribution to research on soil fertility maintenance in tropical areas, by providing ideas and priorities for experimental testing. Moran notes the need to understand practices in the wider household context, and the necessary participation of a range of informants if researchers are to draw on differential knowledge. Knowledge of local soil classification systems is also important for an understanding of management sequences and can assist in site selection and description for OF trials.

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Netting, R., 'Farming systems change and indigenous agrarian development: Kofyar farmers of the Nigerian savanna'. University of Arizona (unpublished draft).

Netting traces indigenous change among the Kofyar, N. Nigeria, from traditional intensive homestead subsistence cultivation, to extensive cash cropping in the Benue Plains. An analysis of such responses can help isolate conditions conducive to planned interventions. The Kofyar received no technical or financial assistance; the adaptation was based on familiar crops, tools, methods and labour organisation.

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Norem, R.H., 'Basic interviewing and note taking skills for the informal survey in FSR & E': Selected Proceedings of Kansas State University's 1986 Farming Systems Research Symposium, (eds) C.B. Flora and M. Tomecek, 1986, pp.56-57.

Norem discusses the skills necessary for successful scientist/farmer interaction: techniques for establishing rapport, 'attending' behaviour, question structure, observation, providing positive feedback, sharing experience and focussing discussions, and problems of recording and interpreting information.

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Okali, C. and Knipscheer, H.C., 'Small ruminant production in mixed farming systems: Case studies in research design'. Paper for FSSP 5th Annual Research and Extension Symposium, Kansas State University, October 1985.

Research methodology in on-farm trials remains generally limited to the conventional approach which hinges on control of variables, replication, numerical measurement and focus on the technology itself. Transferring this on-station research methodology to farmers' fields has led to the exclusion of the farmers from the design process and reduced them to labourers. But family farmers being small have the

capacity to incorporate innovations into their system in a variety of ways which scientists are unable to predict. The variability in farm populations and the size of their enterprise require alternative sampling and evaluation procedures. This is particularly relevant for secondary farming systems enterprises such as small ruminants.

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Prain, G.D. and Samaniego, F.U., 'Beyond the farming system: on-farm commodity research in the Peruvian Highlands'. Paper for Farming Systems Research Symposium, Kansas, 5-8 October 1986, (draft).

Whilst there has been a positive movement in national and international agricultural research towards understanding and working with small farming systems, the resulting approach has generally concentrated on localised, in-depth studies. However, both farmers and national programmes rely on interconnections, which cross-cut farming systems boundaries and affect the systems themselves. Such interconnections are often crop-specific. Commodity research programmes with a strong on-farm component have a real potential for understanding farming complexities in both local and extended contexts. In the Peruvian Central Highlands it was possible to identify informal potato seed systems involving interconnections within complex local farming systems and between farmers and an extensive marketing system which had implications for the strategy of distributing high quality seed being utilised by the Peruvian National Potato Programme.

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Raintree, J.B., 'Extension, research and development in Malandi: Field test of a community-based paradigm for appropriate technology innovation among the Tagbanwa of Palawan'. D.Phil. Anthropology, Hawaii, December 1978.

Raintree explores the methodology for stimulating direct community involvement in research and development of appropriate technologies through an account of his work among the Tagbanwa. He emphasises the critical role of the community based catalyst worker in stimulating local problem solving based on traditional concepts and technology.

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Rawson, E.M. and Grosz, R.K., 'Institutionalising farming systems research and extension in Rwanda's Buberuka Highlands': Selected Proceedings of Kansas State University's 1986 Farming Systems Research Symposium, (eds) C.B. Flora and M. Tomecek, 1986, pp.33-45.

Describes efforts in the Farming Systems Improvement Project to institutionalise FSR/E into existing research and extension systems without creating an artificial project-dependent structure. The project aims to involve farmers, researchers and extensionists in research and dissemination follows a Rwandan government re-structuring of research services in 1983 to facilitate farmer participation.

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Rhoades, R.E., Breaking new ground: Agricultural Anthropology, Lima: CIP, 1984.

Departing from a review of the historical role of anthropologists as defenders of traditional agriculture against modernisation, this book argues that the insights they could have provided would have assisted sensitive agricultural development, and outlines the positive experience of CIP in drawing together natural and social scientists at the earliest stages of research projects.

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Rhoades, R.E., 'Informal survey methods for farming systems research'. Human Organisation, Vol. 44(3), 1985, pp.215-218.

Outlines useful procedures for interaction with small farmers, emphasising the importance of good preparation (reviewing earlier reports; deciding what kind of information is required), of an attitude of politeness and sympathetic enquiry, of timing interviews to coincide with slack periods for the farmer, of observing local customs and adequately writing up the interview once completed.

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Rhoades, R.E., ' Improving the food systems of Asia: The role of the farm household in potato and sweet potato research and development'. Discussion proposal to the Dutch Government from CIP, October 1986.

This proposal, with funding agreed in March 1987 and led by Rhoades, seeks to broaden the user-group focus of agricultural research, which, even with recent participatory methods, has focussed narrowly on 'the farmer', to the neglect of women and other important actors at or beyond the household level, in food production and utilisation. The proposal will identify, train and support individuals from Asian ldcs to conduct research on potatoes and sweet potatoes which focuses on these neglected areas. A specific intention is to facilitate joint activities between ldc researchers and western social and technical scientists.

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Rhoades, R.E., 'Using anthropology in improving food production problems and prospects'. Agricultural Administration, Vol.22, 1986, pp.57-78.

Explores the role of social anthropology in agricultural research and development. For the first time since the 1940s, social anthropologists are showing an interest in applying their profession to problems related to basic food production and utilisation. Similarly, development agencies and agricultural research organisations are more receptive to anthropology than at any point in history. Potentials, limitations and misconceptions of using anthropology for improving basic food production are discussed. A case study of agricultural anthropology at CIP is described.

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Rhoades, R.E. and Booth, R.H., 'Farmer-back-to-farmer: A model for generating acceptable agricultural technology'. Agricultural Administration, Vol.11, 1982, pp.127-137.

Rhoades and Booth argue that the increasing emphasis on inter-disciplinary research since the 1970s has in practice produced multi-

disciplinary teams of scientists with independent roles rather than interdisciplinary teams.

Farmer-back-to-farmer involves farmers, social scientists and natural scientists working together to reach a common diagnosis of the problem and to design, conduct, evaluate and disseminate research. The research process is iterative and interactive; conflict may be necessary if perspectives do not easily coincide.

The example is quoted of potato storage in Peru: Scientists working on-station at CIP had considered storage losses to be the most important post-harvest problem, whereas the anthropologist, based on his research in villages, suggested that farmers did not perceive small, shrivelled or spoiled potatoes as waste since they were all useful (as animal feed, dried potatoes, etc). The main problem was eventually redefined as one of excessive sprouting of new potato varieties in traditional dark room storage.

Scientists identified storage in diffused light as a means of inhibiting sprouting. After working on the design of seed stores on the research station they began to consider the changes in seed storage methods which would be compatible with farmers' needs and conditions. Farmers' evaluation of the research outcome was positive, and they adapted the technology to suit local materials and storage facilities.

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Richards, P., 'What's wrong with farming systems research?'. Paper for the Conference of the Development Studies Association, University of East Anglia, 1986 (mimeo, draft).

Despite some success in understanding intercropping, labour bottlenecks, etc. Richards criticises conventional FSR as a slow expensive process with too narrow conception of farming systems. It obscures the characteristics of the production process and impedes assessment of the potential for change. Decision-making involves complex, sequential processes, with interaction between members of a household and between household and community. Richards sees farming communities as taking the lead by doing the job of incorporating tech-

nologies into their own conditions. Scientists' role is to provide materials for farmers' experiments and monitor results and feedback.

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Richards, P., Coping with Hunger: Hazard and Experiment in an African Rice Farming System. Allen and Unwin, 1986a.

Discusses ITK in the form of farmers' experiments and selection of rice planting materials. Varietal categories reflect Hogbuama farmers' concern to spread labour inputs and strike balance among family hunger, household needs and private cash requirements. Farmers had confidence in the local procedures they had established. Peasants are not conservative: they make their own varietal selection through trials and introduce 2-3 new varieties on a wide scale per generation. The possibility exists of promoting village-level seed multiplication units managed by farmers, and of linking local research initiatives with formal R & D services.

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Richards, P., 'New models for low-resource agricultural research and extension in sub-Saharan Africa'. London: University College, 1987 (draft, mimeo).

Urges more attention to ecological specificity in the design of agricultural R & D for resource-poor farmers in ldcs. Rapid rural appraisal is a useful technique at the introductory stage, but once research is underway, deeper participation is needed to understand the farmers' requirements. Mechanisms for selecting 'participators' need to take into account the possibility of divergent rights and responsibilities within households and communities. In situ ecosystem manipulation constitutes a major source of untapped productivity growth, and farmer participation should be incorporated into national agricultural research systems on a continuing basis.

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Richards, P., 'On the south side of the Garden of Eden: Creativity and innovation in Sub-Saharan Africa'. Department of Anthropology, University of London, 1987 (draft, mimeo).

Contrast European-based models of agricultural development with African ones, in which important interactions are found between farmers' R & D and local processes of natural change, particularly among the classic forms of shifting agriculture. Interactions between choice of crops (which imply specific uses of land and labour) and household demands for food and cash are particularly important. African ecological experience has important lessons from history for the design of current policies.

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Rocheleau, D. The User Perspective and the Agroforestry Research and Action Agenda, University of Florida, 1986 (draft).

Through dialogue with communities, research should take account of the multiple uses and multiple users of resources, study indigenous knowledge and analyse landscape in terms of access and control according to sex, status etc. The user perspective needs to be incorporated in the development of prototype AF systems, in adaptive research and in action research.

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Russell, N., 'Tapping the farmer's wisdom'. IDRC Reports, No.13(2), 1984, pp.18-19.

The OF trials programme, begun in 1982, aimed to increase farmers' participation in problem solving and to encourage dialogue between farmers, scientists and extensionists. Scientists had been reluctant to work in the uncertain environment of farmers' fields, while extensionists had tended to be physically and intellectually isolated from research scientists. Two improved sweet potato varieties were tested and evaluated by farmers. Experimental station research remains the programme's foundation, but it is guided by criteria of relevance to farmers.

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Singh, K.P., 'Study of agro-climatic and socio-economic conditions and introduction of relevant technology in rice farming system of plateau region of Bihar, India'. Paper for Socio-Economic Field Survey in Rice Farming System workshop, New Delhi, L.N. Mishra, Institute of Economic Development and Social Change, Patna, 1986.

Exploratory and diagnostic surveys indicated the inapplicability of research station findings to farmers' conditions. Contact with farmers identified a series of research questions, emphasising: security over high yield; low capital and power requirements; and local involvement. Three women development officers are working in village women's centres and with women farmers.

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Sollows, J., 'Farming systems research: Rice/fish culture investigations, Ubon, north-east Thailand, 1984-86'. Ubon, CUSO, 1986.

Outlines methods for introducing rice-fish culture in parts of N.E. Thailand through on-farm trials. The trials included variations in stocking intensity and impact on fish of chemical fertiliser applied to rice. The importance of researchers' willingness to accept modification by farmers of the technology they recommend - owing, in particular, to wide variations between farmers - is stressed.

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Swift, J., 'Rapid appraisal and cost-effective participatory research in dry pastoral areas of West Africa'. Agricultural Administration, Vol.8, 1981, pp.485-492.

Livestock research requires long time series data. 'Ground truth' is necessary to complement satellite imagery and national statistics, but there are problems of motivation and high cost if outsiders undertake this work. Swift suggests that data gathering networks could be established within pastoral communities to provide information necessary to assess range condition, animal numbers, productivity and the domestic economy, eg. ILCA-trained local enumerators in Mali. The method needs considerable preparation but is low-cost once established.

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Tan, J.G., 'A participatory approach in developing an appropriate farming system in 8 irrigated lowland villages': Selected Proceedings of Kansas State University's 1986 Farming Systems Research Symposium, (eds) C.B. Flora and M. Tomecek, 1986, pp.215-232.

Summarises the five and a half years' work of the Agency for Community Educational Services Foundation (ACES) community organisers in eight villages of Nueva Ecija, Luzon, Philippines. ACES found it necessary to develop the participatory technology development (PTD) approach and integrate it into the community organising strategy. Notes farmers' willingness to innovate providing that the political structure is capable of responding to their needs, and that innovation led to systems and varieties more diverse than those associated with irrigated HYV rice introduced 20 years earlier. Development workers should be elicitive (non prescriptive) catalysts.

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Taylor-Powell, E. and von Kaufmann, R., 'Producer participation in livestock systems research: Experience with on-farm research among settled Fulani agro-pastoralists in Central Nigeria': Selected Proceedings of Kansas State University's 1986 Farming Systems Research Symposium, (eds) C.B. Flora and M. Tomecek, 1986, pp.257-276.

The project aimed to improve dry season livestock nutrition through forage production and feeding. Various problems were encountered: inappropriate research techniques, data collection difficulties, participant selection and cooperation, bias due to incentives, limited experience and resources of participants. Through a programme of on-farm trials the researchers' objectives were brought in line with producers' priorities and feeding strategies.

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Tripp, R., Data Collection, Site Selection and Farmer Participation in On-Farm Experimentation, CIMMYT Working Paper 82/1, 1982.

Tripp observes that improved site selection and farmer/scientist communication during OFR can increase the availability and reliability of

agronomic and socio-economic data. Information on farmers' circumstances should be sought throughout the experimental period, to refine the recommendation domains. Explanation of the purpose and practices of the trial and the roles of farmers and scientists, farmers' assistance in site selection and their observations and opinions of trial performance, are vital. Trials are planned with extension agents, taking into account logistical constraints and farmers' interests and experience.

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Tripp, R., 'Anthropology and on-farm research'. Human Organisation, Vol.44(2), 1985.

Seeks to establish how anthropologists eschewing conventional long-term 'participant-observation' techniques, can contribute in the short-term to the enhanced relevance of technology development by identifying OFR techniques that can be utilised by researchers having little social science background. Diagnostic surveys need to be sharply focussed in order to avoid excessive data collection. Anthropological techniques in the conduct of trials can help to understand farmers' criteria of evaluating trial outcome. The INIAP experience in Ecuador is quoted as a successful example of anthropological involvement in OFR: experimental variables were kept to a low number, and farmers permitted substantial freedom in manipulation of the technologies introduced.

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Verbeck, K., Sanogo, B. and Kleene, P., 'The farming systems research/development/extension linkage: Experience from Mali': Selected Proceedings of Kansas State University's 1986 Farming Systems Research Symposium, (eds) C.B. Flora and M. Tomecek, 1986, pp.152-164.

Following 'participative' village surveys, the FSR programme selected ten villages for research work with non-users of animal traction. Draught oxen, tools, training and inputs were provided for farmers fulfilling credit requirements and tillage improvement and agronomic advice was available for the non-qualifiers. Questions of the poten-

tial divisiveness of the approach, the levels of community involvement and researcher intervention in support services are raised.

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Vierich, H., 'Accommodation or participation? Communication problems', in Matlon et al (eds), 1984, pp.17-26.

Sources of confusion in communications result from people's failure to distinguish between stereotyped and spontaneous behaviour; group and individual behaviour; ideal and real behaviour; and folk vs scientific descriptions and analyses. The paper focuses on how these affect communication between farmers and researchers and between researchers from different disciplines.

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Wahyumi Sri, Knipscheer, H.C. and Gaylord, M., 'Women's decision-making role in small ruminant production: The conflicting views of husbands and wives'. Agricultural Administration and Extension, Vol.24, 1987, pp.91-98.

Part of a questionnaire addressed to wives of sheep and goat farmers in Cirebon, Indonesia, was later administered to their husbands. The results of both surveys showed husbands and wives reporting significantly (ANOVA) different levels of participation in small ruminant management. A Spearman rank correlation test indicated consistency between two data sets as wives and husbands tended to rate similarly the wife's role in decision making relative to that of other wives. The study illustrates that careful selection of sampling units and survey instruments is needed to minimise sex bias in survey results.

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Wotowiec, P., Poats, S., Hildebrand, P.E., 'Research, recommendation and diffusion domains: A farming system's approach to targeting'. Paper for conference on Gender Issues in Farming Systems Research and Extension, University of Florida, 1986.

The authors propose refining the concept of 'recommendation domain' to allow the domain to be re-grouped so that homogeneity is not lost as

research proceeds from the definition of an agenda through to the dissemination of results. By focussing research on representative farms, more efficient distribution of research results is achieved and the definition of 'research', 'recommendation' and 'diffusion' domains recognises the different purposes and uses of research.

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Wright, P., 'Water and soil conservation by farmers', in Ohm, H.W. and Nagy, J.G. (eds) Appropriate Technologies for Farmers in Semi-Arid West Africa, pp.54-60. Purdue University, West Lafayette: International Programs in Agriculture, 1986.

Describes the experiences of Oxfam's efforts to reduce soil erosion and run-off in Burkina Faso. Oxfam introduced levelling devices to facilitate construction of micro-catchments. Farmers were more eager to introduce cereal crops than the trees initially advocated by the project. Farmer participation in the design of the innovation, and its dissemination were essential to the project's success in spreading the techniques among hundreds of farmers. Management of the environment depends not only on individual, but on community-level participation.

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Youmans, D., 'Modes of farmer participation in FSR/E': FSRP Project, Lesotho': Selected Proceedings of Kansas State University's 1986 Farming Systems Research Symposium, (eds) C.B. Flora and M. Tomecek, 1986, pp.249-256.

Youmans specifies the different participatory roles played by farmers in the project - 'collaborators' testing enterprise and activity mixes, 'cooperators' participating in field trials, village committees as 'learners' in an extension education programme, farmers as 'adopters' of technology, and 'teachers' of other farmers through diffusion networks. Farmers act as 'evaluators'; their perceptions of change are the principle criteria of project effectiveness.

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Zandstra, H.G., 'Farming systems research and extension: Achievements and future'. FSSP Newsletter, Vol.5(1), 1987.

Commenting on FSR achievements, Zandstra notes that emphasis on farmer participation in OFTs has sometimes lessened the emphasis on experimental techniques permitting valid comparisons. He stresses the importance of long-term sustainability in FSR, the value of farmers' local knowledge and the need for effective monitoring, appraisal and field staff training. The expansion of OFR should be integrated into National Research Systems, involve commodity and livestock programmes and strengthen links with policy planners.

Agricultural Administration Unit

Overseas Development Institute
Regent's College Inner Circle
Regent's Park London NW1 4NS
Telephone: 01-935 1644

AGRICULTURAL ADMINISTRATION (RESEARCH AND EXTENSION) NETWORK

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CONTENTS

Agricultural Administration Unit, Overseas Development Institute

The Overseas Development Institute (ODI) is an independent, non-profitmaking research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British aid programme. Its mandate is to widen the state of knowledge and the flow of information concerning the admin-istration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these had between 600-900 members in 1986 and is drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other relevant events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

I NEWS FROM ODI

John Howell was appointed Director of ODI on 1st November 1987. As from this issue of the Newsletter, John Farrington takes over as sole editor.

Other staff changes in the AAU include the imminent departure of Simon Commander after four years' service. Simon's research has sought to identify ways of improving the design of World Bank Structural Adjustment Lending Programmes, particularly in respect of their impact on agriculture. This culminated in a conference at ODI in September this year at which donors, government officials and academics reviewed the impact of SAL on agriculture in specific country case-studies. The proceedings are being edited by Simon Commander under the title 'Structural Adjustment in Agriculture: Theory and Practice' and will be published in mid-1988.

John Farrington is editing six papers from the IDS Workshop, 'Farmers and Agricultural Research: Complementary Methods', as a special feature for the journal Experimental Agriculture (item IV below). Funds are being sought to make offprints of these available to members of this Network.

II NOTES ON DISCUSSION PAPERS

The three Discussion Papers enclosed with this Newsletter continue the theme of farmer participatory research opened in the last Newsletter with Discussion Paper 19. All were presented in earlier drafts to the IDS Workshop on Farmers and Agricultural Research: Complementary Methods (July 26-31, 1987) for which Discussion Paper 19 was circulated as a background paper.

Discussion Paper No.21

Farmers and Experimentation. Robert Rhoades

Present efforts in international agricultural research and development are still dominated by the 'transfer of technology' model. This model assumes that scientists generate technologies for the benefit of farmers. This paper argues that farmers also generate technologies and production-utilisation systems. In fact, modern agriculture is seen as a mere afterthought to some 10,000 years of farmer experimentation and technological breakthroughs. Three contemporary case studies are utilised which illustrate the problem solving approach of farmers and how it compares to the 'transfer of technology' model. The conclusion is drawn that combining farmers' and scientists' methods first requires a better understanding of farmer-based research on the part of scientists. A low-key, focused approach in development efforts is recommended.

Discussion Paper No.22

Farmer Participation in On-farm Varietal Trials. Jacqueline Ashby, Carlos Quiros and Yolanda Rivera

This paper asks what contribution farmers can make to the criteria (usually defined by breeders) for accepting or rejecting new varietal material. In CIAT bean trials, earliness of matura-

tion was found to be an important criterion to farmers but had not been considered by researchers. Important differences also emerged in respect of grain size; smallness attracted a lower price in commercial varieties but was not a disadvantage for domestic consumption where flavour and cooking characteristics were important. Farmers also expressed strong preference for a more upright plant architecture, to facilitate weeding, than had been considered to date. With cassava variety selection, a different approach was adopted, providing farmers with a range of material and basic agronomic information on each type, and then deriving their selection criteria from the varieties they planted.

Group discussion permitted rapid synthesis of farmers' common practices and alternative management strategies, and had the added advantage over survey-type investigations of allowing researchers to check their understanding of farmers' views in the course of the discussion. However, care needs to be taken in selecting group members so that the interests of specific groups (in this case, those producing for market and those for domestic consumption) are to be adequately understood and represented.

Discussion Paper No.23

Experimenting Cultivators: a method for adaptive agricultural research. Louk Box

The paper describes efforts in the Dominican Republic's Adaptive Agricultural Research Program to design agricultural research methods complementary to those practised on-station. An attempt was made to link the crop knowledge of cassava cultivators to that of researchers, extensionists and agrobureaucrats. In so doing, knowledge chains were established between the various actors. Cultivator experiments were taken as the starting point of the research, and knowledge derived from such experiments was operationalised into adaptive trials.

Criticism of on-station trials has resulted in rapid development of methods involving on-farm trials. Given the risks, the costs and design problems of on-farm trials, it is argued that some serious drawbacks exist. A two-fold alternative is proposed: first, cultivator experiments are made more amenable to statistical analysis. Second, on-station trials need to be adapted to production conditions facing cultivators. This two-fold adaptation is the key characteristic of adaptive trials.

Social scientists are seen as brokers who follow a biographical approach to problem identification. The importance of adaptive trials is stressed in forming a link between informal experiments done by cultivators and formal ones done by researchers. It is through such trials that communication interfaces are created, and knowledge networks can be integrated.

III RESPONSE TO DISCUSSION PAPER 19

Mike Collinson (Scientific Adviser, CGIAR, 1818 H Street NW, Washington DC 20433, USA) makes the following points:

- CIMMYT's sequence of steps through problem identification, experimentation and evaluation may appear rigid, but is a necessary basis for training national researchers in poor countries, to which much of CIMMYT's effort has been dedicated. Once the researcher has a grasp of the basic methods over the cycle, then flexibility can and will be introduced. But training has to bring security before it can move on to flexibility.

- to make research farmer-centred requires major attitude reversals among scientists. Attempts to promote this directly are unlikely to be credible. Instead, an approach needs to be devised which brings researchers into frequent contact with their clients. From this will then emerge respect for the farmer and farmer-centric attitudes. In practical terms, existing research and extension institutions must be the point of departure, and parsimony is already central to the approaches of CIMMYT and others whose diagnosis of farming systems rests not on massive quantification, but on understanding.

- because of its emphasis on target groups and recommendation domains, FSR has the ability to focus on whatever group - such as resource poor farmers - is identified as a priority by policy makers. To confront policy makers with a major shift towards poor farmers as a pre-condition for developing participatory research approaches is less likely to be fruitful.

- technology transfer is not necessarily 'top down'. Technology can be pushed out to or pulled in by a target group. It can be pulled in from any relevant source to

suit the group's requirements, and this is a potentially important aspect of 'transfer'.

- to describe FSR as a creature of the IARCs should be qualified by recognition of their efforts to build it into national research services, and of the complexity of this task. To devise strategies to introduce a farming systems approach without offending sensitivities in national services is much more difficult than merely commenting on what would or would not be desirable.

- tapping into the indigenous knowledge process is often going to be more valuable than incorporating 'nuggets' of local knowledge into participatory research.

Stephen Biggs (School of Development Studies, University of East Anglia, Norwich, NR4 7TJ, UK) has written in with draft proposals for analysing the information on farmer participation generated by the nine country case studies undertaken in ISNAR's study on the Organisation and Management of On-farm Client-oriented Research (OFCOR - Bangladesh, Nepal, Indonesia, Ecuador, Guatemala, Panama, Senegal, Zambia, Zimbabwe).

He suggests the following typology of interaction:

(i) contract: in which the farmer's land and services are borrowed or hired to provide more agro-ecologically diverse conditions for local verification of technologies developed on-station. This would not constitute participation by most definitions, but constitutes the most useful farmer-researcher link in the view of many scientists.

(ii) consultative: a 'doctor-patient' relationship. Researchers consult, generally progressing through each of the 'stages' of research (diagnosis, design, technology

development, testing, verification and diffusion). They then make the bulk of decisions regarding content and conduct of surveys and trials, calling farmers in again to participate in evaluation. This, and the collaborative mode of interaction, Biggs argues, are perhaps the most common, being central to the work of IRRI, CIMMYT and many national programmes.

(iii) collaborative: involves continuous interaction, farmers being consulted not only on potential new technologies, but also on how to go about cost-effective village-level research. Consultation can be on a group or individual basis; 'research-minded' individuals are often sought out.

(iv) collegiate: in which the formal research system actively seeks not simply to consult farmers on specific technologies or methods of experimentation, but also actively to strengthen the local capacity to conduct informal research and development at farmer and community levels. Several examples, particularly arising from the work of NGOs, are referred to in Discussion Paper 19.

As an issue requiring further research, Stephen Biggs stresses the differential evolution of on-farm research programmes in national research services: some have changed from collaborative to contract arrangements (Ecuador's Production Research Programme; Nepal's Cropping Systems Research Programme; Zimbabwe's Agronomy Institute); some have lost momentum over time (eg Panama's Caisan Project); others have gained momentum (eg Zimbabwe's FSR Unit; Bangladesh Agriculture Research Institute; Zambia's Adaptive Research Planning Teams). The overall ISNAR study is analysing the policy, institutional and methodological reasons for these differential patterns of change, and investigating the ways innovative research managers have addressed problems in the organisation and management of research.

Discussion Paper 23 by Louk Box, enclosed with this Newsletter, sheds light on some of the issues involved.

Further information on the ISNAR OFCOR study can be obtained from its coordinator, Dr Deborah Merrill-Sands, ISNAR, P O Box 93375, 2509 AJ The Hague, Netherlands.

Anil Gupta (Centre for Management in Agriculture, Indian Institute of Management, Vastrapur, Ahmedabad 380015, India) has responded with a second draft of his paper ' Organising and Managing the Poor Client-oriented Research System - Can the Tail wag the Dog?' in which he addresses several issues:

- it is not adequate for scientists merely to respond to existing client demand for research. To do so is to neglect the disadvantaged who may have a limited range of felt needs, and limited capacity to translate them into demands on the research system. Ways have to be found of identifying and articulating this unfelt demand.

- to serve the interests of poor farmers is not a non-political proposition. In most cases, this will reduce the volume of resources committed to researching issues of interest to richer farmers.

- more needs to be done, institutionally and methodologically, to encourage research on problems from which no outcome can be guaranteed.

- research for poor farmers may more validly be geared to reducing risks rather than to increasing average output.

- researchers adopting methods appropriate to investigation of poor farmers' problems have to swim against the current in most research institutes. Means of supporting them have to be found.

Ken Wilson (current address: 11 Millington Road, Cambridge, CB3 9HW, UK) who spent several years of village-level PhD research in Zimbabwe makes a number of interesting points:

on point of departure: "what started as farmer consultation so as to better inform outsiders of the nature of their experience (hence, why existing projects and policies were failing), turned into a host of community resource management projects".

"Participation was helped for us because there was no clear definition at the outset of what we should be coming up with in the end."

on empowerment: "Resource-poor farmers are ... distrustful because they live in conflict-ridden societies where they are very vulnerable to oppression ... they know that knowledge is power ... the closer the researcher gets to the real life-pulse of the society, the higher will be the resistance, as well as the greater the appreciation and rewards ..."

on groups: "We find that groups strengthen the hand of the farmers, and lead to more thorough investigation and local debate ... Group discussions work only once the people present understand and feel part of the process underway, and the researchers already know very well what the basic local ideas are about the subject in question."

on indigenous knowledge: "All the resources that we were working on were under extreme stress, and you have followed others in suggesting that ITK is either fragmentary or use less in such a circumstance. But it does not matter (in knowledge terms) that the communities we were mainly dealing with had been forced into the area by the settlers grabbing the better land. It only helped them better to contrast the way different ecosystems worked. Also just because 'tradi-

tional' resource regulations have broken down does not mean that indigenous knowledge does not know better than outsider guess work how to solve the problems... But of course you are right that these are oft n the situations where there is the greatest need to make deliberate input into the process of creating and maintaining ITK..."

"Indigenous knowledge is local, particularistic, etc. This is always true about certain aspects of local knowledge, but I do not think that the allegation holds up in the case of ecological knowledge... Ecological theories work when they identify a few simple factors and how their interaction can result in a myriad of totally different results under different circumstances... This is why RPF can guess approximately what will happen in any situation, and technocrats can tell you exactly what will happen in very specific circumstances."

Michael Richards (c/o Embajada Britanica, AP 290, Tegucigalpa, Honduras) writes with news of the participatory agricultural research component of FUNDAEC (Foundation for the Application and Teaching of Sciences) in Colombia. FUNDAEC is an NGO established with a Rockefeller Foundation grant in 1974 by a group of university lecturers dissatisfied with the urban bias inherent in conventional education programmes. Community participation in the perception, generation and execution of activities and projects was seen as essential to sustainable development. To facilitate access to the necessary 'outside' knowledge, FUNDAEC established a 'Rural University' at which a wide range of subjects (including agricultural science) are taught on a part-time basis over 2 years to primary school leavers. For appropriate students, a further two years' study leads to the 'ingeniero' qualification. Some 250 students at the lower level, and 35 at ingeniero level are currently being trained, and most return to their communities to initiate and supervise projects

across a broad spectrum of development activities. The agricultural component consists of trials conducted jointly with farmers. From these, over 20 variants of existing crop production and processing technologies have been adopted. The FUNDAEC approach is now being introduced to Honduras on a trial basis.

Larry Zuidema (ISNAR, PO Box 93375, 2509 AJ The Hague, Netherlands) writes on the relation between indigenous and formal scientific knowledge:

> "The distinction between indigenous and scientific knowledge may be useful for some purposes, but certainly is not adequate to describe what is really a continuum of knowledge sources. Another problem with the distinction is that ITK may in fact be scientific, but simply not expressed in the language of the scientist.
>
> ... good research requires a partnership between farmers, extension workers and scientists. Each possesses primary knowledge which can contribute to a process of efficient technological change which has the potential of improving incomes and product output.
>
> With this is mind, one can construct a typology of knowledge which can be drawn upon by the various actors. Following this, one can conceive of and define roles in the process. This then may speak to the questions of structure and organisation of research and extension systems to serve resource poor farmers".

Roger Kirkby (CIAT, E.African Bean Programme, PO Box 67, Debre Zeit, Ethiopia) reports on a study of the practicality of collecting farming systems information by various methods to develop agricultural innovations for small farmers in an area

development project. Farmers' production practices were more finely-tuned to small scale agro-ecological variation than had been suspected from an agro-economic survey by questionnaire. Modifications were made to standard agronomic trials procedures to facilitate farmer participation, including the use of many single-replication sites, and of informal researcher-farmer discussions. This experimental approach was shown to have captured the effects of the wide range of existing environmental and cropping system variation.

Andre de Jager (Presbyterian Church of Ghana, Agricultural Extension Station, PO Box 9, Walewale, Ghana) reports on a group approach to strengthening farmers' capacity to develop their own technology through experiments using methods comparable with those developed by World Neighbours (see Discussion Paper 19). The single year's results available do not allow full evaluation of this innovative approach, but suggest a much fuller participation and dissemination of ideas than achieved under an earlier 'contact farmer' approach to extension.

Angus Geddes (Pakistan-Swiss Potato Development Project, Pakistan Agricultural Research Council, PO Box 1031, Islamabad, Pakistan) summarises an approach linking farming systems research and extension in potato technology, entitled '21 Steps to Success'. This is intended as an aide-memoire to some 50 researchers and extensionists linked to the project who were participants at a recent project seminar on 'On-farm Research'. The project has conducted a number of formal and informal diagnostic surveys, following up some of them with on-farm trials and a pilot extension scheme. The steps fall into 5 main categories: selecting an area, understanding the farming system, working out improvements, testing improvements (together with farmers) and extension and support services.

IV NEWS ON AGRICULTURAL RESEARCH MANAGEMENT

Workshop on 'Farmers and Agricultural Research: Complementary Methods' held at Institute of Development Studies, University of Sussex, 26-31 July 1987

Over 50 participants, divided equally between the biological and social sciences, and drawn from 20 countries, participated in this week-long Workshop organised principally by Robert Chambers with assistance from Paul Richards, John Farrington, Adrienne Martin and Janice Jiggins.

Discussion Paper 19 from this Network was circulated to all participants as a background paper prior to the Workshop.

A list of papers presented at the Workshop is given at the end of this Newsletter. These will be published in reduced form in the Proceedings, to be edited by Robert Chambers. In the meantime, individual photocopies can be supplied on request by John Farrington at ODI.

Most of the papers describe methods which have proven effective in increasing farmer participation, issues of the cost-effectiveness and potential for institutional implementation of the methods being aired principally in the discussion. Cost-effectiveness and implementability will be key areas for future research.

Apart from publication of the Proceedings, follow-up to the Workshop includes:

a) publication of 6 Workshop papers as a special feature in Experimental Agriculture. The papers are denoted by an asterisk in the list below. John Farrington will edit these, and write an introductory 'issues' paper. Publication is envisaged for No.3, 1988.

b) national or regional workshops convened by participants at the Workshop to carry forward the development and testing of methods relevant to specific areas. It is anticipated that there will be 5 such workshops (Latin America, East and Southern Africa, India) and funding may be available for participants' travel expenses within each region.

At the time of going to press, two Workshops were being proposed, by:

- Mrs Y Maraje, Head of Rural Sociology Unit, Ministry of Agriculture, P/bag 0033, Gaborone, Botswana.

- Professor Anil Gupta, Indian Institute of Management, Vastrapur, Ahmedabad 380 015, India.

The latter proposes a series of Workshops commencing in April 1988 with the objective of exchanging information on current farmer-participatory research approaches, identifying ways of making the climate for participatory research more attractive, and drawing up an agenda for further research and training. Anyone from within the region wishing to attend these Workshops should, in the first instance, contact the above co-ordinators.

Finally, John Farrington at ODI would be glad to hear of any proposals for fieldwork to test methods of the type discussed at the Workshop. Field verification is urgently needed and is likely to attract donor funding. The Network will seek to put persons conducting field trials of participatory methods into contact with one another.

Videotape on Farmer Participation from CIAT

Jacqueline Ashby, Co-ordinator of Farmer Participation Projects at CIAT and joint author of Discussion Paper 22 enclosed with this Newsletter, has mentioned a 20-minute video on farmer participation in research prepared by her group in CIAT. In its present version, this can be shown on television/video configurations to U.S. standards, and by the end of 1987, a

version compatible with U.K. standards should be available. Further details from Dr Ashby at CIAT, AA 6713, Cali, Colombia.

Agricultural research in Africa and Asia: Comparative lessons from rice in Sierra Leone, Sri Lanka and elsewhere. A research proposal for the Western Africa Region, May 1987.

The point of departure for this two-year research proposal is that more national and foreign resources (per hectare, per farmer and per unit of farm output) already go into agricultural research in sub-Saharan African than in other developing regions, and yet generate poorer rates of return. The research seeks to examine from Asian experience whether the design and performance of agricultural research in Africa could be enhanced by (a) improving the balances within agricultural research (particularly between adaptive research and technology transfer, between project and national systems, and between station-based and farmers' own experiments), or (b) improving public policy towards agricultural research (particularly its linkage to agricultural policy overall, to budgeting procedures and to personnel policy).

These questions are to be addressed in a two-stage approach:

(a) At detailed and specific level, what can be learned from experience with agricultural research in two small rice-based food systems regarding the possibilities for transferring lessons in order to improve performance in both countries? Proposed case studies are Sri Lanka and Sierra Leone.

(b) More generally, are limits placed on the scope for transferring approaches to agricultural research between Asia and Africa by differences in eg. agro-climates, population density, human capital and power structures? The geographical range will be extended to include other countries of W. Africa and S. Asia.

It is anticipated that, by locating institutional causes of success or failure in agricultural research, the focus of national and donor funding for research can be sharpened. The principal researcher will be Michael Lipton, Institute of Development Studies, University of Sussex, Brighton, BN1 9RE, U.K.

Training Notes for Agroecosystem Analysis and Rapid Rural Appraisal, International Institute for Environment and Development, 3 Endsleigh Street, London, WC1H ODD, UK.

The second edition of these notes, compiled by Gordon Conway, Jennifer McCracken and Jules Pretty, was published in November 1987. They draw on training courses held in the Aga Khan Rural Support Programme in Norther Pakistan and on the Rapid Rural Appraisal Conference held in Khon Kaen, Thailand in 1985. They are aimed at agricultural fieldworkers employed by government, universities or NGOs, attempting to understand, with limited time and resources, any local system. The focus is on rapid rural appraisal (RRA) methods. The authors categorise RRA into exploratory, topical, participatory and monitoring. These notes are concerned with exploratory methods, and it is intended that subsequent sets of notes will deal with the three remaining types. The particular exploratory methodology on which attenion is focussed is Agroecosystems Analysis, defined as a systematic but flexible procedure, based on systems analysis, for determining research and development priorities in rural development. The notes are a good practical guide to ways of rapidly identifying priorities for research and development within a system. They include notes on the practicalities of setting-up multidisciplinary teams and workshops, and contain a useful reading list.

Copies of the notes can be supplied free of charge on request to John Farrington at ODI.

Farming Systems Support Project - Reduced Budget

FSSP (3028 McCarty Hall, Gainesville, Florida 32611, USA) has been providing support and networking facilities for farming systems practitioners for over 5 years. However, its current period of funding from USAID terminates in December 1987 and no source of funds has been identified beyond then.

Well-known FSSP-supported activities include the annual Farming Systems Research Symposium. Formerly held at Kansas State University, this will be held at the University of Arkansas for the three years 1987-89 with support from Winrock International. The important issues emerging from this year's symposium included:

- farmer participation in agriculture technology development;
- means of linking FSR with policy research;
- research/extension linkages and communication/information systems;
- gender issues in technology development.

Recent numbers of the FSSP Newsletter have focussed on farmer participation (Vol.5, No.1), intra-household dynamics and gender issues (Vol.5, No.3) and on-farm research (Vol.4, No.4). Unless new sources of funding can be identified, the last number of the Newsletter will appear in the final quarter of 1987.

Information Centre for Low External Input Agriculture

ILEIA (PO Box 64, 3830 AB Leusen, Netherlands) is an independent, non profit-making organisation seeking to improve information exchange on the management of agriculture with low external inputs. Its quarterly Newsletter is available on subscription (DFl 25/yr - approximately £23 - to ldc nationals or institutions, or students in industrialised countries; and DFl 40/yr to others). Free subscription can be arranged for ldc institutions

in certain circumstances. Recent issues have dealt with crop nutrient supply (Vol.3, No.1), integrated pest management (No.6) and management of dry lands (No.5). An issue on farmer participatory research and extension is in preparation, and an international workshop on this theme is proposed for March 1988 in the Netherlands. Details from Bertus Haverkort at the above address.

Planning Conference for the Social Sciences at International Potato Centre, September 7-10, 1987

This third planning conference at CIP noted the emergence in the six years since the previous conference of a comparative advantage in generating economic and anthropological perspectives of farmers' and consumers' behaviour, and in collaborating with natural scientists in using these perspectives in the process of technology generation. The conference sought ways of furthering this comparative advantage in the future, paying particular attention to social scientists' role in analysis of priorities for technical research, and in the development and dissemination of methodology. Copies of the Conclusions and Recommendations of the conference can be obtained from Dr Doug Horton, CIP, AP 5969, Lima, Peru.

V PUBLICATIONS OF INTEREST

Strengthening African Research in Sub-Saharan Africa: A Proposed Strategy Proceedings of a high level seminar on African Agricultural Research, Fedalfing, Bavaria, West Germany, September 23-28, 1987.

This seminar, held under the auspices of the World Bank's Special Programme for African Agricultural Research (SPAAR) is one of the several sources for the strategy document. This is still a

working document, seeking response from aid donors and research administrators and practitioners. Its point of departure is that a substantial network of regional and international institutes capable of generating new technology for Africa is now in place, but national systems, on the whole, are not strong enough to adapt the technologies to the needs of local farmers.

Key elements of the strategy are to:

- improve the correlation between the objectives of agricultural research and national macro-economic and social goals;
- reform and strengthen the national institutions responsible for research, and improve their interaction with extension;
- achieve stable research budgets consistent with the contribution of agriculture to national income;
- improve education and career opportunities in agricultural research.

Further information from SPAAR, World Bank, 1818H Street NW, Washington DC 20433, USA.

The Technology Applications Gap: Overcoming Constraints to Small-farm Development. Research and Technology Paper No.1, Rome:FAO, 1986. 95+45pp.

This review by Deborah Merrill-Sands addresses technology development from the viewpoint of institutions' organisation and methods. The allusion to 'technology gap' in its title has a familiar ring, but should not be confused with work initiated a decade ago at the International Agricultural Research Centres to examine what was wrong with farmers as they were able to achi ve only a fraction of the yields obtained on experiment stations.

The school of thought proclaiming "the technology is good, the farmers are at fault" is rejected here. Further, the well-documented failure of support services (credit, marketing) is seen as only partly responsible for poor technology uptake. This review of some 200 references takes an altogether different approach by questioning the viability of 'improved' technology intended for specific smallholder clients. The fact that smallholders frequently function under conditions different from and pursue goals at variance with those of capitalist enterprises often invalidates such technology. Maximisation of farm family welfare includes elements of commercial activity, baut, more generally, a balance "among production and consumption goals of quality, quantity, flexibility and stability" (p.3) and the pattern of enterprises undertaken will be complex and interdependent, a function of welfare goals and access to resources.

A number of conclusions with major implications for the organisation and management of technology development emerge: technology transfer often fails through misconception of roles of farm family members and of the place of the technology within the household economy. Farmers are not inherently resistant to change, but selective and adaptive in their uptake of technology, and criteria of acceptability vary widely according to household conditions. If technology more acceptable to small farm households is to be designed, these key socio-economic factors must be more clearly understood.

Greater participation by the farm family in the technology development process is urged, and a comprehensive and clear checklist of steps and methods to promote participation is given.

Joyce L. Moock (ed) Understanding Africa's Rural Households and Farming Systems. Westview Special Studies on Africa, Boulder, Colorado:Westview Press, 1986. 234pp.

Particular attention is paid to household decision-making processes that affect the way households and farms respond to changes in agricultural incentives and technologies, the nature of the farm household as a production and consumption unit, and the division of economic spheres between men and women. The advantages of merging farming systems research with 'household economics' theory, and studies of kinship organisation are also explored. This combined approach highlights new areas with potential for addressing the problems of African agriculture. The contributors are members of international research institutes, African agricultural agencies, and donor agencies as well as university professors from a variety of disciplines.

Joyce Lewinger Moock is associate director of agricultural sciences at the Rockefeller Foundation.

Strengthening National Wheat and Rice Research Systems, International Fund for Agricultural Development. Summary of an International Consultation, Rome, 26-28 January, 1987, 55pp. IFAD, 107 via del Serafico, 00142 Rome, Italy.

This Consultation, with the theme 'Strengthening National Agricultural Research Systems to Assume an International Role in Specific Areas of Wheat and Rice Research and Training' was one of the events marking IFAD's tenth anniversary. An underlying theme was to examine the highly diverse and location-specific research needs of poor farmers thoroughly. Recognising that the resources of the International Research Centres cannot be expanded to meet these diverse requirements, the meeting identified existing activities of strong national research systems and proposed, with the help of IRRI and CIMMYT, that they be expanded internationally to meet the needs of other national

programmes with similar agro-ecological conditions.

J.S. Davis, P.A. Oram and J.G. Ryan, Assessment of Agricultural Research Priorities: An International Perspective. ACIAR Monograph. Australian Centre for International Agricultural Research, PO Box 1571, Canberra, Australia, 1987. 85pp.

This paper describes an econometric method of estimating the impact of cost savings resulting from agricultural research on production of economic surplus, and its distribution among producers and consumers. Empirical results indicate that by far the highest anticipated returns to research investment are in rice, with potato and wheat occupying second and third places. Spillover effects between regions with similar agroecologies and rural infrastructures were significant suggesting an important role for donors, who can more adequately take these into account in research resource planning than can national agencies.

The analysis is based on a multi-regional international trade model used to derive economic benefits of alternative commodity and research portfolios, and the distribution of these among consumers, producers, importers and exporters.

The authors express concern that the TAC-recommended reduction in emphasis on wheat and rice research at the International Centres (see below) will reduce the expected level of economic benefits from the CGIAR system.

CGIAR Priorities and Future Strategies. Review prepared by the Technical Advisory Committee of the Consultative Group on International Agricultural Research, FAO, Rome, 1987.

Rapid adoption of new technology in rice and wheat productio has contributed to the emergence of cereals surpluses in many countries. However, deficits persist in numerous food and other crops, and land and water resources continue to be threatened by

degradation. The TAC's long-term strategy for the CGIAR Centres in the face of this challenge principally represents a continuation of existing policy: technology generation for commodity production systems will continue to be a principal thrust. Additional emphasis is to be placed on sustainability through improved resource management and conservation. Priorities among commodities were determined by application of a set of indicators, comprising: relevance of contribution to CGIAR goals; research productivity and efficiency of the CG system in particular lines of research. A long-term reduction is envisaged in rice research, and, if CG funds do not increase, also in wheat. Coarse grains, roots, tubers and livestock will receive additional resources even from a static overall budget, and food legumes research will expand if the overall CG budget increases in real terms. A 25% increase in real resources available to the CG would permit inclusion of 3 new commodity groups: tropical vegetables, coconut and aquaculture.

Since the last Newsletter (No.16) two further studies have been published in the CGIAR Study Paper series. These are:

Hans E Jahnke, D. Kirschke and J. Langemann, The Impact of Agricultural Research in Tropical Africa' (No.21)

Robert E. Evenson, The International Agricultural Research Centres: Their Impact on Spending for National Agricultural Research and Extension (No.22)

The first of these, after discussing the problems facing research in Africa and the current state of national and international research activities, draws on nine country case studies of IARC impact (Burkina Faso, Cameroon, Ethiopia, Kenya, Malawi, Nigeria, Senegal, Tanzania and Zimbabwe). It concludes that the impact of CGIAR research on agricultural production has so far been extremely modest, but collaboration with African national research systems is only just beginning, so assessment of this

type may be premature. Also, given the particularly difficult production environment, lack of infrastructure and lack of appropriate policy framework in many African countries, it is easy for expectations to be over-optimistic.

Evenson's impact assessment relies on the highly aggregated production response models long associated with the University of Minnesota. They, therefore, tend to miss important interactions at sub-national levels. Nonetheless, this study of 25 countries sheds some light on the combined and separate effects of national and international agricultural research centres on production, and the degree to which positive extension impact depends on strong research services. Overall rates of return to both national and international research are found to be high in terms of productivity growth. IARC impacts are higher in countries in the same geo-climatic region as the IARC headquarters, and these impacts reduce the effect at the margin of national research and extension programmes, indicating a substitution effect between international and national centres. Outside similar geo-climatic regions the interaction is substituting in some products, but complementary in others (maize, rice, beans). Perhaps surprisingly, an increase in national research expenditure appears to decrease the effectiveness of extension impact. Overall, the returns to extension are much more variable than those to research. The author attributes these deficiencies to inadequate organisation of extension as a vehicle for research findings, though he notes that further study of extension impacts is desirable.

William M. Rivera and Susan G. Schram (eds), Agricultural Extension Worldwide. London: Croom Helm, 1987. 294pp.

This volume examines issues in agricultural extension, current practices and emerging priorities from 16 papers by leading practitioners and academics. Recognising that extension systems

are varied and require specific linkages and support if they are to function effectively, the study seeks to identify factors for success in policy, practices and programme linkages. Several new ideas emerge: the implementation of any one extension model is unlikely to meet the varied requirements that exist even within an ldc; it may be appropriate to involve several agencies of differing status instead of merely one; extension should not be limited in scope to agricultural production - knowledge needs to be transferred (or acquired) across a spectrum of agricultural arenas, including prices, credit, supplies and markets.

S. Kearl (ed), Livestock in Mixed Farming Systems: Research Methodologies and Priorities. Proceedings of a Workshop held at ILCA, Addis Ababa, 24-27 June 1985. FSSP Network Report No.2, 1986, 220pp. From: FSSP, 3028 McCarty Hall, Gainesville, Florida 32611, USA.

Livestock in mixed farming systems are an important source of income for poor farmers, yet, because they do not fall squarely within conventional disciplinary divides, are an underresearched resource. This volume helps to redress the imbalance, containing chapters on on-farm research methodologies, the interpretation of data from farms and livestock/crop interactions.

W.A. Stoop, Issues in Implementary Research with a Farming Systems: Perspective in National Agricultural Research Services, ISNAR Working Paper No.6, 1987, 29pp. From, ISNAR, Box 93375, 2509 AJ The Hague, Netherlands.

In principle, it is reasonable to expect the cost-effectiveness of research to be improved by a shift towards problem-oriented on-farm research in national agricultural research services. In practice, however, research with a farming systems perspective (FSP) creates much greater demand than on-station research on national organisation, management and commodity/disciplinary backup. It should therefore be built up

slowly, be integrated with existing commodity/disciplinary research, and be supported by adequate administrative structures. The predominance of external funding, especially in Africa, for farming systems research has allowed the difficulty of establishing such support and linkages to be avoided hitherto. If FSP is to be sustainable, the author maintains that externally funded 'FSP-project' teams should be set up not before a national minimum FSP capability has been set up, but after.

SPAAR/ISNAR, Guidelines for Strengthening National Agricultural Research Systems in Sub-Saharan Africa. Special Programme for African Agricultural Research, 1987. 28pp. From, World Bank, 1818 H Street NW, Washington DC 20433, USA.

With the aim of enhancing ldc administrators' capacity to develop their own agricultural research systems, this report proposes guidelines for action under several headings, broadly: research funding; system building; determining research priorities; strengthening management, and issues for donors. On this final point, the report recommends a shift from project to longer-term programme support, with correspondingly longer contracts for expatriate staff, to facilitate institution-building.

PAPERS TO THE WORKSHOP ON FARMERS AND AGRICULTURAL RESEARCH: COMPLEMENTARY METHODS HELD AT IDS, UNIVERSITY OF SUSSEX, 26-31 JULY 1987

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Agricultural
Administration
Unit

Overseas Development Institute
Regent's College Inner Circle
Regent's Park London NW1 4NS

AGRICULTURAL ADMINISTRATION (RESEARCH AND EXTENSION) NETWORK

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NEWSLETTER 18 May 1988

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I NEWS FROM ODI

Elizabeth Hawksley has been appointed to replace Simon Commander, whose departure was announced in the last Newsletter (No. 17). Elizabeth has worked for two years as an Evaluation Officer for Malawi's National Rural Development Programme, with brief periods of work in other parts of East Africa. She will be researching an issue likely to be of interest to many members of this Network, namely the economic impact of structural adjustment programmes on small farmers. Specifically, her work will focus n seed industry privatisation, using case studies from 3-4 countries. As many members will know, seed industries are likely to become a focus of increased attention in national plans for agricultural sector reorganisation, hence ODI's decision to contribute to the structural adjustment debate in this area.

Elizabeth would be interested to hear from members who have experience of recent institutional change in the industry, such as privatisation of parts of it, or greater farmer involvement in seed production. Evidence of impact on price, distribution mechanisms and cropping patterns would be particularly interesting, as would references to published or "grey" literature, personal anecdotes or contact addresses.

Mike Collinson gave a lunchtime seminar on 29 February entitled: "Whither Farming Systems Research?" He is writing a paper on this theme for submission to a journal later in the year. ODI is aiming to hold a small stock of the paper for distribution to Network members. Enquiries to John Farrington.

The six papers, together with an editorial introduction by John Farrington, on participatory research methods for publication in Experimental Agriculture which were mentioned in the last Newsletter (No 17) will appear as scheduled in the July 1988 issue of Experimental Agriculture (Vol 24, No 3). Funding has been secured to obtain offprints of the set of papers. These will be mailed to Network members as soon as they are available. Requests for further copies can also be considered.

John Farrington organised a half-day seminar at ODI on 11 May on Agricultural Biotechnology and the Third World: Prospects and Policy Issues. The aims of the seminar were to analyse the likely implications of advances in agricultural biotechnology for the Third World, and to explore their implications for public policy, in both developing and industrialised countries. The issues include: the likely North-South trade effects of commercial biotechnology applications; the impact on the Third World of the private sector's growing involvement in agricultural research; biotechnology, multinational investment and the plantation sector; the future role of publicly and privately funded agricultural research for developing countries.

The speakers were:

John Elkington - Editor of Biotechnology Bulletin, 1 Cambridge Place, London SW13 OPE, UK

Martin Greeley - Fellow of the Institute of Development Studies, University of Sussex, Brighton BN1 9RE, UK

Brian Mahy - Head, Pirbright Laboratory, Institute for Animal Health, Ash Rd, Pirbright, Woking GU24 ONF, UK

Sinclair Mantell - Lecturer, Unit for Advanced Propagation Systems, Wye College, Ashford, Kent TN25 5AH, UK

The Chairman was:

Dennis Greenland - Director, Scientific Services, C.A.B. International, Wallingford, Oxon OX10 8ED, UK (formerly Deputy Director General (Research) at the International Rice Research Institute)

Almost 100 participants attended the seminar. Discussion was lively, and John Farrington will edit a selection of the material presented (including his background paper) into an ODI publication later this year. This represents a new area of interest for the Network, and material or enquiries from members on this subject would be welcome. It is hoped to feature at least two papers on biotechnology among those accompanying the next (November 1988) Newsletter.

Deep Sagar (postgraduate researcher, University of Cambridge, UK) and John Farrington are preparing a review on the approaches to agricultural extension adopted in practical applications of farmer participatory methods.

Whilst extension has a clearly-defined role in conventional agricultural research systems, and has been incorporated into the Farming Systems (FSR/E) approach, its role has been much less clear in recent research on participatory methods which have stressed the need for greater contact between researchers and farmers. Yet there are strong a priori arguments for incorporating some of the functions of extension into participatory approaches: extensionists can assist in identifying issues for research, in evaluating and disseminating the outcome of trials and in organising the managing trials.

As we see it, the problem is how to spread the costs of participatory research over a large number of clients without detriment to the high degree of relevance achieved through participatory approaches. Extension in its broad sense (ie. including the functions of dissemination, feedback etc) appears to have a potentially important, though as yet largely undefined role to play. In some circumstances there may also be a role for existing (or modified) publicly-funded extension services.

Changes to ODI Network publication series

Of the four Networks operated from ODI (Agricultural Administration - Research and Extension (AA R & E), Irrigation Management (IM), Pastoral Development (PD) and Social Forestry (SF), all except AA R & E refer to the papers regularly sent out with their Newsletters as "Network Papers". Partly through historical accident, the AA R & E Network refers to its regular mailings as "Discussion Papers", its "Network Papers" being a smaller, separate series available to members on request.

In order to standardise terminology across the Networks, the AA R & E Network will, as from the November 1988 mailing, refer to its regular mailing as "Network Papers", the term "Discussion Paper" being discontinued. What was formerly the AA R & E Network Paper series will

be expanded in scope to carry papers of interest to sub-groups of members of each of the 4 Networks. It will be re-named "Inter-Network Series". These Inter-Network Papers will be announced in the Newsletters of all Networks. Where the sub-groups likely to be interested can easily be identified from the computer data bases (Registers) of members, the papers will be mailed direct to them. Otherwise, they will be available on request.

The first two papers to be published in this new Inter-Network Series will be:

Gaie Mendelssohn: The Use of microcomputers for project planning, monitoring and evaluation
and
Michael McCall: Indigenous technical knowledge in farming systems and rural technology: a bibliography for Eastern Africa.

New publications from ODI

AAU Occasional Paper Series:

Occasional Paper 7: Jon Moris, Extension Alternatives in Tropical Africa.

Reviews alternative forms of agricultural extension and their likely performance under tropical African conditions; discusses also how farmer participation can be increased and extension services made more effective in promoting agricultural technologies. 64 pages, 1988, £4.95.

Occasional Paper 8: John Howell, Training and Visit Extension in Practice.

A collection of papers focused on the design of technical recommendations for agricultural improvement using extension management based on the Training and Visit System. The book develops

themes raised in ODI agricultural network papers and includes new contributions. 64 pages, 1988, £4.95. Papers include:

Derek Byerlee, "Agricultural Extension and the Development of Farmers' Management Skills";

Ben Cousins, "Agricultural Extension and the Development of Technical Messages in Zimbabwe";

Nick Chapman, "The Impact of T and V Extension in Somalia";

Alistair Sutherland, "Extension and Farming Systems Research in Zambia";

Gershon Feder, Roger Slade, Anant Sundaram, "T and V Extension: Impact in Northern India";

John Howell, "Making Agricultural Extension Effective: Lessons of Recent Experience".

Occasional Paper 9: John Farrington and Adrienne Martin, Farmer Participatory Research: a Review of Concepts and Practices.

This is an updated and expanded version of Network Discussion Paper No 19 for which there has been substantial demand since its publication in May 1987. It will be available in August 1988, price to be determined. Network members in Latin America may be interested to hear of a proposal to translate this paper into Spanish. The proposal comes from Julio Berdegue at the Grupo de Investigaciones Agrarias, Academia de Humanismo Cristiano, Casilla 6122, Correo 22, Santiago, Chile, and the Network has obtained funds to supply the translation free of charge to Spanish-speaking members. Requests should be made to John Farrington.

II NOTES ON DISCUSSION PAPERS

Accompanying this issue of the Newsletter are five Discussion Papers. Two of these carry forward the theme of farmer participation in agricultural research developed in the last two Newsletters (Nos 16 and 17) and in Discussion Papers 19-23, but in a particular context: that of R & D into hand or animal-operated agricultural equipment. An introduction to the two papers is provided below (pp 9-10). Network members are encouraged to circulate these papers among colleagues concerned particularly with farm equipment. Responses to the ideas they contain - whether in the form of individual comments or reports on work with which members are familiar - are invited and will be considered for publication in the next issue of the Newsletter.

Briefly, the more important issues raised in the two papers are:

(i) that farmer participation in design and trials is essential. Basant (DP 24) outlines the breadth of innovation currently being initiated by farmers in collaboration with local artisans, and Starkey (DP 25) attributes much of the low adoption of wheeled toolcarriers to inadequate participation by farmers in the research process.

(ii) researchers - in all disciplines, not only engineers - are under pressure by funding agencies to produce highly visible innovations in short periods of time. As a consequence, the emphasis is on producing hardware at the expense of improvements to the less visible, more complex but, ultimately, equally important "software" of research methods, institutional organisation, management and communication procedures, and so on.

(iii) The short-term (often donor-funded) "project" approach to R & D means that virtually all published

reports contain only early assessments of the technology's potential. These tend to report mainly on-station trials, thereby avoiding problems that arise when the technology is introduced to farmers, and giving an over-optimistic view of its potential. Insofar as they are addressed at all, the problems that farmers identify are mainly analysed in internal memoranda, making them inaccessible through conventional literature searches. The "knock-on" effect of this process is that the media (who are similarly biased towards "hardware") pick up, and in turn, report these optimistic views, thereby creating the impression that the technology has been (or is about to be) widely adopted.

(iv) Pressure to produce hardware contributes to another shortcoming - that of inadequate searches for relevant experience elsewhere in developing the types of technology in question - and so the wheel, and a number of its abortive precursors, is reinvented repeatedly.

(v) As in R & D across a wide range of subject areas, there is a reluctance to publish (and, among editors, to accept) reports of the <u>failure</u> of experiments. A careful distinction needs to be drawn here between informative and uninformative failure: the latter might include, for instance, shortcomings on the conduct or monitoring of trials that make the results unusable. To be <u>informative</u>, failure in the design of equipment must contain a counter-intuitive element, or must shed light on the grey area in which the outcomes of new design or design modification are genuinely difficult to predict. No stigma attaches to this type of experimental failure: publication of its results can prevent the exploration of blind alleys from being repeated in other work.

These papers should not be taken to imply either of two extreme positions: either that only farmers and artisans can devise relevant hand- or animal-operated technology, or that all interventions by engineers are necessarily unproductive: certain technologies in certain contexts have undoubtedly had strong production effects at little social cost. But several important questions raised in these two papers remain unanswered:

(i) What roles can engineers most usefully play in this area of technology development?

(ii) Are such roles more closely compatible with the institutional framework provided by national research services, or with those provided by NGOs?

(iii) What roles do specific institutions, such as donor-funded home-based scientific research institutes, have to play? Would networking form a useful part of their functions? If so, what form should it take?

(iv) What can be done in the longer term to obtain wider recognition of (and funding for) R & D as an interactive process, not a series of discrete projects?

Networkers' comments are invited on any of these points. Space will be made available in the next issue of the Newsletter for a selection of both case-study material and conceptual debate.

Discussion Paper No 24

The diffusion of agro-mechanical technology for Indian rainfed farming: an exploratory analysis.

Rakesh Basant

Reporting on a survey of four villages in a resource-poor district of Gujarat, India, this paper analyses changes recently introduced to non-mechanised equipment in response to biological innovations such as the introduction of new crop varieties. The process of innovation is shown to be much more complex than commonly suggested by those studies which classify it into "adoption" or "non-adoption". Innovation frequently involves modification of existing equipment, and partial adoption of new technologies. It is a process characterised by trial and error and by frequent interaction between farmer and local artisan. Innovation and diffusion commonly occur as distinct stages in respect of technologies developed on-station. With agro-mechanical technologies developed at village level, by contrast, these "stages" overlap considerably, diffusion being characterised by near-spontaneous spread of the technologies, with repeated further modification to suit new circumstances.

Implicit in the paper's conclusions is that attempts to develop small-scale non-motorised technology must be highly participatory if they are to succeed. Furthermore, by contrast with many other technology types, a distinct group of "local experts" other than farmers themselves can be identified: local artisans have an important role to play and need to be drawn equally strongly into the participatory process.

Discussion Paper No 25

Practical Agricultural research: lessons from thirty years of developing wheeled toolcarriers.

Paul Starkey

This paper reviews a substantial volume of published and unpublished reports on the development of animal-drawn wheeled toolcarriers over the last 30 years. The evidence suggests minimal commercial adoption of this technology by farmers despite the substantial research funding that it has attracted.

Inadequate consultation with farmers during research contributed to the incorporation into wheeled toolcarrier design of numerous compromises which increase risk and reduce convenience and flexibility. Few of these shortcomings were evident under "ideal" research station conditions.

The paper provides a case study of the processes underlying misinvestment of research resources of this kind: initial success stories, based largely on research station trials, were generally the only ones published, thereby giving the impression of widespread successful adoption; problems arising from farmers' experience were rarely followed up; donor agencies applied pressure to obtain early, visible results in the form of new hardware; inadequate communication among researchers led to much repetition of the same problematic aspects of design.

Investment in this area - probably exceeding US $40 million at today's prices - will not have been totally wasted if it strengthens the resolve of agencies and individuals to allocate more attention to these areas for the future.

Discussion Paper No 26

Status Reports: a basis for the planning of agricultural research, extension and other rural development activities in India

T J Bredero

This paper describes efforts in India to improve the data base for guiding decisions on agricultural research strategy. The World Bank has been supporting India's National Agricultural Research Project (NARP) for almost a decade. Recent attention has focused on improving the relevance of the recommendations produced by State Agricultural Universities to the distinct conditions of India's 121 agro-ecological zones. Status reports attempt to provide the necessary information on these conditions, describing natural resources and land use forms, and presenting statistics on agricultural production (including forestry, livestock and horticulture) and on human resources. Virtually all information is compiled from existing sources. Adoption patterns are analysed to identify production constraints, and these are prioritised according to the geographical extent and economic value of crop production, and the number of farmers affected. It is anticipated that by the end of 1988 Status Reports will have been prepared for most of the 121 zones.

Discussion Paper No 27

Options for science-based interventions in African agriculture

Jon Moris

Departing from the premises that there are few cases of successful direct transfer of animal and plant production technologies which have worked well in Africa, and that much station-based research in Africa has tended to produce "elite" technical packages derived under favourable conditions, this paper focuses on two broad issues: that of low institutional productivity and that of the shortage of ideas as to the types of science-based interventions that could successfully be researched.

Institutional issues requiring investigation include: how topics are chosen for research; what makes some research services more productive than others; how scientists' information-seeking behaviour could be improved and how recommendation domains are derived. Research topics of particular interest for arid and semi-arid zones include: how farming represents a "response" to highly variable rainfall; what can be done to alleviate the spread of agriculture into marginal areas; how camel productivity can be raised; how drought early-warning can be improved and better used; how technical packages and education can be organised for pastoralists; how factors influencing their recovery from drought can be evaluated; and how seasonality constraints can be alleviated and resource monitoring improved.

For sub-humid and humid zones, priorities include protection against striga, evaluation of land rehabilitation, household energy, labour-sparing innovations, supplemental irrigation, soils classification and management, and the search for long-term sustainability.

In addition to these potential topics, a number of modes of technical assistance are also considered, as are the criteria by which countries or aid organisations might prioritise topics or modes of intervention.

Discussion Paper No 28

International Service for National Agricultural Research: Study on the organisation and management of on-farm client-oriented research (OFCOR)

Part I - Deborah Merrill-Sands

Part II - Stuart Kean and L P Singogo

The objective of the OFCOR study - set up by ISNAR in 1986 - is to analyse the organisational and managerial factors impinging on the capacity of national agricultural research services (NARs) to develop and sustain client-oriented research programmes. OFCOR is complementary to on-station research, and embraces a range of activities from research prioritisation to evaluation of technological solutions, with direct involvement of farmers at various stages in the process. In the ISNAR study, OFCOR programmes in nine countries (see Annex) are analysed in terms of their contribution to seven functions: a problem solving approach; an interdisciplinary systems perspective; characterisation of client groups; technology development and adaptation; promotion of farmer participation; provision of feedback, and promotion of collaboration with extension and development agencies.

The Zambia case study notes among the principal achievements of OFCOR: revision of recommendations in some areas; identification of reasons for non-adoption; identification of new directions for research; development of a motivated research and extension staff with stronger links between the two functions. It also notes that location of OFCOR teams in the provinces effectively decentralises the research programme.

III NEWS ON AGRICULTURAL RESEARCH MANAGEMENT

West African Animal Traction Network

This Network is holding a workshop on "Animal Traction for Agricultural Development in West Africa" at Saly, Senegal, from 7-12 July 1988. The themes to be discussed include: animal power for production, the impact and profitability of animal traction, and constraints to its use.

Both the Network and Workshop are English/French bilingual. Details can be obtained from: Paul Starkey, Oxgate, 64 Northcourt Ave, Reading RG2 7HG, UK.

Agricultural Administration and Extension to merge with Agricultural Systems

These two journals will merge, appearing in monthly form as Agricultural Systems in 1989. The new journal will have revised aims and scope which retain the main subject-matter of Agricultural Systems, but incorporate some topics from Agricultural Administration and Extension, notably technology transfer and farming systems research. The Editors of the combined journal will be Professor Barry Dent at the Edinburgh School of Agriculture, UK, and Professor James Jones at the University of Florida, Gainesville, USA.

Livestock and indigenous knowledge in the Indian drought

Prof Anil K Gupta (Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad 380 015, India) has sent out an appeal for intensified research on aspects of drought management and on interventions for rehabilitation of its victims. Among the possibilities he mentions are schemes to classify the genetic characteristics of animals forced into large concentrations through the drought, as a step to hinder genetic erosion, and a survey of indigenous knowledge of aspects of animal husbandry. Further details from Prof Gupta.

Danish Development Research Centre

The Centre for Development Research (Ny Kongensgade 9, DK-1472 Copenhagen K, Denmark) is embarking on a new programme of research on the relationship between agricultural development and environmental problems in East Africa. The particular focus is on the increasing vulnerability of peasant farming systems, their resource base and food production. Further details from Jannik Boesen, Senior Researcher, at the above address.

Farming systems research in N.E. Brazil - the role of the Federal University of Paraiba

Prof Eduardo Zaffaroni (Centro de Ciencias Agrarias, Universidade Federal de Paraiba, 58.397 Areia, Paraiba, Brazil) has written with details of the University's FSR activities. These include a collaborative programme with the state-level agricultural research (EMEPA) and extension (EMATER) enterprises, and with the Cotton Research Centre of the national Agricultural Research Enterprise (EMBRAPA), which uses participatory approaches in the design and testing of new farming systems. Since this is a relatively novel approach in N.E. Brazil, Prof Zaffaroni is eager to establish contact with other research teams using participatory approaches.

Agroforestry research in Peru

The Tulumayo Agricultural Research Station is undertaking research in agroforesty jointly funded by ICRAF and IDRC. The objectives are to devise stable systems incorporating components of livestock, annual and perennial crops, and forestry to arrest deforestation and soil degradation in lowland areas of Peru. The project seeks contact with teams conducting similar work elsewhere. Contact: Ing. Manuel Flores, Apartado 113, Tingo Maria, Peru.

Center for Indigenous Knowledge for Agriculture and Rural Development, University of Iowa

In October 1987 the establishment of the Center for Indigenous Knowledge for Agriculture and Rural Development was approved by Iowa State University. The Center will fall administratively under the Technology and Social Change Program and be directed by Prof Michael Warren (address: TSCP, 318 Curtiss Hall, Ames, Iowa 50011, USA).

The Objectives of the Center are as follows:

To support activities of the Indigenous Knowledge and Decision-Making, the Farming Systems Research and Development, and the Women in Development interdisciplinary research groups established under the TSC Program;

To provide a global mechanism to systematically access and store all papers and publications dealing with Indigenous knowledge and Decision-Making systems relevant to agriculture and rural development;

To provide a global networking mechanism to assure that interested individuals and institutions are informed about current developments regarding indigenous knowledge and indigenous technologies;

To publish annual bibliographies on the Center's holdings through the Bibliographies in Technology and Social Change series;

To develop methodologies useful in formally recording indigenous knowledge, indigenous decision-making, and indigenous organizational structures important in agriculture and rural development;

To design training programs for change agents in the methodologies for formally recording indigenous knowledge and decision-making systems; and

To design procedures for "establishing National Indigenous Knowledge Resource Centers so indigenous knowledge can be easily accessible by change agents working in agriculture and rural development".

A number of Interdisciplinary Research Foci Groups have been set up under the Technology and Social Change Program. These include:

- Methodologies for Project Management and Planning
- Decentralised Development Planning/Organizational Coordination
- Indigenous Knowledge/Decision-Making and Development
- Farming Systems Research and Development
- Women in Development

Major research proposals at the Center include a study on "Access, Control and Use of Indigenous Agricultural Knowledge Systems for Agricultural and Rural Development Project", with field work in Nigeria and the proposed establishment of a Nigerian Indigenous Agricultural Knowledge Resource Centre.

INTERPAKS - The international Program for Agricultural Knowledge Systems: New Publications.

INTERPAKS is an educational non-profit programme of the University of Illinois at Urbana-Champaign, established in 1982. It seeks to promote a balanced and holistic approach to the processing, transfer and use of agricultural knowledge through research and publication in extension, agricultural economics, communications, information services and rural sociology. Its project on Technology Development and Transfer Systems in Agriculture is funded by USAID and recent reports include:

- four country case studies of agricultural technology systems (Jamaica, Malawi, Mexico and Taiwan)
- an overall technical report supporting the analytical framework,
- Annotated Bibliography on Development and Transfer of Agricultural Technology.

Volume I of the Bibliography was published in August 1985 and carries over 270 annotated entries on technology development, transfer and utilization, with general sections on agricultural development, and policy and planning. It has author, title and subject indexes.

The following brief review of the Malawi country case study illustrates the scope of these:

> Chapter headings include: country context; policy; technology development; technology transfer; technology utilisation; technology flow; summary and conclusions. The report describes the structure and organisation of each of the above components of the technology development system, and provides various measures of productivity. Although its findings on the volume of resources committed to the technology system, and their productivity are generally positive, the report notes such shortcomings as: excessive caution in the approval of new recommendations or release of new varieties; absence of farmer participation in technology development; low quality of extension training courses; underequipment of extension agents. The report concludes that a primary constraint to lack of utilisation of improved technology is inadequate availability of credit.

For further details on INTERPAKS publications, contact: Prof Burton E Swanson, INTERPAKS, University of Illinois at Urbana-Champaign, 113 Mumford Hall, 1301 West Gregory Drive, Urbana, Illinois 61801, USA.

IV PUBLICATIONS OF INTERESTS

L-E Birgegard and M Fones Sundell Agricultural Research in rural development: a review of issues and arguments.

Following a review of the respective roles of international and national agricultural research centres in pursuing objectives of growth and equity, this paper assesses the performance of national systems and seeks to identify more clearly the role of donors in assisting agricultural research. Concluding that a simple donor strategy of increased overall funding is inadequate, the paper suggests a focus on key constraints in the organisation and management of agricultural research, and suggests the following priorities for shifts in the research programmes of national agricultural research programmes in sub-Saharan Africa: towards food crops, within those, especially towards the crops cultivated by the poor; towards problems likely to arise 15-20 years hence, ie. for land-scarce situations in many countries and towards technologies which are less import dependent. Other papers of interest in this series include No 4: Farming Systems research: issues and problems of implementation, by the same authors.

Available from the Swedish University of Agricultural Sciences, International Rural Development Centre, P O Box 7005, S-75007 Uppsala, Sweden. Issue Paper No 1, 1987.

Jacques Derclaye Support for small farmers: a participatory and concerted approach in Honduras.

This study, one of a series produced at the OECD, examines how marginal farmers under increasing resource pressure create networks of new socio-economic relationships. Small farmers' organisations at grass roots level are one outcome of this process, and serve as a focus for accumulation of know-how and resources. Success depends on their giving priority to farmers' own requirements, the need to participate in national objectives (domestic or export markets) being secondary. Other

case studies are being prepared for Burkina Faso, Ghana, Rwanda and Senegal.

Details from: Development Centre Papers, OECD Development Centre, 94 rue Chardon-Lagache, 75016 Paris, France.

M K A Lundberg Information R & D in agriculture: theories and experience.

This thesis reviews theories of innovation and diffusion, outlining the shortcomings of hierarchical systems. Sections on interactive innovation and diffusion systems and informal R & D contain numerous useful case studies.

MSc Thesis, School of Development Studies, University of East Anglia, Norwich NR4 7TJ, UK, September 1987.

G W Norton and P G Pardey Priority-Setting Mechanisms for National Agricultural Research Systems: Present Experience and Future Needs.

The use of objective criteria for allocating research funds among objectives is likely to produce two broad types of improvement: internally, the enhanced cost-effectiveness of research and externally the strengthening of Agriculture Ministries' case for funding vis-a-vis other Ministries competing for scarce public funds. This paper provides a useful comparative assessment of the conceptual and practical merits of several priority-setting models: benefit-cost (expected economic surplus) analysis; mathematical programming and simulation. It also provides practical case-study experience with the use of weighted criteria models in the Dominican Republic, Ecuador and Uruguay, and with the use of expected economic surplus analysis in Peru.

Available as Working Paper No 7, ISNAR, P O Box 93375, 2509 AJ The Hague, Netherlands, November 1987.

Paul Starkey Animal-drawn wheeled toolcarriers: Perfected yet Rejected. (161 pp).

The book provides an illustrated history of three decades of research, development and promotion of animal-drawn wheeled toolcarriers. These implements have been universally hailed as "successful" and yet farmer adoption has been extremely low. Experiences in more than thirty different countries around the world are described and analysed, with information derived from national authorities, donor-assisted research and development projects, and past and present manufacturers. The 100 photographs and drawings illustrate many of the features of fifty designs developed in Africa, Europe, India and Latin America. It is argued that repeated disappointments could have been avoided had there been more open discussion and more farmer involvement in research. What starts as a specific analysis relating to animal traction broadens in scope, so that general lessons that are relevant to many current research and development organisations are highlighted.

Published by Friedrich Vieweg & Sohn of Braunschweig/Wiesbaden on behalf of GATE (German Appropriate Technology Exchange), and can be ordered through bookshops in Europe and North America. GATE publications such as this are generally available free of charge to organisations in developing countries dealing with the development, adaptation, introduction and application of technologies. Requests may be addressed to: Publications Officer, GATE, Deutsche Gesellschaft fur Technische Zusammenarbeit, D-6236 Eschborn 1, Postfach 5180, Federal Republic of Germany.

Paul Starkey Animal Traction Directory: Africa. (151 pp).

The directory is designed as a resource document on sources of experience and expertise in the field of animal traction in Africa. For each of 48 countries in Africa, a brief overview of animal traction utilisation is provided, giving approximate statistics for the numbers of draft animals and equipment employed, details of the main uses of animal traction and some of the constraints. Addresses, telex numbers and descriptions are given of key institutions involved in animal traction, including

agricultural Ministries, development projects, research organisations, non-governmental organisations, training institutions, aid agencies and manufacturers. The detailed index makes it easy to trace sources of experience on a very wide range of topics including blacksmith training, donkey ploughing, erosion control and forage legumes. Approximately 250 relevant bibliographic references are cited, together with over 400 addresses.

Ordering details are as for Animal-drawn wheeled toolcarriers above.

Yair Levi II and Howard Litwin Community and cooperatives in participatory development.

This book consists of a selection of papers presented at the IVth International Symposium of CIRCOM (International Research Centre on Rural Cooperative Communities) on "Participatory Development Through Community-Cooperative Interaction". The book is divided into three parts. The four papers making up the first part are mostly concerned with the conceptual framework underlying the community-cooperative dynamics. In the second, the prerequisites for and methods of enabling the community-cooperative dialogue to emerge and develop are discussed. The papers by Chinchankar, Fals Borda, Cernea and Verhagen refer to Third World countries and deal respectively with general motivational factors (mainly, though not exclusively, India) a methodological approach to participatory research (Columbia, Mexico and Nicaragua), a country wide methodology (Mexico) and field experiences in specific areas of two Asian countries (Sri Lanka and Thailand). The third part ("Case Studies") offers an illustration of community-cooperative endeavours in Western, Eastern Block and Third World countries. Hatkar's and Soriano's papers enable close insights into the realities of culturally and economically oppressed areas of India and Bolivia.

Available from Gower Publishing, Croft Road, Aldershot, Hampshire GU11 3HR, UK.

Donnacadh Hurley (ed) with an Introduction by Matt Gamser The Management of Technological Change: an Annotated Bibliography.

This annotated bibliography seeks to guide government and other decision-makers in developing nations in making choices between technologies and mechanisms by which they can be indigenised, and in creating a supportive environment for desired technical change. It does so through two means: through introducing the reader to the major issues surrounding technology choice, and, most important, through presenting him/her with case studies of choices and their consequences, through which both the criteria for decision-making and the means for implementing decisions can be assessed. Its sections present examples of how national science and technology policies, international agreements and indigenous knowledge development have been selected and used to promote innovation in various areas. They include cases of both successful and unsuccessful ventures, as often more can be learned from failure than from success. Articles and books by over 140 authors, including case study information on over 49 developing countries, are abstracted in this bibliography. The annotated works have been selected from the large and growing body of literature in this area for their quality and their availability. Emphasis has been placed on new material, which reflects current issues and beliefs, and on publications which are readily obtainable from major publishing houses, journals, and international organisations.

Available from Intermediate Technology Publications Ltd., 9 King Street, London WC2E 8HW, UK.

Anil K Gupta Managing Access, Assurance and Ability: What should Rural Development Managers Learn and Unlearn?

The training of rural development managers has attracted attention in the recent past in light of the drive in the Indian Central Government for upgrading the professional skills of development managers. However, the thrust is either towards training people at the lower levels or towards sending senior managers, including public servants, abroad. The paper makes a case for building upon the experiential knowledge of rural development managers and suggest alternative training approaches which

can demystify expert knowledge and at the same time provide a basis for greater collegiality between trainer and trainees. The paper is edited into four parts. In the first part the conceptual framework linking space, season, sector and social stratification, and that linking access, assurance and ability are discussed. In the second, the issues which have arisen during various training programmes in which administrators were asked to share their dilemma are given. Part three includes a review of rural development training programmes in some of the institutions and finally, alternative approaches for future training strategies are given in part four.

Available as Working Paper No 710, October 1987, from the Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad 380 015, India.

CIMMYT From Agronomic Data to Farmer Recommendations: An Economics Training Manual.

This is a completely revised version of the training manual published in 1976 under the same title. Presenting a set of procedures for the economic analysis of on-farm experiments, the manual is intended for use by agricultural scientists as they develop recommendations for farmers from agronomic data. If they are to be adoptable, such recommendations must be consistent with the farmer's goals and socio-economic circumstances and the agroecological conditions he faces. The first three parts of the book provide an introduction to microeconomic principles, culminating in the application of marginal analysis in the formulation of recommendations. Part four focuses on the preparation of experimental results for economic analysis, and the importance attached by farmers to risk, so that measures of the variability of anticipated returns from a new technology become important.

Available from CIMMYT, A P 6-641, 06600 Mexico DF, Mexico.

Jeffrey R Jones and Ben J Wallace (eds) Social Sciences and Farming Systems Research: Methodological Perspectives on Agricultural development.

This collection documents the methodological advances resulting from incorporation of social science perspectives in agricultural research. Apart from introductory and concluding chapters by the editors, it contains useful summaries of the better known (and some less well-known) projects and programmes involving social scientists. It includes papers on the International Potato Centre's experience (Rhoades, Horton, Booth); the women's programme in Malawi (Spring); the progression from cropping systems to farming systems research in Bangladesh (Wallace and Ahsan); incorporation of marketing into FSR in the Sudan (Reeves); the limited utility of HYVs in parts of Malawi (Hansen); evaluating technological alternatives in central American (Jones); adaptations of FSR to the study of pastoral systems in Niger (Curry) and FSR and agroforestry (Michie; Robins).

Westview Special Studies in Agriculture Science and Policy, 5500 Central Avenue, Boulder, Colorado 80301, USA, 1986.

Isiaka Adio Idowu Institutionalisation of Knowledge Flows: an Analysis of the Links between Agricultural Research and Extension in Nigeria.

This thesis (i) studies the processes of decision making in the formulation of research programmes and extension messages; (ii) seeks to determine how national and international research and extension organisations collaborate in the development and dissemination of technology; (iii) aims to identify the organisational and methodological factors influencing the effectiveness of communication flow; and (iv) examines functions and factors influencing the performance of research and extension personnel. The study focuses on Nigerian research and extension organisations. It identifies widely overlapping responsibilities, particularly in extension, and recommends the establishment of a single unified service. The study examines the role of three major technology transfer strategies in improving research-extension linkages (National Accelerated Food Production Program; Farming

Systems research strategy; T and V extension). Major obstacles to stronger research-extension linkages include: the proliferation of agencies involved (particularly in extension) and the lack of a national body to coordinate the planning of agricultural research and extension. General problems faced in the development and dissemination of technology include the low ratio of staff at research institutes directly involved in research work; low densities of extension coverage; lack of innovative methods and content of extension programmes, and lack of evaluation of extension messages.

Agricultural Administration Unit
Overseas Development Institute
Regent's College
Inner Circle
Regent's Park
London NW1 4NS
England

Telephone: 01-487 7413
Cables: Picodi, London NW1
Telex: 297371, quoting ODI H5673