

# Agricultural Research and Extension Network

Newsletter No. 48

July 2003

## Contents

<b>1. From the AgREN Coordinator .....</b>	<b>2</b>
<b>2. Contributions from members .....</b>	<b>2</b>
Impacts of land rights privatisation .....	2
Maintaining development projects in Nigeria .....	4
Heifer International Dairy Project, China .....	4
Farmer Field Schools in the Sudan .....	5
Participatory watershed management .....	6
Development of Sustainable Agriculture in the Pacific .....	7
Participatory maize and livelihood improvement in Southwest China .....	8
Identifying and solving constraints on scavenging poultry .....	9
Promotion of rabbit farming in Tamil Nadu .....	10
Fadama development in Northern Nigeria and cultivator-pastoralist conflicts .....	11
Strengthening social capital in innovation systems .....	12
An actor oriented analysis of innovation systems .....	13
Milk and meat processing and preservation using appropriate technology .....	14
Combining Block Demonstration and FFS approaches in soil fertility management .....	15
How can research contribute to improving livelihoods of artisanal fishing communities in West Africa? .....	16
Improving the impact-orientation of agricultural research organisations ....	17
PROLINNOVA: Promoting local innovation in ecologically-oriented agriculture and natural resource management .....	18
Training needs of extension personnel in communication and transfer of technology .....	19
Understanding and enhancing youth livelihoods in rural East Africa .....	20
Verification and confirmation of appropriate extension techniques for resource poor livestock keepers in Nepal .....	21
<b>3. Websites .....</b>	<b>22</b>
<b>4. Announcements .....</b>	<b>22</b>



ISSN 0951-1865

---

## From the AgREN Coordinator

---

AgREN hosted an email discussion in March on the topic of privatised extension. Our thanks to all of those who participated (or just listened in). A record of the discussion is available at [www.rimisp.cl/agren03/](http://www.rimisp.cl/agren03/). AgREN Paper 130 in this issue presents a summary of the issues raised in the discussion and presents some case study material. The discussion made clear that a number of experiments in various types of privatised extension are underway, but much more experience is needed before we can make judgements about performance. For those AgREN members involved in this type of experiment, we hope you will consider AgREN as a place to publish your findings.

AgREN is placing special emphasis on three themes. Globalisation was the focus of the previous email discussion (in 2002) and the subject of several AgREN papers. We welcome further experiences related to this theme. The focus for the next email discussion (in 2004) will be diverse farm livelihoods and their relevance to the planning and execution of pro-poor agricultural research and extension strategies. There is growing awareness of the importance of multiple sources of income for farm households and of the importance of off-farm labour. We want to explore the implications of these phenomena for practical agricultural development. Any thoughts or experiences are welcome regarding this theme, including possible papers or newsletter contributions, or suggestions on how we might organise our email discussion.

Access to AgREN papers continues to improve. We hope that all members have now received the CD-Rom containing past papers. A number of members have written to tell us how useful this is. In addition, we are gradually uploading past papers onto the website so that they will be accessible to a wider readership.

### **AgREN 'hands-on' writing for publication workshop, Nairobi**

Fifteen researchers and development practitioners from Kenya, Tanzania and Uganda were invited to the World Agroforestry Centre in Nairobi for the first ever AgREN Writing for Publication Workshop, 20–21 May 2003. Participants included both old and new AgREN members from national and international research institutes, universities, NGOs, and policy units; all had been selected to participate in the workshop on the basis of their interest and their potential to publish a paper in AgREN or elsewhere.

At the two-day 'hands-on' workshop, participants gained practical insights into developing and organising scientific papers, including tips on style and editing. Dr Judith Killen (formerly of the World Agroforestry Centre, now Director of Programme Development for PACT, Washington D.C.) facilitated the workshop, assisted by Dr Kate Longley (Overseas Development Institute); funding was provided by the UK Department for International Development through AgREN. Over the next two years, AgREN hopes to publish papers prepared by the workshop participants, on topics ranging from technology transfer to private extension delivery to marketing.

Although two days was felt to be too short considering the amount of work that was achieved, the workshop was a great success and AgREN hopes to hold similar workshops in future. In the words of one of the participants: 'AgREN is really doing an excellent job in encouraging and welcoming young researchers, practitioners and policymakers to publish their work. This is highly commendable for it enhances information sharing and dissemination of findings.'

---

## Contributions from members

---

### **Impacts of land rights privatisation: Findings from Eastern Kenya**

The results of longitudinal research conducted in Mbeere, Eastern Kenya suggest that two issues relating to land rights privatisation merit further attention: the interaction between individual land rights and dominant land use practices and the scope for varying adjudication criteria and procedures in order to enhance equity. Mbeere is an area of relatively low potential and population density: semi-arid, characterised by population clustering and traditionally dependant on bush fallows for fertility restoration. The previous tenure system recognised individual rights of use and exclusion over cultivated land. Use rights in fallow and uncleared land were vested in the community. The land claims of different clans and of the lineages of a given clan –

often widely dispersed – both varied substantially. Comprehensive adjudication of individual ownership began in Mbeere in the early 1970s as part of Kenya's national land adjudication programme. The outcomes provide unambiguous support for neither proponents nor opponents of externally promoted privatisation. Impacts include:

- increased inequality in access to land-based resources;
- mixed consequences for women: increased insecurity of tenure for some but enhanced opportunity for land ownership for those who can afford to buy;
- contribution to the emergence of a land constraint

---

among households who were adjudicated zero or small land areas, for whom viable and affordable alternative methods to bush fallowing for sustaining soil fertility are not always available;

- failure to activate a credit market for most farmers;
- some activity in the land market, but not always for efficiency enhancing motives;
- some medium to long term investment in, and on, the land, albeit for a variety of motives: compensation for loss of free access to community resources, resource conservation, economic gain and, possibly, securing future land rights;
- some impetus to commercialisation of the local economy (via impacts on resource access and investment opportunities);
- local validation of individual land rights which most households regarded as sufficient even if they had not received title deeds.

The following paragraphs briefly review policy issues arising from the Mbeere survey.

### **Distributional concerns**

Distributional impacts of privatisation in Mbeere were a function of the mode of implementation: the criteria and procedures used. Some abuse of process occurred but did not dominate the outcome; the latter was determined primarily by an attempt to base adjudication on the pre-existing land distribution between clans, and between lineages within clans: a distribution which for historical reasons was highly unequal. There are a range of policy options which, when land rights are privatised, might be used to contain inequality in individual rights. In Mbeere, the most appropriate would have been some compensated redistribution between kin groups, prior to final confirmation of individual rights – a measure easier to implement before pressure on land has led to the chronic level of disputation which proponents of the evolutionary theory of land reform see as a precondition for external intervention. While compensation costs have potentially serious budgetary implications for the public sector, there is scope for spreading compensation payments over time: an option used in Taiwan and South Korea and, more recently, in Brazil. There is also scope for providing compensation in kind: for example in the form of education vouchers.

### **Adjudication costs**

The survey findings support the view that privatisation costs, and their distribution, depend on process design. In Mbeere, annual public sector costs were contained by (a) relying on local people working within indigenous organisational structures and institutions to determine and mark land boundaries and to implement initial phases of dispute settlement and (b) phasing the programme over several decades. Furthermore, most farmers did not regard acquisition of formal title deeds based on cadastral survey as a precondition for implementing land use improvements contingent on increased privatisation. However, an up-to-date local register, based on simple sketch maps

which note key boundary markers, would help to contain reemergence of land disputes. To maximise access to information regarding land transfers, such record-keeping should be located at as low a level as is administratively feasible. Such records could also provide a basis for more formal adjudication in the future, including elective use of cadastral surveys by the emerging minority who need formal title deeds to obtain bank credit.

### **Efficiency concerns**

In much of sub-Saharan Africa, constraints on formal sector credit provision to farming extend beyond absence of land title to high production risks and high administrative costs of lending to dispersed small scale farmers. Mbeere epitomises such a situation. In such contexts policy choices regarding interventions to privatise land rights should be governed primarily by other, non-credit related, land use impacts. These are likely to be location specific and conditioned by a variety of factors, including:

- the extent to which privatisation induces and/or facilitates land related investment – an outcome which depends on;
- the availability of appropriate innovations whose viability is conditional on privatisation (e.g. on full privatisation of transfer and/or exclusion rights);
- effective dissemination methods for relevant know-how;
- adequate provision for market access.

The positive association of privatisation with investment in soil and water conservation in Mbeere, combined with growing evidence of the scope for lowering privatisation costs, suggests that it may be appropriate to reconsider the case for externally promoted privatisation in regions where previously this did not appear cost effective. Such regions include those where communal grazing rights and bush fallowing combined with individualised crop production and rapid, often clustered, population growth are associated with increasing erosion and regions where tenure institutions have been distorted or eroded by past policy and/or civil conflict. However, the findings also suggest that it is unreasonable to expect uniform impacts from land privatisation across agro-ecological zones. This implies that national land policies should ideally allow for variation in the form and timing of privatisation across regions.

#### **Further Information**

**Diana Hunt**, University of Sussex, School of African and Asian Studies, University of Sussex, Falmer, Brighton, BN1 9RH, UK.  
*Email:* D.M.Hunt@sussex.ac.uk

For further details see Hunt, D., (2003) 'The debate on land privatisation in sub-Saharan Africa: Some outstanding issues', available on request from the author.

---

## Maintaining development projects among Niger Delta youths in Nigeria

The Niger Delta region lies within Delta tributaries in the extreme southern part of Nigeria. This region produces most of the crude oil from which Nigeria generates large amounts of foreign exchange. Nine States fall within this region which include Rivers, Bayelsa, Delta, Abia, Akwa Ibom, Cross River, Imo, Ondo and Edo. The youths in the Niger Delta region play significant roles in the development of the region, either as channels of expression or as participants in the direct development process.

In the development of many Niger Delta communities, youths have been involved in self help and development efforts such as environmental sanitation, community security activities, renovating feeder roads, putting up sign posts, erecting bus stops, digging wells, erecting poles for rural electrification, and group farming, among others. These activities are carried out on both an individual and a collective basis. Many of the youths belong to community associations which are the major form of channelling collective efforts.

Development projects are maintained by youths in the Niger Delta region. But experience has shown that if their efforts are not adequately complemented or supported by those of development agencies and well-meaning individuals, then adequate sustainability is not guaranteed.

Maintaining development projects could be through personal efforts of the youths or through assistance from within or outside the community. A recent study by the author carried out in the Niger Delta region revealed that 74% of the youths maintain and sustain projects through levies. An objective look at this finding

suggests that the youths have a great deal of concern for community development projects. It was observed that 56% of the youths solicit funds from community members which suggests that community members share this concern and support them in their development efforts. In the same vein, 41% of the youths solicit funds from NGOs and oil companies. The oil companies are actually the major force to reckon with in terms of assistance for development of the communities and in the maintenance of development projects in the region. The result also showed that 29% of the youths solicit funds from local government authorities. The various communities fall under the jurisdiction of the local government. But the level of assistance obtained from them is negligible, compared to other sources. In addition, 17% of the youths maintain development projects with money from sales of various products. This is a way of internally generating funds for the benefit of their associations.

The Niger Delta youths maintain community development projects in the area especially through self-help. They however, get complementary assistance from external sources such as community members, NGOs and sometimes from local government authorities.

### Further Information

**Olufemi M. Adesope,**  
Lecturer, Department of Agricultural Extension, Federal University of Technology, P.M.B 1526, Owerri, NIGERIA.  
Email: molsyfem@yahoo.com

---

## Heifer International Dairy Project, Xuanhan County, China

The village of Song Jia Zui is on Yunmeng Mountain in Xuanhan County. Heifer International began a poverty alleviation and dairy project there in 1986, and the village has experienced dramatic changes in family income and community life style.

There are 65 families living in this community, 52 of which are project recipients. All of them earn their living by raising dairy cattle. Dairy farmers plant rye grass as fodder. At least one *mu* (0.165 acres) is allocated for each cow, and five cuttings are possible, yielding over ten thousand kilos. Some of this land is then used for maize growing. This rotation challenges the traditional agricultural system that emphasised food grain production. Under the traditional system, one *mu* of land can only produce grain worth around US\$150. On the other hand, a farmer can earn at least US\$400 annually from one cow fed with the fodder produced on the same land. A family raising three cows can afford to build a new house after four years. Concentrate for cattle is provided from maize, soybeans, and brewery by-products.

Chopped maize leaves, stems and soybean vines are also good roughage for cattle. Under this system,

all produce from the land is fully utilised and there is no wasteful burning of crop residues.

In addition, energy production is being transferred from traditional crop residue burning to bio-gas or electricity. Rather than collect and store maize stalks for fuel, manure is stored in a bio-gas digester for fermentation. The residue after fermentation is a good organic fertiliser.

There is a state road crossing Song Jia Zui. Many newly built houses sit beside the road, as people move down from the mountainside to be closer to the market and to outside information. Oranges are also an important crop for the villagers, and marketing of the crop has become more efficient. Each family has some orchard land on the hilly slopes, under which rye grass for dairy cows is planted. Earlier farmers had not considered growing crops specifically as animal feed, but now many families earn a good living based on dairy cattle and orange cultivation.

While many young people from rural areas leave for the city, trying to find employment, the young generation in Song Jia Zui has a different attitude. Most of them resist the appeal of city life, believing they

---

can make a more stable income in the village. The Heifer Project has helped many of these farmers gain access to loans and to technical assistance. The farmers of Song Jia Zui are keeping pace with rapid change in the outside world but are preserving their rural way of life.

#### Further Information

**Peng Bin**, Chen Taiyong, Heifer China Office, C3-8, Tian Le Jiayuan, #10 the 4th Section, Yi Huan Nan Road, Chengdu, Sichuan 610041 CHINA. *Email*: taiyong@hpichina.org

## Farmer Field Schools (FFSs) in the Sudan: Past, present and future

In the Sudan, as in other African countries, vegetable crops are produced by small scale farmers under irrigated or rained conditions. Also, as in other African countries, the average yield of vegetables in the country is still relatively low. The main vegetables cultivated in the various parts of the country are tomato, onion, okra, eggplant, potatoes, cucumbers, watermelon, carrot, sweet pepper, and hot pepper. Central Sudan (particularly the Gezira and Rahad Schemes) as well as private farms along the Blue Nile Banks supervised by Gezira State Agricultural Extension, are the main producers of vegetables.

Although traditional vegetable production in Africa was conducted with a minimum of inputs, as vegetables assume major economic importance and quality becomes an issue, there is greater use of improved seeds, fertilisers and pesticides. The intensification of vegetable production has also created pest problems that were not so important in traditional agriculture. At present, too many pesticides are used with no apparent reduction in pest outbreaks. Small farmers in particular do not know which pesticides to use or when and how to apply them safely.

In the Sudan vegetable farmers have made irrational use of pesticides, resulting in risks for health and environmental hazards. The FAO/ARC (Agricultural Research Corporation) project for the Sudan on the Development and Application of Integrated Pest Management on cotton and wheat initiated activities on development, implementation and validation of IPM on vegetables. Farmer Field Schools (FFSs) in the Sudan are a system for training farmers and disseminating IPM options for the major vegetable crops. The FFSs aim to make it possible for farmers to gain control over their lives. In this context, knowledge, skills, positive attitudes and interaction are the core of improvement. These schools are excellent tools for reaching farmers' groups. They strengthen linkages and interaction between vegetable farmers, extensionists, researchers, managers and specialists at different levels. FFSs help their members to reduce their production costs. They also create a healthy environment of work which is expected to encourage vegetable farmers and their trainers to work together to solve their problems and challenge their main constraints. FAO started implementation of the participatory approach in the 1970s and learned that the most effective means for achieving farmers' objectives are small demonstrations and informal groups, cooperatives, organisations and FFSs.

The FFS is a group of 20–30 farmers meeting once a week next to their fields to be trained in knowledge,

skills and attitudes so as to become more effective communicators who depend on themselves to solve their problems. Weekly field training represents the cornerstone of all FFS activities. It consists of three stages:

1. The trainer(s) meets with participants under a tree next to their fields to discuss the training subject for that week.
2. They go to the field to observe the crops, the cultural practices and collect samples of insects, beneficials, and infected plants.
3. They return to the shade to discuss what they saw, learned and collected. The trainer summarise the topic and with farmer participation selects the topic for the next week.

The main FFSs activities are:

- Weekly field training;
- Demonstration plots;
- Establishment of vegetable nurseries;
- Field days;
- On-farm research and validation experiments;
- IPM training sessions;
- Field observations;
- Exchange visits; and
- Visits to related agencies.

In 1993 the Sudan became the first African country to apply the FFS approach, modify it to suit the socio-economic structure of the rural community, evaluate and present it as a model that can easily be assimilated and adopted by small farmers in the rest of the country and other African countries.

Many evaluation studies indicated the successful performance and positive results of FFSs in the Sudan. Therefore, in the 1996/1997 growing season, after the termination of the international assistance, the FFSs approach became a national policy in order to sustain the successful run of the schools. Looking at the last five years we find that the majority of the schools were terminated, particularly in Gezira State. Reasons for this included lack of financial support, lack of transportation and lack of adequate training for trainers. However, despite this situation the future of the FFSs in the country is expected to be very good due to the supportive policies that will pay for agricultural activities in the coming few years.

#### Further Information

**Ahmed Mirghani Abdel Rahman**, Department of Agricultural Extension, Faculty of Agricultural Sciences, University of Gezira, Wad, Medani, SUDAN. *Email*: mirghani99@yahoo.com

---

## Participatory watershed management for sustainable development

Apart from the pressure of the growing population on natural resources, breakdown of traditional research management systems, reluctance to include farmers' knowledge in research, and over exploitation of natural resources are also exerting pressure leading to natural resources degradation. Environmental and ecological rehabilitation is possible only when the concerned people see a reason for it and are fully involved in all aspects of resource management and conservation. Hence, soil and water conservation must give importance to local knowledge and skills and reinforce local organisations through participatory processes. The impact as a result of local peoples' involvement in watershed programmes includes economic benefits such as increases in land value, yield, enterprise development and demand of labour; social benefits like greater self-confidence, fewer conflicts over resources, reduced out-migration, and a new rapport between local people and external professionals; environmental benefits such as reduced soil erosion, increased number of trees, reduced salinity, reduced use of fertilisers and pesticides, and the return of birds and wildlife.

In Participatory Watershed development:

- Local communities are fully involved in analysing their soil and water conservation problems and decisions are made with their active participation.
- The external support organisation facilitates analysis and is a catalyst for action, building on the local knowledge, needs and opportunities of the communities and helping from the local institutions and groups to manage the watershed and protect it on a sustained basis.
- Farmer-to-farmer extension is a key process for passing information to the catchment inhabitants, for closer collaboration between farmers and for scaling up watershed conservation in neighbouring watersheds.
- Technologies selected and crops encouraged depend on the individual needs of the farmers. Flexibility is ensured from the planning and designing to execution.
- Emphasis is on sustainability and equity rather than on short-term benefits. Long-term benefits are aimed at, since they are more likely to be sustained.

### Grass-root level institutions for watershed management

NGOs in India promote community participation in natural resource management through grass-root level /village institutions. They initially take up the role of facilitator to enable involvement of the village community in the process of appraisal and planning. They then encourage the formation of the village institutions, so that sustainability of any activity taken up for watershed management is ensured and the community becomes willing to run certain risks that the farmers could not take as individuals. A process of technology search is facilitated at the village level and from the external sources. The institution then takes up the role of trainer for the skills not available within

the local community and networks for the skills already existing in the watershed. The process of technology search ensures that all indigenous technical knowledge is taken into account. The institution then works on developing a local cadre of paraprofessionals, which can handle the implementation and financial and investment aspects of the watershed management programme. The villagers and the village institutions do participatory impact monitoring and evaluation of the programme. This experience has shown that if an external support institution takes the role of a facilitator and spends enough time on the participatory process, the programmes are cost effective, more effective in their use of the resources, and lead to village institutions taking up activities with multiplier effects like credit and savings.

### Implications

Implications for watershed development include:

#### *Technologies:*

- Incentives must be linked to pre-selected conservation measures as these encourage farmers to engage in the construction measures.
- Capacity of individual and institutions to innovate and experiment must be encouraged.
- Greater emphasis is needed on biological measures for soil and water conservation, such as green manure, cover crops, mulching, composting and reduced tillage.
- Participatory Technology Development and adaptive research should become an integral part of watershed management programmes.

#### *Process and methods:*

- Farmer-to-farmer extension should be encouraged and capacity of farmers for experimentation and extension should be strengthened. Since each farm is different and needs change over time, external institutions must be flexible and responsive, and ready to learn with farmers.
- The pace of programmes and projects must be slow to build motivation, confidence, and rapport amongst all the groups involved.
- Village based management of programme funds and planning is an important pre-requisite for sustainable watershed management.

#### *Impacts and indicators:*

- Focus should be on adaptation of technologies and practices by farmers rather than on technology adoption.
- Equity issues must be addressed if the poorest and marginalised are not to be missed.
- Widespread training and competence building is needed, to encourage and sustain a participatory approach.

#### *Policies:*

- Widespread national and international policy reform can create a more supportive and enabling policy environment.

- Adequate financial and institutional support should be given to the local people's organisation.
- Apart from natural resource management policy focus should also be on livelihood security, equity and institutional development.

#### Further Information

**Souvik Ghosh**, Scientist (Agricultural Extension), Water Technology Centre for Eastern Region (Indian Council of Agricultural Research), Chandrasekharpur, Bhubaneswar-751023, Orissa, INDIA.  
Email: ghosh\_wtcer@yahoo.com

## **Development of Sustainable Agriculture in the Pacific (DSAP): Promoting sustainable island livelihoods**

The Pacific is unique compared to other regions of the world. It is defined by large expanses of ocean with scattered and isolated areas of land of varying size. Sustainable agricultural systems in the Pacific are coming under increasing pressure due to population growth and other factors. In the high volcanic islands farmers are moving away from shifting cultivation, where soil fertility was maintained and erosion controlled, to cropping plots of land more frequently. This increase in the intensity of land use is resulting in deforestation, soil erosion and declining yields. High population growth rates, unfavourable age structures and increasing urbanisation on islands with limited land and water availability are a reality, particularly in the low-lying atolls. This has serious implications for these fragile island ecosystems. Further, the lack of trained local researchers and extension officers with skills in sustainable farming systems has resulted in promotion of inappropriate technology and further degradation of the natural resource base. Other problems include increased crop damage from pests and diseases and frequent natural disasters. This has contributed to undermining rural livelihoods, and longer-term threats from climate change, HIV/AIDs and civil unrest, particularly in Melanesia, make for an uncertain future.

Although progress has been made in addressing some of these problems, such as the development of promising agroforestry and soil fertility enhancement technologies through the EC-funded Pacific Regional Agricultural Programme (PRAP) and more recently participatory plant breeding by the Taro Genetic Resources: Conservation and Utilisation (TaroGen) project<sup>1</sup>, the general common approach to agricultural development has been inappropriate and ineffective. The lack of involvement of rural communities in the development process compounded by weak agricultural research and extension services (NARES) and poor linkages between farmers, NARES and NGOs have all contributed. Rural communities have been the losers and opportunities to enhance their ability to cope in such vulnerable contexts squandered.

Recognising these shortcomings, the Secretariat of the Pacific Community (SPC) together with NARES, NGOs and other regional stakeholders from ten countries collaborated in the development of an initiative to address many of the issues constraining sustainable agriculture and rural livelihoods in the region. The outcome of these consultations,

Development of Sustainable Agriculture in the Pacific (DSAP), commenced at the beginning of 2003 and will be funded by the European Community for the next four years.

DSAP aims to increase sustainable agricultural production of target farm families in the ten participating countries covering Melanesia, Polynesia and Micronesia. Importantly, DSAP is as much about process as product. DSAP will employ participatory approaches with farmers and rural communities for the identification and adoption or adaptation of technologies to solve agricultural problems. DSAP will build on the positive aspects of earlier donor projects while addressing past constraints. The project will focus on strengthening the linkages between NARES, NGOs and farmer groups in order to enhance the capacity of local communities. As part of this strategy DSAP will also strengthen national capabilities in the production and use of a variety of extension communications approaches such as radio, posters, handbooks, pamphlets and video. DSAP will help identify possible entry points or interventions for other programmes or projects operating in participating countries that contribute to ensuring sustainable island livelihoods.

DSAP is particularly interested in hearing from professionals or organisations working with rural communities in Pacific countries or similar contexts. We would also like to hear from organisations involved in capacity building relating to sustainable agriculture and livelihoods at the community level.

#### Further Information

**Danny Hunter** is an AgREN member and is the Team Leader of the DSAP project. For further information about DSAP please refer to:

Team Leader, EC/SPC Development of Sustainable Agriculture in the Pacific (DSAP) Project, The Secretariat of the Pacific Community, Private Mail Bag, Suva, FIJI. Tel: 679 3370 733 Fax: 679 3370 021, Email: dannyh@spc.int

This document has been produced with the financial assistance of the EC. The views expressed herein are those of SPC and can therefore in no way be taken to reflect the official opinion of the EC. To learn more about the work of SPC go to [www.spc.org.nc](http://www.spc.org.nc).

<sup>1</sup>Taro Genetic Resources: Conservation and Utilisation (TaroGen) – Networking in Pacific Island countries. AgREN Newsletter No. 44, July 2001, p.10

---

## Bridging worlds of knowledge and experience: participatory maize and livelihood improvement in Southwest China

In the remote and harsh uplands of Guangxi province, farmers must struggle to eke out a living. They have cultivated and relied on maize for their survival for countless generations, and they maintain a higher level of maize varietal and genetic diversity than in the rest of the country. Today this region is a treasure trove of maize genetic diversity that is vital to the future of maize cultivation in China. In Guangxi, more than 80% of the seed supply is from farmers' own seed systems, maintaining diversity for the interests and sustainable livelihoods of all farmers. Maize is now the most important feed crop and the third most important food crop in China. It is the main staple food crop for the rural poor in the upland areas in the southwest.

The government of China has followed a modern technology-oriented approach, relying predominantly on its formal seed system. The development and distribution of modern varieties, mainly hybrids, for the three main staples rice, wheat, and maize, has been the core task and the first priority for the formal system to achieve the overall goal of national food security. Hybrid maize is now grown on approximately 80% of the total maize-production area in China, particularly the uniform and high-potential areas of the Northern Plain. Conversely, a study done in Guangxi, revealed that more than 80% of the seed supply is from farmers' own seed systems.

The genetic base for maize breeding in China has been dramatically reduced during the last decade. Although the total national maize germplasm collection has around 16,000 entries, five dominant hybrid maize varieties now cover 53% of the total maize growing area in the country. In Guangxi, the total maize germplasm collection has around 2700 entries of which more than 1700 are landraces from the region. However, the utilisation of these collected materials in breeding is very limited. Only three main hybrid breeding crosses are used and all the 14 hybrids bred out in the last 20 years share the same inbred line to different degrees. Meanwhile, in several provinces landraces in farmers' fields are degrading and disappearing as a result of the continuing spread of modern varieties.

A research project begun in 1999 by the Center for Chinese Agricultural Policy (CCAP) in collaboration with the Guangxi Maize Research Institute (GMRI) set out to identify and assess ways of developing a mutually beneficial partnership between the formal and informal systems in maize crop development specific to the southwest region. Supported by the International Development Research Centre (IDRC) and the Ford Foundation, the project's key goals are to better promote and use the techniques that enable indigenous local communities to conserve biodiversity and to find ways to involve those communities in the design and implementation of on-farm biodiversity conservation.

The project team members come from several institutions and groups. They have different disciplinary backgrounds, and operate at different levels. Five women farmer groups, six villages, six township

extension stations, two formal breeding institutes and CCAP have been directly involved in both the project design and implementation. Now in its second phase, the project is attempting to link community-based action research with the policy-making process by increasing efforts to engage key decision makers in the maize policy arena at both provincial and national levels.

The field experiments use both a researcher-led and a farmer-led approach with different research focuses in each trial for comparison. More than 40 varieties were identified as target varieties for Participatory Plant Breeding (PPB) and Participatory Variety Selection (PVS) trials at the GMRI station and in five villages. So far, three farmer-preferred varieties have been released and used in the project villages. In addition, five exotic varieties from CIMMYT have been locally adapted, and five landraces from the trial villages have been improved through the joint efforts of farmers and breeders. An improved variety from women farmers has been tested and certified by the formal breeding institution and is widely used in the project region. Formal breeders have identified some very useful breeding materials and inbred lines that have a very broad genetic base from the landraces in farmers' fields.

Other benefits of the field experiments included strengthening interaction, communication, and collaboration among stakeholders and the strengthening of the local level organisational and decision-making capacity of farmers. Attitudes among formal breeders have changed, with the needs and interests of farmers now considered and included in the breeding plan and research priorities of the institutions, and farmers' efforts and knowledge in genetic biodiversity management are increasingly recognised by policy makers at both provincial and national levels.

The project's success has led GMRI to combine gene bank conservation with *in-situ* conservation of landraces. In addition, the China Crop Science Institute will include the local germplasm conservation efforts in Guangxi in its national plan for broadening the genetic base. Meanwhile, CCAP has played a crucial role in expanding the impact and influence of the results at national policy levels. For example, the project was presented and discussed at a national policy-planning workshop coordinated by CCAP and CIMMYT in Beijing, March 2002. This important conference was the first time that 40 prominent national agricultural policy makers and maize researchers had discussed the participatory approach as an alternative and complementary methodology for crop improvement and agrobiodiversity management.

### Further Information

**Yiching Song**, Center for Chinese Agricultural Policy, Chinese Academy of Sciences, Beijing, CHINA.  
*Email:* Yiching.Song@wur.nl

**Ronnie Vernooy**, International Development Research Centre  
Ottawa ON, CANADA. *Email:* rvernooy@idrc.ca



---

## Identifying and solving constraints on scavenging poultry

A research project managed by the Scottish Agricultural College, and with socio-economic inputs from the Natural Resources Institute, has been investigating the production problems facing poultry keepers in two locations in rural India, and seeking to work with poultry keepers to address some of them. The project is funded by DFID's Livestock Production Programme. The locations, both semi-arid, are Udaipur district in Rajasthan and Trichy District in Tamil Nadu. BAIF Development Research Foundation and Tamil Nadu University of Veterinary and Animal Sciences are collaborators in the respective districts.

The two project locations are quite different as far as poultry-keeping is concerned. In the Udaipur project villages the local people are poor tribals, and there is no organised market for poultry. By contrast, in Trichy the poultry keepers belong to a range of castes and wealth categories, and there is a well developed commercial market.

### Project methodology

In its early stages the project undertook a structured survey of 30 poultry-keepers in each location to obtain a general overview of practices and constraints. The principal survey method was an interview schedule. In addition, to collect information about hatchability and mortality the survey used a new technique, which we have called the participatory clutch history method. This information was obtained by getting the owner to recall what had happened to one or more specific clutches in her/his flock during the previous 6–9 months, and to record this information on a chart. Since many poultry-keepers are illiterate, the chart was based on symbols.

After the survey a one-year monitoring programme was established in the two locations to collect further information about poultry production and productivity. This year participatory trials have been implemented in the Udaipur villages; and an on-station trial has been carried out in Tamil Nadu.

### Constraints

Serious problems were identified in both locations, and particularly in the Udaipur villages. The percentage of eggs spoiled was 18% in Trichy and 25% in Udaipur; and the mortality rates were 23 and 42% respectively. In both locations the survey data showed that for the period under investigation predation was a more important cause of mortality than disease; and data from the monitoring programme confirmed that.

Worm counts have shown gastro-intestinal parasites to be present in a large proportion of the birds. Although this does not usually kill the birds, it can weaken them significantly, making them more susceptible to death by other causes.

Newcastle disease (ND) is regarded by many poultry scientists as the main cause of mortality in scavenging chickens. This perception has not been confirmed by the project's experience so far, suggesting that the

importance of ND varies from location to location and may be overestimated in some instances. However even if ND occurs every 2 or 3 years, in the absence of prior exposure or protective vaccination, it may kill more than 70% of the flock. Losses like this would be difficult to bear in a commercial unit or large flock, hence the tendency to vaccinate. The effects of sporadic losses due to ND on a low input system of the type that we are studying are difficult to quantify. Nevertheless, we would argue that over a period of, say, ten years ND is unlikely to be the major constraint to production in the project locations. Factors such as predation and intestinal parasites would have a greater impact. We recommend that similar studies to ours be undertaken in other countries and locations to collect empirical data on the relative importance of different constraints.

### Interventions

The project has been investigating ways of addressing some of the problems identified:

#### *Hatchability*

The failure of 20–25% of eggs laid to produce chicks could be due to the eggs not being fertilised, or to contamination or (in the summer season) excessive heat. Eggs that are sterile, or in which the embryo has died before the egg is incubated, can be consumed or sold, but villagers were unable to distinguish them from fertilised eggs. The project has, therefore, developed and tested a cheap battery-operated 'candling' technology. Another simple technology is being tested that has the potential to reduce and stabilise the temperature of eggs in the summer.

#### *Predation*

Indigenous knowledge about predation control is being collected and synthesised. Provision of training in predation control, and related interventions, is being considered.

#### *Disease*

The project is investigating the effect of locally available plant materials (particularly those with a high tannin content) on the worm burden of the birds. In Udaipur, the grains of a local plant are being tested; and in Tamil Nadu the results of an on-station trial suggest that sorghum grain may be effective.

### Further Information

**Czech Conroy**, Livelihoods and Institutions Group, Natural Resources Institute, University of Greenwich, Central Avenue, Chatham Maritime, Chatham, Kent ME4 4T, UK. Tel: 01634 880088, Fax: 01634 883377, Email: m.a.conroy@gre.ac.uk

**Dr Nick Sparks**, Head of Avian Science Research Centre, Scottish Agricultural College, Auchincruive, Ayr KA6 5HW, Scotland. Tel: 01292 525105, Fax: 01292 525098, Email: N.Sparks@au.sac.ac.uk

---

## Promotion of rabbit farming among the farmers of Tamil Nadu, India: Possible initiatives

Rabbit farming has significant potential to improve food security and nutrition in developing countries like India, where lands for raising food are decreasing due to the burgeoning human population. Broiler rabbits are highly productive; their meat is low in fat and cholesterol, but rich in proteins, vitamins, and minerals. Rabbit rearing projects have been taken up by the Government organisations and NGOs in several parts of Tamil Nadu, hilly areas in particular, over the years. However, the general perception is that their initiatives have not yielded the needed results. Farmers seem to be apprehensive about the viability of this promising enterprise. There are several reasons behind their concern, foremost among them being a lack of cooperation among the researchers, extensionists and the farmers. In smallholder systems, the farmer/extension/research relationship is especially important, because the demand for research services has been relatively difficult to assess. To become demand-driven, the researchers and extensionists need to be conducting research in the farmers' fields, utilising their indigenous technologies, based on joint diagnosis of farmers' problems and opportunities.

The Southern Regional Research Centre of the Central Sheep and Wool Research Institute (an organisation under the Indian Council of Agricultural Research) located in the Kodaikanal hills of Tamil Nadu, has been involved in popularising rabbit farming in Southern India. The difficult terrain, agro-climatic conditions, and dwindling land holdings have been hindering agriculture in these hilly regions and micro-livestock enterprises like rabbit rearing can be a boon to the farmers of the region. Taking the aforementioned points into account, and based on the lessons it had learnt from the past, the research station has proposed certain initiatives for the farmers of this region. One such initiative is conducting participatory research with the farmers of the region. Such participatory research, that is conducted before any sound, general or specific recommendation is made, will go a long way in promoting rabbit rearing enterprises in this region.

Initial informal surveys in Kodaikanal hills indicated the current problems faced by livestock owners. The extension experts and scientists of the research station have been involved in trying to find out how the farmers cope with these problems and identifying their technology needs. The research station has proposed certain strategies and options for farmer experimentation. They include:

1. Supply of rabbit breeding stock to the farmers at a nominal rate.
2. Supply of veterinary drugs.
3. On-farm training of innovative farmers on rabbit production technologies.
4. Involving the farmers in research, in finding means of treating diseases using indigenous methods like herbal remedies.
5. Documentation of such ethno-veterinary practices in rabbit rearing.

6. Farmer experimentation on adaptability of introduced fodder trees such as Tree Lucerne (*Chaemesystisis palmensis*, introduced from Australia and tested successfully at the research station for its growth and palatability of its leaves), so that fodder is available for the animals throughout the year.
7. Identifying farmers' innovative practices with regard to cages, nests, feeding, feedstuff etc. (For instance, though the Institute has recommended coconut fibre for preparing 'rabbit nests', reports of farmers successfully trying dried grasses, which are comparatively cheap, have come in).
8. Recording of parameters such as mortality rate, morbidity rate, reproduction rate, growth rate, feed intake, economics etc.,
9. Help the experimenting farmers disseminate useful results to fellow farmers.

Further, backyard rabbit rearing, a cheap production system, is slowly picking up in states like Tamil Nadu, where large-scale commercial rabbitries had failed to be sustainable. In this system, a few does and a buck are kept in a 'home-built' rabbitry in the backyard, and the animals are raised using locally available greens and kitchen scraps. A recent survey conducted among the farmers of Coimbatore district in Tamil Nadu state revealed that backyard rabbit rearing was considered by many (97%) as a viable option for self-employment. Hence, farmers will be initially encouraged to take up backyard rabbit rearing, utilising minimum resources. Those farmers who gain sufficient expertise in backyard rabbit rearing will then be encouraged to take up small-scale commercial rabbitries. These above-mentioned initiatives, however, are not exhaustive and any suggestion in this regard from AgREN readers is most welcome.

Thus, the research station intends to support farmer-led research by building on farmers' traditional wisdom and to aid in their overall development by introducing rabbits in their farms. The success rate of such initiatives is bound to be higher, since the farmers themselves shoulder responsibilities. The technologies developed from these experiments will certainly complement the traditional and sociological values of the local population, and there will be fewer inhibitions when the results are communicated to other farmers to follow. However, the station also cautions itself from going overload and thrusting such research projects upon the farmers. It realises that such initiatives should come from the farmers themselves.

### Further Information

**D.Puthira Prathap**, Scientist (Agricultural Extension).  
Email: puthira@yahoo.com

**A.S.Rajendiran**, Scientist (Animal Nutrition)

**S.Parthasarathy**, Officer In charge

Southern Regional Research Centre, Central Sheep and Wool Research Institute, Mannavanur, Kodaikanal – 624 103, Tamil Nadu, INDIA.

---

## **Fadama development in Northern Nigeria and cultivator-pastoralist conflicts**

There has been an increase in the cultivation of inland valleys (fadama) in Northern Nigeria in recent years. This is the result of a National Fadama Development Programme (NFDP) and other efforts that increase the dry season cultivation, often with supplemental irrigation, of fadama land. There are a number of positive results from these changes. Rainfed agriculture is restricted to about four months, but fadama cultivation allows the production of crops throughout the year. As soon as the dry season sets in and the inland valleys are sufficiently drained, fadama cultivation commences. There are changes in terms of crop production, with the usual cereal based farming system replaced during fadama cultivation by crops such as tomatoes, pepper, onion, sugarcane and wheat. The implementation of the fadama programme has led to an increase in the adoption rate of agricultural technologies among farmers. The fadama programme has also encouraged the formation of female fadama users associations. Some fadama are cultivated for fodder crops to supplement the crop residues of rainfed agriculture, and green fodder crops in the intense dry period means high income for the growers. Fadama cultivation has also reduced the amount of seasonal migration to the south of Nigeria.

The expansion of fadama cultivation has not been without cost, however, particularly for pastoralists. Over 90% of the cattle and the large proportion of the sheep and goats are held by the nomadic and semi-nomadic pastoralists. Grazing has traditionally been on a communal basis, with no individual possessing sole right to any grazing land. Pastoralists usually used uncultivated bush, fallow farms and forest and grazing reserves, and grass and water were considered free resources available to the stock that got to them first. However, over the years, there has been a progressive deterioration in the symbiotic relationships, and conflicts between the farmers and pastoralists have become routine events in Nigeria.

Some of the major points of conflict include:

*Land tenure and land use practices.* In Nigeria, land was traditionally held on a collective basis, and was used by communities and individuals on first-come first-served basis by virtue of being members of the community. For example, the use of fadama was not based on ownership, and some fadama sites were reserved for use by the pastoralists who would spontaneously settle on them and utilise the resources available therein. However, increasing pressure on land has decreased the importance of communal rights and enhanced the significance of individual ownership of land.

*Inadequacy of the existing grazing land.* Most of the grazing areas have been encroached in recent years by expansion in farming activities as well as by land speculators and government development interventions. Virtually all the grazing reserves are poorly developed, with little or no trace of grass on them, principally due to over-grazing and poor

management. Consequently the pastoralists move farther south in search of sources of fodder.

*Blockage and reduction in size of stock routes.* It has been observed that stock routes become fertile over time due to droppings from animals and therefore farmers encroach on them. The blockage of local cattle routes leading to watering points and increased activities in the fadama are major sources of conflict between pastoralists and farmers. The release of livestock by the settled pastoralists and the arrival of the nomadic pastoralists coincide with land preparation and planting in fadama lands (November to April). One of the problems of the farmers is how to police the scattered fadama from encroachment by the large influx of livestock to the fadama areas.

*Commercialisation of crop residues.* Crop residues are intensively used by agro-pastoralists and nomadic and semi-nomadic pastoralists. Hitherto, they had more or less free access to crop residues. However, nowadays, crop residues are treated as an economic commodity and this limits the opportunity of herders to use them to meet their dry season pasture requirements.

Conflicts are sometimes violent, resulting in the death of farmers and pastoralists. Another consequence of the conflict is the feeling of insecurity and fear generated among the farmers and pastoralists every time the immigration period arrives. The attendant uncertainty and insecurity have forced many farming families to emigrate from crisis prone areas and villages. Indeed some of the farmers claimed that the crisis have affected their ability to pay back NFDP loans.

In terms of conflict resolution efforts, the thrust of the state governments and the affected local governments is on the improvement of pasture through grazing reserves, land conservation and environmental protection, and improvement in facilities and veterinary and extension services. Nevertheless, while the objectives of the governments are sound, their efforts have not yielded many positive results. Conflicts have continued unabated, bringing insecurity, uncertainty, fear and disruption of production activities.

### **Further Information**

**Oladele, O.I.**

Department of Agricultural Extension and Rural Development  
University of Ibadan  
Oyo State  
NIGERIA  
Email: deledimeji@hotmail.com

---

## Strengthening social capital in innovation systems in Nepal: the case of the CIPM/FFS programme

The Community Integrated Pest Management (CIPM)/Farmer Field School (FFS) Programme started in Nepal in 1998. Results of CIPM/FFS by conventional indicators, such as increased crop yields, reduced costs, and increased incomes of poorer farmers have been impressive and well documented. The 'cost effectiveness' of the programme has compared well when assessed against alternative agricultural extension training programmes. However, the programme set out to do more than just improve crop yields, and have short term impacts on rural livelihoods. It sought to strengthen social capital in the overall innovation system of natural resources research and management in Nepal. At the rural household level this was to be through activities to empower farmers, improve gender relationships, and improve farmer's management skills through 'discovery learning', etc. At a broader level the programme supported and initiated activities to bring about a number of changes in the behaviour of a wide range of actors in the government, civil society, NGO, and private sectors.

This research investigates changes that have taken place in the 'social capital' in the IPM part of the agricultural and natural resources innovation system in Nepal. We use ideas and methods from innovations systems and actor approaches to examine these institutional changes and to develop indicators. At its simplest level the major groups/actors involved in the spread of IPM ideas are identified and then the nature of the linkages between these groups is investigated. In broad terms the major actors who have been involved in the CIPM/FFS programme fall into three categories: government institutions, civil society organisations, and private sector enterprises.

Many of the social capital changes have gone far beyond what was originally expected in the project proposal. This is partly because the project expectations were modest, as a result of the many 'constraints and failures' of past projects in the agricultural sector in Nepal. This cautiousness was reflected in the project document in the statement 'It is not expected that large-scale IPM training will take place in Nepal during the next two to three years'.

By 2002 over 17,000 farmers have graduated from the season long FFSs. The programme started with its main focus on establishing a critical mass of IPM trainers within the Ministry of Agriculture capable of organising FFSs. Once this foundation was laid, farmers wanted to move on to take initiatives, make decisions, experiment and communicate for the development of their community. This was possible because the programme followed a flexible approach: subsequent activities were planned year by year, taking account of the results which had been achieved, and the emerging needs and opportunities.

The earlier FFS were mainly in rice conducted by plant protection officers but the programme has expanded to CIPM/FFS in other crops and different

sectors: forestry, post harvest, soil fertility and community development.

From a long-term institutional sustainability perspective some of the most important changes have occurred in the Ministry of Agriculture and the National Planning Commission. These have been of two types. Nepal has never had the types of problems experienced in countries such as Indonesia and the Philippines, where there was a powerful pesticide industry that promoted the use of pesticides in many arenas. However, in planning and policy circles the heavy use of pesticides has been seen a necessary part of the process of modernising and commercialising Nepalese agriculture. This has now changed and the ideas of CIPM are well established within the government structure. A second and related development has been in the attitudes and training orientation of staff in the Ministry of Agriculture. Not only has the content and style of training changed, also their way of working with farmers has improved.

A further significant change was in the activities of some major NGOs in Nepal. CARE International, the largest International NGO in the agricultural and natural resources sector, started initially by using IPM FFS on a small scale but it is now applying the FFS approach in most of its multi-sectoral rural development programmes. In cooperation with Li-Bird, a local NGO, they have integrated IPM FFS training with participatory varietal selection programmes. World Education sees IPM FFS training as a continuation of learning and empowerment processes of women and youth.

In the research we are examining the role of emerging new institutional structures, such as the new National IPM Committee and the IPM Trainers Associations as well as farmers networks. All these can be attributed to the activities of the programme.

In many ways this programme is being seen as a 'success' story. The research is investigating the reasons for this success. It looks at things such as contextual issues, the features of the CIPM/FFS approach, the coalitions/alliances of actors around a common goal, the institutional significance of a group learning approach in Nepal, and the analysis of project staff behaviour.

Finally, the research discusses new emerging issues affecting the programme, such as 'quality control', that will influence further evolution of the programme.

### Further Information

**Annemarie Westendorp**, Senior Lecturer and Course Director, Professional Masters Gender and Agriculture, Larenstein University, P.O. Box 7 7400 AA Deventer, NETHERLANDS.  
*Email:* a.m.b.westendorp@larenstein.nl

**Stephen Biggs**, International Centre for Integrated Mountain Development (ICIMOD), G.P.O. Box 3226, Kathmandu, NEPAL.  
*Tel:* 977 (1) 5525314 , 5524509 *Fax:* 5545122 (Res).  
*Email:* sbiggs@icimod.org.np

---

## An actor oriented analysis of innovation systems: A case study from the charlands of Bangladesh

The 'actor oriented' approaches we are developing are based on the premise that an effective innovation system, (which we define as 'all the actors involved in the development of knowledge and its diffusion'), is dependent on strong and effective information flows and coalitions between key actors in that system e.g strong research/extension linkages and strong farmer/researcher linkages.

Most people would agree with this statement. However, it is unfortunate that many organisations involved in natural resource based innovation systems do not place emphasis on this aspect of their work. Many projects or programmes, though well resourced and effective in developing new technologies or practices, fail to bring any benefits to their client group because they have failed to build partnerships with other key actors. A possible reason for this is that current project planning, monitoring and evaluation (P,M&E) tools do not sufficiently address linkage and coalition formation. In our research we are piloting the use of a number of 'actor oriented tools' which can help to draw attention to the role of linkages and coalitions in innovation systems and to incorporate them in P,M&E (see Box 1). The tools are used to identify key actors, map linkages between them, identify areas for interventions and monitor and evaluate progress.

The tools we are exploring are not new. They have been used by anthropologists and systems analysts for many years. But their use by NR development actors is still not common. Through our research we are testing and adapting these tools to find ones which are user friendly and which will provide a useful complement to existing P,M&E tools.

Our project is an 'action research' activity, our aim being to develop actor oriented approaches while using them practically. The lead organisation is a Bangladeshi NGO, Development Wheel (DEW), which works on the 'chars' (river islands) in the Jamuna river in Bangladesh. Chars are islands formed by river

deposition. Due to annual soil deposits, crop production is extremely productive and there is enormous potential to develop NR based enterprises. However, because of their particular geographical and environmental situation char dwellers require technical and marketing options which are tailored to their own quite unique opportunities and constraints. Currently links with formal innovation support systems (research, extension, NGOs) are weak. As the chars are often temporary there is little permanent infrastructure (government offices, roads, electricity etc.), and mainlanders (including development actors) find it tedious and time consuming to travel to the chars.

In our research we are mapping linkages and coalitions particular to char dwellers as well as those in wider innovation systems for a number of focus commodities. Our aim is to identify linkages or coalitions which could be used or developed by development actors (NGOs, research and extension) to strengthen effective participation by char dwellers in innovation systems.

The research is funded by DFID's crop post harvest programme. The core research team is itself a coalition and consists of members of DEW, a Business Advisory Centre (BASC), anthropologists from Jahangir Nagar University, Dhaka and a freelance research coordinator with a background in social anthropology and NR based research and extension systems. Focus activities (selected in consultation with char dwellers) are chilli, aniseed and livestock fattening. In implementing the research we work closely with other key actors in these innovation systems (from char communities, government, NGO and private sector). We have found that many of these key actors are interested in this approach and in using the tools in their own work. For example, the local extension office has formed an 'actor linkage committee' which brings in other key local actors to consider how to improve linkages.

We plan to complete the research by holding a series of events similar to mini trade fairs which will bring key actors together on the chars. We hope that, through the research, linkages will be built, coalitions formed and that we will equip our research partners with tools they can continue to use to plan and monitor critical partnerships.

We would be interested to hear from other AgREN members involved in similar work or who would like to learn more about what we are doing. Please visit our website at [www.developmentwheel.com](http://www.developmentwheel.com)

### Box 1 Tools being developed in our research

#### Actor linkage map

Here key actors are placed in boxes on a piece of paper and links drawn between them with arrows. This simple technique is a useful starting point for discussing relationships and flows of information in an innovation system.

#### Actor Linkage Matrix

This matrix, which can be easily set up on Microsoft Excel, can be used to summarise and store information on linkages in a system (when the map gets too complex). By highlighting particular cells or linkages in the matrix, development actors can prioritise areas for intervention and monitor change.

#### Determinants Diagram

This is a 'thinking tool' similar to the PRA problem tree. It can be used as a group discussion (or individual thinking) tool to analyse the nature of a particular linkage: its strengths, weakness and possible interventions.

### Further Information

#### Harriet Malsaert

Research Coordinator

188 Gulshan Avenue

Dhaka

BANGLADESH

Email: [malsaert@citech-bd.com](mailto:malsaert@citech-bd.com)

---

## Milk and meat processing and preservation using appropriate technology, in arid rangelands, Kenya

Pastoralists of Northern Kenya are becoming less nomadic and food security becomes a serious issue with high prevalence of long term dependence on food relief during frequent droughts. The originally balanced diet of pastoralists (milk, blood and meat complemented by indigenous plants, roots and tubers) has been largely replaced by maize, cooking fat, sugar and tea, leading to deficiencies. Preservation of traditional food during times of surplus for droughts is needed as is diversification of income to meet the challenges of the changing socio-economic environment in these arid areas, particularly regarding women's traditional role of taking care of the family nutrition and health.

Resources most commonly available are milk, meat, hides and skins. A milk surplus is usually experienced at the end of the rainy season and directly afterwards. Milk is traditionally consumed fresh or naturally fermented. Increasing shelf life of camel milk products to months instead of hours or a few days has proven possible and can help alleviate some of the existing food security problems.

Traditional meat preservation methods used as local delicacies include frying and storing meat in animal fat (*nyiri nyiri, lakuli*). Culling of large animals is rarely done, but pastoralists' perceptions are changing rapidly with the need for new income generating activities.

In 2000 the EC funded Agriculture / Livestock Research Programme in KARI reviewed available documentation on current milk and meat preservation in key pastoral and agro-pastoral areas. The adoption potential for alternative technologies regarding milk and meat preservation particularly in Kenya was assessed as promising.

In early 2001, KARI started a pilot milk processing and preservation programme with a women's group and local CBO support in Ngurunit, Marsabit District, Northern Kenya.

Appropriate technology experiments with camel milk to test suitability of cultures and recipes suitable for arid conditions were carried out. The production of camel milk in this area is far in excess of cow milk, and processing characteristics differ considerably from cow milk's. Recipes were adapted and new ones developed. In the field, camel butter milk (plain / strawberry flavour), camel milk ghee, dried dissolvable camel cheese and a cheese based spiced toffee were produced according to local preferences. Training courses were held for milk-delivering pastoralists and milk processors of the community on milking and processing hygiene and diagnosis and treatment of common diseases (e.g. mastitis) that cause milk spoilage. Adult literacy classes were organised by the CBO to ensure basic record keeping. A mini dairy was built using simple technology and limited solar energy. Marketing in surrounding villages was promoted and organised with the assistance of local people and

visiting pastors from a mission some 60 km away. The dairy now produces the developed products for sale and home consumption and the women use the profits to subsidise veterinary drugs for members. They have been able to improve their livelihoods and are embarking on other enterprises, such as a bakery.

Another women's group from Ngurunit was assisted to test adapted meat recipes based on traditional delicacies of Somalis and Samburus. A marketing survey in Nairobi indicates a large potential for these traditional products, and up-scaling of this venture is currently under consideration. Suitable recipes for sausages, salami and canned meat to increase food security, but predominantly as income generation options, are being tested. Tanning of skins is a future research project. Traditional tanning methods successfully used in temperate climates need to be adapted to the climatic conditions of Northern Kenya.

The facilitating local CBO started education on nutrition in Ngurunit and nearby communities, and the women have started adopting these food security items at household level.

Based on the positive experiences in Ngurunit, two other communities from Northern Kenya expressed interest in milk processing for income generation. KARI/EU provided start-up funds and training in collaboration with local partners. These two dairies have been successfully operating since early 2002 (Moyale) and mid 2002 (Marsabit). KARI Marsabit's laboratory provides milk hygiene testing and livestock disease screening together with the District Veterinary Office.

Seeing that the benefits of value added products stay in the communities, organisations and communities from other pastoral areas in Kenya, Ethiopia, Tanzania and Somaliland now request help to set up similar small-scale dairies. FARM Africa has provided funds to set up three further mini dairies in Marsabit District, currently being established with assistance of a local NGO and KARI.

KARI has learnt that adaptation of known technologies to local conditions is rewarding as part of KARI's role in feeding the population of Kenya, and local communities appreciate the practical application of modern appropriate technologies which they can control on their own and turn into income generating activities.

### Further Information

**Helga Recke**, EU/KARI ARSP Coordinator, Kenya Agricultural Research Institute (KARI). *Email:* hrecke@kari.org

**Anne Bruntse**, Appropriate Technology Consultant, Gilgil, Kenya. *Email:* dloll@africaonline.co.ke

**Amos Adongo**, KARI Home Economist, KARI Marsabit, Kenya. *Email:* karimar@africaonline.co.ke

---

## Combining Block Demonstration and Farmer Field School approaches in soil fertility management: Experience from Bangladesh

The DANIDA supported Integrated Soil Fertility and Fertiliser Management Project (SFFP) has been operating through the Department of Agricultural Extension (DAE) in Bangladesh since 1993. The main strategy could be summarised as follows: *Support to research-extension co-operation; Training of extension staff and farmers; and Demonstrations on farmers' fields on soil fertility management.* The project introduced and emphasised an *Integrated Plant Nutrition System (IPNS)* approach, which combined the use of inorganic and organic fertilisers.

In 1994/95 SFFP started a Block Demonstration (BD) programme. In Bangladesh, BDs consist of 10–15 farmers contributing up to max. 0.5 acre, in a contiguous manner, so that a large demonstration area of around five acres is formed. They are instigated and guided by the Block Supervisor (grassroots extension worker of DAE) through several group meetings and training sessions, and a committee consisting of Chairman, Secretary and Treasurer is formed. The group follows the same crop production and soil fertility plan for the whole year, based on local cropping patterns. Farmers are trained on technical and methodological issues, and field days and farmers rallies are organised to create awareness with neighbouring farmers. An important activity is the training and implementation of related activities of the women in the group, usually the wives of the demonstration farmers. This encompasses preservation and use of farmyard manure, vegetable cultivation and some post harvest activities. Around 57,000 farming families have participated in this programme so far and an estimated 650,000 farmers have visited field days or farmers' rallies. Experiences of the BD programme in Bangladesh are largely positive, with the farmers attaining higher yields, using more balanced fertiliser recommendations, introducing green manure (in relevant areas), and preserving manure in a better way.

In 2000/01 SFFP started a pilot Farmer Field School (FFS) programme on Soil Fertility Management (SFM-FFS). These SFM-FFS were modeled after existing FFS on Integrated Pest Management (IPM-FFS) in Bangladesh, plus some international experience (mainly FAO and CARE). The already trained DAE manpower in IPM-FFS were used as resource persons / facilitators. A curriculum was developed and short practical training on the respective soil fertility sessions was conducted for the DAE staff involved. The participating farmers' groups consisted of already selected Block Demonstrations. The SFM-FFS sessions were not as frequent as in IPM-FFS, but lasted for the whole cropping cycle (1 year), as this is the main strategic choice in soil fertility management propagated by SFFP (considering cropping pattern, rather than single crop during one season). The topics / sessions in SFM-FFS were delivered as per need and timing of the cropping system, e.g. ranging from soil characteristics to balanced

fertiliser use, etc. Several trial and observation techniques were included, e.g. missing nutrient pot and field trials, a water management plot, as well as economic exercises. Separate sessions for women were conducted on vegetable gardening, seed and manure preservation, construction and use of improved stove, nutrition, etc. This small pilot programme (only three FFS during 2001–2) has created considerable interest with DAE and participating and neighboring farmers. The physical and economical outcomes of the FFS seems similar as in BD (balanced fertiliser use, higher yields). One would expect a deeper understanding and improved capacity of the FFS farmer in terms of making decisions on soil fertility management, and this is currently under investigation.

Combining the BD and FFS through the SFFP has yielded considerable attention and success. BDs are well established, have good demonstrative capacity, can potentially reach many farmers with relatively low human resource input and usually include an element of input support for farmers. FFS create improved knowledge and capacity, and thereby positive and sustainable change, is expected. Combining these approaches can have a positive impact on farmers' economic benefit and knowledge. The different programmes should be properly evaluated to give a better insight into the costs and benefits of SFM-FFS vis-à-vis BD and other extension methods. Apart from economic parameters this should include soil fertility and knowledge based aspects, thereby giving an insight into the sustainability of introduced changes. The available human and financial resources of the implementing extension agency should also be looked at, in view of the input required for the methods used. Training on FFS facilitating skills should not only be limited to IPM, but also include soil fertility, and the rest of crop management. A relevant and participatory assessment of constraints and farmers' base knowledge level should be conducted before starting any FFS, which would give it relevant direction. Farmer groups could then ideally choose from 'modules' of ready-prepared sessions, better reflecting their perceived needs. Local initiatives in developing FFS curricula and sessions should be encouraged, as should participation of other extension service providers (NGO, private).

### Further Information

**Jan Rijpma**, Agronomy and Agricultural Development Consultant, P.O. Box 272, Victoria, SEYCHELLES.  
Tel: 248 241252. Email: rijpma@seychelles.net.

**Joost Bakkeren**, Senior Adviser, SFFP, c/o Royal Danish Embassy, P.O. Box 2056, Dhaka, BANGLADESH.  
Tel: 880 2 8116159. Email: joost.bakkeren@sffp2.org.

**Iqbal Hoque**, Subject Matter Specialist, SFFP, c/o Royal Danish Embassy, P.O. Box 2056, Dhaka, BANGLADESH.  
Tel: 880 2 8116159. Email: iqbal.hoque@sffp2.org.

---

## How can research contribute to improving livelihoods of artisanal fishing communities in West Africa?

### Background

The Sustainable Fisheries Livelihoods Programme (SFLP), funded by DFID and implemented by FAO in partnership with 25 countries in West and Central Africa, seeks to reduce poverty in artisanal fishing communities in the region. The SFLP commissioned a study to deepen understanding of the role of research in relation to improving livelihoods dependent on artisanal fishing in six countries in the region: Cameroon, Nigeria, Mali, Guinea, Senegal and Mauritania. Key hypotheses were that:

- linkages between artisanal fishing communities, the policies and institutions that influence their livelihoods and research are generally weak;
- research does nevertheless have an important contribution to make in improving livelihoods through the generation of knowledge and technical and socio-economic innovations.

The study consisted of six detailed national reviews implemented by multi-actor teams facilitated by the national fisheries research institute and a regional overview drafted by the study coordinators. The methodology drew on sustainable livelihoods approaches (e.g. partnership, participation; multidisciplinary analysis and macro-micro level linkages) complemented by some quantitative analysis of funding and economic returns (Nigeria). Results were validated with actors at the national and regional levels.

### Key issues raised

#### *Livelihood groups in artisanal fishing*

A great diversity of livelihood groups use artisanal fisheries resources. These groups operate at all stages of the supply chain, e.g. fishermen and women, boat mechanics, processors, traders. There is some gender specialisation of tasks (e.g. men tend to dominate fishing; women usually co-ordinate processing), but this varies according to context and social norms. Many groups have diverse livelihood activities; migration is an important strategy for fishers in order to follow a moving resource. Many factors determine the vulnerability of each group, depending on context. Fishers have the potential to gain the highest surpluses, but they can be the most vulnerable group as they have to make the heaviest capital investments; women processors are vulnerable to the size of catch and marketing constraints.

#### *Weak organisation*

Producer organisations in artisanal fisheries are generally weak when compared to those in agriculture (e.g. Cameroon, Guinea, Mali) limiting capacities to collaborate with research.

#### *Research providers*

Many actors are involved in fisheries research in each country, including public sector research institutes,

universities, international organisations, the private sector and development programmes.

There has been some positive evolution in the approaches of research institutions in the last decade. Case studies show that research has contributed to improving livelihoods of fisheries communities either indirectly or directly. In some countries (e.g. Senegal) research has helped address challenges in the policy and institutional context, e.g. providing information to inform decisions in international negotiations; supply of innovations to State extension services, then adopted by artisanal fishing communities; etc. Additional strengths in fisheries research include: research themes on artisanal fisheries increasingly identified through participatory processes; existence of some informal frameworks for collaboration between actors; attempts to adapt incentives and the status of research institutions to encourage increased development-orientation of fisheries research (e.g. Mali and Senegal).

### Limited partnerships and user participation

However, formal partnerships between actors are patchy and capacities for socio-economic analysis and participatory research are limited. Linkages between research and extension are often poor and fisheries research institutes have been slow to develop effective demand-driven approaches. They could capitalise more on the contributions of socio-economic research and invest in strengthening the capacities of fisheries communities. Finally, mechanisms for artisanal fishing communities and their organisations to learn of or apply the results emerging from research are generally lacking – much due to failures in extension. Even where fishers are more organised (e.g. Senegal), there are still few examples of formal partnerships between research and fisheries communities.

#### *Policies, institutions and processes*

Incoherence in government policies can have negative effects on artisanal fishers' livelihoods (e.g. support in principle for the development of artisanal fishing, but promotion in practice of increased industrial fishing). Fisheries research has the *potential* to make a strong contribution by enabling policy makers to take informed decisions, formulate appropriate laws on resource use and contribute effectively to international negotiations on use of fisheries resources. However, public research institutions have taken a long time to adapt to the demand-led development-oriented approaches required to improve livelihoods. Finally, in a context of structural adjustment and reduced state investment, the contribution of all agricultural research to improving livelihoods is undermined by a generalised funding crisis and increasing dependence on dwindling international funds. Indeed, most countries studied do not place high priority on funding



---

fisheries research out of the overall resources allocated to agriculture and natural resources, despite the often significant contribution of fisheries to GDP.

### Implications for action

Four types of action at the national and sub-regional levels were identified.

1. Strengthen the institutional, management and strategic planning capacities of socio-professional organisations in the artisanal fishing sector.
2. Establish better mechanisms for partnerships between research and fisheries communities.
3. Strengthen the capacities of fisheries research institutions (e.g. sustainable financing; skills in social science and participatory approaches).
4. Strengthen the contribution of fisheries research to policies and livelihoods (e.g. creation of liaison bodies between research, policymakers and artisanal fishers; establish mechanisms to adapt research results to resolve fishers' constraints and build on real opportunities at the community level).

To put this agenda into practice, country teams drafted policy notes for high level decision makers,

and stakeholder meetings were proposed at national and sub-regional levels to debate lessons.

### Sources

Hussein, K. and Zoundi, J., 2002 *The Contribution of Research to the Sustainable Livelihoods of Artisanal Fishing Communities*, Field Report No.14, FAO and DFID, December ([www.sflp.org/ftp/dload/frpt14.pdf](http://www.sflp.org/ftp/dload/frpt14.pdf)). Further materials available at: [www.sflp.org/Ongoing](http://www.sflp.org/Ongoing) activities of the Regional Support Unit.

#### Further Information

**Jean Sibiri Zoundi**, Chief Research and Development Liaison Service, Institut de l'Environnement et de Recherches Agricoles, BURKINA FASO. *Email:* [zoundi@hotmail.com](mailto:zoundi@hotmail.com)

**Karim Hussein**, Principal Administrator, Sahel and West Africa Club, OECD, FRANCE. *Email:* [karim.hussein@oecd.org](mailto:karim.hussein@oecd.org) (Research Fellow ODI at the time of this study)

**Regional Support Unit**, PMEDP/SFLP FAO, Cotonou, RÉPUBLIQUE DU BÉNIN. *Email:* [rsu.usr@sflp-pmedp.firstnet.bj](mailto:rsu.usr@sflp-pmedp.firstnet.bj)

---

## Improving the impact-orientation of agricultural research organisations

Confronted by public sector reform, research and development agencies are being challenged to adopt 'joined-up' monitoring and evaluation (M&E) systems that not only incorporate broader perspectives and clientele, but also focus more closely on results and service delivery. This represents a considerable departure from existing practices in which research outputs from individual projects are presented alongside impact assessments as the measures of organisational achievement.

'Institutionalising Impact Orientation' was a 16-month inception project designed to address these challenges through introducing performance management concepts, and building the performance management capacity of a pilot group of agricultural research organisations. Two organisations in Ghana, the Crops Research Institute and Food Research Institute, and the National Banana Research Programme in Uganda, participated in the project.

The 'balanced scorecard' was selected and adapted as the central approach for considering and enhancing performance management practices. It has proven successful within private sector corporations and is increasingly being used in the public sector. The scorecard provides a 'balanced' view of an organisation's performance across four perspectives; employee, business, client and financial. It stresses a balance between monitoring internal processes and the views of clients and other stakeholders. Both are seen as crucial to an organisation's survival within an increasingly complex and competitive global

environment, and should be internalised within any performance management approach. Further, the scorecard presents a framework through which organisations and their employees can set targets over which they have direct control or a manageable interest, whilst at the same time establishing goals which contribute to wider development targets.

As the first phase of a larger initiative, the project began the process of redefining monitoring and evaluation within these wider parameters, and began to restructure existing and introduce new practices into the systems of the pilot organisations. The dissemination of the approach, results and lessons has generated considerable interest and opportunity for uptake within the research system reform processes in Uganda and Ghana, and amongst a wider group of development agencies, including the CGIAR, bilateral development agencies and international research and development organisations supporting results-based management and evaluation capacity development initiatives.

#### Further Information

"Institutionalizing Impact Orientation: Building a performance management approach that enhances the impact orientation of research organizations" by David Rider Smith with Alistair Sutherland. Performance and Impact Programme, Natural Resources Institute, Chatham, UK. 2002.

Copies of this book can be obtained from the authors (*Email:* [d.t.r.smith@gre.ac.uk](mailto:d.t.r.smith@gre.ac.uk) or [a.j.sutherland@gre.ac.uk](mailto:a.j.sutherland@gre.ac.uk)), or by writing to ITDG Publishing, 103-105 Southampton Row, London, WC1B 4HL, UK.

---

## **PROLINNOVA: Promoting local innovation in ecologically-oriented agriculture and natural resource management**

A global partnership to promote research and development (R&D) approaches that enhance local innovation is being built from the bottom up. African NGOs are facilitating multi-stakeholder design of national PROLINNOVA programmes. NGOs in several more countries are ready to launch similar processes. The planners of the national programmes will design an international programme to strengthen their local activities.

### **Strengthening local innovative capacities**

PROLINNOVA is an NGO-led initiative to build an international learning network promoting local innovation in ecologically-oriented agriculture and natural resource management (EA/NRM). It focuses on learning from and stimulating activities that strengthen the capacities of 'farmers' (smallholders, pastoralists, forest dwellers, fisherfolk) to adjust to changing conditions by developing and adapting their own site-appropriate systems and institutions of resource management.

PROLINNOVA builds on and scales up R&D approaches – many pioneered by NGOs – that start with discovering what farmers are doing in their own informal experimentation: how they develop and test new ideas to improve their use of natural resources. Experiencing and documenting the rationale of farmer innovation transforms the perspective of conventional R&D and encourages support to local initiatives. Joint experimentation by scientists, extensionists and farmers plays a key role in further developing local ideas in an innovation process that integrates indigenous and scientific knowledge systems.

### **Mainstreaming participatory approaches**

Scaling up is in two directions: horizontally, by involving more organisations, also at farmer level; and vertically, by targeting higher levels within larger organisations. The partners in PROLINNOVA seek to integrate participatory approaches building local innovation into formal research, extension and education. A recent study involving several PROLINNOVA partners identified measures to support this process. PROLINNOVA builds on the lessons from this study, paying particular attention to transforming university teaching in partnership with institutions in Belgium, Ethiopia, Ghana, the Netherlands, Niger and Uganda.

### **Objectives and activities**

To promote processes of local innovation in AE/NRM, PROLINNOVA partners seek to:

1. set up PROLINNOVA programmes in several countries;
2. create lasting mechanisms for linkages between these initiatives, to learn from PROLINNOVA experiences and for mutual support;
3. synthesise, document and spread lessons from these initiatives and similar experiences;
4. encourage wider application and integration of

PROLINNOVA approaches in institutions of research, development and education;

5. increase farmers' influence on R&D. In a programme to support innovation by farmers, they must play a central role in planning and implementation. The influence of farmers and their organisations will be ultimately expressed through their involvement in decision-making about use of R&D funds.

To achieve these objectives, the PROLINNOVA partners are developing country-specific ways of:

- identifying and documenting local innovations and innovation processes related to EA/NRM;
- establishing farmer-extensionist-scientist partnerships to further develop local innovations and encourage others to experiment with them;
- building capacities of all stakeholders in participatory R&D approaches and methods;
- developing and expanding mechanisms that give farmers influence over formal research, extension and education;
- encouraging mutual learning through joint analysis of: a) PROLINNOVA approaches and methods; b) methods and curricula for learning PROLINNOVA; and c) case studies on conducive policies and institutional conditions.

### **Decentralised programme development**

After the first initiative taken by a group of NGOs from North and South during the lead-up to the Global Forum for Agricultural Research (GFAR) in 2000, PROLINNOVA is growing in a decentralised way. With support from IFAD (International Fund for Agricultural Development), NGOs in Ethiopia, Ghana and Uganda – Agri-Service Ethiopia, ACDEP and Environmental Alert, respectively – are facilitating multi-stakeholder processes of building R&D partnerships and planning PROLINNOVA programmes at national level. NGOs in Benin, Brazil, Burkina Faso, Cambodia, Guinea Bissau, Nepal, Niger, South Africa, Sudan and Tanzania are seeking support for their proposals to launch PROLINNOVA. The participatory design process in each country involves:

- inventories of current activities in promoting local innovation in EA/NRM;
- stakeholder consultations to review experiences and identify where supportive activities and mechanisms are needed to scale them up;
- workshops to exchange in-country experiences and design action plans.

Simultaneously, interest of donors is stimulated by exposing them to successful cases of promoting local innovation and experimentation, and linking them with national partners.

PROLINNOVA's momentum thus springs out of programmes defined by stakeholders in different countries and funded from different sources, linked through learning mechanisms such as interactive databases, e-conferences, workshops and publications. A small 'animating' unit facilitates exchange,

systematises information and supports formulation of national and international Prolinnova action plans. Country programme planners will meet in an international workshop in Ethiopia in October 2003 to agree on international sharing and learning mechanisms. This process of participatory planning and development mirrors the approach advocated by Prolinnova, so that the global programme will be owned by all partners.

#### Further Information

**Laurens van Veldhuizen** and **Ann Waters-Bayer**  
PROLINNOVA c/o ETC Ecoculture, POB 64, 3830 AB Leusden,  
NETHERLANDS. *Tel:* 31 33 4326024, *Fax:* 31 33 4940791,  
*Email:* ecoculture@etcnl.nl, *Website:* www.prolinnova.net

PROLINNOVA country coordinators:  
**Amanuel Assefa**, *Email:* ase@telecom.net.et  
**King-David Amoah**, *Email:* ecasard@africaonline.com.gh  
**Fred Kafeero**, *Email:* envalert@imul.com

## Training needs of extension personnel in communication and transfer of technology

Training is considered as an important contribution to improve an individual's ability to perform a job or organisational role. It is often conducted in order to improve productivity, improve the quality of performance, lower loss and/or reduce inefficiency, minimise accidents, reduce turnover and absenteeism. In many organisations training is not effective because those in charge of training limit their role to sponsoring managers for training. Training has been recognised as an important input for improving the professional competence of extension personnel for effective transfer of technology to the farming community. In the reorganised agriculture extension system in India, popularly known as Broad Based Extension System, the communication component of extension work has been given an important place. Keeping in view the proliferation of communication media and transfer of technology, a question naturally arises regarding the kind of training extension personnel require. Keeping in view their crucial role, doctoral research was conducted by the authors during 1997–2000 in the Department of Agricultural Extension and Rural Sociology, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, with the objective of studying the training needs of extension personnel in the Broad Based Extension System under the Tamil Nadu Agricultural Development Project. Coimbatore and Madurai districts of Tamil Nadu were selected as the study area. The extension personnel included in the study were the Agricultural Development Officers and several classes of Agricultural Officers (Extension, Tamil Nadu Women in Agriculture, Subject Matter Specialists) employed in the State Department of Agriculture. The total sample size consists of 144 extension personnel which includes 32 ADOs, 33 AOs (Extn.), 26 AOs (TANWA) and 53 AOs (SMS). The research methodology was framed to study the training needs. For this purpose relevant literature was reviewed and discussions were held with extension scientists. One main area of training was identified as communication and transfer of technology and 21 sub-areas under this area were also listed. The training needs were determined by assessing self-perception by the respondents in the sub-areas. The extension personnel were asked to give their response on a four point continuum scale against each sub-area of training needs. Mean scores were worked

out to identify the training needs in specific areas. The outcomes of the present study revealed that there was not much difference between categories of personnel with respect to the knowledge and skill requirements and training needs. All four categories of extension personnel needed training and they gave their preference to gain knowledge and skill in areas such as presenting programmes through radio and television, effective public speech making, preparing materials for radio broadcast and telecast in different modes, and preparation of video programmes. All four categories of extension personnel want to gain skill in areas like effective writing of articles/extension literature, preparation of visuals for teaching, preparation of literature for farmers use and operation and handling of teaching equipment. There was little difference in training needs between the four categories because all the four categories of extension personnel were in same cadre. A slight difference was noticed in the preferences given by the agricultural officers (TANWA) and the other three categories because of gender difference and education. Further training in communication and transfer of technology is not a one-shot affair. It is a continuous process that requires regular as well as ad-hoc courses and programmes to be implemented. Also a systematic effort on curriculum planning is needed for training of extension personnel at regular intervals.

#### Further Information

**Dr. J. Meenambigai**,  
Lecturer in Agrl. Extn.  
Faculty of Agriculture  
Annamalai University  
Annamalainagar – 608 002  
Chidambaram,  
Tamil Nadu  
INDIA.  
*Tel:* 91 (0) 4144 238937, 91 (0) 4144 238451  
*Email:* naturajan@hotmail.com

**Dr. R. Netaji Seetharaman**  
Professor and Head  
Dept. of Agrl. Extn. And Rural Sociology  
Tamil Nadu Agrl. University  
Coimbatore – 641 003  
INDIA  
*Tel:* 91 (0) 422 242286

---

## Understanding and enhancing youth livelihoods in rural East Africa: an introduction to a research project

### Introduction

This is a brief introduction to a study on rural youth livelihoods in East Africa, which is currently being funded by the UK Department for International Development through its Natural Resources Systems Programme. These notes indicate the major questions the project seeks to address and offer a discussion of some of the conceptual issues concerning the investigation. Further details on the management of project, including research partners and activities can be found at [www.youthlivelihoods.info](http://www.youthlivelihoods.info).

### Research Hypothesis and Key Questions

The underlying hypothesis of the Rural Youth Livelihoods Research Project is that youth are critical stakeholders of improvement in Natural Resource Management (NRM). However, for youth to become proactive in investing in NRM we believe that they must have adequate opportunities to build their livelihoods on their own terms. Preliminary investigations suggest that a lack of understanding of how young people living in rural areas make use of local natural resource endowments to shape their livelihood strategies presently limit such opportunities. The Project aims to find ways by which the particular needs and interests of rural youth can be recognised and addressed by available service institutions. The kind of questions we seek to explore are as follows:

- What opportunities do rural youth see to invest in NRM as part of their livelihood strategies?
- What are seen as the key constraints dissuading rural youth from pursuing a longer-term 'career' in NRM?
- Are current NR-focused policies and institutions enabling or constraining to their livelihood opportunities?

Such questions amount to a complex challenge requiring the adoption of a broad perspective that encompasses an understanding of the livelihood strategies of young people, the policies that shape NRM, as well as the institutions that serve rural areas.

### Why has the study of youth livelihoods been neglected?

An understanding of the lives of rural youth should be an essential aspect of rural policy and practice. However, the present and potential contribution that young people make in shaping social and economic change in rural areas remains poorly understood. Indeed, there are few published accounts of 'youth livelihoods' in Africa. There are a number of reasons why this should be.

Reflecting a weak international policy environment, at the national level there is little commitment to the collection of information on young people. Knowledge of youth livelihoods remains localised, partial and highly fragmented among ministries and other service providers. In both Uganda and Kenya, despite the existence of a wide range of policies that directly impact upon their opportunities and choices, the full contribution that young people make in social and

economic life is frequently ignored, or misunderstood and by politicians, policy makers and opinion leaders.

Another important reason is that young people often have few opportunities to make their interests and needs known in societies that operate on gerontocratic principles of governance, and where control of key resources is *expected* to remain in the hands of older people. This lack of 'voice' is compounded by the fact that present professional approaches to framing the understanding of development processes tend to overlook young people, due to an over-extensive reliance on the 'household model' that focuses attention on the lives of adults. Particular issues of poverty and disadvantage faced by young people are, therefore, unlikely to be identified without a prior commitment to explore their interests and concerns.

### Are youth livelihoods 'sustainable livelihoods'?

During initial investigations in Kenya and Uganda, informants have identified a number of livelihood opportunities where young men, especially, seem to predominate. These include brick making, 'sand harvesting', firewood gathering and charcoal production, bicycle-taxis, horticulture (tomatoes, melon) to name but a few. The characteristics of these enterprises suggest that they:

- Require heavy, sustained physical effort: 'Strength' in particular, is commonly seen a key asset of young men.
- Are risky and often short-term, but may offer high and/or quick returns: Issues of "long-term security" may be less important to youth than to older people.
- Are rural-based but do not depend upon control of land or other key NR assets (although access to common-pool resources may be significant).

The characteristics of these enterprises possibly signify areas of 'comparative advantage' for young people, and suggest that 'youth livelihoods' might usefully be contrasted with those of adults. There is an apparent gap between the transitional strategies of youth with the established opinion that long-term investment in NRM is a necessary condition to the achievement of 'sustainable rural livelihoods'. This research provides a critical entry point into re-examining the basis of 'sustainable livelihoods', discussion of which is frequently elevated to a level of such complexity and abstraction that it threatens to prevent us from connecting with real lives and real concerns. It is important to remember that we are not born with livelihoods; rather they are created through our interaction with the world into which we are born.

#### Further Information

Kevin Waldie, Lecturer, International and Rural Development  
Dept., University of Reading, PO Box 237, Reading RG6 6AR  
UK. Tel: 44 (0)118 378 6527 Fax: 44 (0) 118 926 1244  
Email: [k.j.waldie@reading.ac.uk](mailto:k.j.waldie@reading.ac.uk)  
Project web-site: [www.youthlivelihoods.info](http://www.youthlivelihoods.info)

## Verification and confirmation of appropriate extension techniques for resource poor livestock keepers in Nepal

The development of appropriate strategies and techniques to overcome the constraints that limit livestock production, and the contribution that livestock can make to the livelihoods of resource poor livestock keepers, are of little value if they are not communicated to the people who could make use of them. A number of extension methodologies have been developed to facilitate dialogue with farmers, and to communicate research messages to them. However, not all methods are equally effective to disseminate information and technologies at the farmers' level. A survey was therefore carried out to determine which extension methodologies were considered most effective by extension agencies and by farmers groups.

The survey was conducted using a structured questionnaire. Key persons and extension agents working in different institutions and with farmers' groups were interviewed. The criteria for selection of institutions was to ensure representation of government bodies, research institutes, international non-government organisations (INGOs), non-government organisations (NGOs) and farmers' groups. The validity and reliability of the set questionnaire was pre-tested both in English and Nepali with extension professionals and relevant stakeholders and partner collaborators, government officers and NGOs. Their comments and feedback were used to revise the questionnaire before it was used in practice. A second questionnaire was administered to farmers' groups. These were groups that had been associated with projects managed by the institutions involved in the survey. The farmers' questionnaire was also piloted before being used with farmers in this study.

The surveyed institutions use a range of extension approaches. The commonest approach, which was considered the most effective among the contacted organisations, was the group approach. Sixteen (77%) organisations are working with a group approach and say that it is the most effective approach compared with others. Three organisations (14%) described it as just effective. For awareness raising, posters and pamphlets were considered most effective by six (29%) organisations and effective by a further seven (33%). However, some believed that posters were more effective than pamphlets for Nepalese resource poor livestock keepers. Only two organisations (10%) considered the farmers' cooperative approach the most effective, although a further 12 (57%) considered it effective.

Based on their experiences, the organisations made recommendations about which extension approaches would be more appropriate to adopt for a livestock project. These recommendations are summarised in Table 1. The farmers' group approach was the most highly recommended method for engaging with farmers and communicating extension messages.

The approaches that farmers' groups found the most effective are summarised in Table 2. Farmers were in agreements with the institutions that the group approach was the most effective extension methodology to use.

However, farmers rated fairs and competitions much higher than did the institutions, but did not appear to value the use of extension media (radio, pamphlets and posters) to anything like the same extent. They were also less convinced of the value of individual contacts than were the institutions.

The results of this survey suggest that effective extension requires the adoption of a group approach. The use of this approach is recommended by both farmers and institutions. The use of extension media may assist in the dissemination of information, but many farmers are excluded from this approach, and did not find it helpful. The use of a group approach is very expensive in terms of resources, and will also exclude farmers who are not involved in the group. Means of engaging with farmers who are not usually involved in groups need to be established if they are not to be permanently excluded from dialogue and the dissemination of information.

The extension approaches that are found effective in one location are not necessarily equally effective in other locations and also depend on the type of farmers (resource rich and resource poor farmers).

**Table 1 Extension approaches recommended by extension organisations**

Extension Approach	Number of organisations recommending approach	Percentage of organisations recommending approach
Group approach	16	76
Group meeting	11	52
Individual contact	9	43
Poster and pamphlets	6	29
Supervision & follow-up	6	29
Group training	5	24
Farmers' cooperative approach	4	19
Mass awareness	4	19
Groups exposure visits	4	19
Fair/ exhibitions	4	19

**Table 2 Extension approaches recommended by farmers' groups**

Extension approach recommending approach	Number (%) farmers' groups	Rank
Group approach	6 (75%)	I
Farmers competition	4 (50%)	II
Training & visits	3 (37.5%)	III
Passing on gift	3 (37.5%)	III
Village-based farmers training	3 (37.5%)	III
Supervision & follow-up	2 (25%)	IV
Technical advice	2 (25%)	IV
Individual contact	1 (12.5%)	V
Farmers visits	1 (12.5%)	V
Farmers meeting	1 (12.5%)	V
Extension media	1 (12.5%)	V

### Further Information

K.P. Neupane, Nepal Agroforestry Foundation, Khoteshwor Phoolbari, PO Box 9594, Kathmandu, NEPAL.  
Email: naf@ntc.net.np

---

## Websites

---

### **ISNAR website ([www.isnar.cgiar.org](http://www.isnar.cgiar.org))**

The following new publications have recently been posted on the ISNAR website. They can be downloaded free of charge, and hard copies may be obtained free of charge by individuals in developing countries.

#### *Research Management Guidelines No. 6: Improving agricultural research at universities in sub-Saharan Africa: A study guide*

Universities in sub-Saharan Africa have been the subject of criticism for being too academic and remote from the practical needs of the societies that they are supposed to serve. Yet these universities often include among their faculty a great proportion of their country's most highly trained researchers, and have some of the best research facilities. How can these resources best be mobilised to contribute to national development objectives? This Research Management Guideline tries to answer this question and examines related issues. [www.isnar.cgiar.org/publications/catalog/rmg.htm#rmg6](http://www.isnar.cgiar.org/publications/catalog/rmg.htm#rmg6)

#### *Meeting Report: A framework for biosafety implementation*

Concern over possible environmental and health implications of modern biotechnology has stimulated

regulatory mechanisms for food safety and environmental risk assessment. Given the challenges and difficulties inherent to building these regulatory systems and the necessary operating capacities, ISNAR convened an international expert consultation in July 2001, titled 'A Framework for Biosafety Implementation: A Tool for Building Capacity.' The present report provides an overview of the main building blocks used to develop a conceptual framework for biosafety implementation. [www.isnar.cgiar.org/publications/catalog/meetings.htm#ROM16](http://www.isnar.cgiar.org/publications/catalog/meetings.htm#ROM16)

### **Agricultural Research and Extension Network ([www.odi.org.uk/agren](http://www.odi.org.uk/agren))**

The AgREN website contains a full list of network papers together with details of how to join, the benefits of membership, how to submit material for publication, and contact details for network personnel. Back issues of papers dating back to July 1999 and the current newsletter are also available. The AgREN website contains links to other related organisations and projects, and we welcome suggestions from members regarding other useful links that you would like to see included.

---

## Announcements

---

### **Conference announcements**

#### ***SEAAFSRE Ninth Regional conference: 'Moving beyond doing good research and extension to making a difference to the lives of resource-constrained farmers and the rural poor'***

The ninth regional conference of the Southern and Eastern African Association for Farming Systems Research-Extension (SEAAFSRE) will be hosted jointly by Makerere University, the National Agricultural Research Organisation (NARO) of Uganda, Uganda National Agricultural Advisory Services (NAADS) and the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) on 29 September – 1 October, 2003. The conference, whose theme will be '*Moving beyond doing good research and extension to making a difference to the lives of resource-constrained farmers and the rural poor*', will be in the form of a symposium that will feature a keynote address, invited papers on each of the seven symposium sub-themes, focused group discussions, poster and 'tool bazaar' presentations including training materials on best practices. All individuals and organisations involved in FSRE work including farmers, policy makers, planners, researchers, advisory services

providers, NGOs, the private sector, elected officials and donors are invited.

For further information please contact: Dr Fina Opio, Chairperson, 9<sup>th</sup> SEAAFSRE Conference Organising Committee, Namulonge Agricultural & Animal Production Institute, P.O. Box 7084, Kampala, Uganda. *Tel:* 256 (0)77 23907, *Email:* [fopio@naro-ug.org](mailto:fopio@naro-ug.org)

#### ***International colloquium series on land use/cover change science and applications conference: 'Studying land use effects in coastal zones with remote sensing and GIS'***

NASA, ITU, LUCC and IGBP cordially invite you to join the International Colloquium Series on Land Use/Cover Change Science and Applications at its conference: 'Studying Land Use Effects in Coastal Zones with Remote Sensing and GIS'

This will take place on 13–16 August 2003 in Antalya/Kemer, Turkey. Chairs: Dr. Garik Gutman, NASA, USA; Prof. Dr Derya Maktav, ITU, Turkey. Details are given at: [www.ins.itu.edu.tr/rslucoat1](http://www.ins.itu.edu.tr/rslucoat1). For additional information contact Prof. Dr Derya Maktav, Istanbul Technical University (ITU) Remote Sensing Department

---

80626 Maslak, Istanbul, Turkey, *Tel:* 90 212 2853808,  
*Fax:* 90 2125737027, dmaktav@ins.itu.edu.tr

## **Publications**

### ***Participatory Monitoring and Evaluation with Pastoralists by Wolfgang Bayer and Ann Waters-Bayer.***

Göttingen: GTZ/ETC Ecoculture/Sierke Verlag, 2002.

As a follow-up to the GTZ publication 'Planning with Pastoralists: PRA and more' (French version: 'Planification avec des Pasteurs: MARP et au-delà') in the mid-90s, Wolfgang Bayer and Ann Waters-Bayer have collected and analysed experiences in participatory monitoring and evaluation (PM&E). This joint publication of GTZ and ETC Ecoculture (Netherlands) is based on a review of published and 'grey' literature, communications with people and agencies working with pastoralists and the authors' field experiences, mainly in Africa. It includes attention to building of multi-stakeholder platforms for planning, implementing and assessing natural resource management, in which special efforts must be made to include mobile livestock-keepers. The analytical review is followed by an annotated bibliography of 75 documents and a list of key electronic information sources on pastoralism. GTZ and ETC hope that the book will, like Planning with Pastoralists, become a valuable instrument for people and projects in development cooperation, also beyond pastoral development. It can be obtained from GTZ Division for Rural Development, Attn Annette von Lossau, POB 5180, D-65726 Eschborn, Germany (Annette.Lossau-von@gtz.de or Inge.Kutscher@gtz.de), and will soon also be available in the GTZ Participation Kiosk (<http://www.gtz.de/participation/>), where 'Planning with Pastoralists' can still be found.

### ***INASP Rural Development Directory 2003/4***

Oxford: INASP, 2003, ISBN 1 902928 15 6

Printed version: £25.00 (inclusive of post and packing)  
CD ROM: approx. £10.00 (inclusive of post and packing)

The aim of this Directory is to provide access to a wide range of information on rural development. It contains profiles of more than 400 international, regional and national networks and organisations around the globe, and is particularly concerned to promote South-South information dissemination and interchange.

Each entry provides contact details and a brief description of the organisation, highlighting its objectives, activities, subject areas of interest and geographical coverage. In addition there are details of information provided by the organisations, including newsletters, journals or online documents. The Directory is available on the INASP website, [www.inasp.info/pubs](http://www.inasp.info/pubs) where the contents will be updated on a regular basis.

For further information contact the International Network for the Availability of Scientific Publications (INASP), 27 Park End Street, Oxford, OX1 1HU, UK  
*Website:* [www.inasp.info/pubs/rd/info.html](http://www.inasp.info/pubs/rd/info.html),  
*Tel:* 44 1865 249909, *Fax:* 44 1865 251060,  
*Email:* [inasp@inasp.info](mailto:inasp@inasp.info)

## **Workshop report**

### ***Participatory technology development for agricultural improvement: Challenges for institutional integration***

An international workshop held at IIRR (International Institute for Rural Reconstruction) in the Philippines brought together 25 practitioners from Asia, Africa, Latin America and Europe. A major portion of the workshop was spent on analysing in detail 19 case studies to draw out main lessons learned. To this end, the cases were structured into four 'windows' or themes: those covering experiences within research organisations, those within extension and development organisations, those among civil society organisations and those describing experiences cross cutting all three categories. The discussion and analysis were structured by making use of an organisational development matrix. The workshop participants identified and assessed the crucial challenges in institutionalising Participatory Technology Development (PTD) approaches, such as the building of strong multi-stakeholder platforms for PTD, key competencies for PTD and implications for training and learning, collection of convincing evidence on PTD for policymakers, and the creation of internal institutional environments conducive to PTD.

The main findings and lessons learned during the study as well as conclusions and recommendations of the workshop have been published in a synthesis document entitled 'Participatory Technology Development for Agricultural Improvement: Challenges for institutional integration'. Brief summaries of all 19 case studies are also included. This document was co-authored by the study coordinating team – IIRR and ETC Ecoculture (Netherlands) – and published by IIRR. In addition, all of the materials generated from this initiative, including the synthesis document and the complete versions of the 19 case studies, have been compiled on a CD. These are complemented with further readings and resources on PTD. The workshop participants' generous sharing of practical experiences in institutionalising PTD has contributed new knowledge that is now available to policymakers, educators and other PTD practitioners.

The report and CD can be ordered by contacting Ms Lilibeth Sulit, Administrative Assistant/Bookstore-in-Charge, Publication and Communication Program, Regional Center for Asia, International Institute of Rural Reconstruction (IIRR), Y.C. James Yen Center, Biga, Silang, Cavite 4118 Philippines. *Email:* [Lilibeth.Sulit@iirr.org](mailto:Lilibeth.Sulit@iirr.org)

## Papers with this issue

128. **Reforming farm journalism: The experience of Adike Pathrike in India.** Shree Padre, Sudarshana and Robert Tripp
129. **Improving watershed management in developing countries: A framework for prioritising sites and practices.** Carlos Perez and Henry Tschinkel
130. **Understanding participatory research in the context of natural resource management – paradigms, approaches and typologies.** Kirsten Probst and Jürgen Hagmann, with contributions from María Fernandez and Jacqueline A. Ashby
131. **The adoption and dissemination of fodder shrubs in central Kenya.** Steven Franzel, Charles Wambugu and Paul Tuwei
132. **Changing incentives for agricultural extension – a review of privatised extension in practice.** Robert Chapman and Robert Tripp

## Guidelines for contributions to AgREN publications

AgREN members and others are encouraged to submit material for publication in both the Newsletter and as Network Papers. The type of material that is most suitable for submission is described below. Articles submitted as potential Network Papers will be assessed by an Editorial Committee and, where necessary, guidance will be given to authors in revising their papers for publication.

**a) Newsletter Contributions:** AgREN welcomes news from members that describes their work relating to the development of small-scale agriculture and sustainable rural livelihoods. AgREN would particularly like to hear about specific, on-going projects which are particularly innovative or other activities of interest to AgREN members. Contributions to the newsletter should be no more than 800 words, and may include photographs or illustrations. Shorter contributions are also appropriate. Please note that articles may be edited prior to publication.

**b) Network Papers:** AgREN Papers are broadly concerned with the design and promotion of appropriate agricultural technologies, with specific attention focused on the methods, processes, institutions and policies that promote pro-poor technical change and support equitable improvements in agriculture for developing countries. The principal focus of AgREN Papers should be adaptive research, extension or supporting mechanisms such as credit, marketing and producer organisations. Network Papers should seek to explore and promote the role of increasing agricultural productivity, resource conservation and farmer empowerment in the context of diversified rural livelihoods.

### Content:

- Papers should focus on practical experience in research and extension methods as well as innovations in the public or private provision of other agricultural services.
- Papers may make reference to current theoretical issues in the field of rural development, but their principal focus should be on the provision of well-written descriptions of practical and innovative experience that will be of use to other practitioners.
- Although AgREN has an interest in novel diagnostic and evaluation methods that help practitioners understand farmers' priorities and contexts, papers that follow through on such diagnosis and illustrate applications and outcomes are particularly welcome.
- Papers may be based on a broad range of sectors relating to agriculture, e.g. crop and livestock production, aquaculture, agroforestry, extension, natural resource use, environmental management, credit supply and marketing.
- Most AgREN papers describe an experience from a particular time and location, but they are written in such a way that practitioners on other areas can draw useful implications.

### Word length and referencing:

Network Papers should be between 6,000 and 12,000 words long, and include an abstract of 500–750 words highlighting research findings and policy implications. References should follow the examples below.

### Books:

Carney, D. (1998) *Sustainable rural livelihoods: What contribution can we make?* London: DFID.

### Journal articles:

Sanchez, P.A. (1995) 'Science in agroforestry'. *Agroforestry Systems*, No. 30, pp. 5–55.

### Other information:

- Material submitted to the Network will be considered for publication on the understanding that it has not been submitted elsewhere.
- Material published by AgREN may, with acknowledgement to ODI, subsequently be published elsewhere.
- Contributors will be asked to sign a form transferring copyright for published material to ODI. This enables us to give others permission to photocopy Network material.
- Newsletter items may be submitted to the Network at any time. If it is not possible to include an item in the next newsletter it may be held over for use in a subsequent edition.
- Photographs may be submitted to accompany newsletter items. These should have a minimum resolution of 200 dpi.
- Papers should be submitted both in hard copy and on 3½" disk or by email, in one of the widely used word-processing packages.
- All material should be submitted to the Network Coordinator at the address given below:

**Agricultural Research and Extension Network**  
**Overseas Development Institute**  
111 Westminster Bridge Road, London SE1 7JD, UK  
Tel: 44 (0)20 7922 0300 Fax: 44 (0)20 7922 0399  
Email: [agren@odi.org.uk](mailto:agren@odi.org.uk) Website: [www.odi.org.uk/agren](http://www.odi.org.uk/agren)