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SMALL FARMER SERVICES IN INDIA
A study of two Blocks in Orissa State

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A Study of Two Blocks in Orissa State, India

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of the Overseas Development Institute

The level and quality of services available to farmers - particularly small farmers - in Ides is generally held to be a major constraint on agricultural development; but there is less agreement on the implications of shortcomings in services such as extension and research, credit provision and the supply of production requirements such as fertilizer, pesticides and seed. One view is that there has been insufficient investment in agricultural services, particularly in research and extension, and insufficient concern with efficiency in the delivery of services. But a contrary view is that there has already been too much investment in the public provision of agricultural services and that the poor returns to such investment point to the need for a new approach, in which ultimately services are requested and paid for on a commercial basis, with the private sector undertaking the major role in input supply and also providing technical advice to its customers and appointed agents.

The nature of this debate is clouded by the poor empirical base of the issue of agricultural service provision. This study is designed to identify and clarify some of the commonly held assumptions on the performance of publicly provided agricultural services and examine these against the evidence of two small areas in Orissa. The study uses the term 'public provision' to include both co-operatives and private dealers when operating in collaboration with government controlled subsidy and credit schemes.

The particular emphasis in this study is upon small and marginal farmers primarily cultivating food staples with family labour, using mainly traditional technologies and having limited irrigation facilities. Orissa itself is a state with lower levels of per hectare yields and fertilizer use than any state in India; and the study examines the supply of services and farmer demand for services in two of its Blocks: one in the poorly serviced plateau region (with a significant tribal population) and another in the more intensively cultivated central plain.

Both Blocks - Rairangpur and Nimapara - are currently subject to efforts to improve agricultural services and thereby increase production and incomes.

As part of a State-wide Orissa Agricultural Development Project, extension services have been strengthened by an increase and re-deployment of agricultural village level staff, a programme of research and training to establish new varieties and practices and to improve the relevance of crop recommendations and support available to selected farmers. As part of the Indo-British Fertilizer Education Project, a special effort is also being made by the Hindustan Fertilizer Corporation to demonstrate improved use of inputs and, similarly, to assist farmers in gaining access to services. In addition, over the past decade Orissa has had substantial investment in rural banking facilities and irrigation and plans to establish a larger public warehouse system to improve availability of fertilizer in particular.

Against this background of relative agricultural backwardness and new levels of public investment, the study examines four main issues.

First, it examines the performance and impact of extension services and in particular the view that such services are frequently inappropriate to the needs of the majority of farmers and wastefully concentrate scarce resources on a small group of already successful cultivators. Second, it examines the organisation of seasonal production credit to investigate in particular the view that difficulties of access and indirect cost to borrowers inhibit higher levels of credit use among smaller farmers. Third, it examines the evidence on inadequacies in the supply of production requirements as a factor in low rates of adoption of improved inputs. Finally, the study examines the extent to which the public supply of all three of these services - extension, credit and inputs - is biased against the smaller farmer.

These issues are examined from two perspectives: from farmer interviews it examines the level of effective demand, and difficulties in access to services; and from the public sector evidence it examines the different ways that services are provided and considers whether these represent the most efficient use of resources.

Extension

Compared to evidence from states elsewhere in India, the level of demand for extension services in Orissa is high, with over 50% of farmers interviewed indicating a familiarity with and interest in the work of the VAW. However, this interest is less in the provision of technical advice per se than in the inducements to improve practices. In particular, there is demand for seed

minikits, seedlings and plant protection materials which are obtainable through the VAW. The accessibility of such services has improved under the Training and Visit system, but the adaptations of T and V in Orissa (particularly the use of village demonstration plots rather than 'contact farmers' and the fusion of input supply duties with technical advice) has tended to concentrate support upon the 'adopters' in the farming community. In practice this is similar to the approach adopted under IBFEP which further concentrates its support by selecting villages with relatively assured irrigation; although the scale of the IBFEP plots means that marginal farmers and sharecroppers are less under-represented than normally occurs with demonstration approaches.

The survey work of this study suggests that at least half of the farmers in Orissa do not receive useful advice or other extension support, do not apply for credit and do not use fertilizer or improved seed. In large part, this category of 'non-adopters' consists of marginal farmers. Many marginal farmers are primarily engaged in paid labouring work and are not available for extension services, but the recommendations and inducements of the extension service (both Department of Agriculture and IBFEP) are often uneconomic to farmers with poor land quality and high susceptibility to crop failure. In these circumstances, it is an efficient use of extension staff to concentrate upon adopters and also upon the provision of inputs and advice in the use of inputs. But given the generally well-organised system of training days for VAWs, there is scope for improvement in the research-extension links so that more attention can be paid to the non-adopters. At present, problems identified at the field level are largely technical in nature; reasons for non-acceptance of recommendations are not fully investigated and reported by VAWs.

The study argues, against current thinking on extension, that extension and input supply should continue to be linked. The Department of Agriculture (at present levels of private sector services) must take major responsibility for supplies and to use an entirely separate field 'service' for a function so closely linked to extension would represent an unjustifiable cost burden. Current extension worker to farmer ratios in Orissa are in the region of 1:600 but the coverage is better than in most ldcs because visits are regularly undertaken. In the IBFEP, the present agronomist to farmer ratio appears to be unnecessarily high (roughly 1:60) for the level of technical understanding of most farmers who often remain unconvinced of the economic viability of improvements but are not entirely unaware of the practices themselves. The technical weaknesses of farmers appear to be on timing and precise quantities of fertilizer and pesticide applications, not on the general

principles of use.

Credit

The effective demand for formal crop season credit in the two Blocks examined is not particularly high: 38% of farmers indicated their involvement. The remaining 62% consisted of direct buyers of inputs, defaulters, and 42% of farmers not using improved inputs anyway.

The supply of production credit in both Rainrangpur and Nimapara has declined substantially in volume (number of accounts) and value over the past three to four years. This is partly a consequence of commercial bank policy at branch level. There was an expansion of aggregate seasonal lending activities in both Blocks following the opening of new branches in the mid-1970s, but there have been high levels of default and a general reluctance to seek new business while problems of repayment and rephasing of loans has preoccupied bank staff.

But the decline is also due to the rapid expansion of medium-term lending under IRDP. The high administrative requirements involved in such lending operations have seriously curtailed the activities of agricultural loans staff. In the case of a few banks, seasonal production credit lending has stopped altogether as loans officers have ceased the practice of visiting villages to arrange loans. This may also indicate a very low level of demand for credit as very few farmers appear willing to visit the banks in order to open loan accounts. The practice has been for such accounts to be arranged at farm level since the borrower knows that he eventually needs the endorsement of an agricultural loans officer, VAW (or HFC Agronomist). It is for this reason that the distribution of seasonal credit is very patchy; certain villages may have as many as a quarter of farmers holding accounts, others have none whatsoever.

The study investigated organisational and management factors which are widely held to inhibit small farm borrowing: cumbersome procedures, delays in loan sanctioning and covert payments which increase the real cost of borrowing. The evidence of farmers, banks and suppliers suggests that all three of these factors may be exaggerated. Procedures often put a greater demand on loans officers than borrowers, and while the procedures of co-operative societies are often delayed by the accumulation of applications at different stages of loan consideration, there is some evidence to suggest

that farmer complaints at late delivery of fertilizers are often a pretext for not lifting. This is where the fertilizer component of a loan application has been deliberately inflated in order to increase the value of the cash component which is released prior to delivery of the kind component.

Evidence of corruption, or illegal payments, in the system of input supply is circumstantial in this study, but, on the whole the VAWs' current role in the system does not put them in a position to be a major part of any corruption. The level of charges that might occasionally be made on acquiring loan forms or assisting in access to supplies is very small and such charges do not substantially increase the cost of borrowing.

The greater speed and efficiency of the commercial banks compared to the co-operative societies is evident from this study, but if it is assumed that there should be continued government investment in improving formal credit supply for seasonal lending, it is hard to avoid the conclusion that this will have to come primarily through the co-operatives. The potential for CB expansion in places such as Orissa is severely inhibited by the high cost of lending in areas of low and erratic demand, low deposit potential, and poor recovery. An expansion of lending in such areas would probably require new forms of subsidies to lenders on their operating costs. The high cost relative to loan portfolio is, however, less critical in the case of co-operative banks since they already have a network of branches - the primary societies - which trade in other goods and appear to have under-utilized management resources.

At present, formal seasonal lending in Orissa is falling between two stools. Poor co-operative credit performance has stimulated government promotion for Commercial Bank operations. This has further weakened co-operative banking yet the CBs have neither the staff nor the operating cost subsidies to take over from the co-operative societies.

Input Supply

The private sector supply of fertilizer is limited in both Rainrangpur and Nimapara. The low level of demand, the low profit margins for controlled-price goods, the risks of holding stock that can deteriorate, and the high capital cost, all deter existing general traders from holding fertilizer. Similar considerations apply in the case of pesticides and, to a lesser extent, seed, where commercial opportunities are restricted because of the high level

of government involvement in distribution.

In the foreseeable future, the role of the public sector - in Orissa (and India as a whole - in input supply (especially manufacture, pricing and wholesale distribution) will remain paramount; at the retail level, in Orissa specifically, the potential for a wide network of village traders, linked to publicly-provided wholesaling, depends largely upon a very substantial increase in demand.

The absence of such a network is widely assumed to be a factor in the low level of consumption of improved inputs. The evidence of the study on farmer demand does not support this. Farmers are not deterred from lifting fertilizer because of the cost and time involved in visiting co-operative depots and private traders in the main towns of larger villages; and there is little interest among farmers in reactivating village co-operative stores as fertilizer sales centres.

On the other hand there appear to be considerable difficulties on the part of co-operative societies and government agencies in efficiently staffing small sales centres in the villages. Co-operative stores are unreliably managed and Department of Agriculture seed stores - while well-managed - incur a high opportunity cost with VAWs being taken away from extension duties at critical times.

Private fertilizer dealers are generally preferred by farmers because the time involved in transactions (for fertilizer under subsidy arrangements) is relatively short and because opening hours are more convenient. But for officials, the use of private traders for such schemes still involves administrative costs.

There is, in fact, little evidence of abuse of the subsidy system. But some dealers have seen the opportunity of collaborating with farmers in falsely issuing fertilizer and claiming the subsidy. The involvement of IBFEP Assistant Agronomists in supervision has curtailed this practice but this has been at a cost to extension work proper. There is some evidence of a few farmers misusing their subsidized fertilizer in the sense that it is applied over a larger area than intended, but there does not appear to be any selling of fertilizer by farmers.

The evidence of farmers clearly indicates that the provision of 100 MT fertilizer godowns in the villages of Orissa is a poor investment at present

levels of demand. Farmers have no difficulty travelling 20-25 km to lift fertilizer and the costs of lifting away from the village are not a significant deterrent. Furthermore, unless such stores serve other functions - such as grain banks to mitigate distress selling - there is the likelihood of a low and irregular level of utilization with fertilizer sales alone unlikely to cover salary and other costs, at least on present fertilizer cost margins.

The impact of subsidies is impossible to calculate on available evidence of only two seasons, but the farm interviews suggest that many farmers are unlikely to continue their present levels of pesticide and fertilizer use once the IBFEP subsidy is removed. Those that will continue with high levels of use are generally the farmers who already have a record of improved input use.

Conclusions

The evidence of this study supports only some of the commonly held assumptions about the importance of public service constraints in ldc agriculture. Extension services in Orissa, while generally effective in meeting the demands of farmers involved in improved practices, provides insufficient support for the poorer farmers where yield levels remain extremely poor. There is also some bias in technical advisory services and input supplies towards already successful farmers and this represents a degree of inefficiency in resource allocation. But against this general confirmation of ldc trends, it is also evident that input supply constraints are not as important as they are often held to be and a supply-led approach to input provision, involving the construction of warehousing and associated operating costs throughout the countryside, is not always appropriate given the resource of farmers in acquiring inputs that they require for agricultural improvement. The indifference of farmers towards ostensible 'supply' constraints in lifting fertilizer suggests that where governments - in the absence of private sector alternatives - are involved in input supply they should recognise that the conditions of low demand that have led in part to the absence of private sector alternatives also apply to the public sector.

The over-regulation of public agricultural services (for example in the rationing of subsidized fertilizer) is also generally regarded as an important constraint to efficiency, and there is clear evidence in this study of inefficiency in the allocation of scarce professional resources to administrative tasks of regulating access and distribution. But there is not much evidence to support the view that such regulation inevitably leads to corrupt behaviour on the part of technical field staff; and there is every reason to

LIST OF ABBREVIATIONS

AA	Assistant Agronomist
ADAO	Additional District Agricultural Officer
AEO	Agricultural Executive Officer
BDO	Block Development Officer
BoI	Bank of India
CADA	Command Area Development Authority
CAP	Compact Area Programme
CCB	Central Co-operative Bank
CRRI	Central Rice Research Institute
DAO	District Agricultural Officer
DDA	Deputy Director of Agriculture
DoA	Department of Agriculture
DRDA	District Rural Development Agency
ERRP	Economic Rehabilitation of the Rural Poor
FCI	Fertilizer Corporation of India
HFC	Hindustan Fertilizer Corporation
IADP	Intensive Agricultural Development Programme
IBFEP	Indo-British Fertilizer Education Project
IFFCO	Indian Farmers Fertilizer Co-operative
IGFEP	Indo-German Fertilizer Education Project
IRDP	Integrated Rural Development Programme
LAMPS	Large Agricultural Multi-Purpose Societies
MAY	Minimum Assured Yield
MCCB	Mayurbhanj Central Co-operative Bank
NABARD	National Bank for Agricultural and Rural Development
NCAER	National Council for Applied Economic Research
OADP	Orissa Agricultural Development Project
OAIC	Orissa Agro-Industries Corporation
OSWC	Orissa State Warehousing Corporation
OUAT	Orissa University for Agriculture and Technology
PACS	Primary Agricultural Co-operative Society
PCCB	Puri Central Co-operative Bank
RCMS	Regional Co-operative Marketing Society
SBI	State Bank of India
SFDA	Small Farmer Development Agency
SMS	Subject Matter Specialist
UCB	United Commercial Bank
VAW	Village Agricultural Worker
VLW	Village Level Worker

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Chapter 1
INTRODUCTION

1. Farmer Services and Agricultural Development

1.1. 'Service' Constraints on Agricultural Development

The present level of publicly-provided services to farmers in poorer countries is generally regarded as a major constraint on agricultural development. Most people involved in agriculture will be familiar with evidence of, for example, unrepaired delivery trucks while stocks of fertilizer and seed are deteriorating in makeshift warehouses; or evidence of modern warehouses largely unused because fertilizer and seed are unavailable. There is also a constant flow of evidence that agricultural extension agents in poor countries persist in conveying advice and recommendations in which farmers show no interest: for example, dry season cropping recommendations to farmers without any likelihood of irrigation; fertilizer application levels that even the richest farmer dare not risk; land preparation practices for which labour cannot be found.

Even where specific services such as fertilizer supply or extension are efficiently organised, there appear to be major gaps in the overall government effort to improve agriculture - gaps between research and extension leading to inappropriate recommendations for particular areas; gaps between extension advice and input supply (or availability); and gaps between input supply and the availability of credit.

These deficiencies in service provision seem particularly acute when the further dimension of differential access is considered. It is evident in most countries that the extension workers, loans officers and supply agents cannot find sufficient time and effort to deal with the large numbers of uneducated, sceptical, and generally unreliable

poorer and smaller farmers. Much more support is available to a handful of larger, richer farmers who are seemingly more prepared to take advice, set up demonstrations, complete loan forms, lift scarce inputs as soon as they arrive at the local depots, and generally make their wishes known to public agencies.

What should be concluded from this apparently poor record of performance in assisting farmers, and especially poorer farmers? One view is that there has been insufficient investment in agricultural services, particularly in research and extension, and insufficient concern with efficiency in the delivery of services. The implications of such a view are for more expenditure on research - particularly adaptive research linked to technically stronger extension work; more training of staff; more infrastructural investment in input supply; the reorganisation of services to improve reliability and increase coverage; and the encouragement of producers' organisations to promote greater access to advice and inputs. This remains the conventional view, and one which is strongly held in Ministries of Agriculture in developing countries.

But a contrary view is that there has already been too much investment in the public provision of agricultural services and that the poor returns to such investment point to the need for an entirely new approach. This view is held particularly by those who see little evidence of any positive impact on production due to publicly-provided (or controlled) concessionary finance and subsidized inputs to farmers, and who see the administrative costs of such provision and control as excessively high. It is a view which is reinforced by criticisms of extension performance which suggest that there is an inherent inappropriateness in the public supply of technical information (or 'technology transfer') to small farmers with their wide range of differing production constraints and requirements. It is argued that effective extension must be geared towards the diverse demands from farmers themselves. Ultimately, this alternative view of service provision anticipates a

farming environment in which services are requested and paid for on a commercial basis, with the private sector undertaking the major role in research on seeds, fertilizer etc. and also providing technical advice to its customers and appointed agents.

Despite this seemingly fundamental divergence of opinion on how services should be provided, there is a much wider measure of agreement on the importance of service provision itself (rather than the form it should take) in agricultural development. For governments and donors in particular, it makes sense to isolate the service provision constraint from other constraints - economic, technological or structural - in order to assess its relative importance in any strategy to increase small farmer production. This is because there are some clear trade-offs in agricultural spending: a high level of expenditure on services can mean considerably less room for manoeuvre on price support and input subsidies if these are felt to be more important constraints. Similarly if farming remains at a low level of technology with little use of improved inputs and small marketed surpluses there is a case to be considered for holding down the rate of increase in service provision and transferring staff and finance to a stronger research programme to consider further the technical constraints to increased production.

These sorts of considerations have meant that extension and input supply services are on trial in much of the Third World: 'on trial' in the sense that many governments, and donors in particular, are concerned about the appropriate role of the public sector in promoting services to farmers, especially where this role appears to be inhibiting the development of private sector services; and 'on trial' in the sense that levels of recurrent public expenditure in poor countries have concentrated attention upon apparently poor returns to agricultural services and upon apparently low levels of efficiency within such services.

The subject area of agricultural service provision has a poor empirical base and a study of this sort first needs to identify and clarify some of the commonly-held assumptions on the performance of publicly-provided services in low-income countries (see 3 below). These must then be examined against the available evidence, which in this case comes from two small areas in India. Finally, conclusions can be drawn about the relevance of such evidence for the organisation of agricultural services in other countries.

The focus of this study is upon services to 'small farmers'. This has a fairly precise, though not necessarily helpful, definition in India which is based on the size of landholding; but in more general terms the study is concerned with the category of farmers - the majority in most poor countries - which is generally resistant to extension advice (or the risks involved in adopting it), to new varieties and practices, to investment in fertilizers and pesticides and to incurring formal debt obligations. It is a category of farmers which relies primarily upon family labour, using traditional technology on a small, and possibly fragmented, cropped area. In the main it operates without assured irrigation for a second major crop and relies upon a single, often erratic, season of rainfall. Its major crop is a food crop, for family needs above all.

1.2. Which Services?

'Extension' is a service which is central to this study. I use this term to mean the provision of technical advice on all aspects of crop husbandry, planting materials and the use of plant protection chemicals and fertilizers. This is a broader usage than that associated with extension as 'technology transfer' which describes a process of conveying, one way, a recommended package of practices and inputs. But, in other respects, it is a narrow usage of the term, as it concentrates upon a specific function - the provision of technical advice - of an extension

service. The provision of technical advice is not the only function of extension workers; in many developing countries it is not even the main function. But, for the present, I leave to one side the issue of the appropriate range of functions that extension workers should undertake.

In practice, 'input supply' is closely tied to the extension function. By this term, I mean the provision of physical requirements for seasonal crop production by agencies, in this case under some form of government control. The most important input supplies for this study are improved seed, fertilizer and pesticides. Machinery and fuel inputs are less important. Fuel, largely for pumps and in the form of publicly-provided electricity, is an enormous problem for some larger farmers in India but it is outside the scope of this study. For the great majority of small and marginal farmers, machinery services are similarly unimportant as yet, except in the occasional cases of hiring sprayers for pesticide application. There is nothing in this study on tractor-hire services which are of little consequence in the ricelands of eastern India.

In a separate category to input supply is formal seasonal production credit to buy these inputs and to provide working capital, in theory, for privately-hired farm labour and animal draught. In the parts of India in the study, credit is not linked to the provision of storage and marketing services. There is, in any event, much less regulation and public sector involvement in marketing in the case of India than elsewhere in developing countries and post-harvest services are not included in this study.

In India, water is often the most important publicly-provided input to farmers, although much of the water supply for irrigation comes from privately owned wells and ponds, the latter often filled from public irrigation canals. Irrigation issues are frequently raised in this study, but water is not considered as one of the main

areas of service provision. This is only partly because of the limited scope of irrigation in the villages visited. The more important reason for not dealing in detail with the performance of the Irrigation Department and the various Command Area Development Authorities is that they are not as directly involved in water supply and distribution at the farm level itself as might be supposed from a formal description of their functions. Because of the absence of publicly-regulated field canals and the widespread illegal practices of water release, it cannot be said that the provision of water is an input supply function in the same category as seed and fertilizer. There are, however, difficulties which arise over the co-ordination between Irrigation Department decisions on water release and the recommendations of the Department of Agriculture and these are discussed in the extension context.

The three main areas of service provision considered in this report are therefore: extension, input supply and credit.

1.3. Public Provision

The term 'publicly provided' services means - in the Indian context and in most developing countries - the field activities of Departments of Agriculture (extension, plant protection, seed multiplication and distribution, etc.), Government-controlled public corporations, banks, and co-operatives.

On the face of it, co-operatives should be categorised as 'private sector'. Formally, the ownership of individual societies is in the hands of members contributing share capital, and the continuing performance of societies depends upon successfully trading in goods and services. But there are two reasons why co-operatives are taken in this study as an extension of the agricultural public sector. First, in reality the co-operatives in the agricultural service sector are financed by public

expenditure and controlled by publicly-employed officials. The involvement of society members in investment and trading activities is primarily a means towards a more efficient, accessible and less costly service provision than any public sector alternative. Second, government support for co-operatives is part of a deliberate policy of providing for small farmers a source of inputs and credit alternative to the traditional private sector of merchants and moneylenders.

The 'private sector' involved in input supply is, in fact, closely tied to government in the areas covered by this study. In the case of fertilizer and pesticides, the manufacture and wholesale distribution is controlled by government, or government-owned enterprises and co-operatives and the private sector consists of small retailers selling at controlled prices. Furthermore, the level of private trade in agricultural inputs is strongly influenced by the demand for agro-chemicals induced by formal credit availability, extension support and - in this study - government subsidies. The effect is that private dealers work so closely with government officials and the staff of banks and corporations that they can be considered as part of the system of public provision of agricultural services.

1.4. Government Strategies and Farmer Services

Criteria for assessing the effectiveness of services must take into account the overall objectives and attitudes of the governments that provide such services. In the Indian case, there is a fundamental aspect of agricultural strategy which has particular importance. This is the belief that the small family-run farm should be the main focus of agricultural policy. Land ceiling legislation has been introduced to redress what is regarded as an inequitable pattern of land ownership and to prevent the acquisition of large holdings by richer farmers. The corollary of this has been an attempt to provide support for smaller and poorer farmers who might otherwise have

left farming altogether as a result of low farm incomes leading to land sales, or who are engaged permanently in off-farm employment at the expense of the family plots.

The implications for agricultural services of this policy of attempting to establish the economic viability of large numbers of smallholdings are twofold. First, it means an interventionist and supply-led approach to service provision. Incentives and subsidies are provided for the use of inputs as a deliberate attempt to stimulate higher levels of demand. The administrative costs of providing services are not passed on to farmers; and the public sector is given the main responsibility for services. Second, it means a re-distributive approach to service provision. Richer farmers, whatever the pattern of landholdings, are felt to have special advantages in gaining access to services and credit due to their economic and political power and the bias towards them felt by government officials. For this reason, some services are designed to provide differential access such as cheap credit for certain categories of borrower or rationed access whereby eligibility for subsidised inputs is limited to quantities recommended for a specific land area. Technical advisory services may also be designed to ensure access to poorer farmers through, for example, selection for service provision (such as demonstration fields or minikits) whereby only a small area (1ha at most) is eligible for subsidy.

2. The Indian Context

Since the Intensive Agriculture Development Programme of the late 1950s and 1960s, it has been a basic tenet of India's agricultural strategy that deficiencies in the provision of inputs and services are a major constraint to development. The study on which the IADP was based postulated a ten-point programme which included supply of credit, inputs and extension. In the selected IADP districts (one of which was Sambalpur which included the command area of the Hirakud Dam in Orissa) there

was emphasis upon the introduction of the new high-yielding cereal varieties which were being released in the 1960s.

It was a period of dramatic growth in yields in some districts (especially those with assured irrigation) but at the end of the generally disappointing IADP period in 1969 the lessons that were drawn tended to reiterate the earlier diagnosis.¹ Input distribution was regarded as inadequate to meet farmer requirements for fertilizer and improved seed; and this inadequacy was considered to be partly due to unscrupulous private firms and retailers allowing poor quality control. The extension demands on Village Level Workers (VLWs) were regarded as far too great and a ratio of 1 VLW per 300 farmers with one AEO for a group of four VLWs was suggested, along with an upgrading of the technical calibre of VLWs. Access to formal credit was still regarded as deficient, partly due to long delays in credit disbursement, especially in the co-operative societies.

A particular legacy of IADP was the concept of a multi-purpose agricultural service centre located below the Block level where farmers could go for most of their requirements. In theory, such centres would include credit and input supply functions plus custom hiring, minor processing, storage and marketing. There were parallels in the Farmer Development Centres in Malaysia and elsewhere, but in the event, the closest that India came to establishing such centres were the Farmers Service Societies established under the Small Farmers Development Agency.

These were, in fact, similar to existing Primary Agricultural Co-operatives under a designated 'lead bank' although their main function was medium-term lending (unlike the PACS) to small marginal farmers and landless labourers. The SFDA was wound up in 1980 and, along with similar agencies (such as the Drought Prone Areas Programme), it was subsumed under the Integrated Rural Development Programme. The IRDP is operated through District Rural Development Agencies which administer a subsidy scheme particularly directed to marginal and small farmers. In Orissa, for example, it provides 33½% subsidies

(50% in the case of certain scheduled caste and scheduled tribe beneficiaries) on items such as milch animals, bullocks and carts, and pumps etc. with medium-term loans arranged through the existing banks. The administrative costs to Departments of Agriculture and commercial banks of what has become a major agricultural programme based on medium-term lending is discussed in later chapters.

Throughout this period of experimentation, the long-established PACS have remained intact in most parts of India despite continually poor levels of credit recovery and weak member involvement. In areas where the level of society trading has been very low or particular inefficiencies have been evident there have been mergers into Large Agricultural Multi-Purpose Societies (LAMPS).

But if the concept of multi-service centres has not been developed, the Government of India has continued to emphasize the need for an increased density of input provision through village godowns. The current policy is for a network for fertilizer distribution in particular with a retail point within a 10-12km radius of every village in the country. This effectively means four villages to be served by each retail outlet against the current national average of seven villages in a range of 2 to 50.²

This improved supply is no longer considered as primarily the responsibility of the co-operatives. Since 1965 fertilizer marketing (but not pricing) has been de-controlled and private dealers encouraged. Under the Block Delivery Scheme, designed to promote trading in low-demand 'interior' areas while ensuring price consistencies throughout the country, all dealers are compensated for costs incurred in transport from railheads to the Block. Co-operatives are obliged to trade in the areas of low demand and normally they are obliged to hold larger stocks than might be commercially desirable. On the other hand, they have trading advantages over the private sector. They receive concessionary credit to buy stocks and their storage costs are often covered by other government agencies such as the National Warehousing Development Corporation.

Nationally, around 60% of the retail outlets for fertilizers are co-operatives or similar public institutions which have the particular advantage to cultivators of being channels for credit disbursement, with cash lending linked to in-kind requirements.

The supply of formal credit is the responsibility of both co-operatives and the government-controlled commercial banks. It is generally felt that co-operative lending is more cumbersome to borrowers because of the relatively complicated sanctioning procedures and lower levels of efficiency. A study in Tamil Nadu claimed that 77% of co-operative borrowers failed to receive their requirements at the time they wanted whereas only 20% of commercial bank borrowers had the same difficulty.³ But co-operative societies tend to have a larger number of small borrowers and, as I discuss later, there may be reasons why some borrowers are deliberately lethargic in lifting fertilizer requirements.

The role of informal lending in Indian agriculture remains a matter of considerable controversy. It is generally held that credit - rather than land and tenancy - is the main lever of exploitation in rural society with exorbitant rates of interest, low prices paid for pledged crops and low price given to labour used to repay incurred debts.⁴

Yet there is continued strength in private lending despite the availability of concessionary formal credit with fairly slack recovery procedures and the prospect of partial debt cancellation. One implication of this strength is that the real costs of formal borrowing and the difficulties of access have been under-estimated, especially for small farmers. This is a conclusion reached by a study of fertilizer use undertaken by the NCAER for the Fertilizer Association of India in 1981.⁵ This study 'surveyed' constraints - identified by farmers to enumerators - to increased fertilizer use. Among all farmers lack of irrigation (48%) was the main constraint and 21% of the replies indicated that lack of extension advice might be a constraint (11% 'ignorance' and 10% 'harmful'). Only 17%

mentioned credit. But in the small and marginal farmer category, this figure rose to 72%. This figure is interesting, but it should not be taken at face value. Many small farmers believe that the use of fertilizer is too risky to justify investment. The mention of 'credit' as a constraint, in these circumstances, is often a euphemism for a grant or subsidy.

In eastern India (the area of this study) there has been a major programme to increase both fertilizer use and efficiency. This is because much of the spectacular increase - now levelling off - in fertilizer use (from 0.13 million tonnes in 1955/56 to 60 million tonnes in 1982/83) has been in the States of north and north western India, but not in the east. Part of this programme was the Indo-German Fertilizer Education Project under the Hindustan Fertilizer Corporation, drawing upon similar promotional work of IFFCO and FCI which have 'adopted' villages for special extension, credit and input supply services.

An evaluation of the IGFEP showed that fertilizer use was often well below recommended levels and concluded that this was because of poor supply (or deficiencies in 'complementary inputs').⁶ In some areas the lack of assured irrigation is the obvious supply factor referred to, but the survey work gave equal weight to deficiencies - or uncertainties - in the supply of planting materials, credit, technical advice on dosage, timing and application methods. A particular issue for the project was that even with assured fertilizer supply at concessionary rates, cultivators were often ignoring recommendations on dosage and applying over a much larger area than advised by agronomists. Larger farmers came closest to recommended use and this was felt to be because of better access to credit and extension advice.

The extension strategy adopted under IGFEP was similar to the earlier IADP strategy in which advice was concentrated upon selected cultivators in a specific area with the intention of creating a demonstration effect to be followed elsewhere. The advisory work was allied to special access to inputs and credit and with inducements to collaborate, including subsidies. This intensive approach to extension, linked to input supply, was

partly determined by the sheer cost and difficulty of serving all farmers with a package of the improved inputs and practices produced by India's agricultural research system. However since the mid-1970s an apparently alternative approach to extension work has been introduced within most States which seeks to serve a larger number of farmers in all, rather than selected, districts.

The Training and Visit system is designed with less concern for particular technological packages and more concern with establishing a technically-proficient extension service capable of adapting advice to specific local circumstances. It does this through greater emphasis upon training than previously and a system of fixed schedule visits to farmers' fields and village meeting places. T and V also attempts to confine the task of extension to the provision of technical advice on crop production.

The background to the new emphasis is to be found in the recognition of the poor agricultural performance of Village Level Workers under the Community Development Block system established in the 1950s. Under this system, the VLW was responsible to the Block Development Officer for a range of village level functions with direction only in technical matters from the Department of Agriculture. In theory, 70% of VLW time was devoted to agricultural tasks but in fact it proved impossible to schedule agricultural work satisfactorily because of competing demand for tasks such as road repair, health campaigns and famine relief. In addition, even within the agricultural quota of work, the extension function was relegated as input supply and credit administration had higher priority.

There remains considerable controversy over the precise role of the VLW - now absorbed into the Departments of Agriculture and redesignated as Village Agricultural Workers (at least, in most States, including Orissa). Even under a new single line of authority, VAWs remain the main instrument for village level contact and the services tend to be requested for non-agricultural tasks. Furthermore, there are considerable reservations within Departments of Agriculture about what is seen as an impractical divorce between extension and input supply functions.

Interestingly, the more traditional extension approach of IADP and IGFEF is followed in Orissa under the Indo-British Fertilizer Education Programme with demonstration areas of selected cultivators receiving advice and support on access to inputs from resident agronomists. In the Department of Agriculture, on the other hand, the T and V system has been in operation since 1977 with much closer supervision and direction than previously and a substantially wider extension coverage. In practice, however, the differences between these two approaches to extension are less apparent, as the following chapters indicate.

3. Specific Assumptions

The specific assumptions about agricultural services to be investigated in this study can be broken down into four main categories: input supply, credit, extension and research, and differential access.

In 1.1. I described these assumptions as 'commonly-held'. In the case of extension, credit and input supply this means assumptions held within the network of international agencies, research institutes and universities which influence Government of India and have formed the basis of much policy in the agricultural sector. This does not mean that there is not substantial dissent on some of the assumptions, but these remain the mainstream view.

3.1. Input Supply

There is one major assumption behind current measures to improve input supply to farmers in India and in many other ldc's. This is that there is difficulty of access for a large number of farmers which constrains input use. In particular this means that the provision of godowns is inadequate and that farmers must travel too far for inputs - given their own difficulties of, and the costs associated with, transport; and that the storage capacity of godowns is insufficient to carry levels of stock appropriate to meet fluctuating demand. The

deficiencies are held to be in publicly-controlled agencies such as Department of Agriculture seed supply stores, co-operative societies and private traders operating under license.

3.2. Credit

Assumptions about the supply of credit are difficult to disentangle from the range of objectives of credit policy which include maintaining political support and the alleviation of poverty through resource transfers in the form of concessional credit for particular population categories and credit tied to direct subsidies on goods. This study is concerned with seasonal credit for production purposes (payment for labour and supply of requirements, especially for fertilizers). Despite a long record of credit provision, especially through Primary Agricultural Co-operative Societies, there is still a low rate of disbursement in many parts of States such as Orissa (and a poor rate of recovery, which is an important but rather different issue to the rate of disbursement).

Two assumptions are frequently made about the problem of disbursement. First, that farmers have considerable difficulty in obtaining loans or in obtaining the goods for which loans are sanctioned due to inefficient and cumbersome procedures of transaction. Second, that the actual costs of borrowing are higher than the formal position of relatively low interest rates indicates (that is 'low' when compared to informal rates of moneylenders and traders and low also when compared to rates to non-agricultural borrowers). High administrative costs of lending have been fairly well documented but there appears to be little evidence of the real costs of borrowing. This is inevitably difficult as it involves investigating, for example, the costs of photographs, letter writers, and illegal commissions. However the main cost is often assumed to be the time taken up by

bank and dealer visits which appears to be a substantial consideration when set against the easy accessibility of informal lending - despite its high interest rates - and the flexibility in adjusting terms of repayment.

In India, agricultural co-operative societies - as providers of both credit and inputs - have been given a great deal of responsibility for service provision. The apparent record of poor delivery performance and slow procedures therefore have to be examined against the alternatives. Again, there is a general assumption that can be examined: this is that commercial banks and licensed traders are more efficient at meeting farmers' seasonal-credit-linked requirements than co-operative societies federated to co-operative banks.

3.3. Extension

Assumptions about extension are, firstly, about the way that extension staff should work among cultivators. In government-run agricultural extension work aimed at increasing crop production the most effective course of action is held to be the concentration of technical advice and assistance on the provision of inputs to selected cultivators who have indicated a willingness to follow technical advice and use improved inputs. The adoption of improved practices and inputs by this relatively small group of farmers will have a demonstration effect, whereby neighbouring cultivators will themselves adopt practices, or seek advice on practice and input availability and use from the extension service as well as from more successful cultivators themselves.

The second assumption concerns the actual duties of extension staff. This reflects a recent 'mainstream' conversion to the view that the technical advisory function of extension staff is paramount and that non-agricultural duties (especially of a community development and general administrative nature) constitute a cost to

effective performance. This view also holds that any substantial duties in input supply and credit similarly undermine the performance of the advisory function and should be performed by separate agencies.

3.4. Access

The difficulties for farmers in gaining access to inputs and credit described above are generally assumed to be particularly severe for poorer, marginal farmers - especially as richer farmers are thought to influence extension workers and receive priority attention. Loans officers also appear to spend more time with richer borrowers at the expense of smaller ones who cannot easily cut through the mechanisms of borrowing. Where co-operative societies are controlling supply, committee members can use their position in a way that ordinary members cannot. Poor farmers are regarded as more easily intimidated and confused in applying for loans or in getting available subsidised inputs such as seed packets or fertilizer. Share-croppers are assumed to be at a disadvantage because of their temporary and dependent status.

On extension in particular, the assumptions are that the contact farmers (under T and V for example) and demonstrators (under IBFEP for example) are inevitably drawn from amongst the bigger and richer farmers who seek preferential treatment. But in addition, the inputs and practices recommended are likely to be more appropriate for the better endowed (eg. newly irrigated) land. If this is the case then access to extension is not simply a matter of the rich capturing available public services. It is also a matter of the services having relevance only for a limited category of rich farmers with the poor, as a consequence, having little demand for extension and associated input supply services.

4. Method of Investigation

These issues were examined in two administrative areas (Blocks) in the eastern Indian State of Orissa: one in the plateau region of the interior with its large tribal population and rapidly drained red soils, and the other on the richer coastal plain region which is often heavily waterlogged. Both Blocks are included in the extension and improved inputs promotion programme supported by UK funds under the Indo-British Fertilizer Education Project (see the following chapter).

The main bulk of the information in this study came from interviews. These can be divided into interviews on the 'supply' side of services (Department of Agriculture, Hindustan Fertilizer Corporation, Banks, Co-operatives, Dealers) which took place at various levels; and interviews on the 'demand' side (farmers) which were more structured and based on a selected sample.

Within each Block, five villages were chosen for farm-level interviews. In each case, one village was self-selecting, the 'key' village in the IBFEP where at least a full season of support had already been provided. Two further villages were chosen from among the other nine 'cluster' villages of each IBFEP demonstration area of ten villages (to be covered over a five year period). The final two villages were outside the IBFEP area of operations but nonetheless included in the World Bank-assisted project to improve extension services throughout the State.

Within each of the ten villages, I took the Department of Agriculture's village listing of households and farm holdings and selected five farmers for interview. In all cases I excluded those with registered holdings of above 2ha and those registered as 'landless'. Using the distinction adopted in most of Orissa of small farmer (1ha to 2ha) and marginal farmer (below 1ha), I selected three 'marginal' and two 'small' farmers per village.

Taking the ten villages overall, the 50 farmers interviewed represents roughly a 10% sample of the small and marginal farmers and a slightly lower figure for all farmers. This figure is rough for several reasons. The size of holdings mentioned in the Government figures normally indicates land for which there is title: the figures do not attempt to take into account leased-in and leased-out land (or the actual cropped area of each farmer). As a result, some of the small and marginal farmers selected for interview turned out to be responsible for more than 2ha, although none - as it happened - were large (4ha and above) cultivators with artificially low registered holdings due to paper transfers and other practices.

On the other hand, some of the farmers selected had very small holdings of poor quality but as share-croppers elsewhere (or as tenants in some other form) they were largely engaged in their own farming rather than as farm labourers. There was also a small category of farmers registered as landless yet benefitting from IBFEP support as share-croppers in a demonstration area.

The farmers were interviewed through an interpreter (from either the Department of Agriculture or HFC) mainly in their homes in the afternoons and evenings but in some cases in their fields in the mornings. Interviews normally took between one and two hours and covered seven main areas: incomes, land and tenure, labour, crops and cropping pattern, technical advice, use of inputs, and credit. These interviews took place between mid-October and mid-December: this was the time of harvest for most of the kharif crop and, for a small number of farmers with assured irrigation, for considering input requirements for the rabi (winter) crop.

The purpose of the farmer interviews was primarily to gain a number of impressions of the range of factors that influence decisions in agricultural production. I attempted to find out what sorts of inputs and services farmers were using, the reasons for such use, and how access to such services took place. The information from the interviews was cross-checked whenever possible with information from banks, co-operatives,

VAWs and dealers. This occasionally led me to 'correct' information already given by farmers, but it generally confirmed farmers' evidence.

On the supply side, interviews were held at several levels. At the State and District levels, my main interest was to discuss the evolution of agricultural policy and to collect data. The Block level interviews involved investigations into the operations of all the banks and main dealers, including the co-operative societies, as well as the work of the Department of Agriculture and the HFC. At the village level, the relevant extension workers (Village Agricultural Workers) were interviewed - through an interpreter for the most part.

The next chapter describes some of the main features of agriculture in Orissa which are important to an understanding of the system of service provision. The subsequent two chapters are concerned with the Blocks of Rairangpur and Nimapara. In these chapters I examine the nature of farming in the villages visited and the sorts of support and services which are provided. I then describe the evidence accumulated in farmer interviews. In the final chapter, I draw conclusions from the evidence of the two Blocks.

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Chapter 2

AGRICULTURE IN ORISSA

1. Physical Environment

To the south-east, Orissa is bounded by the 300 mile Bay of Bengal coastline, to the north by West Bengal and Bihar, and to the south and west by Madhya and Andhra Pradesh. Orissa is normally classified into four physical zones:

The alluvial coastal plain is up to 60 miles wide and is crossed by several deltas. There is relatively high humidity throughout the year and, despite frequent flood problems, and some salinity, this is the State's richest area for paddy production. Normally there is sufficient water to allow a second pulse crop for areas without rabi irrigation.

The central plateau consists chiefly the Mahanadi basin with red and yellow laterite soils and a generally flat topography rarely over 1,000 feet above sea level. Despite its poor soils, this area has a better developed agriculture than the other interior zones. Much of the area is suitable for wheat - as well as paddy - cultivation and it includes the command area of the Hirakud irrigation scheme.

The northern plateau (a continuation of the Chotanagpur plateau of Bihar) includes a number of hill ranges rising to 3,000 feet. About 45% of the area is covered by forest. It is a region of highly leached and acidic laterite soils with poor water-holding capacity.

The hill range of the Eastern Ghats is the largest of the four zones, but the least populated. It consists mainly of forested land or bare, eroded hills. There are a large number of small streams serving terraced flood plains.

These zones do not approximate to district boundaries, but a variation analysis of Orissa¹ (using measures of labour productivity, cropping intensity, irrigation use and fertilizer

consumption) divides the districts of the State into four distinct agricultural development categories. The 'Advanced' category consists of the four coastal districts of Puri, Ganjam, Cuttack and Balasore; the 'Developed' category consists of the three central plateau districts of Sambalpur, Bolangir and Dhenkanal; the 'Undeveloped' category consists of the three northern plateau districts of Sundargarh, Keonjhar and Mayurbhanj; and the 'Problematic' category consists of the Eastern Ghat districts of Koraput, Kalahandi and Phulbani.

Nimapara Block is in Puri District (the 'advanced' coastal plain); Rairangpur Block is in Mayurbhanj District (the 'undeveloped' northern plateau).

These distinctions are less evident at the individual farm level as microtopography plays a major part in cropping systems. The cultivable area throughout Orissa is divided into high, medium and low lands. The drought-prone high lands are normally under a short duration paddy (or possibly millets, oilseeds or pulses such as arhar (pigeon pea) in the plateau zones). Low lands, on the other hand, are likely to have long duration local paddy resistant to flooding and high levels of standing water. (In the coastal zone, there is even a fourth category of 'super low land', meaning extreme swampiness over several months). Many Orissa farmers have all three - or four - categories of land, which forms some insurance against large variations in rainfall.

The yearly mean rainfall is about 1,500mm, varying from 1,300mm to 1,650mm for the thirteen districts. About 75% of this rain falls in the four-month rainy season from June to September, but there are periods of highly variable rainfall at either end of this period and the distribution within the period is uneven, with very intense rainfall leading to run-off and flooding of low lands.

2. Agricultural Performance

There are roughly 3.6 million farming families in Orissa, cultivating around 6.6 million hectares. Of the 3.6 million farmers, 2.7 million are in the categories of 'small' and 'marginal'.² Census data suggest that the marginal category may be increasing relative to the other category. In 1970-71 this category (holdings of 1ha and below) represented 42% of the total holdings (and 12% of total cropped area); in 1976-77 it represented 45% of holdings (and 15% of cropped area) (see Table 2.1). Possible reasons for this apparent trend are discussed below.

Table 2.1: Number and Area of Farm Holdings 1970/71 and 1976/77

Category	<u>Number</u>		<u>Area</u>	
	1970-71 mn	1976-77 mn	1970-71 mn ha	1976-77 mn ha
1. Marginal (below 1ha)	1.47	1.65	0.77	0.85
2. Small (1-2ha)	1.11	1.04	1.71	1.46
3. Semi-Medium (2-4ha)	0.45	0.60	1.36	1.59
4. Medium (4-10ha)	0.30	0.23	1.79	1.30
5. Large (10ha and above)	0.08	0.06	0.85	0.55
Total	3.41	3.58	6.48	5.75

Source: Agricultural Census Data, Government of Orissa

Of the 6.6 million ha under cultivation, a total of 4 million ha was accounted for by kharif paddy alone (and 4.6 million ha by all kharif cereals). Only around one-fifth of Orissa's farm land is double cropped and for most farmers, the second crop is confined to a pulse on the residual moisture after the kharif paddy.

Agricultural production and productivity, after years of stagnation in the 1960s and 1970s, appear to be very gradually increasing although reliable evidence is difficult to come by as the Bureau of Statistics and Department of Agriculture have different results. Furthermore there have been wide variations

in recent years. Paddy yield figures in particular have been subject to natural calamities of drought (especially in 1979/80) and both drought and flooding (in 1982/83). Yields fluctuated between 7.5 and 10.0 quintals in the 10 years to 1977/78 and as Table 2.2 shows, they remain stuck at around 1 tonne (10 quintals) per ha taking HYVs and local varieties together. However, the area planted to HYVs has slowly increased as a proportion of total kharif paddy lands and rabi planting has also risen slowly; so there is some reason to believe that recent climatic adversities have concealed a real improvement.

More encouragingly, there has been evidence of success in a diversification programme. The idea is to encourage the growing of pulses, oilseeds and coarse grain cereals on marginal paddy lands in the kharif and to introduce shorter duration varieties of paddy to enable a second crop of pulses or oilseeds on residual moisture. Both pulse and oilseed (especially groundnut) production has risen over the last five years, with the area planted to groundnut increasing from 144,000ha in 1978/79 to 292,000ha in 1981/83.

However, paddy remains the major crop and these figures represent very low levels of productivity for a rice-growing state, compared not only to Punjab with its average paddy yields of 2.60 tonnes per ha but also to the all-Indian average of 1.33 tonnes per ha. And although the figure for area under HYVs is increasing, it remains lower for Orissa than anywhere else in India in percentage terms. In eastern India, West Bengal has 29% of its cropped paddy area under HYVs against 16% for Orissa; Andhra Pradesh has 66% and Punjab 89%.³ Similarly, the proportion of crop under irrigation in Orissa is lower than most other States. Neighbouring West Bengal for example has 40% of its cropped area under irrigation, whereas Orissa had only 15% in 1976/77⁴, rising to 19% in 1981/82⁵. However, this figure largely represents the availability of supplementary irrigation after the onset of kharif. For rabi irrigation the figure is under 5% of cultivated area.

Table 2.2: Major Crop Production, Area and Yield in Orissa, 1978/79-1982/83

Crop	1978/79			1979/80			1980/81			1981/82			1982/83		
	P	A	Y	P	A	Y	P	A	Y	P	A	Y	P	A	Y
1. HYV Paddy	1115	875	12.7	1069	950	11.3	1624	1214	13.4	1543	1170	13.9	1954	1702	11.5
2. Local Paddy	3287	3497	9.4	1849	3167	5.8	2677	2982	9.0	2310	2989	7.7	1110	2390	4.6
3. Other Cereals	131	272	4.8	80	240	3.3	229	408	5.6	95	196	4.9	107	228	4.7
4. Pulses	791	1566	5.0	567	1652	3.4	836	1725	5.1	1045	1874	5.5	839	1710	4.9
5. Oilseeds	427	664	6.4	279	722	3.9	485	736	6.6	591	832	7.1	577	810	7.1

Source: Dept. of Agriculture, Orissa

Note: The figures for 1978/79-1980/81 are 'fully revised'; for 1981/82 partially revised; and for 1982/83 'tentative'.

Key

P : Produce '000 Tonnes

A : Area '000 Ha.

Y : Quintals/Ha.

Similarly, the level of fertilizer use in Orissa is lower than elsewhere in India. Figures on the consumption of plant nutrients (expressed in terms of kg per ha) show Orissa at 9.9kg/ha in 1981/82. In West Bengal the figure is 32.8kg/ha (close to the all-India average of 34.6kg/ha); in Punjab 123.7kg/ha.⁶

In per capita terms, production in Orissa may be declining. Population growth rates have been calculated at 2.19% per annum over the twenty-year period to 1979, but foodgrain production grew by only 1.19% per annum.⁷ Another calculation suggests that per capita production declined by 7% between 1965 and 1975.⁸ In eight of the ten years to 1974, Orissa produced enough foodgrain to consume at the all-India per capita average. In some years it exported several thousand tonnes of grain. But over the past ten years, Orissa has needed to import foodgrains in most years.

To list the constraints to increased agricultural production in Orissa suggests that the State is trapped in its own poverty with each constraint reinforcing the others. The unfavourable soil and rainfall conditions, together with the small and fragmented nature of holdings, have discouraged private and public investment in agriculture. Without irrigation and land development, the widespread adoption of improved varieties and inputs such as fertilizers has been held back with farmers unwilling to risk new technologies and unable to generate income to pay for them. The ways out of this 'trap' are similarly mutually reinforcing as the major agricultural programmes (see below) recognise. Simultaneous improvements in irrigation, land consolidation, research and improved varieties, pest and disease control, fertilizer use, credit availability, and extension services are necessary conditions for agricultural development but within existing agricultural practices and socio-economic conditions there are formidable obstacles to any dramatic improvements in the short term.

3. Agricultural Practices and Use of Inputs

Demand for improved inputs and technical advice is determined by the production decisions of farmers on matters such as method of planting and selection of variety. The following general account on practices apply to the majority of small farmers in Orissa cultivating paddy.

The farming year normally starts in June with the pre-monsoon showers or - if these are insufficient - with the monsoon rains, which allow ploughing with draught animals and wooden or mouldboard ploughs. Land preparation can take two or three weeks so the direct seeded crop is often sown towards the middle of July. For farmers with irrigation, nursery plots can be established in June allowing uprooting and transplanting before the end of July (although seedlings can be left for up to 60 days before transplanting). Direct seeding avoids the labour costs of transplanting (between 12 and 20 labour days per ha), but there is a higher seed requirement; 35/40kg per ha for direct seeding against 25kg per ha transplanting; although after thinning, seedlings from the direct seeded crop can be sold. The main disadvantages to direct seeding are higher weed contamination and rates of weed growth and the higher incidence of subsequent lodging. Line-sowing, rather than broadcasting, is recommended for the direct seeded crop as a means of reducing weeding problems, of allowing easier pest identification and control, and of ensuring better plant population. But, as in the case of transplanting, the labour requirements of line-planting mean that many farmers do not follow the recommended practice. (For the transplanted crop, in fact, traditional hand span measurements are normally preferred to line-planting using a 'rope'.)

Direct seeding is not necessarily the planting method of the poorer farmers unable to supply labour. Farmers with uneven land and inadequate water control - often the poorest - cannot risk the effect of erratic rainfall during plant establishment of a direct seeded crop, so transplanting is necessary.

At this stage, few farmers pay much attention to plant protection. Seed treatment measures (which usually means dusting in a pot) are not often undertaken and it is very rare to find farmers applying the recommended prophylactic treatments at the nursery stage, despite the frequency of later insect attacks (such as gallmidge and stem borers) and diseases (such as blast and leaf blight).

The unpredictability of rainfall also creates problems for farmers within the growing season, especially where drainage is inadequate. Most of the semi-dwarf HYVs require a water depth of below 20cm, although there are HYVs, such as Jagannath, and some local improved varieties, such as Mahsuri, which can withstand up to 50cm of standing water. Some traditional local varieties, on the other hand, can survive in up to 100cm of water.

Most of the varieties in common use are traditional, long duration (145-160 days) types, although among currently favoured long duration varieties are the HYV CR1009 which is particularly tolerant of gallmidge, and the local improved CR1030. Long duration varieties reach panicle initiation stage after about 100 days and they often have difficulties with moisture stress from mid-September when the peak of the monsoon has passed. The shorter-duration (90-105 days) varieties, such as the HYV Culture 28 (or Annapurna) are often recommended by the Department of Agriculture (not least because this allows for a second pulse or oilseed crop) but these appear to the farmers to be vulnerable to pests and diseases as well as requiring efficient water management.

For farmers the periods of greatest financial difficulty are likely to be July and August when there are costs incurred for land preparation, labour (for transplanting and weeding) and for fertilizer. This capital shortage may continue through to the late November or December harvest, when there is also a serious food shortage for many families.

With long duration varieties, a crop such as white mustard or linseed (both for fodder) is often undersown before the paddy harvest, utilising residual moisture. A second major crop is possible only in areas with irrigation, although in the case of canal irrigation - the major form - the amount of water generally available determines whether this crop is a cereal such as wheat or HYV paddy, requiring six irrigations, or less water-demanding crops such as gram or groundnut.

The most common pattern of fertilizer use for kharif HYV and local improved paddy is for a single top dressing of a nitrogenous fertilizer, such as Urea or CAN, or a farm manure. This might involve two bags of Urea per ha, roughly 50kg Nin nutrient and costing Rs 250. The standard recommendation for fertilizer, on the other hand, is NPK 60:30:30 and NPK 40:20:20 for local varieties in three splits with a basal dose including K (muriate of potash) and a NP compound such as Gromor (Urea Ammonium Phosphate) to assist in counteracting disease and lodging. The recommendations mean an approximate cost of Rs 900 per ha for long duration HYV paddy.

The generally low rates of application for local improved varieties during the kharif are primarily due to the high levels of risk incurred in fertilizer investment. In particular, the reluctance to apply basal dressing on the transplanted crop is due to fears of either water-logging or insufficient water which means weed growth is particularly severe.

The returns to fertilizer use are also questioned by many small farmers. In 1982/83 the rough calculation for non-users was that the purchase (at Rs100) of 40kg of Urea (appropriate for one acre's top dressing only) returned, under best possible conditions, only an additional 60kg of paddy (at around Rs 140) over five months or so. Another way of looking at it is that a farmer might relinquish 6kg of paddy in July for the half-chance of a return of 9kg of paddy in December. And given the climatic and pest conditions of Orissa, a 'half-chance' is a reasonable calculation.

In practice, the great majority of farmers do not see their farm as a commercial enterprise in the sense of careful calculation of returns to investment in purchased inputs requiring a specific income to cover operational costs and new investment. There are very few tractors, and only occasional signs of land development. Privately owned wells are rare and they usually consist of a manually operated weighted lever supplying little more than half a hectare. The annual crop is largely stored for the food needs of the family and its animals and any surplus is bartered or used to repay loans incurred at times of either recent food shortage or some long-past family occasion such as bereavement or marriage.

The subsistence nature of much of Orissa agriculture is particularly evident in the importance attached to crop by-products. These include crop residues for animal consumption (with the further by-product of dung cake - an important fuel source as firewood is becoming increasingly scarce and expensive) and straw for roofing (an important consideration in the non-adoption of short-stemmed HYVs).

Rural society in Orissa is permeated by the importance of omens and supernatural forces, although farmers are not resistant to new varieties or the use of inputs on such grounds. Agricultural practices are nonetheless often tied to the decisions of local priests and the timing of religious festivals; and seasonal operations such as weeding and harvesting can be delayed by omens or religious observances which take precedence over agronomic advice.

Another important factor in the adoption of new practices is the incidence of family illnesses, especially in the wet season, which is also the period of food shortage. In a study of Sambalpur, over 90% of farm families were found to have suffered recent illness, usually specified as "fever, chest pains and coughing".⁹ Poorer women in particular were found to have suffered illnesses throughout pregnancy and delivery. For farm families the implications of this have been not to embark upon new practices involving substantial new labour demands on the family. Poorer families work harder than others and often

carry on working even when sick. Many hire-out their labour after very early morning work on their own plots, and more individual members of poor families (wives, children, the elderly) work than in better-off families.

4. Marketing and Borrowing

In Rengali Block in Sambalpur in 1979, research showed only 23% of cultivators sold any surplus kharif crop, although the figure for the neighbouring Attabira Block in the Hirakud Command Area was 70%. This low level of admitted sales need not be taken at its face value as an indication of surplus, but even if the figure is higher in reality, this is because it consists mainly of repayments in kind for food loans, labour and other services provided before harvest. This form of debt is more widespread than other forms of informal borrowing, such as village moneylenders and pawnbrokers. One study of debt in Orissa¹⁰ suggested that formal (ie. bank) borrowing was much more important in rural households than informal borrowing (82% of a survey borrowed formally and only 8% informally) but this disregards the type of lending described above between households.

Because of this system of advancing food, labour and services against a harvested crop it is difficult to assess precisely informal interest rates (although I interviewed farmers who indicated it is often as much as 15% per month). It is also difficult to assess the extent of distress selling. Agricultural staff claim that this is not widespread in Orissa, but the price of village sales of paddy between the November harvest and April does appear to fluctuate significantly. Prices of Rs90 per bag (a 75kg bag of paddy being the equivalent to 50kg of rice) were cited in November 1982. This was expected to rise to as much as Rs140 by April and remain at that level during the period of the year when the poorest farmers were needing to buy, or work for, rice as their own stocks were finished. Some families are in permanent debt and must provide labour as their only method of repayment or of maintaining their borrowing facility.

5. Land and Tenure

There are a small number of tribal farmers in Orissa who practice shifting cultivation around isolated villages connected by footpaths. But the great majority of farmers are involved in permanent cultivation on registered land. The conditions of ownership and tenancy are important to an understanding of service provision.

Formally, the land market in Orissa is more or less static but there is considerable movement in informal leasing, especially among small and marginal farmers. A national survey has shown that over 70% of both lessors and lessees were in this category.¹¹ The principal form is sharecropping with a range of share mechanisms depending on the use and purchase of improved inputs (as the next chapters illustrate). Nationally, around 85% of leases are on a share-crop basis, with 15% on a fixed rent basis. In most cases, the landlord pays land taxes and water charges, with the costs such as labour and ploughing covered by the tenant.

The incentives for the sharecropping tenant as against a fixed-rent tenant are complex. Sharecropping is a form of insurance as it reduces rent liability in the event of crop failure although at the same time it discourages the risk of purchasing improved inputs. Available evidence suggests that yields are higher under fixed rent arrangements than under sharecropping.¹² Fixed rent arrangements are undertaken by better-off farmers leasing-in additional land which they often farm with higher levels of improved inputs than the landlord could afford. In such cases, leases are longer than for sharecropping, which is often for a single season only. Fixed rents are more likely to occur with smaller landlords who may be obliged to lease-out because of cash needs or lack of family labour.

Sharecrop tenants are frequently also labourers on their landlord's fields and there is often a pattern of social obligation underlying this economic relationship. The landlord may, for example, provide food at times of emergencies and at festivals, and allow his labourers to keep straw. On the part of the labourer and sharecropper the landlord may be provided

with fuel and additional labour when required. For all these reasons, landlords often prefer a large number of poor tenants with a range of duties and obligations to them which enhances their own prestige and power in the community. Landlords are not always closely interested in their land anyway. Much leased-out land belongs to absentee members of a local family who may be civil servants, visiting once a year and relying upon a relative to collect a small income from the tenant.

6. Services and Input Supply

6.1. Department of Agriculture

The upper tier of agricultural administration in Orissa, as elsewhere in India, is fraught with potential for rivalry. In overall charge, below the Minister, is an Agricultural Production Commissioner. Responsible to the APC are two Secretaries: one for Agriculture and Co-operatives, the other for Animal Husbandry. Responsible to the Secretary for Agriculture and Co-operatives are three Directors of Departments: for Soil Conservation, Horticulture, and Agriculture and Food Production. The Directorate of Agriculture and Food Production is commonly called the 'Department of Agriculture' (DoA) and this is the term I use.

The DoA is the most important arm of agricultural administration in the State in staff and expenditure terms. In the 1982/83 State budget provision of Rs 13,400 million (State Plan, Non-Plan and Central Plan expenditure combined), Rs334 million was allocated for Agriculture followed by Rs39 million for Soil Conservation and Rs19 million for the Agricultural Universities.¹³ The Directorate of Agriculture is responsible for 2,700 technical and 7,400 paratechnical employees.

Below the level of Director, the DoA has a hierarchical structure roughly based on Government of Orissa administrative areas. At the Range level (which is now the equivalent of the Administrative District) are 13 Deputy Directors of Agriculture (DDAs); Agricultural Ranges are

divided into 'agricultural districts' under District Agricultural Officers (DAOs). But these districts were established when the Ranges were much bigger than they are now, and in most parts of Orissa there is a further sub-district level (called a 'sub-division') to which Additional DAOs are appointed.

At the Block, the level below the Administrative District, there are Agricultural Executive Officers (AEOs) responsible to the DAO or ADAO. There are normally between 8 and 12 AEOs per agricultural district or sub-division. Below the AEO level are the Village Agricultural Workers (VAWs), each responsible for a 'circle' normally containing 8-10 villages. Each AEO is likely to have between 6 and 8 VAW Circles to supervise.

In 1977, the entire organisation of the DoA became the subject of review following the World Bank's decision to lend \$16.8mn for a project to improve agricultural production through a strengthening of research and extension capabilities. In fact, the structure of the DoA has not been altered by the Orissa Agricultural Development Project (OADP). There has however been a substantial increase in the size of the Department. The following table indicates this.

Table 2.3: Department of Agriculture Staff in Selected Posts 1976 and 1982

	Staff in Post in 1976	New Posts Approved since '76	Estab- lishment in 1982	Staff in Post in 1982
1. DDA (Range)	6	7	13	13
2. DAO	30		30	30
3. ADAO	32	30	62	55
4. AEO	778		778	746
5. VAW	5731	771	6502	6187
6. Range SMS (Training)	-	13	13	13
7. Range SMS (Other)	33	38	71	67

The new DDA and ADAO posts illustrate the need for higher levels of supervision generated by increased extension activity. In addition, the new emphasis upon regular instruction to the VAWs is shown by the increase in Subject Matter Specialist posts not only at the Range level but also at the district and sub-division levels where there are now two SMS posts with each ADAO or DAO. At this level, the SMS posts are for Agronomy and Plant Protection only. This is a weakness, according to the Director of Agriculture, and he would like to see SMS posts in Land Management in drought-prone areas, Horticulture in tribal areas with tree crop potential, and Water Management in irrigated areas where there is generally poor control of water at field level.

The most important organisational changes brought about by OADP have been in the location of AEOs and VAWs within the government service. Previously, these staff were part of the Block administration and under the Block Development Officer. The BDO is formally part of the Community Development and Social Welfare Department (similarly the VAWs in the past, when they were called Village Level Workers) but the post is responsible to the District Collector. The current position is that around 75% of the old VLWs have been transferred to the Department of Agriculture with a further 771 new posts established; and in 1982, 1,000 of these VAW posts were upgraded to the scale of Agricultural Overseer. The Department has also taken over responsibility for four Village Level Worker (or Gram Savak) Training Centres for pre-service and in-service training of VAWs and AEOs.

6.2. Extension

Prior to the OADP, field level agricultural work was of two sorts. Under the Department itself were a number of overseers and fieldmen demonstrators concerned with specific crops and their promotion under a Range crop specialist or with a specific area-based programme such as the IADP (see 6.9 below). The Block-employed VLW was

supposed to spend up to 80% of his time on agricultural extension but this was rarely done as there were competing demands for work on such matters as public health campaigns, road-building labour supervision, famine relief, and elections. The agricultural duties were primarily in the fields of seed supply and credit administration for fertilizers. Extension work proper was confined to demonstrations run by VLWs themselves on land rented from farmers.

The present extension structure is based on the Training and Visit (T and V) system. Organisationally, the VAW circle consists of between 600 and 800 farming households which are divided into eight Units and visited on a fixed day once every fortnight. Within each Unit, a group of 'contact farmers' are regularly visited in their fields and these farmers are expected to collaborate in improved practices suggested by the VAWs. Other farmers have the opportunity of attending larger meetings held in the afternoons on the day of the VAW visit. For VAWs, the T and V system also means fortnightly training with instruction from SMSs and the AEO.

Despite the new level of extension activity and coverage and the higher technical understanding that field staff have acquired since 1977, the methods of extension work have not changed substantially. Emphasis is still upon visits to individual fields where demonstrations are under way. There is still little use of methods such as radio programmes and visual aids, and the organisation of farmers' visits to other areas is largely confined to special programmes such as that conducted by the Hindustan Fertilizer Corporation (HFC) under the IBFEP (see 6.9 below).

6.3. Research and Recommendations

The impact of OADP on research has been to develop four Regional Research Stations, under the Orissa University of Agriculture and Technology (OUAT), for what are seen as different agro-climates. There is also a range of

other University research stations for particular crops (such as rice and jute) and for high altitude agriculture and farming under saline conditions. The Department itself has a number of research stations dealing with soya bean, citrus, coconut, arecanut and pulses; and with implements, manuring, pests and diseases. There is also an important central government research station at Cuttack (the Central Rice Research Institute).

The Regional Research Stations have a training function, for SMSs in particular, with monthly training days for staff from three to four Districts. The results of the Regional Research (and other) Stations are tested at Adaptive Research Stations (established under OADP) in each of the 13 Districts. Several of these Stations were previously Government Farms. These are inadequate in terms of staff and laboratory facilities. The stations normally have only one Research Officer and one Junior Research Assistant. They are able to conduct only varietal trials and do not undertake wider agronomic work on, for example, plant protection, soil improvement, and cropping patterns.

Recommendations to farmers are primarily those which appear in guidelines prepared by research scientists and crop specialists at the State level in collaboration with OUAT and which appear in the Training Manuals for Extension Officers each season (Rabi and Kharif). The form of the Manual is the stage-by-stage cultivation of individual major crops and notes on minor crops with separate sections on pest and disease treatments. At the District level, these recommendations are reformulated in sheet form for fortnightly issue at VAW training sessions. They are also presented in terms of individual crops, and cover the operations that need to be undertaken in the following two weeks. The need to prepare and print such sheets well in advance means that unforeseen climatic, pest or input supply problems have to be discussed at the meetings and adaptations made to the messages.

6.4. Seeds

The requirement for seed in Orissa is largely met by farmers themselves, with only 3-5% of requirements met by purchase from the Department of Agriculture. Farmers either hold their own seed from season to season or exchange with other farmers. In the case of paddy the exchange may be of local varieties for improved or HYVs at a rate of 1:1.25 or 1.5.

The private traders and co-operatives do not deal in seed on any significant scale. The availability of government-provided seed at a subsidized rate, price controls on paddy, low demand and the difficulties of storage have prohibited any significant non-governmental trade.

There are 85 Government seed farms multiplying from foundation seed provided by CRRI and OUAT. Seed from the farms is supplied as first generation certified seed in minikit packages which selected village cultivators are supposed to multiply to meet all the village requirements. But in practice, it is difficult to trace the use of seed multiplied in this way through farmer exchange. It has been estimated that by the third year of use, when the particular variety might be widely adopted in a village, it has lost its vigour by the order of 20-30%. So at the point of widespread adoption its yield potential may not be much above local varieties. Furthermore at 4 years, HYV seed becomes particularly susceptible to disease and pest attack. The marginal benefits to fertilizer use on HYVs (assuming favourable weather) are likely to be more than cancelled out on 4/5 year seed in poor condition.

In 1978 the Orissa State Seeds Corporation was established to develop seed distribution and license private dealers and co-operatives. The eventual target of OSSC, under the IDA-assisted National Seeds Programme, is to have four licensed dealers in each Block, but in practice the Department of Agriculture remains the only source of seed in most of Orissa. The OSSC operates only in parts of four districts and only 89 dealers had been appointed by 1981.

Within each Block there is normally only one permanent seed sales centre with temporary sales points managed on a part-time basis by VAWs. The Department's view (expressed by the Director in his proposals for Phase 2 of OADP) is that four centres per Block are needed to meet anticipated demand with VAW posts established at each Block level simply to establish seed requirements and ensure their availability. The nature of this demand depends largely upon the adoption rate of the Department's own recommendations on new varieties.

While the general record of promoting improved varieties of paddy seed has not been spectacular, there have been significant successes elsewhere. In 1981/82, for example, much of the extension effort was devoted to diversifying into groundnut and promoting the use of improved groundnut seed. A subsidy on both seed (AK 12-24) and phosphatic fertilizer was part of this campaign which involved, in some cases, changes in cropping patterns to allow October (early Rabi) planting on the unbunded highlands and February planting (Rabi - summer) under irrigation. The Department calculates that - to 1982/83 - 28,000ha has been diverted to groundnut from paddy and wheat and 120,000ha planted overall. With an average yield of 2 tonnes per ha for AK 12-24, it is claimed that there is a net income of Rs6000 per ha against Rs2,500 per ha for HYV paddy at the yield level of 4 tonnes per ha.¹⁴

6.5. Quality Control

The mechanisms for controlling malpractices in input supply are not well-developed in Orissa. The procedures for inspection and laboratory testing are directed primarily at adulterated fertilizer and false branding in pesticides and seed. The DAO is the officer

designated responsible for the various orders, although - in the case of the Fertilizer Control Order - the AFO also has inspection powers.

The actual work of inspection is, however, another matter. There is only one post in each district for a Quality Control Inspector, although at current levels of private sector involvement in input supply this does not represent a particularly severe deficiency in agricultural administration.

6.6 Co-operatives

There are two branches of the agricultural co-operative movement in Orissa: credit and marketing. In the former, the apex organisation is the Orissa State Co-operative Bank which has 17 Central Co-operative Banks operating in the Districts. In 1981/82 these CCBs lent to 2,566 Primary Agricultural Co-operative Societies (PACS), 222 Large Agricultural Multi-Purpose Societies (LAMPS) and 5 Farmer Service Societies.¹⁵

The small number of FSSs are a legacy of the Small Farmer Development Agency programme which has now been amalgamated into the IRDP (see below 6.10).

The Co-operative Credit Societies are also Consumer Societies, selling controlled price goods. In both Rairangpur and Nimapara the majority of PACS and LAMP branches (the former PACS) are in fact trading only in consumer goods and do not stock fertilizer or pesticides. The PACS were established in the 1950s but the high levels of default and subsequent trading losses has meant a reconsideration of their role and the current emphasis is towards amalgamation of smaller PACS into LAMPS. At present, neither the LAMPS nor the PACS have the authority to sanction loans. Sanctioning is a matter for the headquarters of each CCB: subsidiary branches within the District do not have the authority.

The co-operative marketing function is undertaken by the 63 Regional Co-operative Marketing Societies which are

linked to the Orissa State Co-operative Marketing Federation. The fertilizer sales of the Federation and the RCMSs constitute their largest item of trade. In 1981/82 Federation sales of fertilizer amounted to Rs1529 million against Rs0.9 million for pesticides and Rs0.3 million for other sales. In the case of the Societies, fertilizer sales were Rs120 million, against Rs63.2 million for consumer goods, and Rs2.8 million for pesticides.

Not all of these sales are to the PACS and LAMPS: private dealers can also purchase from the RCMS. As the following chapters indicate, the pattern of co-operative activity at the level of individual societies varies considerably, and the existence of a co-operative society (with a full-time Secretary, store, offices and watchman) does not necessarily mean that fertilizer is being lifted by members even where loans have been sanctioned.

Crop marketing is not an important function of the co-operative societies, and public sector involvement generally in crop marketing is limited in Orissa. In theory, licensed rice-millers are obliged to sell a proportion of their produce at a fixed price to the Food Corporation of India (the Civil Supplies Department in fact). But in the 1980s the procurement was never above 200,000 tonnes, out of a total annual production of between 4 and 5 million tonnes. There are almost 3,000 licensed mills in Orissa and an estimated 5,000 unrecorded (and thus unlicensed) mills.

6.7. Fertilizer and Pesticides

Orissa is a net exporter of fertilizer with an output in 1981/82 of 101,000 tonnes of nutrients and a consumption of 82,000 tonnes (54,000 tonnes N; 10,000 tonnes K; 18,000 tonnes P).¹⁶ The State also produces 12,000 tonnes of compound fertilizer from imported materials.

The average consumption of fertilizer has risen since the mid-1970s from 6.8kg/ha in 1975/76 to 9.9kg/ha in 1981/82 (6.5kg N: 1.2kg P: 2.2kg K) although this

figure is still well below figures for other States.

Around 60% of fertilizer is retailed via the public sector: that is, the co-operatives or the Orissa Agro-Industries Corporation, both of which also handle the bulk of pesticides and farm implements sold. The private dealers (often with a small shop or stall and a few hired sheds for stores) tend to operate from the larger towns where there is a fairly high turnover and stocks from wholesalers can be obtained easily. The 'interior' areas are a virtual co-operative society monopoly as the low margins and costs of storage and transportation discourage the town-based dealers from extending their operations and small village shop-keepers, lack the capital. A similar situation prevails for pesticides, although in this case the Department of Agriculture itself is also a major provider of pesticides and treatment services.

Taking the co-operatives, OAIC and the private dealers together, there are in the region of 5,000 fertilizer 'sales points' in Orissa (which has 51,638 villages). In 1976/77 the FAI assessed the number of sales points at 4,654, of which 2,197 were public sector and 2,457 private sector. However, the previous year the private sector figure was only 394. The discrepancy obviously indicates a waywardness in data collection, but it also conveys the fluid stage of the fertilizer market. Many merchants deal only in fertilizer and pesticide (and possibly vegetable seeds), but there are others who trade more generally and move in and out of the fertilizer market. Furthermore, many co-operatives only intermittently deal in fertilizer.

The largest wholesale distributor of fertilizer is the Fertilizer Corporation of India (FCI) which also has the largest private distributor network with over 500 retailers. The next biggest distributor is the Hindustan Fertilizer Corporation, which has a Marketing Division with four Area Offices. The Marketing Division appoints dealers at the District and Block levels and

these include co-operative societies. Separate from the Marketing Division is the Fertilizer Promotion and Agricultural Research Division. The FPARD is involved in demonstrations, trials, and soil testing, leading to the possible revision of fertilizer recommendations, especially for new technologies such as slow release materials and fertilizer/pesticide mixtures. Under IBFEP the agricultural research and extension work of HFC has been increased, although it remains tiny when set against the scale of the Department of Agriculture's extension effort.

6.8. Credit

Estimates of informal lending are uncertain, but if formal lending constitutes 15-18% of total lending (as estimated in the OADP Appraisal Report), it can be estimated that 3-5% of total lending is from the commercial banks (or 30% of formal lending). Following the initiation of the IRDP (see below) much of this lending is medium and long-term. The State Land Development Bank also finances medium-term lending institutions (the LDBs) at most sub-division levels in the State and the CCBs are also involved in medium-term as well as seasonal lending.

Within each District, one of four commercial banks is designated the 'lead' bank with particular (but not exclusive) responsibility for financing poorer sections and small farmers. The State Bank of India has six districts; the United Commercial Bank, four districts; the Bank of India, two districts; and the Andhra Bank, one district.

For crop seasonal lending, or 'production credit', the main source of loans is the CCB (through the local PACS or LAMPS), although commercial bank lending is also available, especially for the successful farmers, as the following chapters indicate.

For seasonal lending the cash component cannot be more than 40% of the value of the seasonal requirements. On formal crop loans the rate of interest is below the commercial rate charged for most non-agricultural loans: in 1982/83 it was 12½% against 14-18% on non-agricultural loans. There are concessional arrangements on lending which also further reduce the rate of interest for certain categories of farmers allowing, for example, a 4% interest rate on a proportion of a loan to marginal or low-income farmers. In the event of partial crop failure, it is also likely that the Government will give instructions on extending loan repayment terms and allowing further loan facilities.

In the event of a default, attachment (or seizure of assets) is possible, although especially in the case of co-operatives, the legal process of dispute is often lengthy. Seizure is, nonetheless, a real fear among borrowers and while, under the Civil Code, productive assets and essential commodities cannot be seized, several farmers I met claimed knowledge of bullocks and grain being taken from defaulters.

6.9 Special Programmes

There are two special crop improvement programmes which impinge directly on this study. The first is the IBFEP itself, and the second is the Compact Area Programme (also termed the Minimum Assured Yield Programme).

Under the IBFEP, sixteen Blocks in Orissa have been selected, by four District Committees, for an intensified programme of extension advice and fertilizer and pesticide supply. Two of the districts are in the coastal plain (Puri and Cuttack), one in the northern Plateau (Mayurbhanj) and one in the hill range (Kalahandi). The programme is supported by infrastructural development involving the construction of 300 metric tonne capacity godowns at each Block level and a number of 100 metric tonne godowns within major villages of each Block.

The extension work involves posting Assistant Agronomists to 'clusters' of ten villages within each Block, normally with two clusters per Block. Within his cluster, the Assistant Agronomist initially operates in a single village for two seasons where he selects demonstrating farmers who receive regular technical advice and assistance in the supply of subsidised fertilizer and pesticides. Demonstrating farmers are those with holdings within a demarcated improvement area following broader similar practices on a uniform cropping pattern.

AAs spend, on average, 20 days per month in the field with farmers and at certain times of the year there are daily field visits so that, for example, land preparation, seed selection, sowing, plant protection, treatments, fertilizer applications and water management are supervised throughout. This intensity of advice means that only 40 to 50 cultivators can receive regular support (in practice, the figure may be lower: say 25/30). This support also involves assistance with loan applications, dealers, and where necessary, access to VAWs where these provide seed or sprayers. The extension work also involves arranging 'field days' (two per cluster each season) in which all the demonstrating farmers meet with local agricultural staff (eg. the Plant Protection SMS, AEO and IBFEP officers) and 'training programme' days in which a wider range of officials are invited to meet farmers (eg. Bank Manager, BDO, DAO, and possibly OUAT Professors).

After providing this level of support in one village for two seasons, the AA moves to a neighbouring village in the cluster to begin a similar process of fertilizer education and promotion. During the year of IBFEP support, the VAW continues with his own programme of visits to contact farmers.

The Compact Area Programme is undertaken by the Department of Agriculture and since 1982 kharif it is supposed to operate in all Units of the extension service throughout the State. The VAW is required to arrange a demonstration area of at least 12ha, encompassing - if

possible - a range of farmers from medium to marginal. Within this area (of 'minimum assured yield') a single variety is selected. In kharif 1982 this was frequently either CR1009 (a long duration paddy with a high disease tolerance and unlikely to lodge) or the medium duration CR190.

The CAP - which began in 1981/82 - takes several forms across the State and its precise character is influenced by other items in the Department's extension programme. In some areas for example, it is linked to the establishment of community nurseries where seed and fertilizer is supplied at subsidised rates and seed dressing and nursery treatments are provided by the Department. Elsewhere, it is linked to the minikit programme of supplying packets (6kg) of paddy and pulse seeds to selected cultivators.

The form of CAP also varies. In some areas, it is possible to claim that up to 300ha in a single large village is under CAP; elsewhere if a CAP exists at all it may be a demonstration plot of little more than 1ha. But despite its uneven spread, there are certain distinguishing features of the CAP as an extension programme. First, it is an intensive extension approach not unlike IBFEP although smaller in scale. It concentrates advice upon a certain category and provides a package of support measures. Second, it is based upon a demonstration of improvements followed more or less uniformly across several farmer fields. Third, it instructs the VAW to be involved in input supply functions, including the arrangements for loan application and the direct issue of inputs.

6.10. Other Programmes

The most important government agricultural programme apart from CAP and the extension work as a whole, is that concerned with subsidies (and related medium-term lending) under the Integrated Rural Development Programme

(IRDP). The District Rural Development Authorities (DRDA) which administer IRDP funds are important both because of their volume of expenditure and because of the demands placed upon the field staff of the Department of Agriculture (for survey and administrative work) and upon the staff of the commercial banks. This is considered in later chapters. The DRDAs have taken over earlier programmes to provide grants for the purchase of productive assets and land development under the Small Farmer Development Agency and the Drought Prone Areas Programme. The Integrated Tribal Development Agency (with a similar function) retains its separate funds however.

The Economic Rehabilitation of the Rural Poor Programme operates similarly to IRDP. It also conducts household surveys to identify potential beneficiaries of medium-term loans with a scale of subsidies ranging from 75% for those with no income-earning assets and an annual income of under Rs 1,200 to between 33½% and 50% to marginal farmers and agricultural labourers. The ERRP is also involved in some land redistribution and development, ranging from the allocation of individual coconut trees on canal banks to issuing titles to 0.4ha of irrigated land.

Another programme of some consequence to agricultural services is the Command Area Development scheme which began in 1975. It is concerned primarily with land consolidation and field canal construction as a means towards improved utilisation of irrigation schemes built since the 1950s. The scheme - which is executed by Command Area Development Authorities - aims to construct On-Farm Development (OFD) works over 150,000ha in the period 1980/81 to 1984/85 in four major Command Areas, although this target seems very unlikely to be achieved at the present rate of survey and construction. The various CADAs have service functions as well as those of land development. But in practice the size and training of CADA staff rules out any significant role in the areas of input supply and extension.

1. Jayant, Kumar Rontray and Manjurani, Patnaik, 'A Spatial-Temporal Variation Analysis in the Levels of Agricultural Development in Orissa' Indian Journal of Agricultural Economics, 1981 vol XXXVI(3)
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A 'small farmer' is a cultivator with a land holding below 2ha, except where the holding is certified as Class I irrigated (under the land ceiling legislation). In this case the definition of small farmer is a cultivator with 1ha and below. A 'marginal farmer' is one with land holdings of up to 1ha (or 0.5ha in the case of Class I irrigated). An 'agricultural labourer' - who is also eligible for certain loans and grants - is defined as a cultivator with only homestead land but who derives 50% of income from farm labouring. A 'holding' under these definitions is the entire land of a single household, even where several families live together. The land cultivated by a tenant or sharecropper needs to be recorded with rights defined for this to be included in the legal framework of holdings. In practice, very little of such tenancy arrangement is recorded. In the cases where small or marginal farmers are relatively well-off because of off-farm employment or business there is a stipulation - which is very difficult to enforce - that off-farm incomes of Rs200 and above per month disqualify farmers from eligibility
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Chapter 3

RAIRANGPUR

1. The Agricultural Background

1.1. Administration

Rairangpur block, in Mayurbhanj District, is in the north-east corner of Orissa. Fifty kilometres to the north, by rail, is the industrial town of Tatanagar in Bihar; 80km to the south, by road, is the District headquarters, Baripada. The Block has a population of around 56,000, with Rairangpur 15,000 itself. In administrative terms, there are 117 'villages', although a number of these consist of a series of small hamlets. There are almost 7,000 farming families in Rairangpur - an average of 60 families per village (see Table 3.1).

Table 3.1: Rairangpur Block Data

AEO Circle	No. of VAW Circles	No. of Villages	Popul- ation	Farming Families	Cropped Area (ha)	
					Kharif	Rabi
Rairangpur	7	58	21,299	3,138	5,995	1,843
Kuleisila	7	59	21,768	3,824	5,533	1,701
Total	14	117	43,067	6,962	11,528	3,544

Rairangpur itself is a small market town and as the headquarters of Bamanghati sub-division (one of four in the District), it is also an administrative centre. In terms of agricultural administration, Rairangpur is one of 12 Blocks within the Karanjia Agricultural District, which is one of the two agricultural districts in Mayurbhanj. This is an ADAO based at Rairangpur with two SMSs, although only one was in post in 1982/83. Rairangpur also has a cinema - the Krishna Talkies - and this is one of only three outside Baripada in the entire District.

1.2. Land and Population

The town has had a substantial population increase over the past twenty years. The census figure for 1961 was 8,119; for 1971, 11,226 and the current estimate is 15,000. The rest of the Block has also had a sharp rise in population, from about 30,000 in 1971 to about 43,000 now. The 1971 census also indicated that around 65% of the population was either Scheduled Caste or Scheduled Tribe. The population figures indicate a decline in per capita availability of land which has been discussed for the District as a whole by Mahapatra¹. His figures showed a population growth in the decennials 1941-51 of 4.48%; in 1951-61 of 17.5% and 1961-71 of 19.12%. The consequence of pressures on land have included an increase in the fragmentation of holdings and in the number of agricultural labourers. Temporary migration to West Bengal and coastal districts in the November-January period has increased according to Mahapatra, who claims that 36% of the working population of the District are now engaged in agricultural wage employment; although this includes the large number of farmers who work on neighbouring farms when such temporary work is available. Interviews in Rairangpur suggest that off-farm employment has increased with the growth of the town: the market has grown and there are now a wide range of services (such as bicycle repairs, tea shops) and work in construction has expanded.

The local demand for agricultural labour has increased slightly with irrigation development over the past few years, although for much of the year, the daily wage rate of Rs5 (or its equivalent) is paid as it has been for several years. However in peak periods, farmers I interviewed claimed to pay Rs10 and said that the shortage of labour meant that labourers were now cutting hours without fear of dismissal.

1.3. Crop Production

Mayurbhanj District has medium rainfall (1500mm p.a. average) but this is erratic and there can be long spells of drought during the period of anticipated precipitation. The soils are red laterite, with a light texture and poor water holding capacity. The main pest diseases are gallmidge and swarming caterpillar.

As Table 3.2 indicates, yields in Rairangpur are lower than the Orissa average. For the District as a whole, the Department of Agriculture claims that in areas of 'improved' cultivation, average per ha paddy yields are above these figures. They are 2.5/3.5 tonnes per ha in the 1981 kharif and 3.5/4.0 tonnes for the 1981/82 rabi. These figures relate mainly to CAP fields which together constitute 13,000ha, out of a total District kharif paddy area of 450,000ha. Figures for areas under improved varieties and technical packages were 1,500ha for groundnuts, 1,500ha for biri and 3,000ha for ahrar.

A main feature of the Rairangpur crop figures is the gradual change in the local/HYV paddy crop mix in the kharif, with a slight increase in HYV paddy yields - as well as cropped areas. Local varieties remain stuck at 1tonne per ha. There has been also an increase in rabi cropping of HYV paddy, although the 'diversification' policy of the Department - from paddy into pulses and oilseeds - does not appear to have had a dramatic effect on either kharif or rabi production and yields.

Minor crops in Rairangpur include maize and millet in the upland areas, although no more than 170ha per season has been recorded in recent years, and jute in the low lands (although again only 170ha per season has been recorded).

Table 3.2: Crop Production in Rairangpur 1980-83

CROP	1980/81						1981/82						1982/83					
	Kharif			Rabi			Kharif			Rabi			Kharif			Rabi		
	P	A	Y	P	A	Y	P	A	Y	P	A	Y	P	A	Y	P	A	Y
HYV Paddy	1668	1390	1.2	155	97	1.6	2156	1540	1.4	700	350	2.0	2456	1525	1.6	1018	463	2.2
Local Paddy	9090	9090	1.0	-	-	-	8778	8778	1.0	-	-	-	8632	8632	1.0	-	-	-
Pulses	154	387	0.4	596	1490	0.4	308	771	0.4	573	1433	0.4	263	658	0.4	257	643	0.4
Oilseeds	12	25	0.5	640	1280	0.5	16	32	0.5	676	1352	0.5	39	79	0.5	294	589	0.5
Wheat	-	-	-	496	310	1.6	-	-	-	836	380	2.2	-	-	-	432	180	2.4
Vegetables	1176	168	7.0	3472	496	7.0	1688	211	8.0	4140	513	8.0	1088	136	8.0	3942	438	9.0

P : Produce (Tonnes)

A : Area (Hectares)

Y : Yield (Tonnes/Hectare)

1.4. Irrigation

Part of Rairangpur is included in the command area of the Kharkai Irrigation Scheme which has a potential ayacut of 7,220ha. At present, however, the scheme serves only 4,040ha due to the inadequacy of field canals. There is usually a discharge at every 100m and at some outlets 20m of field canal has been constructed by the Irrigation Department. But the Community Development Department is responsible for the construction of field canals and this work has not been completed in any village in the Block. The survey work prior to land consolidation has been delayed due to staff shortages and the general difficulty of undertaking major land reallocation. But there are also high capital costs involved in field canal infrastructure (levelling, drop structures, pipes for road crossings etc.) which are difficult to meet without external assistance. In the neighbouring Block of Bijatola, an IDA-assisted project for a 7,220ha ayacut includes tertiary canal development. This will require the demarcation of 5ha turn-out areas servicing 8-10 cultivators. Without such on-field development in Rairangpur, the pattern of irrigation is normally water flowing field to field. This has a number of harmful consequences: waterlogging close to the canal, and elsewhere due to lack of drainage; scarcity of water away from the outlet; fertilizer washed away; water levels difficult to regulate; high percolation losses. The impact of irrigation in such circumstances is much diminished and for many areas this has contributed to a lack of confidence in assured water supplies and thus a reluctance to adopt new practices.

1.5. Tenancy

The extent of tenancy arrangements in Rairangpur is difficult to calculate. Estimates for particular villages I visited were that no more than 5-10% of the land was being cultivated by tenants (either on a fixed rent or crop-share basis) of absentee landlords - mainly public officials living away from the villages but still owning land which

their families were unwilling to cultivate on their behalf. But the figure rises to 15-20% when the various forms of seasonal leasing-in and leasing-out are considered. These are normally long-term arrangements, with the more progressive farmers involved in leasing-in land from absentee landowners. Another form is land allocated by landlords to their regular agricultural labourers. Heavy indebtedness also leads to land being leased-out to better-off farmers. It is misleading, therefore, to identify tenants, or even sharecroppers, as a distinct, and necessarily disadvantaged, group. The more important issue for this study is whether the arrangements of tenancy affect access to services.

1.6. Services

Rairangpur is the main agricultural service centre for the Block. It has the Department seed store, although demand is low and much of it is distributed through VAWs in minikits. It is also the location of the main fertilizer dealers and the commercial and co-operative banks. Its location means that most Rairangpur Block farmers visit Rairangpur town rather than any neighbouring Block centre. No village is more than 8-10km from a pucca road which leads to Rairangpur and the longest journey to town along a pucca road is around 25km. It is my estimate that of Rairangpur's 7,000 farmers only a small proportion would have to travel more than two hours to reach Rairangpur if they travelled by food and cycle-rickshaw at a cost of Rs2. As the farm interviews show, the large majority of farmers manage to get to Rairangpur regularly. Those requiring fertilizer or bulky goods from Rairangpur often have bicycles or bullock carts.

There are three possible sources of formal credit for seasonal production in Rairangpur Block. The lead bank is the Bank of India, which sponsors a Regional Rural Bank for medium-term lending under programmes such as IRDP and ERRP, and which has a branch in Rairangpur. The State Bank of India also has a branch, and there is also a Rairangpur branch of the Mayurbhanj Central Co-operative Bank.

The MCCB branch in Rairangpur, like the two commercial banks, provides services to other Blocks such as Kisumi. However within Rairangpur itself there are only two LAMPS affiliated to the MCCB; at Rairangpur and at Kuleisila. The LAMPS have their own sales points in the villages although (as I discuss below) these have a very low volume of business and the great bulk of co-operative fertilizer lifts are from Rairangpur and, to a lesser extent, Kuleisila.

1.7. IBFEP

Under the IBFEP, in Mayurbhanj District, the HFC covers two neighbouring Blocks (Kusumi and Rairangpur). The selected villages are mainly within the Kharkai Command Area. There are two key villages within Rairangpur Block at Halda and Bhalubasa, each of which have an Assistant Agronomist. They are supervised by a single Block Agronomist based at Rairangpur. The Halda IBFEP cluster includes all the villages of one VAW unit plus three villages of a neighbouring unit.

2. The Input Suppliers

Five main sources for the supply of (a) technical advice (or extension) (b) production requirements and (c) credit are examined in this section. None of these sources provide all types of input, but all of them, except the Commercial Banks, provide more than one type.

2.1. Department of Agriculture

Within the Block, there are two AEOs, both with a circle supervising 7 VAWs. These VAWs in turn have 8 VAW units each as prescribed under the T and V system. As all VAW posts are currently filled, this gives an extension worker: farmer ratio of 1:500 for the Block. Under the T and V system, the VAW operates a fixed schedule of visits to his units; he is entirely under the direction of his Departmental superiors, not the Block Development Officer;

and his work is exclusively concerned with promoting agricultural production. The two AEO circles in Rairangpur Block meet with neighbouring Block VAWs for their fortnightly training sessions using the verandah of the ADAOs office in Rairangpur. (In Nimapara, with a larger number of AEOs and agricultural staff generally, a more mobile training programme has been organised so that three different sites are used for 7 AEO circles (covering two Blocks) which constitute a single 'training group'.)

The nature of these T and V innovations can be gauged by the evidence from interviews with one of the two AEOs and two long-standing VAWs. According to the AEO, who had served for more than ten years prior to the introduction of the new system, in the past there was only rarely the opportunity of finding the VLW (as they were then called) on the day that he was needed by the Department, and there was even less opportunity of giving the VLW instructions on various Departmental tasks to be undertaken in the expectation that they would be done properly and promptly. It was his estimate that only 10% of the time available to VLWs was spent on agricultural duties and these were primarily seed supply and organising Department demonstrations.

Both VAWs had worked for over 20 years in the agricultural district. Both had notebooks in which all their farmers names were recorded; these are Contact Farmers under T and V, and demonstrating farmers under the Compact Area Programme. In both cases, the VAWs were able to put faces to most of the farmers that I selected for possible meetings. Difficulties of identification (which were quickly overcome) arose only in the case of 'inactive' farmers - either agricultural labourers with very small plots or people involved in petty trade rather than regular farming.

Both VAWs had bicycles and, fastened to them, a folder (not water-proof) containing various instructions from the fortnightly training session. Neither carried such

extension aids as insect collection or specimen boxes, magnifying glasses or pocket calculators.

Both VAWs held meetings regularly on their visits. They claimed that those were normally attended by around 30 people (although farmers' estimates were 15-20) and for the most part the meetings consisted of the fortnightly message being listened to in silence, followed by a period in which farmers raised questions about a wide range of issues but especially credit and fertilizer availability and, in some villages, problems with irrigation supply.

The Contact Farmer system, if it ever was clear in the minds of the VAWs, had become blurred by the CAP. One said that the Contact Farmers must be good farmers, and follow the recommendations. Contact Farmers received minikits and, in return for seed and plant protection materials, had agreed to follow the main messages of the season relating to transplanting in lines and seed treatment (neither of which seemed to be popular with other farmers). Cultivators following recommendations became eligible for selection as Contact Farmers. Similarly, non-collaborating Contact Farmers were dropped.

Around 1960, when both joined government service in the Community Development Department, their work had been primarily agricultural: close to the 70% stipulated. Their training as Village Level Workers (or Gram Savaks) was, in their view, for technical agricultural work. The change in the balance of their work came with the expansion of special programmes for welfare, employment, and village development generally. This included the distribution of food for school children, organising night-classes for adults and supervising labour on public works. It also meant establishing and serving as either secretary or committee member on the Primary Agricultural Co-operative Societies, created to extend formal lending facilities and supply stores to the small villages which were not served by the banks and private traders.

The generally poor trading performance of the PACs and the constant difficulties of managing loan issues and recoveries led to their amalgamation into Large Agricultural Multi-Purpose Societies in the mid-1970s: much to the relief, they claim, of the VLWs. Shortly after, the VLWs were transferred to the Department of Agriculture and their non-agricultural duties were taken over by a much smaller number of VLWs who remained with the Community Development Department under the BDO.

The VAWs now claimed that 100% of their time was spent on agricultural extension duties, but on closer examination, this was not the case. The most obvious inroad into extension work had been created by the establishment of the IRD programme under which beneficiaries needed to be identified following village surveys of production, income and assets, and discussions with both cultivators and landless labourers on applications under the scheme. The survey work, under the BDO, had begun in Rairangpur at the beginning of the most active period in the extension year, June-July, and was still continuing when I visited in October. One of the VAWs said that he had already spent three months over his survey duties, working most afternoons doing three or four questionnaires at a session. The other calculated that the survey work had taken 15 days in all, with each village requiring several visits. Sometimes this is all he had done on his scheduled visits. In both cases this work had yet to produce a single successful loan application.

The scale of the effort can be gauged from the Mayurbhanj District figures for 1981/82, when it took 46 village surveys to identify 1,411 potential beneficiaries. Only 1,281 of these had been cleared by the four banks involved (449 by the Bank of India, 339 by the Mayurbhanj Central Co-operative, 362 by the Gramya, and 131 by the State Bank of India). However, only 243 loans had been taken up by October 1982, and in the 1982/83 exercise, a further 29 villages had been surveyed (including a small number in

Rairangpur Block), but only 132 applications had been accepted by October.

Apart from the clearly non-extension role of VAWs in the administration of medium-term loans and grants under IRD, there are also seasonal input supply functions which, in T and V orthodoxy, should not be regarded as extension proper and which could detract from extension performance. The most important function is in seed supply, which remains a major task of the VAW as the Block store is the only source of seed for farmers outside the farming community itself. It is the responsibility of the VAW to assess seed requirements for his unit, although the AEO normally checks the figures which tend to be inflated by the VAW to indicate his success in promoting new varieties. When the seed becomes available, the VAW sends an indent to the Block and provides the cultivator with a chit which he takes to the store.

In Rairangpur Block, two additional sales centres were provided (in Kuleisila and Bhalubasa) in the 1982 kharif as part of a general drive in the District to supply seed to farmers badly affected by a long dry spell in July. (In some areas a 50-70% loss of seedlings was reported.) This distribution took two forms. First 4,000 minikits, mainly of high yielding paddy and pulses, were made available free of charge. For the VAW, this meant identifying a small group of cultivators in their units who should receive such minikits. Second, 4,000 quintals of seed was made available through the Department at a 25% subsidy but rationed and restricted to small and marginal farmers. As a result, VAWs were involved in assessing eligibility and issuing chits for farmers to take to the Block or sub-centre seed stores. The actual distribution at these centres was undertaken by the local VAW, who was supposed to work from 6-9 in the mornings before going off on his fixed-schedule visits.

The process of seed supply is time-consuming, but the figures for distribution indicate a low demand overall. A lot of this demand is artificially created by the subsidy, minikit, and Compact Area Programmes and consists of a large number of very small lifts.

The VAWs themselves saw seed distribution as a major part of extension. In the small CAP in Halda, for example, the VAW had distributed minikits of 6kg as an inducement to the four cultivators involved. He had also arranged for plant protection treatments (for catchworm in particular) for the CAP. He had deliberately selected the more progressive farmers for the CAP (and three of these were also among the small group of large and medium farmers in Halda) as he felt these farmers would be copied and would be prepared to bulk and sell the improved varieties to other farmers.

Other aspects of input supply are the provision of plant protection materials, including the hiring of sprayers. Again, this was seen by VAWs as a particular responsibility towards the CAP (originally called the Minimum Assured Yield Programme) which, in the VAWs minds, had a demonstration purpose similar to the extension work that preceded the introduction of T and V.

Under earlier loan schemes both VAWs interviewed have a number of credit administration tasks relating particularly to loans given in installments as work progresses on, for example, land development and well construction. On seasonal lending, the VAW continues to have a major role despite the abolition of the PACS. Both VAWs said they verified the information given on loan applications to LAMPS. They also submitted a list of eligible loanees to the LAMPS secretary. One VAW admitted to filling in application forms for most of his cultivators and both said they often went to LAMPS and the Commercial Banks with the cultivators to speak on their behalf and explain procedures to them. The VAWs were also occasionally present at the disbursement of the fertilizer component of the loan.

For the cynical observer this support can be interpreted in two ways. If the cultivators need such help as the VAW provides, then it is likely that they willingly pay some commission. Alternatively, if the cultivators recognise that without such help, obstacles to credit and inputs are put in their way, similarly a commission will be offered and accepted. The farmer interviews attempted to check this interpretation.

Finally, among other non-extension duties, the most important appeared to be the collection and reporting of agricultural data. This mainly involved recording eye-estimates of cropped area and taking a sample of crop cuttings. But neither VAW thought this added up to more than 5% of total time.

2.2. Hindustan Fertilizer Corporation

In the 1982 kharif season, there were two villages in the Block benefitting from the IBFEP. Halda had 64 families under the project cultivating 59ha. Bhalubasa had 52 farmers cultivating 46ha. The supervision of these areas - normally in four or five separate patches - is a full-time task for the Assistant Agronomists because of the range of responsibilities involved. Fertilizer supply is a particularly demanding responsibility, although only one dealer is used by HFC in Rairangpur Block - the long-established trader, M.L. Sharma.

There were three sources of formal lending under IBFEP for kharif 1982. The State Bank of India issued credit for 23 loans to IBFEP cultivators, the Bank of India issued 37 loans and the MCCB issued 2 loans. By far the biggest group of farmers - 54 - were self-financed, at least as far as their requirements under the IBFEP subsidy scheme were concerned.

The IBFEP farmers had little difficulty in lifting fertilizer, according to the Assistant Agronomists in Rairangpur. The requirements for the separate applications are included on a single delivery order and most farmers lifted all they needed in a single visit to Sharma: an estimated 85% of the lifts were by bullock-cart, normally owned by the cultivators themselves; 10% of cultivators used bicycle-rickshaws under hire, and 5% used bicycles (walking alongside after lifting).

Pesticide distribution under IBFEP in Halda and Bhalubasa in kharif 1982 totalled 12 litres of liquid and 37kg of solid. These are small amounts but much higher than the average consumption for the villages of the Block as the following table for both kharif and rabi indicates.

Table 3.3: Pesticide Consumption in Rairangpur
1980-83

	<u>1980/81</u>	<u>1981/82</u>	<u>1982/83</u>
Liquid (Lit.)	120	145	245
Solid (kg)	1,800	2,200	3,500

Pesticide is also distributed by M.L. Sharma, although those IBFEP cultivators who also benefit from the CAP may also receive materials free-of-charge from the Department.

The volume of work on input supply administration relates to fears of misallocation and fraud. In the IBFEP case, there is a constant concern among the AAs that fertilizer can be fictitiously sold at the 50% subsidy with dealer and cultivator agreeing to share the reimbursement from the HFC. This possibility means that AAs are expected to supervise their own delivery orders so that, for example, they are simply not exchanged for cash with the cultivator signing a receipt note for fertilizer or pesticide.

For the AA, this can mean sitting at the dealers stores from 5am early in the morning up to 10am (after which little business is conducted) for several days when they might be more usefully employed in the fields. On the use of fertilizer, there are similar difficulties of supervision. The most common problem is not re-sale of subsidised fertilizer, but its use across a much wider area than recommended.

As extension agents the two AAs in Rairangpur worked more intensively with farmers than the VAWs, although in both cases, they had significant advantages. One had found accommodation in his village (although there were difficulties for his wife and family who found village conditions unhygienic and neighbours suspicious); another had acquired a motor-bicycle on loan allowing him to visit

his key village in less than 10 minutes from his home in Rairangpur.

It was felt by the AAs that the fertilizer and pesticide recommendations were economic only with the correct varietal selection and planting and with supplementary irrigation and proper water management. The 130 day duration GRM28 paddy was particularly favoured by the AAs in Rairangpur and the Department of Agriculture's support in providing seed was vital to their work.

In irrigated areas the AAs were also responsible for informing the Irrigation Department of water requirements and dates, but this guidance had not always been followed by the ID, who claimed - not unreasonably - that illegal diversion of water further up the system was making allocation difficulties for tail-end areas such as Halda.

The time involved in the arrangement of irrigation, loans and input supplies did not have a serious impact on extension work simply because of the ease with which both AAs were able to visit all their cultivators' fields. The very high extension:farmer ratios (of 1:64 and 1:52) allowed AAs to begin the process of identifying future beneficiaries for the rabi programme in the second village of the cluster. It was also assumed that even when they had left their original 'key' village there would be a continuing obligation to assist demonstrators even after the subsidy had been withdrawn.

Arranging field days and training sessions took up a large part of the AAs time, but the biggest single item of administrative - as opposed to agricultural - work was on surveys such as the NCAER base-line evaluation data collection in 1982. There is also more immediately useful data collection on production and yields. Crop cuttings (5m x 5m) in particular were done with great care and considerable ceremony. Rather less time was given by AAs to soil testing, despite the provisions of the IBFEP and the new mobile laboratories. These undertake tests for

pH level (and soluble salts in the coastal belt). Trace elements are not tested. Cultivators are supposed to provide 10 cuts per 0.4ha giving 10-12kg in all from which a 500g sample can be taken. In fact, the AAs feel that cultivators do not take this seriously. For example, cuts were often taken - wrongly - from the bunds.

2.3. Co-operatives

The Department of Co-operatives has a Block Co-operative Development Officer at Inspector level and provides two officers at the rank of sub-Assistant Registrar for the Rairangpur Branch of the MCCB and for the Regional Co-operative Marketing Society. In each of the two LAMPS in Rairangpur Block there is a Business Manager and an Accountant employed by the Societies but appointed from the Department. Between the two LAMPS there are four sales points in the Block which distribute fertilizer. These are at Tamalbanh and Dhalubasa as well as the Rairangpur and Kuleisila LAMPS headquarters. They are normally staffed by a salesman with one labourer and a watchman.

There are other co-operative stores in the Block (one is at Halda) but these deal primarily in consumer goods, and on a very small scale. (These were formally PACS which in Mayurbhanj generally had a very poor record of administering - and especially recovering - loans.) Unlike the private dealers (see below) the fertilizer stores of the LAMPS operate fixed hours of opening: 8-12.30pm and - on occasions - 3-6.30pm. The RCMS is the wholesaler for the fertilizer provided to the LAMPS and it - rather than the LAMPS - retails farm implements such as ploughs and sprayers and dusters.

The Rairangpur branch of the MCCB lent Rs1,053,000 in 1981/82 of which Rs345,000 was for crop season lending, the balance being mainly for medium-term lending under various schemes. There were 1,413 individual accounts for seasonal production credit held by the Bank for

members of the Rairangpur LAMP at the end of the 1981/82 season, of which 698 had overdues (there were a further 1,223 accounts for members of the Kuleisila LAMP with a similar level of overdues).

In volume terms, 69% of the 1981/82 seasonal loan had been repaid and individual overdues were, on average, only Rs200. But taking earlier years into account, the Rairangpur LAMPS had Rs291,245 of overdues outstanding (before the 1981/82 overdues were added). This involved 1,400 accounts and meant that almost half of the Society members were disqualified from borrowing.

In October 1982, it was estimated from MCCB records that around 700 Rairangpur LAMPS borrowers had received credit over the previous three months for seasonal production, with an average loan of Rs490. The approved-scale finance was much higher than this figure: Rs1,200 per ha, with a cash component of Rs480.

The procedures for co-operative borrowing are not dissimilar from those of the commercial banks, requiring land revenue certificates and AEO approval, and the acquisition of an application form which costs Rs1. However, the application forms themselves require more information than the commercial bank forms. There are two forms, both of which must be completed in duplicate. The first form concerns the particulars of the entire landholding of the applicant (plot numbers, size, type) and the nature of its ownership; and particulars of assets and facilities of the cultivator, such as irrigation and animals. The second form is a credit limit form which is completed in collaboration with the branch secretary and it lists crops and planned acreages with the amount requested for sanctioning in kind and cash. The MCCB has an inspector responsible for visiting farms and checking loan applications but in the case of seasonal production credit this is mainly the responsibility of the secretaries who in turn rely on information provided through the VAWs as in the earlier days of the PACS.

The main complaint from cultivators does not appear to be the procedures as such, but the delays in sanctioning loans. The integrity of this complaint is discussed below (where I suggest these complaints are often a pretext for not lifting unwanted fertilizer) but the formal position is this. Sanctioning is done by the Board of MCCB in Baripada, the District headquarters.

Applications are forwarded from the LAMP Society to the branch, but the branches will only submit batches of 10-30 applications to Baripada. There is considerable scope for delay in this procedure, especially as Society meetings and Board meetings are not held on a regular basis. Nonetheless, it was claimed by the Rairangpur branch that loan approval for most borrowers, from the submission of Society application forms to sanctioning by the Board could take as little as ten days, and on average took only fifteen days.

The major delays may come from the time of intention to seek a loan (although I suggest below that there is much dithering among cultivators on loan applications) to forwarding by the Society to the branch; and from loan sanctioning to actual disbursement. The cash component of loans is disbursed at the sales centre without very much delay (on average, 6 weeks after loan application) but the fertilizer component often takes longer as separate orders have to be made to the RCMS. When these are small, the RCMS does not always respond promptly, and the LAMPS sales centres do not have their own transport to collect fertilizer.

The sales centres do not normally have a storage capacity of more than 50 tonnes, but the centres rarely stock this amount of fertilizer (the equivalent of 1000 bags) even during the period of peak demand. There is also a problem of probity at the sales centre level. In the past two years four storekeepers have been relieved of their duties. The sales centre management is not subject to any formal village committee control, although the village panchayat normally appoints two of its

members to the Society, which is dominated by ex officio members, including the BDO.

The total value of LAMPS fertilizer sales in the Block in 1981/82 was only Rs100,726, with Rs65,138 from the Rairangpur LAMPS and out of total LAMPS sales of Rs233,939 (including sugar, clothes and rice). In volume terms this is approximately 500 quintals (or 1,000 bags). These figures include direct sales to some cultivators from the neighbouring Kusumi Block. The estimated value of sales in the Block as a whole in the same year is Rs500,000 (Department of Agriculture figures). The main consumption was for the compounds Gromor and DAP followed by CAN and Urea (both of which are nitrogenous).

The general policy of the LAMPS is not to sell small amounts of fertilizer but to sell 50kg bags only - even when these are direct sales, as opposed to credit sales where requirements are often assessed in bag amounts. Dealers on the other hand are prepared to sell 2kg at a time. Apart from the occasional inconvenience to cultivators of large purchases, there is also a complaint that 50kg bags are, in practice, often underweight, and there is no provision for making up the weight through the LAMPS stores.

2.4. Commercial Banks

Seasonal lending operations of the Commercial Banks and the Central Co-operative Banks are largely determined at the District Level where different areas of operations are decided upon and the scale of lending agreed from season to season. The following table (3.3) indicates 'scale finance' for individual borrowers for paddy in 1981/82. The assumptions are for relatively high yields. The cultivation costs include estimates for animal draught and wage labour at the current rates of hiring, and they assume recommended seeding rates and fertilizer applications.

Table 3.4: Scale Finance for Paddy 1981/82 (Rs)

Crop	Season	Cultivation Costs per ha	Anticipated Yield Quintals per ha	Value of Paddy	Value of Straw	Total Value	Net Profit per ha	Finance per ha	
								seed	fertilizer
HYV	rabi	3130	53	5300	1120	6420	3290	135	1040
Local Improved	kharif	2170	30	3000	750	3750	1580	95	325

The two Commercial Banks in Rairangpur (the State Bank of India and the Bank of India) both operate in several neighbouring Blocks. In 1981/82, the SBI - in its first year of operation - had 570 accounts for seasonal production credit (with a value of Rs283,000). and the BoI - in its third year of operation - had 744 accounts (with a value approaching Rs400,000). But for Rairangpur Block alone, the figures are much lower. The SBI had only 173 seasonal accounts in 1981/82 (23 of which were with IBFEP farmers), and the BoI had only 158 accounts. The combined value was Rs180,000. (By October 1982, the recovery rate, in value, was almost 70%.)

This is a low volume of business for the Commercial Banks, especially as the SBI has an Agricultural Assistant for Rairangpur Block alone and two clerical officers responsible for farm lending. Similarly the BoI has an Agricultural Officer and a clerical assistant for Rairangpur Block. In practice, seasonal lending takes up only a small part of the two loans officers' time (the AA and the AO), as they are under instructions to give priority to medium-term loan applications under IRDP and, to a lesser extent, ERRP.

In the two banks, 1,551 medium-term accounts were opened in 1981/82 for agricultural lending (against 1,314 seasonal accounts) but loan transaction and supervision under IRDP involves officers in considerably more work. Bank officials do not like medium-term lending which they regard as cumbersome, politically influenced and poor banking practice. For several of them the IRDP scheme is simply hand-outs to tribals and scheduled castes. They prefer agricultural lending to deal with established, larger farmers. Under the IRDP, bankers claim that borrowers are confused by subsidy and loan components and loan discipline is eroded. There is also, they claim, a high administrative cost of transaction in medium-term lending, especially taking into account the involvement of other Government staff

such as veterinary officers for animal health insurance, and - in subsidised purchases of fixed assets - the likelihood of collusion between seller and borrower to inflate prices. In fact, in Rairangpur the sale of goats had to be suspended following a series of malpractices involving both dealers and government officials.

The preoccupation with medium-term lending under IRDP appears to have curtailed the expansion of seasonal production credit which is, in large part, 'supply led'. The procedures of both the SBI and the BoI are similar. In the case of the SBI the AA goes to selected villages in the afternoons to discuss loans. The AA fills in the single form with the cultivator. He can handle up to 20 applications a day in this way, but it is normally less because cultivators are not always certain what they require. A second visit is often made.

In the BoI, the AO visited only 20 villages in the Block in 1981/82 and in these villages rarely more than 15 farmers received advice on loans. In both banks, the great majority of seasonal loan accounts was the result of village visits. Farmers did not often come to the branch to initiate loan applications as they realised that, in any event, without a farm visit a loan would not be obtained.

The borrower requires a land revenue certificate but most of the loan application work is undertaken by the AO or AA. The various documents (possibly including a hypothecation deed) are taken back to the branch office for processing. This can take only one or two days, and rarely longer than a week. The arrangement letter is then delivered to the farmer and the delivery order issued to the dealer. There are four copies: dealer, borrower, and two Bank copies. In the case of the SBI, D.O.s are not issued to the LAMPS because, it is claimed, the farmers do not want this - even where the sales point of the LAMPS is much closer to their home

than the dealer in Rairangpur.

A particular requirement for the loans officers of the Banks is determining eligibility for the Differential Rate of Interest scheme which allows a 4% interest rate (as against 9-12% for other borrowers). The eligibility is a landholding limit of 1ha or an annual income of not more than Rs2,500, and two-thirds of 1981/82 borrowers came under the scheme. Another issue for the loans officer is to check on double-borrowing as, in practice, overdue clearance certificates are not asked for and lists are not exchanged between Banks.

Loan recovery is mainly through the cultivators visiting the Bank itself, although the AA also collects, by SBI estimates, around 30% of the payments. He does not however have particular responsibility for chasing up debtors and the Bank rely on posted reminders. Loan supervision is also undertaken. In the case of BoI three to four visits per season are undertaken by the AO to borrowers. However these visits are often at the request of cultivators who wish to secure additional financing or debt re-scheduling.

Without the IRDP obligations, the Banks claim, it would be possible for a loans officer to handle up to 1,000 seasonal loan accounts at the level of support and supervision described above. At present however, around a quarter of the loans officers' time is spent on seasonal lending. With transport and branch overheads, the cost of this operation is roughly Rs8,000 per crop season for a loan value of roughly Rs90,000. A calculation of the administrative cost of lending is thus in the region of 7%.

The supply-led credit process of the commercial banks is clearly very selective and limited, but for those cultivators who do borrow, the process is not cumbersome and it does not involve any risks of delay in loan approval and availability of supplies.

2.5. Private Dealers

There are three private dealers in Rairangpur Block, all in Rairangpur itself. Only one of those, Sharma, has a substantial turnover: roughly 3,000 bags (1,500 quintals) in 1981/82 which was mainly Gromor and Superphosphate (cf. LAMPS sales of 500 quintals). Most of this was for cultivators in Rairangpur Block although Sharma also deals in the two IBFEP villages in Kusumi Block. Other dealers sold, between them, less than a tenth of this figure (under 50 quintals). In the 1970s there had been more dealers (possibly six, according to Sharma, including the RCMS): all had ceased trading, except Sharma, during the period. Even the RCMS had stopped dealing in fertilizer because of low demand. But since 1980 and the extension of canal irrigation, trade has increased and there are now eight private dealers in the Karanjia agricultural district as a whole.

Generally dealers do not extend seasonal credit (that is, re-payment at harvest) unless the cultivator is well-known to them, but they are prepared to delay payment for several weeks and they do not always charge interest on this. Over half of the farmers lifting from Sharma in fact pay cash and he suspects that only a small number of these are borrowing from moneylenders specifically to purchase fertilizer.

In villages of predictable demand, such as the IBFEP villages, Sharma is prepared to take bags to the village in his pick-up. In 1981/82 the IBFEP villages in Rairangpur represented over a quarter of his total turnover; roughly 900 bags. These village sales visits were particularly helpful to the Assistant Agronomist who was able to supervise lifting on a pre-arranged day with his demonstrating farmers.

When cultivators visit Sharma - and other dealers - there appears to be much less delay and inconvenience than in visits to the LAMPS. The average transaction time for credit-linked supply of fertilizer is five minutes, against between thirty minutes and two hours

reported for the LAMPS. This is achieved even at peak times by the co-optation of other family members into the process of checking identification, completing invoices, receiving payment, providing chits for nearby godowns, and delivery of the fertilizer.

The other main difference is in opening hours. In the case of Sharma, cultivators began arriving shortly after 4am and the main work is completed by 6.30am. There is very little business after 9.30am when a trickle of customers may be weighing out small amounts. At the same time - perhaps an hour later - the LAMPS and other co-operative stores are opening for the day's business selling fertilizers in 50kg bags only and at a cost (for Gromor, for example) Rs3 above the private dealer's price.

Sharma has five small sheds and does not keep a large stock. His total capacity is around 150 tonnes but the most he would hold at any time would be 50 tonnes (500 quintals) on present levels of demand.

3. The Farmers

3.1. Halda

There are 116 households in Halda, which is only 6km from Rairangpur. A VAW circle is based in the village and there is a co-operative store (a branch of Rairangpur LAMPS) which does not stock fertilizer due to roof damage (and apparent lack of interest in repairing it).

Halda was the first village to be adopted under IBFEP in a cluster of ten villages at the tail end of the Kharkai irrigation system. There were 52 cultivators in the IBFEP project in kharif 1982 and these included the 23 cultivators growing 8ha of paddy and 12ha of wheat the previous rabi. In the 1981/82 rabi, paddy yields in the IBFEP demonstration area had been 51 quintals per hectare, but it should be noted that the

demonstrating farmers under their 'usual practices' achieved 42 quintals - the second highest yield figures for Orissa IBFEP.

The availability of irrigation is restricted by both the tail-end position of Rairangpur and its poorly-developed system of channelling water. There are very few proper field canals and during my visit the main village road was saturated for two days to allow water to flow to a small tank which could water 1.5ha at most. An Irrigation Department estimate of loss through seepage was 25%, in addition to a high evaporation loss with water slowly moving from field to field.

In order to assess which groups are benefitting from IBFEP, and Department of Agriculture programmes, it is necessary to look at the composition of the village as a whole. Of the 116 households in Halda, 32 are landless. These are mainly scheduled caste families which provide much of the paid labour force, although a small number are also involved in cultivation as tenants on a sharecrop basis. Of the 84 registered farming households, 31 have less than 0.6ha, and, of these, 15 have little more than vegetable gardens attached to their homesteads. There are a further 17 cultivators in the 0.6-1.0ha category as the following table indicates.

Table 3.5: Farmer Categories and Holdings in Halda

<u>Category</u>	<u>No. of Farmers</u>
4ha and above	7
2-4ha	14
1-2ha	15 (small farmers)
0.6-1.0ha	17 (marginal farmers)
up to 0.6ha	31 (" ")
Landless	32
TOTAL	116

This gives a figure of 48 'marginal farmers' and 15 'small farmers'. Of the remaining 21 cultivators, seven families have 4ha and above.

Six of these seven families figure in both the IBFEP and the Compact Area Programme. In the first IBFEP (rabi) programme only ten out of twenty-three demonstrators came from the marginal farmer category (and these included two tenants), and two from the small farmer category. This means that eleven cultivators (almost half) were from the medium and large-farm groups. In the kharif period of the programme, the base of membership was extended so that of the 52 demonstrating farmers, almost three quarters were from the small and marginal farmer categories. However there may still be a bias in the social composition as only three scheduled caste cultivators and no tribal farmers were included.

Under the CAP in Halda, there were eleven cultivators receiving support in return for planting recommended HYV paddy and pulses. This was in a single plot with 0.10ha per cultivator. All but one of these cultivators also had land under IBFEP support. In the CAP, cultivators were receiving treated seed, free pesticides and the use of a sprayer, as well as subsidised fertilizer. Three of the CAP cultivators were from the large farmer group. In the loosely-administered and imperfectly-understood 'Contact Farmer' system, the same six large farm cultivators were named as the VAWs contact farmers and only two

farmers from the marginal category were named. Three cultivators were simultaneously Contact Farmer, Demonstrating Farmer, and CAP Farmer.

The correlation between size of landholding and extent of public services support (which is found elsewhere also) is discussed in the final chapter. But there is also an apparent correlation in Rairangpur between size of holding and size of family. The odd family out in the seven households with over 4ha (ie. the one that is in neither IBFEP or CAP) is in fact a large joint family with twenty-three members. The other 4ha plus families are also untypically large. All have between ten and seventeen members whereas the majority of landless families have between two and four members, although a few are in the seven/eight member category. The average family size for small and marginal categories is six. However, there are a number of small-farmer families which are, in fact, large joint-holdings deliberately registered under separate title to gain eligibility for concessions and to avoid land ceiling legislation. In other words, it is misleading to look simply at land registration figures and conclude that large landholdings are disproportionately gaining access to services.

Dharajaya Mohanta is a demonstrating farmer, but not a particularly good one. He has 1.4ha (in seventeen plots) but can only cultivate 0.2ha in the rabi because he claims water from the irrigation canals is unreliable. He manages to get a second kharif crop of mustard with tank irrigation. Mohanta is elderly and with only two other family members available to help, he needs to hire most of his labour. Prior to the IBFEP subsidy he had used only a nitrogen top dressing: purchasing relatively small amounts for those plots where he was willing to risk HYVs.

In 1982 kharif he had received a Rs600 loan from the BoI but he had not used it all as he had decided against using his delivery order note for pesticide (with its 30% IBFEP subsidy). He regarded the levels of

both pesticide and fertilizer use recommended by the Assistant Agronomist as an expense he could not bear and he did not intend to continue the application level currently subsidised by IBFEP. Similar cost considerations made him unsympathetic to recommendations on nursery establishment and line sowing. His fields - outside the demonstration area - were directly seeded and broadcast, largely because of the cost of additional labour involved in recommended methods.

Yudhistir Mohanta is a more prosperous cultivator. He is also a demonstrator with 1.2ha (and fifteen plots) but much more under rabi irrigation (0.4ha) and a larger family labour force. Perhaps more importantly, his sons own a tea-shop. The rabi crop in recent seasons has been wheat, although irrigation remains too unreliable to allow more than four plots. His use of compound fertilizers in splits has been instigated by IBFEP; previously he used only a top dressing getting yields of twenty quintals per ha. for HYV paddy, and ten quintals for local paddy. He bought the recommended fertilizer and pesticide outright from a dealer in Rairangpur and the Assistant Agronomist had advised him on pesticide mix and application. He now intended to buy his own sprayer, or in partnership with neighbours. The reason given for buying fertilizer, rather than using BoI services which came to the village, is that he is never certain of irrigation supply and delays a decision on purchase until water is assured. His IBFEP kharif crop seemed likely to substantially exceed his previous level.

The land of Laxman Mohanta is generally too low for HYV paddy although he has 0.3ha (out of a total of 1ha) in the IBFEP demonstration and 0.2ha available for irrigated rabi production. On his other fields his preference has been for local paddy. He has milch animals and regularly sells in the Rairangpur market and locally. As a cultivator new to fertilizer applied to HYV crop he is reluctant to use the recommended level because of what he sees as the risk of pest attack (such as case worm) and drought. He had,

nonetheless, taken a Rs285 BoI loan and acquired Department of Agriculture seed. He appears to have sold part of the fertilizer to another farmer.

The Brahmin, Syam Das, is also a demonstrating farmer although he has only 0.2ha and his main occupation is minding the village temple. But his land is well developed and irrigated in rabi and he normally receives 40 quintals per ha for HYV wheat and 25 quintals for kharif paddy. He is employing labour and leasing-out land but Das had bought Urea, SSP and MoP and applied in splits. In previous seasons, loans have been obtained primarily for labour from village moneylenders. Loans and repayments were in kind and interest rates were roughly 30% per year - or 10% over four months. For kharif 1982, there had also been a Rs135 loan arranged with the BoI for fertilizer and this had been collected in a single lift.

The final Halda cultivator interviewed was the harijan Baramali Kairbatha, who was not part of the IBFEP demonstration. He has 0.6ha, in four plots of medium/high land. His yields for local paddy were between 10 and 12 quintals per hectare. The kharif production of paddy was insufficient to feed a family of seven but Baramali has some income from a betel shop and from fishing. Fertilizer had never been used, but a loan for bulls had been obtained in earlier years from the LAMPS and Rs300 remained outstanding. This had prohibited any further lending from the LAMPS and the BoI loans officer had not approached him. The general tone of the interview was that no help of any sort was available from IBFP or the Department but it actually transpired that Gamaxene had been provided free-of-charge by the DoA following a pest attack a few weeks previously.

3.2. Badabaikala

This is one of the villages in Rairangpur benefitting most from the Kharkai Irrigation Project. It is in the IBFEP cluster and is a good farming village, although the majority of cultivators (72 out of 121 according to the IBFEP village survey) have less than 1ha, but with only fifteen landless families. Winter wheat and HYV paddy are widely grown.

The largest cultivator interviewed in Badabaikala was Bhaguda Majhi, a tribal, who had 2.8ha taking into account joint family holdings. His main income came from a 6ha of tank-irrigated vegetable plots. He was selling in three different markets, including Rairangpur. He employed labour at a total cost of Rs1,500 per season. He claimed to have lost 1.2ha of local paddy in the kharif, due to drought, and this meant he would have to buy grain for family consumption. As a tribal he had received subsidies on the purchase (outright) of a sprayer (Rs300) and (on loan) for buffaloes (Rs 2,200). He had also borrowed Rs1,000 from the SBI for seasonal production, and he had been doing this twice a year for four years. The loan transaction had taken only eight days following the visit of the 'Bank wallah' to the village. Bhaguda knew about the fertilizer and pesticide requirements for crops such as aubergines and tomatoes and did not appear to want VAW advice. Yet he had been selected as a contact farmer and occasionally went to meetings held in the late afternoon. He did not however meet the VAW in his fields partly because he was spending much of his time taking small quantities of vegetables to markets on his bicycle.

Bipio Naik is also a contact farmer and appears to be a successful cereal grower on 1.4ha all of which is irrigated. In the kharif, all his land is under HYV paddy and in the rabi he also grows wheat. His total fertilizer use in both kharif and rabi was at the recommended rates (150kg and 250kg per ha) and his kharif yield for medium duration paddy had been 40 quintals per ha. His requirements were paid for by cash from the private dealers and he had received seed

(some on subsidy) from the Department. His relatively high level of income may have come primarily from crop sales but his labour costs were very high because there were only two family members working in the fields (with two at school, and another in government service). But there was also evidence that Bipio Naik was a landlord drawing rent from land in his government-employed son's name.

He was the one farmer in the village that knew about IBFEP, but as a contact farmer he did not appear to want technical advice except on plant protection measures. He did however go to meetings which he said were attended by around fifteen people (the VAW gave a higher figure). His main difficulties were waterlogging as he was close to the canal turn-out.

Harekrishna Mohanta offered a contrast to Naik. He has 2ha and grows wheat and HYV paddy in the rabi and kharif, but his yields are not above 20 quintals per ha. His fertilizer application was inadequate and seemingly ill-informed. He had bought for cash at different times 2 bags of Gromor and 1 bag of Superphosphate applying them evenly across his fields. He also complained of poor drainage but had not requested a loan for land development. He was interested in borrowing for both increased fertilizer use and land development but he may have been a defaulter (although he claimed never to have borrowed). He had acquired seed from the Department but claimed he had not received any advice from either the VAW or the village contact farmers.

Kalaisha Mohanta is one of the struggling farmers of the village. He has 0.8ha but only two of his five plots are irrigable as he needs land levelling on his other plots. He was one of the few cultivators who said seed (for HYV paddy) was unavailable from the Department. He had bought 10kg of Urea and 20kg of SSP and spread it over 0.8ha, knowing this was an insufficient dosage. But he did not have the cash for larger amounts. He had received loan sanction from the LAMPS too late, he claims, and had already

sold his ageing bulls for Rs600 to meet immediate cash requirements. He had no knowledge whatsoever of VAW visit days, contact farmers or CAPs but had attended a meeting to discuss pesticides, which he had never used.

Maka Sardar is another cultivator struggling with a small, partly-developed holding - and with ill-health. His teenage son is now responsible for 0.6ha, only 0.1ha of which has rabi irrigation. In kharif 1982, 0.3ha had been leased-out because the family did not have the cash to pay for labour. From the 0.3ha cropped, a yield of only 4 quintals was expected from local paddy. In rabi, fertilizer was used but this was only 10kg of Gromor bought for cash. This was the one case in Rairangpur as a whole where the cultivator said that the Bank was too far away to arrange a loan and he did not have the time to visit Rairangpur, 15km away. For a LAMPS loan he would not have to visit Rairangpur but he also claimed that loan forms were not available at the nearest branch (at Halda) and that bank staff had not visited the village (contradicting the evidence of Bhaguda Majhi). He had no contact with the VAW, although he knew the day of his visit.

3.3. Champrai

This is a tribal village - in the IBFEP cluster - with eighty families, although there is also a small, isolated community (around eight families) of Patras - a Scheduled Caste group involved in rope-making and agricultural labouring. There are several small privately-owned tanks in the village for supplementary kharif irrigation, but there has been very little cropping in the rabi. Fifty cultivators in Champrai have below 1ha and twenty-seven of these have less than 0.6ha; but there are only four landless families and only one cultivator with over 4ha.

It is an energetic village, although poor. Much of the farming work is done between 5am and 7am and then the majority of cultivators and their families have to work on roads, canals and fields elsewhere. Such families are

estimated to earn between Rs15 and Rs20 per day. Hindu government officials regard their subsequent behaviour as rather feckless because the evenings in Champrai appear to consist of visits to several beer drinking-houses where women brew for sale.

The largest farmer interviewed in Champrai was Jagath Majhi who has 1.5ha in eight plots with access to a small tank. He has four sons working in his fields and he sells vegetables in Rairangpur market. He knows the recommended fertilizer dosages and the qualities of different HYV varieties but he has only 1ha under HYV and he does not apply the full fertilizer requirement, confining himself to a Urea top-dressing. To purchase fertilizer and seed, and to engage labour, he applied to the LAMPS for a Rs1200 loan but after what he claims were four unsuccessful visits to the stores at Rairangpur he cancelled his application. He then sold some goats and bought fertilizer direct. This difficulty, to Jagath Majhi's knowledge, was shared by another twelve Champrai farmers. He was disparaging about the VAW and said his main demand on the Department was for information on fertilizer and seed availability. He knew of no contact farmers or CAP in Champrai. This was the reaction of all Champrai cultivators interviewed and the VAW, when questioned on this, said that it was difficult to get support for demonstrations in a tribal village like Champrai.

Suna Majhi has 1.1ha in fifteen plots. He also has members of the family working in his fields and his main income is as a builder. He has 0.4ha of HYV paddy but from his entire cropped area he had obtained 20 quintals (an above average yield). He used SSP on his HYV crop, copying his neighbour but under-applying, according to recommendations. The SSP was obtained through a co-operative loan of Rs300 despite having an outstanding loan on the previous year. Suna Majhi was fearful of higher borrowing because of the prospect of seizure and would prefer to buy direct. The main complaint against the co-operative was the delay caused by the secretary requiring all Champrai applications before submitting to

the MCCB. The main requirement from the VAW was seen as advice on pesticide treatments but this has been unhelpful because of a lack of finance.

Kadi Majhi has 0.8ha with his wife and three of his children working in the fields while he works as a carpenter for Rs13 per day. His wife had been pregnant - frequently - in recent years and the farm work had been neglected. Only 8 quintals of local paddy had been obtained and a 6kg packet of improved groundnut seed provided by the VAW had not received fertilizer so was not likely to yield well. Majhi had borrowed for seasonal production from SBI in 1980/81 and had Rs80 still outstanding but he did not have any wish to borrow for fertilizer or to introduce new varieties.

Hindi Majhi has 0.6ha but has left some of it fallow for no good reason other than his own general ineptitude. He is a drunk and his family destitute, to all appearances. He has never used fertilizer, grows only local varieties when he has enough seed, never meets the VAW, and has never sought a production loan. He once received a loan for two bulls on subsidy terms, but these he has now sold.

Chandra Patra is a scheduled caste cultivator with 0.6ha shared between three families. Most members of the joint household are involved in labouring work and rope-making. The family had attempted to improve their yields of local paddy by applying half a bag of Gromor as a basal dressing over all their 0.6ha, followed later by half a bag of Urea as a top dressing. They had paid cash for this and had not considered a LAMPS loan. The VAW had not been consulted and they had no contact with him.

3.4. Badogan

Badogan is the name given to an area containing Badogan village itself with ninety-two rural households and two neighbouring hamlets. In caste and tribal terms, it is a mixed village and it was one area where I found clear evidence of disparities in assets which directly affected agriculture. It is also a very poor-looking and dirty village. Badogan is only 6km from Kuleisila, which has a LAMPS store and a Department seed store, but 18km from Rairangpur. Around 150ha are under cultivation in Badogan and much of the land (around 80ha) is low land with a further 50ha of medium land. Less than 10ha receives irrigation in the rabi from a publicly-owned tank. It is overwhelmingly an area of paddy cultivation.

Mayadhar Nanda is a mediocre cultivator but a relatively rich man (which is fortunate as he has eight daughters and no sons). He owns a village shop and appears to be a substantial money lender. He has 2ha under local paddy with a second linseed crop on most of this. On his best plot of 0.6ha, he had achieved 30 quintals per ha with a single 100kg Urea application (bought for cash) on a local improved variety; elsewhere he had 10 quintals per ha at best with a direct-seeded crop. The cost of labour, he claimed, reduced his interest in improved farming. It is possible that in fact Nanda had more than 2ha and was leasing-out land on a share crop basis (see below). He was not a contact farmer but had received help from the VAW in obtaining pesticide and a hired sprayer at low cost; and he had attended some of the VAW meetings. At the most recent meeting he played a major role in prayers for rain.

One of the cultivators in debt to Mayadhar Nanda was Suseila Sandar, a widow clearly in difficulties in maintaining her house and feeding her family. She has 1.5ha of land but 1ha of this is high land and much of the better quality land is mortgaged. However she has 0.1ha of land served by a dugwell and suitable for vegetables, which she sells. In the previous season the VAW had

provided her with improved paddy seeds and she had purchased a bag of Urea for Rs120 but without any improvement in yield and she had been forced to borrow rice (at what appeared to be a 50% rate of interest over four months). Her main debt problems (which go back eight years with village money lenders) were with the LAMP'S which had lent Rs2,000 for the dug-well, and only Rs200 had been repaid. Her husband's (recent) funeral has cost her Rs3,000 (mainly in purchase of grain) and it was at this point that land was effectively sold.

Laxmi Narayan is a more prosperous farmer. He has 1.0ha of his own land and leases-in a further 1.5ha at a fixed rent. He is also very busily engaged as a 'traditional' (rather than modern) veterinarian. In the rabi, he cultivates around 0.6ha of oilseeds and pulses only. He says he is one of three or four contact farmers in the village, and that this is of considerable benefit to him. He had 0.3ha of HYV paddy (IR8) in kharif 1982, with seed provided by the VAW and VAW help in borrowing Rs600 from the LAMP'S, partly to purchase MoP as a basal dressing with Urea as a top dressing. He had also been given free pesticide so the VAW could demonstrate its application on his field. He was normally getting 20 quintals per ha for his HYV crop which was confined to medium land plots. Despite the help given by the VAW, Narayan complained of occasional loan sanction delays with one month the average period for loan transaction.

One of Kulaisha Mohanta's in-laws is Secretary to the Rairangpur LAMP'S but because of the scattered and generally poor quality of his land he does not benefit from any privileged access to loans or other services. He has 0.7ha in eleven plots and the furthest is a walk of $1\frac{1}{2}$ hrs. He does not grow any HYV or improved varieties but had bought a bag of Gromor from the LAMP'S which (according to the VAW) he then applied too late. (Gromor-Urea plus Ammonium Phosphate is recommended as a basal dressing.) Three members of the family of eight were engaged in agricultural labour and the current yields were

inadequate to meet food requirements. Mohanta was aware of contact farmers, VAW visits and assistance on the adoption of improved varieties, but he complained that support was only given to the rich farmers.

Iswar Mohanta is a tribal who is now virtually landless after what he claims is twenty years of family mortgaging of lands. He has 0.2ha of high land on which all his kharif crop had perished due to drought. His main income is from labouring and the collection of firewood in the forested area some 20-50km away. His father (now dead) had acquired new land under legislation allowing certain sharecroppers to buy. But Mohanta had been forced to return it - on a rent basis - to the original owner (one of the village contact farmers, in fact). Iswar alleged the owner (now a tenant) had not paid the agreed fixed rate of Rs200 per season, although I suspect that he had debt obligations to his 'tenant'. He also claimed that the same tenant had around 12ha under cultivation under different lease-back arrangements from small and marginal farmers who, in most cases, also worked on his land. Iswar Mohanta did not use fertilizer, or formally borrow, or have any contact with the VAW.

3.5. Danbos

Danbos is a fairly large 'interior' village with a geographical area of 285ha; but only 95ha is cultivated and of this 70ha is high land. Only 2ha is served by a privately-owned tank and there is no rabi cropping following the harvest of a pulse crop on residual moisture on the low land. Kharif paddy (50ha) is the major crop, with a small amount of maize also grown. It is a tribal village, with a large number of landless families.

But it is a village with good houses, several of which have electricity (which costs Rs100 to connect and Rs20 per month). The relatively high level of prosperity for a poor farming area with a disadvantaged community is explained by the extent of unskilled and semi-skilled work

undertaken by tribal men away from the village in factories to the north, and the willingness of tribal women to undertake all forms of manual work in the private and public sectors.

The only cultivator interviewed with a substantial holding (2ha) was Ramchandra Majhi. His was also the only family interviewed whose primary source of income was from crop cultivation. Part of his 2ha was tank irrigated and cropped in the rabi allowing him to sell vegetables, paddy, linseed and lentils. He had reached 30 quintals per ha with HYV and local improved paddy and regularly employed labour for farm operations as only two of the family of eight were available for field work. Majhi had been using fertilizer for four years, and was now buying four bags per season (two bags of NPK in July and a further two bags of Urea in September). He knew this was below recommended levels but he had a fear of borrowing for higher inputs. Majhi was a contact farmer. He had been encouraged to HYVs by seedpacks given by the VAW and had received MoP for leafblight to treat 0.5ha of wheat in a demonstration area. Meetings with the VAW were useful for discussing seed availability and plant protection but advice on matters such as plant population and seed dressing was not followed by Majhi who said the cost of new practices was prohibitive.

Bhukhila Majhi is more typical of the marginal tribal farmers of Danbos. He has 0.6ha with only 0.1ha suitable for linseed or mustard on residual moisture. This 0.6ha is a joint holding of two families sharing the same household. Five of the ten members are agricultural labourers. Local paddy is cultivated because it is alleged to have a bulkier content and the long straw is important for roofing. (It was estimated by Majhi and the VAW that re-roofing would cost Rs300 a year if straw had to be purchased.) A small amount (10kg) of Gromor and Urea had been purchased from a dealer for a small vegetable plot and some village sales had been made. There had been little contact with the VAW as Bhukhila Majhi explained that he was not in his own fields when the visits were made. Nonetheless he had received free

Gamaxene treatment from the Department which had saved his paddy crop. Majhi had never borrowed formally. His particular fear was of being cheated over records (such as fraudulent debiting by LAMPS secretaries). He was also thoroughly confused, he said, by the different schemes provided for scheduled tribes and marginal farmers. The VAW was not expected to be able to help in such matters. (In fact, even the AEO - an experienced officer - was uncertain about the range of lending conditions under ITDA, DRDA, DRI and ERRP.)

Singa Majhi is a mother with three children, one of whom works in a factory and brings money when he returns home; the other two younger children work in the fields. Her crops are local paddy with some lentils. When her husband was alive he had grown HYVs and used fertilizer, using a LAMPS loan. But now she regarded the risks of borrowing were too high. She also said that there were practical difficulties in obtaining a loan: she would not go to Rairangpur to arrange the loan or lift fertilizer or seeds as she was unwilling to leave her children alone. (Apparently she had difficulties with her in-laws and could not leave them in charge.) Similar domestic difficulties arose in the case of extension visits. It was impossible for her - or other women - to attend afternoon group meetings as they were invariably preparing food in their houses at that time.

The final two Danbose interviewees were not engaged full-time in cultivation. Kama Majhi had a small bicycle repair shop - from which he earned Rs60 per week throughout the year. He had 0.5ha but with a family of eight, the work was left to his wife and grown children. These grew paddy only and managed 15 quintals per ha on low land plots but had lost all their high land crop that season. He had obtained a cash/kind loan of Rs500 from the LAMPS, but had not used any fertilizer on his paddy. The cash component had been used for shop stocks, and not all the fertilizer had been lifted. The lifted fertilizer appears to have been sold. This misuse of loan funds had followed the SBI refusal

to grant a loan for stocking and Kama Majhi admitted that he would not be able to repay his LAMPS loan (then due) from current levels of income.

Chandrai Majhi is an excellent part-time cultivator. He has only 0.4ha of paddy in seven plots but managed forty quintals per ha. He employs labour but had his own bullocks. He had difficulty in obtaining HYV seed from the Department but had managed to buy from other cultivators. Fertilizer was bought direct from the dealer (1 bag of Gromor and 2 of Urea) and applied in three splits. Chandrai Majhi did not see the VAW on his day of visit. This was partly explained by his long absences from the village, working as a crane driver in Tatanagar. He returned for the early part of the season (nursery establishment and transplanting) and for harvesting. He told me his monthly income from construction work was Rs1,400. Assuming nine months work per year this is at least five times the annual income of the average marginal village tribal farmer engaged in labouring, fishing, wood collection etc. Chandrai Majhi said he had no income from farming as his 12-15 quintals was not sufficient for the needs of his family of seven. He hoped to retire shortly and acquire more land.

1. Mahapatra, S. 'Modernisation of Tribal Agriculture' Economic and Political Weekly, April 1, 1978 vol XIII(13)

Chapter 4

NIMAPARA

1. The Agricultural Background

1.1. Administration and Population

Nimapara Block, in Puri District, is in the Mahanadi delta area. By the standards of the coastal plain, its villages are relatively isolated. Nimapara itself is 20km from Pipili which is a market town on the Bhubaneswar-Puri Road and 55km from Puri itself. Some of the 'interior' villages are accessible only by footpath for up to five months of the year. However, compared to Rairangpur, Nimapara is a Block with a well-developed structure of internal markets and it is close to major markets for agricultural supplies and produce.

Nimapara is roughly half the size of Rairangpur in land area, but its population is 133,000 (cf. 56,000 in Rairangpur) and it has 246 villages (cf. 117 in Rairangpur) (see table 4.1). The main town - Nimapara - has a small population

Table 4.1: Nimapara Block Data

AE0 Circle	No. of VAW Circles	No. of Villages	Popul- ation	Farming Families	Cropped Kharif	Area (ha) Rabi
Bhodra	6	79	33,684	3,862	6,402	6,545
Nimapara	6	54	32,136	3,822	6,037	6,374
Harishipur	6	49	30,705	3,840	6,520	7,114
Balanga	7	64	37,045	4,480	6,670	6,170
TOTAL	25	246	133,570	16,004	25,029	26,203

(11,000) than Rairangpur (15,000), but in the Block there are several small market towns, the largest of which is Bolangir (population 5,000, and 20km from Nimapara). According to census returns, there are 16,004 'farming' households in Nimapara (cf. 6,962 in Rairangpur).

The Block has four AEO circles and 25 VAWs, allowing a VAW:farmer ratio of 1:640 (the ratio figure for Rairangpur is 1:500). Although, unlike Rairangpur, Nimapara is not an agricultural sub-division headquarters, it is grouped with neighbouring Gop Block as a training area under the T and V system. So in Nimapara town itself there is an ADAO and also two Subject Matter Specialists (Agronomy and Plant Protection). The fortnightly VAW training sessions are held at three different centres in the two Blocks and the staffing levels are such that it is not uncommon to have a session attended by the ADAO, the two SMSs, five AEOs and between 40 and 50 VAWs.

1.2. Crops

The total cropped area of Nimapara is recorded (1982 figures) as 25,029ha in the kharif and 26,203ha in the rabi. The rabi figure, however, is a potential rather than an actual figure. Approximately 8,000ha is 'fully' irrigated according to the Irrigation Department but a further 7,000 is 'semi-fully' irrigated - meaning it is on a sub-minor canal system and cannot be assured of water. But there is also a substantial rabi irrigated area fed by tanks, which are able to serve low-lying areas including those which are too water-logged or flood-damaged for kharif cultivation. The level of irrigation development in Nimapara gives the Block a total cropped area per year (i.e. with double cropping) which is over three times the size of that in Nimapara. Canal irrigation has been available in Nimapara for 20 years, unlike Rairangpur where it became available only in the 1980s. In some villages such as Terund below), 75% of the land is canal-irrigated.

The level of agriculture generally, particularly the use of improved inputs, gives the Block aggregate crop production figures (for paddy, pulses and oilseeds) which are at least five times the figures for Rairangpur. The following table (4.2) shows the relatively advanced stage of crop improvement in Nimapara (by Orissa standards) particularly in paddy. The proportion of HYV to local varieties is much higher than in Rairangpur and even local varieties are yielding at twice the rate of the Rairangpur crop.

In the 1982 rabi, irrigation was sufficient only for low-duty crops, notably groundnuts and pulses and, in some areas, potatoes. There were reduced opportunities for HYV paddy with its high water requirements, and the 1981/82 figures reflect this factor. The 1982/83 figures indicate some return to HYV paddy in preference to oilseeds (especially groundnut and til) and pulses. In 1981/82 there was considerable Department of Agriculture effort to promote improved groundnut and pulse varieties but yields were generally much lower than anticipated in the crop recommendation calculations and many farmers felt that the economic returns were unsatisfactory.

1.3. Research

The Adaptive Research Station for Puri District at Sakhigopal was established under the OADP and has been conducting varietal tests on crops such as wheat, black gram, tomato and bringal. For paddy trials to test the effect of early planting on the incidence of insect pests have led to recommendations on advancing the normal transplanting date, to reduce the risk of gallmidge infestation in particular. Department of Agriculture support for the establishment of community nurseries has reflected this research recommendation, but it affects only a small number of cultivators in the Compact Area Programme.

Other trials have been on the optimum time and dosage

Table 4.2: Crop Production in Nimapara 1980-83

CROP	1980/81			1981/82			1982/83		
	P	A	Y	P	A	Y	P	A	Y
HYV Paddy	55,541	14,811	3.75	22,683	6,065	3.74	64,125	16,875	3.80
Local Paddy	33,082	16,541	2.00	33,397	15,044	2.22	29,315	13,325	2.20
Pulses	1,179	2,358	0.50	1,936	3,872	0.50	1,200	2,400	0.50
Oilseeds	3,168	2,986	1.06	4,575	4,742	0.96	3,627	3,058	1.18
Potato	4,616	942	4.90	5,650	1,130	5.00	5,200	1,040	5.00

P : Produce (Tonnes)

A : Area (Hectares)

Y : Yield (Tonnes/Hectare)

for nitrogen top dressing, leading to reductions in previously recommended levels (which according to my evidence were not followed by cultivators anyway); and on different cultural practices. Among the conclusions from these 'management studies' were that the yield response to customary random planting - but with erect, shallow and close spacing as recommended - was significant (47%) only with the full recommended dose of fertilizers.

However, the research did not take into account the labour costs of the different practices and it seemed inconclusive. Similarly, the result of trials on different cultural practices for direct-sown crop (broadcasting; sowing behind the plough in lines; and sowing in line with a marker - closer than behind the plough) showed the latter method to be the most effective in increasing yields but the results did not indicate the differences in labour input.

The 'on-farm' research data collection of the IBFEP is, in this respect, more useful than the adaptive trials programme; although the collection of such data is particularly demanding on the time of the Assistant Agronomist whose main function is extension and input supply.

In Puri this research has attempted a cost/benefit ratio on three paddy varieties (the HYV CR1009 ; the local improved CR1014; and a local unimproved) with three separate treatments (transplanted with fertilizers as per soil test recommendations; direct seeded with the same dosages; and direct seeded with only farm manure). As always in such trials, distortions occurred. For example, the basening of the direct seeded crop was unusually delayed because of the early drought. But the exercise, by observation, estimated the relative costs of labour inputs at each stage of cultivation and post-harvest processing, and also put a value on inputs such as farmyard manure and by-product outputs such as straw. Not surprisingly (in an area of assured irrigation and a level of technical support which must have amounted to a minimum yield guarantee in the view of cultivators) the best returns were to transplanted HYVs

with recommended treatments of fertilizer (as per soil test) and plant protection materials, but the precise figures may be less important than the insights gained into cultural practices: for example, the difficulties experienced by cultivators in applying fertilizer at the correct time in a direct seeded crop, partly because of the problems of weed infestation (see Table 4.3).

Table 4.3: IBFEP On-Farm Trial Data from Gobardhanpur, Puri District 1982/83 (Quintals per Ha)

VARIETY	TREATMENTS		
	1	2	3
HYV CR1009	66.6	61.5	30.1
Local Improved CR1014	39.6	28.8	18.0
Local Unimproved	27.0	20.7	13.5

Treatment 1 : Transplanted with recommended doses of fertilizers

2 : Direct seeded with recommended doses of fertilizers

3 : Direct seeded with only organic matter.

Source: HFC, Puri.

1.4. Input Demand and Services

The level of demand for improved seeds, agro-chemicals and - as a possible corollary - technical advice and credit, is much higher in Nimapara than Rairangpur. The following table on pesticide consumption illustrates this (Table 4.4).

Table 4.4: Pesticide Distribution: Department of Agriculture
1980-82

	1980/81		1981/82	
	Solid (kg)	Liquid (Lit)	Solid (kg)	Liquid (Lit)
Rairangpur	1,860	120	2,200	145
Nimapara	37,200	1,012	38,000	850

Source: Department of Agriculture.

Another difference is that whereas in Rairangpur Block most cultivators are compelled to visit Rairangpur town itself to obtain inputs, in Nimapara there are other small market towns where banks and dealers operate. Balanga has a population of around 5,000 and both Harispur and Bhodra (which have AEO circle headquarters) - like Nimapara and Balanga - have seed stores, co-operative societies and at least one permanent private dealer. There are, in all, 25 private retail outlets in the Block, ten of which are trading throughout the year and dealing only with fertilizer and pesticides.

Nimapara has four banks: the Puri Central Co-operative Bank with 31 affiliated PACS throughout the Block; the Puri Gramya Bank (sponsored by the India Overseas Bank) with four branches in the Block, the SBI, and the United Commercial Bank, which is the lead bank for the District. The PGB is the only bank (PCCB apart) with a branch network.

Only 18 of the PACS deal in fertilizer, although some handled as few as 80 bags in kharif 1982. Their main source is the Regional Co-operative Marketing Society based in Nimapara. They can also buy from private dealers but this does not appear to happen very often judging by evidence from the dealers themselves.

The supply of certified foundation seed is primarily the function of the Department of Agriculture in Nimapara. This

seed is from Government farms (some of which are now nominally under the Orissa State Seeds Corporation) or the National Seeds Corporation. There are a few private seed dealers in large towns such as Bhubaneswar (50km from Nimapara) who supply an estimated 50% of the formal demand in the areas close to the town but only a small percentage of the Nimapara market. The 'formal market' itself meets only a small percentage of demand. An HFC estimate for Puri District is that 5% of total demand is met by the Department, 5% by private dealers, 40% by exchange between farmers, and 50% by farmers' own supply. Generally, this level of supply is sufficient to meet current levels of demand for seed, but there are difficulties in distribution in special circumstances. For example, in kharif 1982 the incidence of, first, floods and then drought meant a major loss of HYV paddy and a deficiency in seed for rabi planting of the same crop.

In Nimapara's neighbouring Block, Pipili (for which estimates are available) there was 7,000ha of irrigated land available for rabi planting of HYV paddy in 1982/83. This required 3,500 quintals of seed materials (for which an estimated 1,500 quintals were available from cultivators); but only 320 quintals were available to meet demands in December, with another 350 quintals of seed yet to arrive from the National Seeds Corporation. As a result, an estimated 2,000ha was unsown either because of non-availability of seed or because of an unwillingness by cultivators to purchase at the prevailing black market prices.

However, I should add that deficiencies on this scale in Nimapara Block (which was also affected by kharif disasters, although not as severely) were not evident from my own farm interviews and the problem of seed availability appears to be over-stated by government officials who report higher than likely production targets for HYV paddy.

1.5. IBFEP

In Puri District, there are four Blocks in which the IBFEP is being implemented. Overall, the programme covered 150ha in 1982 rabi, which included 6ha of summer til following a potato crop on 52ha. The total subsidy disbursed was Rs95,000 to 848 cultivators. In kharif 1982 the programme was expanded with the intention of covering 60ha per cluster: ie. 480ha. In practice 450ha was achieved with 300ha under HYV paddy.

In Nimapara the two key villages are at Balanga and Bishnupur (one of the villages visited for farmer interviewing). In rabi 1982, Balanga had 4ha of groundnut and 25ha under potato yielding 196 quintals per ha (against 165 quintals with 'cultivators' usual practices'). Bishnupur had only 13ha of groundnut and 3ha of potato under demonstration following delays in agreeing on village selection with the Department. There were 45 IBFEP cultivators in Bishnupur at the time.

However in the following kharif, Balanga had 60ha under paddy and Bishnupur had 55ha. In Bishnupur, this was made up of 42ha of HYVs and - on lower land - 13ha of local improved varieties. In Bishnupur, 116 cultivators joined the scheme, including most of the 45 who had benefitted the previous rabi.

Nimapara's IBFEP programme is unlike Rairangpur, where one Block Agronomist can supervise four AAs in the near vicinity because they are all within 20 minutes of Rairangpur by motor bicycle or one hour by bicycle. For Nimapara, the Block Agronomist is based in Bhubaneswar (around two hours away by car, and half-day distant by public transport); and within the Block itself, the two village clusters are at different ends of Nimapara. As a result, the single AA for Bishnupur (which is close to Nimapara) works in relative isolation from supervision and support.

1.6. Irrigation

In Nimapara Block there has been a process of land consolidation in 85 villages following the design of a field canal flow system and land development. This has meant the building of sub-minors, the final link in the chain of main canal, branch, distributary and minor canals.

The process of consolidation and on-farm development is generally reckoned to have brought at least 30% more land in individual Nimapara villages under cultivation; and in some cases up to 80% more land. But overall only 3,500ha of Nimapara has been improved, out of a total area of over 25,000ha.

The reason for the delay in further development is lack of CADA staff, especially surveyors and chainmen and at the supervisory level. Below Assistant Engineer there are only four sectional officers covering the entire Nimapara sub-division. According to the Assistant Engineer the reluctance of cultivators to consolidate their holdings and - occasionally - accept slight losses of land assets in return for compensation has been less important. However, where there have been difficulties these have been in the more prosperous, and larger, villages where it is felt that higher land values and higher levels of party political rivalry generate greater conflict.

In the villages covered in this study, only Satkalia has been subject to consolidation but this has been ineffective due to inadequacy of flow in the sub-minor systems leading to illegal off-take and damage to the canals.

2. The Input Suppliers

2.1. The Department of Agriculture

a) Seed

There are four Department seed supply centres in the Block with Nimapara as the main centre and only permanent store. The three other sales centres coincide with AEO circles and at each rented store a VAW is responsible together with

a labourer who is paid Rs8 per day. The distribution from each centre is illustrated by the following table covering the 1982/83 season to the end of November.

Table 4.5: Seed Distribution in Nimapara Block 1982/83
(quintals)

Seed	Nimapara	Harispur	Tulaispur (Bhodra Circle)	Balanga	TOTAL
paddy	172.0	49.5	47.3	50.0	318.8
wheat	30.4	6.0	9.6	4.0	50.0
mung (green gram)	12.0	3.0	6.0	4.0	25.0
biri (black gram)	42.0	8.0	10.0	10.0	100.0
ahrar	7.0	1.5	2.9	3.0	14.4
mustard	4.8	1.5	3.4	1.8	11.5
groundnut	269.3	5.0	5.0	0.7	280.0
ragi	9.5	-	5.5	-	15.0

Most of this seed is issued on a subsidy basis to small and marginal farmers with a permit from the VAWs. In Tulaispur the store which was rented for Rs60 per month, was open from 8-11 in the morning and 3-5 in the evening. As a result the VAW responsible for the stores only visited a few neighbouring villages, on what appeared to be an irregular basis. At the store itself, however, only 30/40 cultivators normally arrived each day to purchase seeds - normally in 1-4kg amounts. Sales of 1 quintal per day were normal (the total sales in the 1982/83 season to November were only 119 quintals), although small quantities of pesticides were also available at certain times for issue to CAP cultivators. Only a small proportion of seed appears to be sold without subsidy at these local centres.

b) Extension

There are 25 VAWs in Nimapara Block, each providing advisory and other services to around 16,000 cultivators. All work to a fixed schedule and only a few have difficulty

in walking or cycling to their units on the designated day. The exceptions are in areas strung out in hamlets in the low lands (see Salanga below) and in areas where VAWs have been put in charge of seed stores and cannot undertake visits to all their villages.

Mr K. Nayak is the VAW for Billigram Circle which includes Bishnupur where he has two extension units. (Bishnupur is virtually an extension of Nimapara town, but the AEO circle is at Bhodra, 10km away, with the seed stores for the circle 2km further away at Tulaispur.)

Mr Nayak had been a Gram Savak since 1964 in Cuttack and Puri Districts. His work had included supervising road and tank works, vaccination campaigns and the formation of women's and youths' clubs. As an agent of the co-operative department, he has also been involved in issuing fertilizer and loan forms, but not credit recovery. During the IADP period in the mid 1960s he had been involved in agricultural work but it was not until 1977 (when many VLWs were transferred to the Department of Agriculture) that Mr Nayak came to regard himself as primarily an agricultural extension agent. However his current duties, while predominantly agricultural, are not wholly concerned with extension. As with his counterparts in Rairangpur, he had been involved in a major DRDA exercise and threequarters of the villagers in his circle had been surveyed and potential beneficiaries identified.

In input supply, Mr Nayak remains a crucial figure to the cultivator. To the co-operative societies, he is responsible for determining fertilizer requirements for individual borrowers and in the 1982 kharif he helped around 30 PACS borrowers to complete their application forms. To the commercial banks, Mr Nayak is responsible for submitting identification notes for borrowers eligible for subsidy schemes.

As for the Department's own activities, the main input supply functions are in seed supply and support for CAP

cultivators. Permits for subsidised seed (mainly paddy, groundnuts and mung) were provided by Mr Nayak to 220 cultivators in the 1982 kharif. The limitation on seed eligibility was 0.4ha per cultivator rather than size of holding. As a result, larger farmers were able to acquire seed on subsidy. Demand for subsidised seed, and for the 48 available paddy minikits was intense. Mr Nayak said that he gave priority to the more progressive farmers who would receive the highest yields for improved varieties.

The 'progressive farmers' were also chosen as Mr Nayak's 'contact farmers' and all of these were also cultivators in the CAP (or MAY Programme as it is often termed in Nimapara). In fact Mr Nayak - in translation - used the term 'contact farmer' to cover all of those participating in the CAP. He claimed to have arranged a minimum area of 10ha of paddy per village under CAP including plots of CR1014, CR1009 and Ratna and in one village he had an 30ha CAP. In Bishnupur, however, there was some overlap between IBFEP and CAP plots. In fact, both IBFEP and MAY boards were erected on the same plot of CR1009.

In the majority of cases under the CAP in Billigram Circle both fertilizer and pesticide had been provided free-of-charge. In the case of fertilizer, this was a basal application of Gromor for all paddy varieties and a top dressing for CR1009 cultivators. Pesticide treatments were prophylactic nursery applications and BHC dusting in patches of insect infestations.

The VAW for the Salanga Circle, within the AEO Nimapara Circle, is Mr Benudhar Paikaray. I asked to meet him in particular because I visited hamlets in one of his units (Unit 4: Salanga and Satkalia) and it seemed an unwieldy unit given its size and the difficulty of access to outlying hamlets - such as Satkalia - in the wet season. Mr Paikaray said he spent 3 to 4 hours in a 9-hour day simply travelling between contact farmers and demonstration areas. He also claimed that cultivators from the outlying hamlets attended his afternoon group

meetings. However neither of these claims were supported by evidence from cultivators in Satkalia who reported irregular visiting and non-attendance at meetings.

Mr Paikaray had been in service since 1966 as a VEW in the Panchayat Department. Prior to his transfer to the Department of Agriculture he estimated that 50% of his time was spent on agricultural duties, including credit and fertilizer administration. Currently, he is spending less time than other VAWs I interviewed on DRDA work; but in his area there had not been a household survey. He has, nonetheless, handled around 200 applications mainly for dugwells, cattle and shops. This involves receiving individually-written letters and possibly land certificates and other documents from prospective borrowers which he then authenticates by signature and passes on to the AEO.

On seasonal lending, Mr Paikaray is involved as a member of the Ohala PACS management committee. In the 1982 kharif season, 132 applications had been received and forwarded but only 18 received sanction from the PCCB. Applications from defaulters continue to go forward, as the committee claims that there is an intention to repay loans in the period before a further loan is issued. In effect, therefore, there is no real screening of loan applications at this stage and it would appear that the role of the management committee - meeting only monthly - is simply to delay consideration of applications. Yet the consideration of applications does have another purpose as the estimates of PACS fertilizer requirements are based (not always correctly) on the number of loan applications that are likely to be successful. On the other hand, there is no serious attempt to assess likely cash demand for fertilizer and when bags arrive it is the credit customers who get first priority in Ohala. In practice, however, the Society only received 15 bags of Urea and 60 bags of CAN in 1981/82, all of which was disbursed.

Ohala is not, in fact, Mr Paikaray's circle; but Salanga's own PACS has ceased trading altogether, although it still

employs a secretary and a watchman (at Rs150 per month). The rented premises belong to a committee member who has refused permission for the building to be used for bulk items such as fertilizer. The two-room premises are used only for meetings.

As with other VAWs interviewed, much of the efforts of Mr Paikaray on technological improvement had been concentrated upon selected, collaborative cultivators. These had been recipients of minikits for paddy (especially CR1009), groundnut and ahrar. A few 12ha CAP plots had been established, but elsewhere there were much smaller plots. In one case, a single cultivator with 0.1ha represented the entire village CAP. CAP farmers received free pesticide treatments, and fertilizer where community nurseries had been established. Most, but not all, of the 70 designated 'contact farmers' in the circle were beneficiaries of the CAP. The main VAW contact with other - non-CAP - cultivators was for seed supply, where 120 permits had been issued for subsidy purchases.

c) Training and Recommendations

The regular training of VAWs is the main feature of the T and V system when considered in terms of the allocation of Department of Agriculture staff resources. Subject Matter Specialists, in particular, spend a great deal of time either attending training courses or as part of trainer groups preparing the fortnightly VAW training sessions. The preparation for such sessions is very intensive in administration terms. Vehicles are allocated to take officers to the meetings for a season ahead, meals have to be arranged for the all-day sessions, rooms in schools booked and, above all, message sheets and other materials have to be delivered at the appropriate place. It requires a level of organisation which many Ministries of Agriculture in Idcs might find difficult to sustain.

I attended one of the fortnightly sessions. It was held at a school in Balanga, one of three sites used in rotation. The ADAO and two SMSs were in attendance with five AEOs (two were absent, apparently on other duties including seed distribution). There were eight vacant VAW posts at the time of the meetings so 36 should have attended. In fact only 28 turned up, including 10 who were between 15-30 minutes late. There was no immediate investigation into non-attendance but I gathered that illness and bicycle difficulties (as well as other duties) regularly prevented full attendance.

The session, as prescribed in the Range training guide, began at 9am with a detailed discussion of the recommendations for the following fortnight on paddy, wheat, potato, groundnut, mustard and sugar cane. Fertilizer application rates, water management and disease prevention received specific attention crop by crop.

In this case, there were no field visits as the venue for the session precluded this, but at an earlier session I had attended at the Sakhigopal Adaptive Research Station, two hours had been spent in the trial fields and this included specimen collections which were later discussed in the classroom.

Some of the messages discussed were taken straight from the Department's Agricultural Guidebook and some were of the most rudimentary nature (more or less saying 'now is planting time for aubergines, cauliflower and cabbage').

The late morning and afternoon sessions were concerned with discussions on the technical difficulties encountered with earlier recommendations during which the SMSs in particular gave explanations of 'solutions' that should be adopted. In Sakhigopal this problem and solution approach was formalised by giving single-side sheets with room for 1-10 problems to be listed. These included 'groundnut crop wilting', 'grasshopper at panicle

initiation stage', 'rotting potato seed', 'moisture stress in paddy' - in other words, problems that cultivators reported as reasons for poor performance in demonstration plots, and also problems which showed the VAW in a favourable light: 'safe' problems, observing the obvious and - in a sense - excusing the lack of extension impact.

The problem session at Balanga was similar to the one I had attended previously in a neighbouring ADAO Circle at Sakhigopal. 'Problems' were specific technical difficulties confronted in the extension messages. These included the poor germination of a recommended variety - CR1009 - and cases of rotting potato seed (apparently due to length of time spent in cold storage with the Department itself). Other problems concerned pests and diseases (especially smut). There was no discussion of the cultivators' response, or lack of it, to previous recommendations - the most important of which were on field preparation and planting of wheat. The new messages were based upon the Guidebook, although there was evidence of adaptation in the discussion of increasing the recommended seeding rate for wheat as the colder than expected weather had reduced germination.

At neither Sakhigopal nor Balanga was there a serious discussion of input supply problems. This took only 10 minutes in Balanga, although at Sakhigopal there was a longer discussion of irrigation supply difficulties. In both cases, the input supply problem (irrigation aside) was primarily a problem of VAWs having insufficient information on seed availability to convey to the cultivators. On neither occasion was the supply of fertilizer and credit raised as an issue.

There were a range of possible other activities at the VAW session to take up the rest of the day. At Sakhigopal there was a review of different circles, and selected VAWs practised relaying messages to cultivators by addressing the group who then cross-examined them. In Balanga, the morning work on recommendations was repeated

in the afternoon in a more succinct way after the double-sided recommendation sheets had been distributed. There was also a checking of diaries at Balanga.

The conduct of staff throughout was businesslike and respectful. The SMSs and AEOs - sitting on chairs - clearly enjoyed what was regarded as their command of the subject matter and they were listened to in silence but with an attention that did not appear to be simulated. When it came to their turn to speak, most VAWs - sitting on the floor - rose to their feet and spoke clearly and to the point. There was no sign of the excessive deference that is often felt to be a weakness in Indian bureaucracy. Nonetheless, the overwhelming impression that I had was of a technically oriented Department unwilling to discuss what could be termed the social and economic issues of crop production. There was certainly little discussion of extension methods, and no consideration of the relative performance of CAP plots and those of cultivators outside the CAP.

The technological orientation of the training session is a reflection of the Department of Agriculture's general emphasis upon a transfer of technological packages and the priority that should be given to the implementation of recommendations among contact farmers. In the Puri Range Training Manual for 1982/83, for example, it makes clear that:

"The T and V programme essentially provides for transfer of know-how from SMSs to farmers through AEOs and VAWs. Hence it is necessary to equip SMSs with basic knowledge and guidelines on the growing of different crops and technology for higher production so as to make them more effective and self-reliant in knowledge content and in the transfer of practical technology to the field level.

The Manual continues:

"It is the responsibility of each VAW to ensure implementation of various recommendations received by them in each of the fields of at least 10 contact farmers while influencing as many others as possible. This should be ensured without fail. Contact farmers may be changed in case they are not willing to work with VAWs, It will be the responsibility of the AEOs to ensure

that all contact farmers are being effectively contacted by the VAWs and various recommendations are effectively demonstrated on all fields of the contact farmers".

It would be wrong to assume that this directive approach to extension work necessarily means that social and economic constraints to adoption are neglected and that, as a consequence, the recommendations are likely to be inappropriate to a large number of farmers. But the approach clearly neglects the possible role of VAWs in providing information on the suitability of various recommendations for particular categories of farmers and it clearly relegates the importance of VAWs in understanding the reasons for non-adoption of recommendations. The conduct of the training sessions and particularly the discussion of 'problems' - is an illustration of the general approach.

2.2. Hindustan Fertilizer Corporation

The operations of IBFEP in Nimapara are in two clusters: Bishnupur and Balanga. This study concentrates on Bishnupur and its neighbouring cluster villages of Dirapur and Terundia, although by kharif 1982 only Bishnupur had received support.

In theory the selection of IBFEP demonstration sites within villages is determined by land type, accessibility for field visits by other cultivators, and potential for yield improvement. In practice however, the sites are identified only after the AA (with the help of the VAW in the case of Bishnupur) has spoken to a large number of cultivators and it is eventually the cultivators themselves who select the various sites. In general, the 70 demonstrating farmers in kharif 1982 were cultivators with a previous record of collaboration with VAWs and adoption of new varieties. There was a bias - although not an overwhelming one - towards larger cultivators, as Table 4.6 indicates.

Table 4.6: Size of Holding and Demonstrating Farmers in Bishnupur

<u>Holding</u>	<u>No. of Farmers</u>	<u>No. of Demonstrators</u>
Medium/Large	32	9
Small	65	32
Marginal	187	29
Landless	72	0

While 28% of medium/large farmers and 50% of small farmers were included in the IBFEP (which is designed for small and marginal farmers); only 15% of marginal farmers were included.

The low percentage of marginal farmers can be explained partly by the fact that well over half of them have less than 0.4ha and therefore the majority are primarily agricultural labourers who do not make themselves available for technical advice on improved farming.

Of the 70 IBFEP cultivators in Bishnupur only 11 sought loans from the Puri Gramya Bank (which has a branch just outside the village on the outskirts of Nimapara). However 20 cultivators (out of 45) were still overdue from their previous IBFEP rabi loan and were thus ineligible. This was largely due to the poor performance of groundnut (around 9 quintals per ha against an anticipated 20 quintals).

The great majority of cultivators had also purchased seed treatment materials on subsidy, but fields with HYV paddy had attracted Brown Plant Hopper in the kharif and, free of charge, BHC dust had been distributed. The dusting itself had been done by selected cultivators on behalf of the rest of the group in each of the three IBFEP plots. This action had been facilitated by an IBFEP village-level committee which meets twice in a season. Two cultivators are members plus the AA, the BDO (who is chairman) and the AEO.

The extension work of the Department of Agriculture has overlapped to a considerable extent with the activities of IBFEP. There are two units in Bishnupur in the VAW Circle. In one of these (Unit 6) all eight contact farmers are included among the IBFEP demonstration group. On the whole they represent the larger farmers; six have more than 2ha and the remaining two both have 1.2ha. In the second unit (Unit 2) four of the contact farmers are also demonstrating farmers. One has 7ha, and all of the other three have 2-3ha each.

As the interviews below indicate, most of these larger Bishnupur farmers who were benefitting from subsidies and technical support in 1982 have been using fertilizer and improved planting materials for some time.

The work of the AA in Bishnupur involved much more than supporting demonstrating farmers. Training Days, in particular, are a major feat of organisation. Thirty to forty farmers attend from 8am - 6pm so meals have to be provided. The ADAO is invited, the District and Block Agronomists from HFC, Subject Matter Specialists, the Irrigation Engineer, and in the Bishnupur case, the Agricultural Officer of the SBI.

The time available to the AAs for technical advice and organisation of input supplies is curtailed by these tasks of administering meetings, but a more serious curtailment has now arisen because of the requirements of a major survey and monitoring exercise. In addition to this work, there are the routine crop surveys to be done. This crop cutting work takes place with considerable ceremony with - on the occasion that I witnessed it - three staff (AEO, Block Agronomist and AA) in attendance for three hours for a 5m x 5m demarcation, cutting, threshing and weighing. This was done in the presence of curious neighbours, however, and the demonstration impact of such a show of official interest should not be discounted.

2.3. Co-operatives

The Nimapara Regional Marketing Co-operative Society is normally the only source of fertilizer to the 18 PACS active in farm input supply, but as the following table for kharif 1982 indicates, the volume of trade is often very small.

Table 4.7: PACS Fertilizer Sales: Nimapara Block
Kharif 1982

<u>PACS</u>	<u>Fertilizer</u> <u>(bags)</u>
Tulaispur	641
Barimundaninigaon	280
Dandipur	256
Dhaleshwar	238
Bhagabahpur	225
Arisandha	166
Kanatiakanpur	141
Hariathenga	120
Nusantha	92
Bhilligram	85
Renghalo	82
Chala	75
Srinusingha	71
Renchasasana (Harispur)	66
Ekamanakana	60
Anasalo	60
Gadatorihan	54
Bhodra	36
TOTAL:	2748

The following table indicates the emphasis upon the lower cost fertilizers, such as CAN - a nitrogen top-dressing - and the relative unimportance of recommended compounds such as NPK and Gromor (Urea Ammonium Phosphate).

Table 4.8: Type of Fertilizer Sold in Nimapara PACS,
Kharif 1982

<u>Fertilizer (NPK)</u>	<u>Amount (bags)</u>	<u>Cost per bag (Rs)</u>
CAN (25:0:0)	212 ⁴	83
Urea (46:0:0)	42 ⁴	122
Shymala (NPK) (15:15:15)	6 ⁴	130
MOP (0:0:6)	39	67
Superphosphate (0:16:0)	37	50
IFFCO NPK (10:26:26)	37	154
Gromor (28:28:0)	23	187

The source of loans for the PACS is the Puri Central Co-operative Bank which has a branch in Nimapara. Its crop seasonal lending is larger than the three commercial banks together. In 1981/1982, Rs575,522 was sanctioned against a total of Rs636,000 for the three commercial banks. In kharif 1982, however, the PCCB lent an estimated Rs481,000 while the commercial banks lent only Rs211,000. There were also an estimated 1,800 PACS borrowers (with an average loan of Rs270) against only 170 Bank borrowers (with an average loan of Rs1,300).

By November 1982, only 672 PACS members had received loan sanctioning from PCCB under the IDRP. This is because out of a total of 15,321 PACS members in Nimapara, 7,399 are ineligible for loans because of overdues. Many of these are old accounts, but current borrowers do not have such a poor record.

Of the Rs575,522 sanctioned in 1981/82, Rs459,400 had been recovered by October 1982: a recovery rate of over 75%. The figure for fertilizer consumption (or lifting) illustrates one of the reasons for this relatively high rate of recovery. In crop seasonal loans, 40% of the value of each application is for cash with the remaining 'scale finance' to cover seed, fertilizer and pesticide.

In practice, however, this 40% kind component is not fully drawn down and an artificial 'recovery' is assured. The figures on fertilizer lifting illustrate this particularly well.

In kharif 1982 when total sanctioning for crop seasonal lending was an estimated Rs481,000, only 2,632 bags had been lifted (at a value of approximately Rs230,000). Even allowing for the non-fertilizer 'kind' component (of seed especially), this represents a significant shortfall between anticipated demand and actual supply. One possible reason is that the RCMS and the PACS simply fail to deliver fertilizer at the time it is required by borrowers.

The evidence of most farmers supports this possibility. Furthermore, the transporting capabilities of the RCMS also appear to indicate a general deficiency in meeting farmer requirements. There is a single 10ton truck, manufactured in 1964, supplying 85 PACS (in four Blocks), 50 of which have some demand for fertilizer. Yet this interpretation of low levels of lifting by borrowers does not take into account evidence of considerable efficiency in the co-operative supply system. The single truck had been operating a 5-day week throughout the kharif season; PACS are mostly only 5-10km apart; all the societies using fertilizer have a watchman/labourer; and they have an average storage capacity well in excess of requirements even on a fortnightly delivery basis. Furthermore, only small amounts of delivered fertilizer are unlifted (the gap between RCMS issues and lifting by all PACS members was only 192 bags in 1981/82 and stood at 232 bags in kharif 1982).

There is an alternative explanation of low levels of lifting by PACS borrowers, which suggests that complaints about timely supply are sometimes a pretext for failing to lift the amount requested on the loan application. In practice, many loan applications are deliberately inflated on fertilizer requirements in order to increase the volume of the cash component. As the cash component is issued by

the Secretary after loan sanctioning, there is no incentive for the cultivator to return to the PACS to lift fertilizer. On the contrary, if he does not need the fertilizer he has requested, he has every incentive to complain about late arrival, short weight, adulteration, inconvenient store opening hours, and so on as an excuse for not drawing upon his loan in kind.

There are, nonetheless, difficulties created for cultivators in co-operative performance, particularly in the processing of loan applications. Cultivators obtain application forms from the PACS for only five paise, and - assuming they have paid their minimum initial share capital of Rs5 and established their land rights on joining the society - it is not as difficult to submit a loan application with the PACS as it is with most commercial banks. But the management committees of the PACS (which include either the AEO or VAW) rarely meet more than two or three times per month even in busy periods, and the process of loan sanctioning, from society recommendations to PCCB approval, can take 6-8 weeks. There are often difficulties at the PACS management committee level where the convening of meetings can be hampered by disputes between secretaries, other officials and members. The disputes themselves are illustrative of the difficulties in administering lending. Accusations of fraudulent recording of loan issues are one cause of dislocation, and four PACS have been dissolved over the past two years in Nimapara because of alleged corruption.

All the PACS in the Block have full-time secretaries who also act as store-keepers. They normally open from 8-12am and 2-6pm, but there are days, apparently unpredictable, when the stores are closed because the secretary has been called away, and late opening appears to be common. Cultivators, furthermore, do not have much confidence in the probity of co-operative staff. The secretaries are effectively appointed by the PCCB and the Department of Co-operatives. Not all are part of the Government of

Orissa co-operative 'cadre' and it was the view of the PCCB branch manager that non-cadre staff were generally unsuitable for their responsibilities. He said that they would all be replaced in time. At the RCMS level, the secretary is at the rank of Sub-Assistant Registrar. He has an accountant, cashier, clerk, consumer stores clerk, storekeeper, two watchmen, driver and various labourers to manage stock in four separate warehouses. But in 1982 the secretary had three members of his staff suspended following charges of misappropriation.

2.4. Commercial Banks

There are three commercial banks operating in Nimapara Block. The lead bank (UCB) now makes no contribution to seasonal production credit activity; and both the Puri Gramya Bank and the SBI have only a modest lending programme.

The longest established bank is the United Commercial which began operations in 1970. In that time 586 borrowers (mainly in Dhenua and Dhaleswar villages) have received loans and by the mid-1970s the value of seasonal disbursements were in the region of Rs300,000. But as the level of default increased and overdues mounted, there was a curtailment of seasonal lending. At the end of 1977/78, Rs124,333 was outstanding on seasonal production credit; in 1978-79, Rs486,078; in 1979-80 Rs518,459. With this poor record of recovery (85% of borrowers in default) the value of seasonal lending declined to Rs110,000 in 1981/82 with 105 accounts, and lending was stopped entirely in kharif 1982. There were no plans to resume seasonal lending operations.

The pattern for medium-term lending is different. Since 1979/80 the emphasis has shifted to IRDP and ERRD lending under pressure, according to the Manager, from the BDO to deploy available staff to processing loan applications under these programmes. The Assistant Manager spends at least a third of his time on the programmes and the one

field officer in post (who has a motor bicycle) spends 90% of his time processing medium-term IRDP loan applications. The Manager could not see any prospect of resuming seasonal lending - or launching any effort at loan recovery on past seasonal loans - with his existing staff.

The Puri Gramya Bank has four branches in Nimapara Block, although only one (at Bishnupur) is close to the town itself. This branch is also the most recent and had been lending for three seasons when I visited in kharif 1982. For seasonal production loans, a total of Rs126,279 had been disbursed by the end of the first two seasons. This was on only 103 accounts.

At the beginning of the 1982 kharif, Rs94,196 remained overdue on 68 accounts. In kharif 1982 itself, Rs109,800 had been lent to 70 borrowers including 11 IBFEP cultivators. In addition, 334 medium-term accounts have been opened under either DRDA (327 accounts) or ERRP (7 accounts). This remains, however, a very modest lending operation for a bank established primarily to extend agricultural credit to small and marginal farmers.

The branch has only a manager, two cashiers and a messenger. The manager does not have access to any vehicle and does not own a bicycle. Seasonal borrowers must visit the branch office for all aspects of transaction. For new borrowers this normally involves several visits especially if certain documents (such as letters of guarantee with proper identification) are overlooked by the borrower. In practice, there are no borrowers further afield than Terundia, 10km distant. The low rate of recovery, explains the Manager, is due to the difficulty of applying pressure on borrowers without any field staff.

The SBI similarly only began lending in the 1981 kharif. It began with 200 accounts and it was estimated that 50% of these were overdue at the outset of kharif 1982. The total number of existing crop season accounts stood at

400 at the time of my visit. In value terms this amounted to Rs244,000 disbursed in kharif 1981, Rs166,000 in rabi 1981/82 and Rs102,000 in kharif 1982. Like the PGB, there has been a swift decline in seasonal lending operations.

This is due to poor recovery, rather than lack of administrative capacity to cope with new levels of demand. The capacity of SBI for agricultural lending is significantly greater than that of PGB. There is an Agricultural Banking Division with its own Manager, supported by an Agricultural Loans Officer primarily concerned with crop season lending and two officers concerned with medium-term lending under IDRP. The Agricultural Loans Officer also has a motor bicycle.

He is responsible for 30 villages, and the Manager felt that a single officer should be able to administer at least 500 accounts per season and that his officer was working well below capacity. The work of the officer involves visiting villages to discuss loans and returning later to collect application forms. (Apparently, in the case of Nimapara SBI branch, there was no attempt to co-ordinate these visits with the schedules of the VAW.) The officer is also responsible for checking the applicant with other banks; but as there are no overdue certificates in use this involves visiting other banks. Other documents are also checked by the officer, although for loans below Rs5,000 (the great majority of seasonal loans) this does not involve investigation of land title.

Once loans are sanctioned, the officer disburses cash and the delivery orders. For fertilizer, this is mainly from the RCMS. Unlike the case of co-operatives, Commercial Banks provide cash for seed requirements, but the cash component (up to 50%) can be partly withheld so that the officer is able to release the balance following a farm visit to establish that the planned cropping has taken place.

2.5. Private Dealers

Nimapara has a number of small fertilizer retailers, some of whom also deal in pesticides and vegetable seeds. In Nimapara itself there are three dealers (all next to each other in the market) with small storage sheds. There are other dealers - in most cases dealing in a wider range of goods - in the villages of Talaispur, Bhodra, Haripur, and at Balanga where there are three dealers.

Sudbakar Sahoo, in Nimapara, is a typical small retailer. His two neighbours in the market are relatives (a brother and a cousin) and his father had once owned the only private fertilizer sales outlet in Nimapara. His own stock was valued at Rs10,000 (just before rabi sales) and the three dealers together had a 15tonne capacity. His total annual sales had never been above 5tonnes (100 bags), which was more than his two neighbours as he had special arrangements with HFC.

He is not, in fact, the HFC agent in Nimapara: this is Shridar Sahoo, who is based in Balanga, the second largest town in the Block. Shridar is the only private wholesaler in the Block (RCMS is the main wholesaler) and Sudbakar is his sub-agent for HFC. Sudbakar is in this position as he is unwilling to embark upon a capital investment of around Rs40,000 which was needed to acquire a dealership. The consequence of this is that Bishnupur cultivators under IBFEP have had delays in delivery which has obliged HFC to make the special arrangements of having a sub-agent. DOs given to cultivators are made out to Shridar Sahoo, not Sudbakar Sahoo who is the supplier. Sudbakar gives credit to known cultivators usually for up to a month without charging interest. He had very few bad debts. He had more problems with SBI who made arrangements with him in 1981 for their seasonal production credit and held up payment for several months. He claimed that this delay led him to withdraw from SBI lending arrangements.

His hours, like Sharma's in Rairangpur, were early ones. He opened at 5am but 6-8am were his busiest hours,

followed by 5pm to 8pm in the evenings for nearby cultivators wanting very small amounts. Most of his morning customers came with bullock carts travelling for up to 10-12km. The high turnover (and low storage capacity) means that he hires a truck every month, sometimes twice a month, to get fertilizer from Bhubaneswar or Balanga. While he is away, his relatives take on the shop (something the co-operatives cannot manage). He is occasionally asked for technical advice but only by a few cultivators. At busy times, he may have 200 customers a week but only four or five will ask for guidance on fertilizer use.

2.6. IRDP

The scale of administrative effort involved in subsidies and medium-term lending under the IRDP is, at present, larger in Nimapara than Rairangpur. However, the BDO now only has 4 VAWs (including one specially designated for ERRP) available for the DRDA programme which has a target of disbursing a total of Rs8,000,000 per annum (including the loan component). He estimates that it will take five years to survey the entire Block. However in 1981/82 only Rs1,600,000 had been approved for Bank loans (400 accounts averaging Rs4,000) of which Rs500,000 was the subsidy component.

The four Banks each have an area of IRDP operations and the largest category of lending (in volume terms) has been for tube-wells, followed by bullocks and carts, goats, milch cows, fisheries and small shops. Most loans have a 33 $\frac{1}{3}$ % subsidy (for marginal farmers or low-income families). Defaulters are excluded from consideration unless debt rescheduling is agreed with the Banks. One difficulty in the scheme has been the rapid increase in prices following the new levels of (subsidised) demand. Milch cows are said to have risen in price by 100% (from Rs1,600 to Rs3,200) in just one year in the Nimapara market. Similarly, fodder prices have risen, and inferior animals are alleged to be dumped on the IRDP beneficiaries, sometimes in collusion with government and bank staff.

3. The Farmers

3.1. Bishnupur

Like Halda in Rairangpur Block, Bishnupur warrants particularly close scrutiny as it is the one village in the Block which has received - at least by 1983 - the benefits of both the IBFEP and the Department of Agriculture package of enhanced technical support under the OADP.

The statistical evidence of the previous section showed a disproportionate representation of larger cultivators in the selection of demonstrating farmers and some overlap between the CAP (or MAY programme) beneficiaries and the IBFEP cultivators. However, my own interviewing left a more blurred impression of access to public sector support than seemed evident from these statistics. Size of landholding in Bishnupur is not easily matched to an individual's cropped area because of the extent of sharecropping and other rental arrangements. Bishnupur 'village' is a series of small hamlets with around 15 families in each, including several exclusively Brahmin neighbourhoods. There are also a substantial number of absentee landlords as well as these non-cultivator Brahmin castes. As a result, in a village of around 70% landless and marginal farmers, there appears to be a considerable amount of land leased-in by cultivators of all levels.

Larger landowners appear to be unduly privileged in access to public services, but this is sometimes on behalf of a tenant who is sufficiently well-established to dictate levels of investment to the landlord. Similarly, there are small and marginal farmers on the list of beneficiaries who are in fact cultivating a much larger area. The upshot of this is that I see rather more evidence of a bias towards 'progressive', collaborating cultivators in Bishnupur than towards 'large' cultivators; and this bias towards the progressive

farmers is regarded by most Orissa agricultural staff as an entirely desirable extension approach.

From an agricultural perspective Bishnupur is a relatively well-served village. It has 479ha of cultivable land and 292ha of this is irrigated by canal. Insofar as the main canal system itself is reliable (in conditions of frequent flooding) most Bishnupur cultivators are reliably served by the Irrigation Department. Bishnupur is also close (4km at most) to Nimapara, the Department of Agriculture main sales centre, the fertilizer dealers in Nimapara market, the RCMS, and the various banks.

Hari Swain is both an IBFEP demonstrator and a MAY programme participant. He is an experienced user of loans and inputs but he remains a very cautious investor of scarce capital. He has 0.8ha of his own land but leases-in a further 2.4ha with two of his brothers with an arrangement for a 50% crop share. He is following recommended crop varieties: for example in kharif 1982 he had short duration paddy CR1009, as well as CR1014, allowing early planting of CR190, as well as mustard and groundnut, in the rabi. Yet on three high yielding paddy varieties he is able to sell only 10-15 bags (1bag = 75kg) at between Rs125 and Rs140 per year. The joint family is not particularly large (eight members), but surplus grain has to be used to hire bullocks and labour as well as to repay village consumption loans. (Neither of these forms of exchange are regarded as 'sales'.)

Hari Swain has been borrowing from the PACS for 8-10 years, usually at least Rs1,000 per year. In kharif 1982 he spent Rs658 on subsidized fertilizer and pesticides from a loan value of Rs1,500. This was in excess of normal use, but he did not intend to borrow at the same level the following year when the subsidy was removed.

Despite the level of technical and material support (as a minikit grower as well as a subsidy beneficiary) Hari Swain was not a well-informed participant in improvement programmes. Technically he had no difficulty in understanding messages, but he thought the VAW was an assistant to the IBFEP agronomist, who he assumed worked for the Department. He also failed to name the VAW's day of visit, although he knew it was fixed; and he had not attended any group meetings.

Chaitu Malik is also a tenant cultivator included in the IBFEP. He has 1.2ha on four plots cultivated jointly with his two brothers. He has leased in the same land for 15 years from a landlord who lives in Nimapara. In the rabi, only 0.1ha is leased in. The main family income is from labouring. Chaitu Malik himself estimates that he works for eight months a year on other fields. On his own fields he is planting CR1009 and has been buying HYVs for several years although he does not regard the Department as a reliable source. Normally he applies half a bag of Urea to his entire 1.2ha but under IBFEP subsidy he had purchased Gromor as a basal dressing and for the first time used the pesticide Gamaxine. He was doubtful if he would continue to use improved inputs without subsidy. There was not, he claimed, any difficulty with acquiring loans as a longstanding tenant, and although he did not know when the VAW visited, he was satisfied that he could get whatever technical advice he needed from his work elsewhere. The main reason, it appeared, for his lack of interest in improved inputs was his relative indifference to his own yield potential while income opportunities could be found in agricultural wage labouring in an area of high cropping intensity.

The third of the IBFEP cultivators interviewed in Bishnupur was Laxman Sahoo. He has only 0.4ha in a joint family holding of 1ha. He had previously leased-in 0.8ha but the landlord had now reclaimed the land that his father had been cultivating (possibly to avoid tenants' right to purchase legislation). He now leases-in 0.4ha for kharif HYV paddy

and rabi cropping of groundnuts and bringal. He kept 60% of the produce as he is using purchased inputs.

Despite his small land resource base and a large family of 13 Laxman Sahoo is relatively well-off. He had his own milch animals and oxen which he hires out; he has a son working as a peon in the Irrigation Department; and he sells vegetables and groundnuts in the Nimapara market. He has been cultivating Culture 28 for four years and has now introduced CR1014. He has also been using Urea at the recommended levels for top dressing, although since defaulting on a PACS loan he now has to buy directly. Under IBFEP he has increased fertilizer application (DAP and MoP were bought direct in the kharif) but in the previous rabi his IBFEP-supported investment in groundnuts (seed, fertilizer and additional labour totalling Rs1,300 for 0.2ha only) had not realized the anticipated returns and he remained uncertain about continued levels of inputs on paddy after the subsidy had been removed.

The two non-IBFEP interviewees offered a marked contrast: Nirranjan Dixit is a Brahmin who does not cultivate but works, for Rs250 per month, for the Public Health Department. He has 0.8ha which he leases to a single tenant well-known to his family. His rent is a crop share and he normally receives 10 bags of paddy in the kharif (ie. there is a yield of 35 quintals per ha). He claims to have arranged a Gramya Bank loan for his tenant and to have requested pesticides from the VAW. He also said that he checked his tenant's crop regularly. But he knew next to nothing about varieties and fertilizer and he could not name the VAW or his day of visit.

Kunja Malik is a Harijan shopkeeper although his small store has a turnover of only Rs20 per day from 10/20 customers. But he also has 1.2ha which is cultivated by his young sons. He does not have access to irrigation in the rabi and his kharif crop provides the staple food for his family of 10. He remains unaffected by the improvements introduced by other cultivators in Bishnupur. He still grows local paddy

varieties being unable, he claims, to afford the cost of improved varieties (at the exchange rate of $1\frac{1}{2}$ units of local grain for 1 improved). He also uses only cow-dung as a fertilizer although he could have joined the IBFEP. The reason why he did not was that he was unwilling to abandon broadcasting and could not afford the hired labour, seed or fertilizer. None of his family has regular paid employment. Cash was a major constraint, he claimed, especially since he had acquired a Rs1,200 PACS loan for a pair of bullocks which he was unable to repay.

3.2. Dirapur

Dirapur is also in the IBFEP cluster and, like Bishnupur, it is close enough to Nimapara for cultivators to lift fertilizer and seed directly from the town. It is a relatively rich village, with a number of two-storey houses and it was the only village I visited in Orissa where I saw privately owned cars. It was estimated by Department of Agriculture officials that 80% of cropped land was under tenancy, with a significant landowning, but Brahmin population (around 35 households out of a total 116 households). There are 64 households registered as landless or as having less than 0.1ha, but many of those are share-croppers. Unlike neighbouring Terundia (see below), Dirapur has reliable irrigation but it is a poor farming village with more income appearing to come from services and petty trading.

Nitei Swain is an exception to this record. He lives in a well-built joint family house (with electricity) where three brothers support a total of 27 family members (including 10 well-clothed children). Each brother farms separately. Nitei Swain has 0.6ha of his own and leases-in 1ha on a season-by-season basis. All of his total of 1.6ha plots are included in the 8ha MAY plot. On his tenanted land he gives only 25% of the produce to his landlord as, he says, he invests heavily in his crop and this leads to a higher effective rent than many 50% share croppers give. He was anticipating 60 quintals per ha from his kharif paddy. In

the rabi he had also grown improved groundnuts (AK 12-24) and biri for sale in the market.

He claims to have been a contact farmer for seven years (ie. before T and V was introduced) and had been planting HYV paddy for longer. He knew all the extension recommendations and was prepared to comment on them. For example, he had direct-seeded - against advice - in the kharif because he felt the fields did not need their normal period of rest following the early rabi harvest. He has also used a smaller fertilizer dose than recommended (50kg Urea and 50kg CAN) because of the risk of flooding in the kharif.

Nitei Swain had ceased to borrow from the PACS when, five years ago, his fertilizer had arrived 15 days too late and he was "compelled" to take it or otherwise lose the deposit already paid. He occasionally took village loans (at 50% rate of interest per month) for items such as pesticides or seed but in the past four seasons he had received various subsidies and grants from the VAW and had experienced neither supply nor capital problems in his farming. His main difficulty was that landlords were unwilling to lease their land to him as they feared that he would eventually find a legal way of taking possession.

I met Nitei Swain in the company of the HFC Assistant Agronomist and he was enthusiastic that the cultivator should become one of the demonstrating farmers in the IBFEP when it was implemented in Dirapur. Nitei Swain was the only cultivator I met in Orissa who knew both the names and respective responsibilities of the Block SMSs.

Bhima Khandi is also a contact farmer. He cultivates 1.8ha, all on a tenancy basis. He now pays a fixed rent to two landlords but for most of the past twenty years he has been cultivating the same land on a sharecrop basis. Legally, he could now seek title but he is fearful of doing this. He employs labour on his tenanted land and has his own bullocks. The landlord has no dealings with the VAW.

As a contact farmer, Bhima Khandi received a CR1014 minikit and free BHC dusting. From 1.8ha he expected a surplus of 10-15 bags of kharif paddy (some of which he would lend to his labourers) and he had also planted 0.1ha of groundnut and 0.4ha of pulses. Yet he had purchased only 1 bag of CAN. This was not because of credit difficulties: he found the PACS too troublesome to bother with, but the private dealers had allowed him 3 bags of Gromor on credit in the previous rabi. He simply felt that full amounts of fertilizer were an unnecessary expense in the kharif when HYVs were not planted. As a contact farmer he held out hope of a subsidy for the following rabi, and he thought that his selection as a contact farmer was because he already knew what to do with regard to improved cropping.

None of the other three people interviewed in Dirapur were fully engaged as cultivators. Brahmar Sethi is from the laundryman caste and he also manages a small shop in some form of arrangement with a Brahmin. His income from laundering is in kind from 40 families in the village and amounts to between 700 and 800kg of paddy per year. The shop takes Rs40-50 per day.

He also has 1.1ha which his son helps him to look after. In the kharif he had a small plot of CR190 which he wanted for rabi paddy seed and he was aware of the recommended fertilizer and pesticide requirements for HYV paddy. He was uncertain about the use of seed chemicals but said he was unable to meet the VAW because he had no time to go to meetings and his son would not go alone. He has been a defaulter with UCB for three years following the issue of a Rs700 rabi fertilizer loan which he had been unable to repay. In kharif 1982 he had purchased 1 bag of CAN for his entire cropped area, saying he could not afford more.

Bhulei Daler is also a shopkeeper and claims to be a money lender by virtue of debts outstanding to the value of Rs2,000. This is on takings of between Rs5-Rs10 per day and with a stock valued at Rs75 at the time of my visit. He was in debt to his wholesaler in Nimapara and could not

get more stock. He could not conceive of the day when stores such as his could trade in fertilizer because of the capital required and the risks of extending credit. He had 0.1ha of paddy and had planted CR101⁴ but without using any fertilizer. He has access to irrigation and last rabi had obtained a Rs100 co-operative loan for fertilizer. However the Secretary had disputed this figure and, according to Bhulei Dalei falsified the accounts to show an outstanding loan of Rs260. (Bhima Khandi had also suggested difficulties at the nearest PACS - at Terundia - and subsequently I learnt of a PCCB investigation into allegations of society malpractice.)

Bharsi Bhoi is a landless scheduled caste labourer with the Irrigation Department. He earns Rs150 per month for eight months of the year. Part of the food requirements of his family of five are met from 0.1ha of tenanted land in both rabi and kharif. He could, he says, lease in more than this but only if he worked for the landlord which he is unwilling to do because of his regular work with the ID. He pays 50% of the crop in the kharif and a fixed rate of 7.5 quintals (10 bags) per ha in the rabi. As he manages a yield per ha of around 25 quintals, this represents roughly 20%. Bharsi Bhoi does not have any dealings with the VAW, although he correctly named the day of his visit; but he has bought seed from the Department. He also bought 12kg of CAN (at a cost of Rs20) for paddy top-dressing. The amount purchased was what he could afford; he did not know the recommended dose. He had not considered PACS borrowing and the society requirements were unknown to him. Three years previously he had obtained a UCB loan for a pair of bullocks and a cart. He said that he did not in fact need the cart but had been compelled to purchase it. The loan of Rs2,800 remained outstanding and he could not see any way that he could repay such a sum. (In fact, the loan - which I checked - had been subject to a 50% subsidy and his debt obligation was only Rs1,400, but he still seemed unlikely to repay.)

3.3. Terundia

Terundia - also in the IBFEP cluster - is a large village, with 336 farming families, close to Dirapur and similarly convenient for services available in Nimapara. It has less favourable irrigation supply with many farmers on minor and sub-minor canals and much evidence of illegal bank cutting to fill tanks for rabi cropping.

Kalandi Palanta was the most successful cultivator I interviewed. He said he had spent several thousand rupees on litigation to acquire title to his 0.8ha tenancy. He had also taken direct action in withholding crop shares, which indicates that he may not have been typical of the share-croppers of the area. The 0.8ha has now been added to his existing 0.7ha of irrigated land and he appears to be operating at a level considerably above that of most of the cultivators I met. He has a large vegetable garden and a number of banana trees and cultivates both wheat and potato in the rabi. On his paddy crop (mainly CR190, T1242 and CR1014) he has 40/50 bags surplus to food requirements for a family of 12. He estimates his total crop sales at Rs7,000 per year.

Palanta is a contact farmer but says he received no special help from the VAW apart from the occasional minikit and help with pesticide sprayers. He has an outstanding loan of Rs1,700 with the United Commercial Bank which could not be repaid due to Brown Plant Hopper losses the previous rabi. But he had bought four bags of fertilizer for the kharif crop (CAN, Urea and MoP) which was below the levels recommended for his selected varieties. He knew this, having cultivated a range of HYVs and improved varieties for the past five years, but he felt the risk of drought and pest attack ruled out a higher level of investment.

Baribanda Sahoo is also a successful farmer in dispute over land. He has only 0.6ha of his own but he also cultivates 0.6ha of temple land which he has claimed as his own since 1974. He no longer pays rent and the Brahmin temple-keeper appears unable to evict him. He has milch animals and 20 coconut trees and in the rabi is able to cultivate jute and

groundnut as well as HYV paddy. In the kharif he is reluctant to plant more than 0.1ha to HYV paddy because of the risk of pests and the cost of treatment. He would use pesticides only if provided free of charge, which had happened in 1981. He had cultivated CR190 with a 10kg minikit provided by the VAW and he claimed - wrongly - to be a contact farmer. But he had been one of twenty cultivators who had met with the VAW and agreed to cultivate a MAY plot of HYV paddy and groundnut. He anticipated a 50% fertilizer subsidy for this.

For the kharif Baribanda Sahoo had bought fertilizer directly but confined himself to 25kg of Urea. In the rabi he had borrowed Rs1,000 from the UCB - his largest ever seasonal loan. Rs600 of this was for fertilizer, but he had been unable to repay more than Rs500 and the Manager had visited him to exert pressure. His difficulty was the need to support not only his own family but also to help the other families (of his two brothers) in the same compound.

Narendra Nayak is a primary school teacher who, his neighbours suggest, knows nothing about farming. He was formerly a clerk in Calcutta and has semi-retired to his village. He owns 1.2ha but leases this out. He has had the same tenants for 20 years and they now pay him 30 bags of paddy per year (both kharif and rabi) rather than a half-share as previously. This is roughly 60% of their total produce for the two seasons (on relatively low average yields of 12 quintals per ha). But this rent includes repayment to Nayak of the loan he obtains on behalf of his tenants (who are landless) from the PACS. For his part, Nayak pays labourers with the cash component of the loan and allows his tenants to lift the fertilizer. The loan for 1982 rabi was for Rs500. This had not yet been repaid although his tenants had paid their rent. It was Nayak himself who met the VAW, and he received an 8kg minikit of Ratna in 1981. He said his tenants cultivated both Ratna and CR190 paddy varieties.

Manu Maharana is also a cultivator in name only. He has land - 0.6ha - but he has given this to his brother for cultivation as he is fully engaged in constructing bullock carts (he is from a carpenter caste) and looking after his paralysed wife. To pay for his wife's treatment he has also sold some land for Rs2,000. He makes 15-20 carts per year, selling at Rs1,100 each with an estimated profit margin of Rs200.

When he was farming, Maharana had regularly borrowed from the PACS but in his last year of farming (1981/82) he had borrowed Rs750 and sold the fertilizer. He had been cultivating CR1014 and Culture 28, but had never achieved good yields despite fertilizer applications because of Brown Plant Hopper infestation on HYVs. This had been treated free-of-charge by the VAW on one occasion. He did not regard his abandonment of farming as a major loss as he had always struggled to feed himself and his wife and to meet medical bills, and his situation had not changed.

The poorest cultivator interviewed in Terundia was Bhandu Bhai. He is a Harijan with a family of 11 and only 0.4ha. His son gets the proceeds of a further 0.1ha as payment for his labour on the land of a larger farmer, and Bhandu Bhai himself is a sharecropper with his two brothers on a further 0.6ha. His own land is too low for HYVs but elsewhere he and his son are cultivating CR1014 in the kharif and 0.4ha of improved groundnuts (AE1) in the rabi as well as a small plot of potatoes. He is evidently a serious cultivator, has regularly borrowed from the PACS and repaid. In the kharif of 1982 he had borrowed Rs500 for a fertilizer/cash loan and lifted two bags of Gromor; the qualities of which he had learnt from working as a temporary labourer. However, he had experienced difficulty in the past with the PACS Secretary allegedly falsifying his passbook and he would prefer to purchase fertilizer direct from dealers if he could afford it. There have been seasons when he has done this and bought smaller quantities than intended - because the PACS had been late in delivery.

Bhandu Bhai says he has not met the VAW in five years, and did not know of any MAY plots or contact farmers.

3.4. Salanga

Like Bishnupur, Salanga village consists of linked hamlets but here there is a single large hamlet of Salanga itself (around 60 households) with neighbouring hamlets such as Satkalia (which I visited) accessible only by foot across 3km of bunds. There are three households - all scheduled caste - in Satkalia which is a low-lying area, mostly unsuitable for available HYVs. There has been land consolidation in Satkalia but the cultivators (two of whom I interviewed) have yet to receive rabi canal water.

Gadadhar Nayak has worked for 20 years in Calcutta as a mason and has retired to a joint family holding of 1.2ha. There are 13 in the family but his brother has continued to work away from home. The family is relatively well-off, with sheep, goats, and bullocks. Gadadhar Nayak is a contact farmer with 0.2ha of CR1009 (from a community nursery) on a compact area arranged by the VAW between Salanga and Satkalia.

But elsewhere, much of his crop had been lost due to flooding. This included 0.4ha of CR1014 on which he had applied 12.5kg of CAN at transplanting and 50kg of Urea. Despite these setbacks, he hoped to plant 0.2ha of potato in the rabi with seed potato purchased from the Department Cold Store in Pipili 25km away; and he intended to extend the cropped area of CR1009 next kharif. Gadadhar Nayak felt he had good support from the VAW, including free BHC dusting, and attended meetings even though they were held in Salanga. Similarly, the PACS secretary had helped him with loans and he expected permission to extent payment because of the flooding. Nonetheless, Nayak complained about delays in delivery of PACS fertilizer and had relied on the VAW to provide CAN.

The other Satkalia cultivator interviewed, Mandardhar

Moharathi, was less well connected to the Department's agricultural services, but he also managed to acquire bulky inputs such as fertilizer despite the difficulties of access in the wet season (for fertilizer in fact, this means head-carrying for the final 3km). The fertilizer was obtained with a Rs250 loan from the Ohal PACS, 4km from Satkalia.

Moharathi has 0.8ha under CR1014 and local varieties, and 0.4ha of this had been purchased for Rs2,500 following land consolidation. The price paid reflected the potential for rabi cropping but as yet water had not been delivered on a sufficient scale. The VAW had helped him with pesticide for a caterpillar infestation and Moharathi knew the day of the VAW visit; but he was critical of the advice and support provided. A promised mustard minikit had not been delivered, and on the last visit, wheat cultivation had been advocated - in an area as yet totally unsuited for wheat because of lack of irrigation.

Karunakar Nayak in Salanga village is a contact farmer with 0.4ha (out of a total holding of 1.6ha) in the 4ha MAY plot of CR1009. He had a record of good husbandry, having achieved 50 quintals per ha in 1980/81 kharif with Ratna paddy and three fertilizer applications. But this was on 0.1ha only and he had not risked the cost of fertilizer in a larger area in 1981/82; and because of what he regarded as the high labour cost (Rs7 per day) 0.8ha of his kharif paddy crop had been broadcast rather than transplanted as recommended.

From his PACS loan of Rs500 he had acquired Gromor, Urea and MoP but had decided to sell 25kg of Gromor. His main concerns were the risk of disease and flooding on varieties such as Ratna and CR1009 (in rabi, he also cultivated potato and groundnuts). He had used Gamaxene seed treatment for the first time in 1982 after the VAW offered it free-of-charge for the minikit provided for MAY cultivators. But the high cost concerned Karunakar (who had a family of 12 to support) and he did not expect to use pesticide treatments if required to pay the full cost. He had no difficulties

with PACS lending and input supply, and had rescheduled loan repayments; his reluctance to increase borrowing appeared to be influenced by risk considerations only.

The remaining two cultivators interviewed were less well supported by public services. Rabinda Kumar has 1.6ha of cropped land, including 0.8ha which has been held on a sharecrop basis for 15 years. Most of this was planted to local improved varieties T141 and T1242 with Kumar insisting (contrary to other evidence) that there were no MAY plots or contact farmers in Salanga. The only information on paddy cultivation that he could recall from the VAW was to change his seed every three years. He had been using fertilizer for five years, normally paying Rs170 per season for two bags of CAN from a private dealer. The PACS he claimed, was an unreliable source of fertilizer; and in his case loan sanctioning had come too late for his requirements.

Muraliahar Behera lives in a scheduled caste hamlet beyond the main village. Like all of his neighbours he is primarily a farm labourer. He has 0.2ha of low land on which he cultivates local varieties and some T141 in the kharif only. For the latter variety he has used the same seed for eight years continuously and says that he has seen no degeneration. He uses 25kg of Urea on T141 and had applied for a Rs100 PACS loan for the purpose (including a Rs40 cash component). He had lost his home in recent storms and was living, with his wife and two young children, in a neighbour's house. He could see no possibility of repaying his loan as his kharif crop would not meet family consumption needs and he had already incurred private debts. Behera said that none of the Harijans in his hamlet had ever been selected as contact farmers or minikit growers because at the time of the VAW visit all were working elsewhere.

3.5. Odaguan

Odaguan is a village of two hamlets but only 67 households. It is close to a distributory canal and accessible by road only by a footbridge across the canal. It was one of the villages most seriously affected by the 1982 floods with high kharif crop losses.

Odaguan is an 'interior' village by Nimapara Block standards. It was regarded as too inaccessible for inclusion in the IBFEP; and the establishment of a Department Seed Sales Centre and PACS fertilizer stores at Tulaispur is because it was felt that cultivators from villages such as Odaguan would find the need to travel as far as Nimapara a constraint to the adoption of improved inputs. The cultivators interviewed had - without exception - used these local facilities, but in two cases at least, they had used private dealers in Nimapara as well.

Jaganath Sahoo is a contact farmer and son of the Panchayat secretary. He has 1ha including 0.2ha of leased-in, but his main income is from betel vineyards. These were damaged in the floods and he now has a Rs2,000 loan to re-establish the vines. But he still manages to take leaves to the Nimapara market twice a week where there are buyers from Bhubaneswar and even Calcutta.

His paddy crop is Culture 28 (Annapurna) and both CR1014 and a local variety on lower lands. On Annapurna and CR1014 he had good yields (45 quintals and 40 quintals per ha respectively). These yields were achieved with basal and top fertilizer dressing (Shyamala 15:15:15, CAN, Superphosphate, and MoP) on 0.6ha of HYV and improved paddy. This had been bought privately in Nimapara. But the total cost had been only Rs110 as he had received (unspecified) small amounts of fertilizer from the VAW as a contact farmer. He had also received the pesticide Malathion from the VAW and had rented a sprayer at a nominal cost. In the kharif he had also received a GMR28 paddy minikit but the nursery had been destroyed in the flood. He anticipated a pulse seed subsidy permit for the rabi from the VAW.

Sahoo usually borrowed from the PACS for cash and fertilizer in the rabi only. He complained at delays in delivery of fertilizer but he could remember only one season in the past six when such delays had held up planting. The delay was more a question of wasted journeys, but as he visited Nimapara twice weekly anyway, this did not appear to be a serious problem.

Madhabanda Swain is also a contact farmer and has 0.2ha in a 2ha MAY plot of CR1014. His own land is only 0.3ha but he has a further 0.4ha leased-in at a fixed rent of Rs600. He also has a small betel vineyard from which he earns Rs30 per month, selling in the village itself. He labours for up to 30 days per season, and borrows from the farmer concerned.

In the rabi he cultivates CR190 and potatoes, when water is available. He has been a contact farmer for three years, and regularly receives minikit seeds, but unlike other contact farmers he had bought his own pesticide for stem-borer treatment, paying Rs60 to a private dealer. He had also bought fertilizer from a private dealer in Tulaispur, but this was only small quantities of CAN and MoP (32kg) as he was unable to borrow from the PACS (as a defaulter) and did not wish to borrow from the private dealer for his kharif requirements. For the rabi, and a higher fertilizer requirement, he intended to get part of his estimated requirement on credit.

Bhaskar Pradhan is registered as having 2ha but in fact he has 5ha, 3ha of which is leased out to semi-permanent tenants. He does not have any regular dealings with the VAW, but Pradhan acquires seed, fertilizer and occasionally pesticide for his sharecroppers although his overall fertilizer use was only 50kg of Urea (including 18.5kg on the CR1014 - well below recommended levels). He is the only cultivator I interviewed who bought fertilizer directly from the PACS which he said was nearer than any other source and always had stock for cash sales.

The remaining 2ha is cultivated by sharecroppers, who Pradhan calls 'labourers'. This 2ha includes 0.4ha within the MAY plot and a further 0.8ha of GMR28.

Manu Lenka is only 16 but his father is dead and, with his mother, he cultivates 0.8ha. He does not employ labour in the usual way but he gets help from neighbouring cultivators in return for labour on their own plots. Unlike most of the other cultivators in Odaguan he does not have any irrigated rabi land but manages a small biri crop on residual moisture. In the kharif he cultivates 0.05ha of Culture 28 as a seed crop which he exchanges for bulky local varieties for his own food consumption.

Manu Lenka meets the VAW regularly and seeks his advice and that of other farmers. He has been to the MAY plot and thought it was performing too unevenly to form any firm conclusions on spacing, variety selection, use of pesticides and level of fertilizer use. But he had followed advice on 0.4ha of CR1009 the previous rabi (applying Gromor, MoP and CAN in recommended amounts). He had purchased fertilizer on a piecemeal basis, on each occasion drawing upon credit from the private dealer in Tulaispur. This he had repaid. He had not been involved in PACS lending which he regarded as too troublesome for a cultivator of his scale.

Bhikani Sahoo cultivates a joint family holding of 1.8ha with his two brothers. They have only 0.2ha under cultivation (pulses) in the rabi despite a potential irrigated area of 1.2ha. It is a very poor family and their main source of income is farm labouring. In the rabi, in particular, they say they cannot afford HYV seed and fertilizer and therefore they are better-off working for wages than cultivating. In the kharif they cultivated mainly local varieties with 0.05ha of Culture 28 on which they applied no fertilizer apart from a small amount of manure.

Sahoo knew the day of the VAW visit but did not attend meetings. He claimed that the talk was always of crops (such as potatoes) and varieties (such as CR1014) that he had no intention of cultivating because of the cost of obtaining seed and fertilizer. He appeared to have little confidence in improvements in field crops but he had recently acquired a loan of Rs2,500 under the IRDP for the establishment of a betel vineyard. The field supervisor (of the LDB in this case) had been issuing the loan in small installments for different operations and materials and Sahoo complained at the delays that were being caused. However, I could find no reason to fault the supervisor on the work that I saw and I suspect that the borrower had been disappointed that so little cash in hand had been given.

Chapter 5
CONCLUSIONS

1. Introduction

There are three parts to this chapter. First, I discuss the evidence on access to publicly-provided agricultural services: what is the effective demand, what difficulties are experienced by farmers in gaining access to services and the quality of those services, and which categories of farmers, if any, have particular problems in access. Second, I discuss the evidence on efficiency of services. In particular, I look at the different ways that services are provided and ask whether the particular ways that service provision is undertaken represent the most efficient use of public resources in meeting policy requirements. In a sense, these two sections deal with the demand and the supply sides of agricultural service provisions. In the final section I look at the usefulness of the evidence in answering the broader question of the relative importance of administrative - as opposed to technical and economic - constraints on agricultural improvement ('administrative constraints' in this context are constraints within the system of public agricultural service provision).

2. Access

2.1. How representative?

Issues of access to services are largely, although not wholly, related to the spatial distribution of services, so before any conclusions can be drawn from the evidence of this study it has to be established whether the Blocks and villages selected for farm interviewing are typical of conditions in Orissa.

Both Rairangpur and Nimapara towns are sub-Divisional (as well as Block) headquarters and as a result there are more banking facilities and private dealers than in some other

Blocks. But they are also relatively remote Blocks in terms of main roads and main market centres and by the standards of most Block headquarters they are in the category of 'small' market towns. Of the possible Blocks for study (which were limited because of the research interest in IBFEP) these two Blocks are among the least well served in terms of agricultural services.

Within the Blocks themselves, the selection of villages was similarly influenced by IBFEP considerations and in both cases, the key village is located closely to the main town: similarly the neighbouring cluster villages selected are among the more favourably located villages. However, I tried to rectify this imbalance in selection by visiting villages further away from the main centre of services and choosing the least accessible of the IBFEP cluster villages.

In practice, this particular spatial concern - proximity to the Block headquarters - is not as important as it may appear. Most loan applications are written in collaboration with the loans officer, VAW or co-operative secretary in the villages; both Blocks have temporary seed supply centres away from the Block headquarters; fertilizer requirements can be lifted from the small PACS or LAMPS sheds spread across the Block; and when specific extension advice is required by farmers this is done (in the first instance) by tracking down the relevant VAW in his circle.

2.2. Demand

The first question to be asked from the evidence of farmer interviews concerns the level of effective demand for public services. The way I answer this is to trace which services were mentioned as being requested on a regular and significant scale. The term 'services' means (a) extension advice (b) seed (c) plant protection (d) credit (e) fertilizer. The following table gives the overall figures (based on 25 interviews in each Block).

Table 5.1: Farmer Responses and Demand for Public Services

Service	Block		Total
	Rairangpur	Nimapara	
Extension	48%	56%	52%
Seed	52	64	58
Plant protection	32	44	38
Credit	36	40	38
Fertilizer	52	48	50

In the case of plant protection and fertilizer, the total levels of demand are increased by 6% and 8% respectively if private sector sources are added.

Set against other recent studies of extension in India for the World Bank¹, these figures for extension 'demand' must be considered as high, although they cannot be directly compared. It is my view that they represent a broadly accurate statement on the level of demand for extension in Orissa.

I have interpreted demand for extension advice as including an interest in and demand for the services and inducements directly offered to cultivators through the extension service. These are primarily the supply of minikits of new varieties and the provision (to the cultivator in his fields) of pesticide treatments and equipment. In both cases the issue of materials is accompanied by direct advice on use, and most cultivators consider such advice to be an important ingredient. The percentage figures on extension demand are high, therefore, partly because of the fusion of technical advisory and input supply functions in the agricultural field service in Orissa.

It is useful, nonetheless, to separate the demand for seed supply and plant protection from technical advice (or 'extension') per se. Seed supply is separate from extension as it often involves visits to Department stores by the

farmers themselves. Twenty-five per cent of the farmers interviewed had recently acquired seed from the stores and most of these had done so after they received a chit from the VAW indicating their eligibility for a specified quantity of subsidized seed. There was also a similar percentage of farmers who had either received seed directly from the VAW in the form of a 6kg minikit (for paddy, groundnut and arhar especially) or obtained paddy seedlings from community nurseries established by the Department.

The demand for plant protection services (38%) is similarly largely the result of the availability, through the VAW, of assistance during disease or pest infestations. For example, prophylactic treatments were undertaken among demonstrating farmers cultivating HYVs with the free distribution of chemicals by the VAW. There were only three farmers (6%) who privately bought chemicals and hired sprayers or dusters without any apparent subsidy or encouragement from the VAW.

It is difficult to assess the precise demand for technical advice. A large number of farmers interviewed (34%) were directly involved in some sort of demonstration plot activity supported by the HFC or the Department of Agriculture. But in farmers' accounts of dealings with the VAW or Assistant Agronomists, the provision of advice on crop husbandry generally (planting, spacing, weeding etc.), and on fertilizer requirements particularly, did not figure as significantly as advice on planting materials and plant protection.

This does not necessarily mean that the provision of such advice is unwarranted. In the case of farmers with plots in either MAY/CAP or IBFEP demonstrations, the recommendations (on plant population for example) were followed and in most cases fertilizer applications were in line with recommendations on basal and top dressings. On other plots, however, and among non-demonstrating farmers, there remains a general reluctance to abandon present practices such as broadcasting or transplanting in an apparently random, if labour-saving, way. Recommended levels of fertilizer are regarded by most farmers as

unacceptably high risk investments in the generally uncertain climatic and pest conditions; and their own specific conditions of land quality and poor water control. It appears that it is considerations of cost and risk rather than poor understanding of alternative production possibilities which are inhibiting the demand for technical advice.

The level of effective demand for formal crop season credit is 38%. The 62% of non-users is made up of three categories: those who do not use purchased inputs such as fertilizer anyway (42%); those who purchase their requirements direct without recourse to formal borrowing (8%); and those who require credit for inputs but are in default (12%). Demand for production credit generally is impossible to calculate because informal borrowing does not normally fit into categories of production purposes and consumption purposes, but there were three cases in the interviews of short-term credit being extended by the private suppliers of fertilizers.

The level of demand for publicly-provided fertilizer (50%) is a relatively high figure (given the evidence for Orissa as a whole) but the amounts are normally well below recommended levels. 'Publicly-provided' in this context means either the co-operative societies (on both cash and credit terms) or the private dealers where they are issuing fertilizer as an agent of a public subsidy scheme. Included in this figure are the 12% of fertilizer users who have gone into default on loans in recent seasons. They now buy relatively small amounts privately but would use more if loans were open to them.

Taken as a whole, the evidence on demand for the various services also illustrates the differences between the IBFEP key village and other villages. In Rairangpur Block, there was a much higher demand for all public services than in the other four villages, as Table 5.2 indicates.

Table 5.2: Farmer Responses and Demand for Services in Rairangpur

	Rairangpur (4 villages)	Halda
Extension	40%	80%
Seed	45	80
Plant Protection	20	80
Credit	30	60
Fertilizer	45	80

This was not, however, the case in Nimapara, where the relative impact of IBFEP had been less (due to a later start date in a much larger village).

Table 5.3: Farmer Responses and Demand for Services in Nimapara

	Nimapara (4 villages)	Bishnupur
Extension	60%	40%
Seed	65	60
Plant Protection	40	60
Credit	40	40
Fertilizer	40	80

Bishnupur, it should be noted, does have a higher general level of demand for services than Halda. These percentages refer to publicly-provided services. In Bishnupur, there is a greater use of private dealers and more use of available private capital in acquiring services.

Quite apart from the narrowness of the data base, these figures on their own do not answer questions about the impact of IBFEP on demand for services, as it is evident that villages such as Bishnupur and Halda were selected partly because there was already a willingness to adopt

improved technologies. However a closer examination of the individual interviews does indicate a higher level of demand induced by the subsidy and the intensity of technical support. Whether this level will be sustained or not is an issue discussed in 3.4.

2.3. Difficulties in Access

The second question to be asked concerns the extent and nature of difficulties in gaining access to particular services and the utility of those services. It is useful at this point to distinguish between the Department of Agriculture field services (extension, plant protection and seed) and fertilizer supply and credit services which involve other agencies.

2.3.1. Extension

The interviews indicated a remarkably high level of familiarity with the VAW system of visits and of collaboration with the VAW in some form of publicly supported programme such as minikit, community nursery, demonstration or pest treatment. No less than 17 of the farmers (including seven IBFEP farmers) interviewed were involved in a demonstration plot, even if this was sometimes as little as 0.10ha.

Loosely, such farmers are termed 'contact farmers' by supervisory staff in the Department of Agriculture in what amounts to a pretence that an orthodox T and V system is in operation. But few VAWs use, or even comprehend, the term and invariably when I used the term in farm interviews, it had to be interpreted along the lines of "a good farmer receiving and following VAW recommendations". There was no direct translation available.

Nonetheless, the scheduled visit aspect of T and V is working well in Orissa, and much better than in other States in India. World Bank reviews² show that even

among contact farmers only 50% know the name of the VAW in Karnatka and Gujarat; and in Maryana only 80% of contact farmers could name the day of the VAW visit. In Orissa, the level of familiarity with extension staff among all farmers appears to be much higher.

There were three farmers in the two IBFEP villages who thought the HFC agronomists were from the Department of Agriculture, mistaking them for either an additional VAW or - in one case - the VAW's supervisor; but only two farmers (out of ten) in the same villages did not know the name of the VAW or the day of his visit. In the remaining eight villages (ie. 40 farmer interviews) there were only eight farmers who did not appear to know anything at all about the VAW. There were a further twelve who were uncertain about some aspects of the VAW's work (eg. they knew the day of the visit but thought it was weekly, not fortnightly, or they did not know if meetings had been held) and this may have been the fault of the VAW himself. But this still leaves well over half of the farmers interviewed knowing both the VAW and where and when to find him. Assuming the sample was representative, this indicates a high level of access to extension services.

This degree of access does not however in itself indicate the utility of extension services. But there were only five farmers (10%) who explicitly disclaimed any use for extension advice or even support on inputs. Three of these were 'contact farmers', and two of them claimed that they already knew enough not to require VAW support. The other three farmers discounted VAW advice on the grounds that it was too costly to follow.

Despite this level of familiarity and contact, both useful and otherwise, this still leaves around 40% of the farmers interviewed without any experience or apparent interest in the extension service. In most cases this is because of the nature of their employment which means that both VAW farm visiting hours and evening

meetings are missed. (There is also the exceptional case of tribal Champrai which appeared to be unvisited.) In a few cases this lack of contact was due to small business activities or domestic duties such as food preparation in the case of women. But the more important reason was absence due to the off-farm labouring work undertaken by most marginal farmers, who finish their own farm work early in the mornings before the VAW visits.

Seed supply through the extension services warrants a brief examination, especially as an IBFEP survey in Madhya Pradesh³ showed that 19% of farmers had some difficulty in the process of acquiring seed. Despite the recent and temporary nature of local seed stores, there were only two farmers interviewed who indicated difficulty in obtaining their seed requirements from the Department, and none of the 12 farmers who had received chits for subsidized seed experienced any difficulty in obtaining their entitlement even when they came from relatively remote villages such as Odaguan. This does not necessarily mean that the present system, under which the Department itself is the major source of certified seed, is capable of permanently meeting demand (which fluctuates considerably) but it does suggest that the extension system is capable of conveying information on seed availability and of allocating seed. Farmers in Orissa do not, it seems, often waste their time due to uncertainties over delivery and availability of improved seed.

2.3.2. Fertilizer and Credit

The supply system for fertilizer in both Rairangpur and Nimapara is held to be deficient by many senior government and parastatal officials on the grounds that there is inadequate storage capacity in both the public and private sectors and a lack of sales centres close to interior villages.

The evidence of farmer interviews does not support this view. Although current levels of demand are low, this does not appear to be because of direct supply difficulties. (The survey of IBFEP farmers in Madhya Pradesh also found that few farmers (9%) had problems of fertilizer availability.) Where there are difficulties these are indirect, resulting from credit or subsidy arrangements which have put pressure on particular suppliers. There is no evidence that farmers paying cash have any difficulty in lifting fertilizer. Furthermore, the evidence of interviews suggests that (apart from the single case of the widowed farmer) farmers using fertilizer have no concerns about travelling to lift the amounts they require from the main towns. The delivery costs, in time and (where cycle-rickshaws or bullock-carts are used) money, do not appear to be significant constraints on fertilizer use and visits to town - by the category of farmers using fertilizers - are regarded as commonplace even where the distance is 20km.

The PACS and LAMPS remain the main source of credit-linked fertilizer for farmers, but there is a general preference among fertilizer users for the private dealers over the co-operative societies, and where co-operative credit considerations do not apply, most farmers use private dealers. This is partly because of the likelihood of a quick transaction through private dealers whereas co-operative societies have a reputation for delay and for inefficiency in maintaining opening hours. A more important consideration for farmers, however, is the opening hours themselves. Private dealers are normally open in the early morning hours which farmers prefer for conducting their business whereas Societies rarely open before 8am. For farmers living very near towns, private dealers have the further advantage of remaining open in the evening hours.

The figure of 42% of farmers not using (or not wanting to use) chemical fertilizer is made up of different categories, although most are cultivating local or local improved varieties of paddy in the kharif only. In some cases the absence of fertilizer application is the consequence of land type with both low lying land (long periods of standing water) and high land (moisture stress) discouraging fertilizer use. In a few cases, there appears to be a lack of interest in cultivation because other business interests take up time and available capital. In five cases, a reason given for lack of interest in fertilizer application was the reluctance to incur formal debt obligations. This was particularly felt among poorer farmers who cited instances of co-operative society attachment of animals and (in one case) even grain from defaulters.

The group of fertilizer users of particular interest to this study are the 50% who do so under formal credit arrangements (or would do so if recent overdues were cleared). It is generally assumed that farmers, in India and elsewhere, have difficulties in access to seasonal production credit facilities. Specific difficulties are held to be:

- (a) cumbersome procedures which inhibit farmers from putting in applications;
- (b) slow disbursement which delays delivery of goods such as fertilizer to the point where farmers' confidence in borrowing is lost;
- (c) additional charges illegally levied by officials which increase substantially the cost of borrowing.

The issue of procedure is not, on my evidence, a serious consideration in discouraging borrowing. First, the administration requirements for borrowing are not a cause of difficulty to farmers. The main requirement - the land revenue certificate - is easily obtained. No-dues certificates are not, in practice, a requirement and only in the case of substantial medium-term loans are

hypothecation deeds required. Second, access to loan application procedures is generally facilitated by the lending agencies. Of the 19 current borrowers interviewed, nine had completed their forms in their own village with the help of loans officers of the commercial banks or other officials. The other 10 had gone to the nearest PACS or LAMPS. In only one case was there a complaint that loans forms were not available with the Secretary. In most cases, loan sanctioning had been notified promptly by letter or word of mouth with cash and delivery orders collected without difficulty.

The range of information required for loan processing, even for relatively small advances, is excessive but the onus tends to be on the loans officer and Co-operative Secretary rather than the farmer. The completion of forms is, in any event, not a particularly fastidious process and it is only with medium-term loan applications that information is checked by visits to the household.

The issue of delays in loan disbursement is, ostensibly at least, more important. In the case of PACS loans, there is normally a period of one month between loan application and sanctioning, although this is down to five or six days in the case of commercial banks. But sanctioning does not necessarily mean that fertilizer is immediately available. In the case of private dealers this does not appear to create difficulty, but there were several complaints about the PACS which have a more dispersed network of small sales points which do not hold a large stock. Among 14 current and recent co-operative society borrowers there were five complainants. One claimed that he needed to get the support of the VAW before the secretary would check if his loan had been processed, two complained that the secretary had falsified accounts and they had not received the amounts for which they had been debited; but there were only two who said that delays in delivery had obliged them to cancel their order entirely. These two were among

seven (or 50% of co-operative borrowers) who either failed to lift their entitlement or sold a large part of it. In all of the fertilizer stores I visited, there were quantities of ordered but unlifted fertilizer.

It is plausible to claim that some farmers who give delays in delivery as the reason for non-lifting are not being honest. The system of establishing scale finance (40% cash to 60% kind) inevitably encourages borrowers to inflate their fertilizer requirements as a means of obtaining higher levels of cash, which may be needed for both production and consumption. While cash can be disbursed immediately, delivery of the kind component can be delayed and this is a useful pretext for further delay in lifting from farmers themselves, especially if they remain uncertain about their precise requirements.

It needs evidence from the supply side itself (see next section) to claim unequivocally that input supply delays and inefficiencies are a factor in constraining fertilizer use. The evidence of farmers themselves, taken as a whole, suggests that this is not a serious factor, although the relatively long loan transaction process for co-operative lending does appear to inhibit borrowing, especially as many small farmers appear to be ditherers when it comes to assessing their loan requirements and often submit their applications much later than their own experience should dictate.

I found it difficult to form a conclusive judgement on the issue of corruption raising the cost of borrowing. The details of information for formal lending are not easily understood by many farmers and there is a requirement for assistance from VAWs in cases where loans officers are not available and occasionally VAWs' help is needed in obtaining loan applications. But despite persistent efforts to assess the existence and scale of payments made to VAWs for such services, I was unable to trace anything more than occasional cases of additional payments for specific favours, on pesticide

treatments especially (but this did not extend to favours on borrowing).

My own view is that for field-level agricultural services there is no widespread system of covert payments which substantially supplement the VAWs income and to which all cultivators must contribute if they are to file loan application forms, lift fertilizer or acquire seed at subsidized rates. Even in the case of co-operative society secretaries and members (where opportunities for illegal payments are greater as they can withhold applications and payments), no farmers hinted at significant corruption within the loan process, and I am reasonably satisfied that the cost of borrowing is not inflated by the need to pay significantly high commissions or illegal service charges.

2.4. Differential Demand and Access

This somewhat rosy picture of access to services in Orissa nonetheless indicates that broadly half of the farmers in Orissa have no contact with or use for extension services, do not use government services to acquire certified seed or protect their crop, and do not apply for credit to purchase fertilizer. Furthermore, the aggregate picture does not indicate if there are specific groups of farmers using services which have less opportunities and more difficulties than others.

The following table takes landholding as a criteria in distinguishing farmers; in this context, 'small' farmers have 1-4ha, 'marginal' farmers have less than 1ha. This indicates that small farmers are greater users of public services than marginal farmers, and the distinction is increased once the small amount of private sector provision (and thus overall service use) is added.

Table 5.4: Demand for Services by Farmer Categories

	All	Small	Marginal
Extension	52%	70%	40%
Seed	58	65	53
Plant Protection	38	45	33
Credit	38	45	33
Fertilizer	50	60	42

Department of Agriculture staff do not deny this bias towards larger farmers. In earlier chapters it was shown that this bias was particularly marked in IBFEP villages where medium (2-4ha) and large (4ha plus) farmers were disproportionately represented in the demonstrations. However, it is argued that the bias is towards the more progressive farmers willing to discuss recommendations and try new practices. If there are proportionately less marginal farmers than small farmers involved in public services this is because they are unwilling to incur risks with such a scarce land resource and because many are involved in farm labouring and cannot meet the VAW regularly. Nevertheless, the improved technology being advocated by the Department are considered to be scale-neutral and the level of support given is designed to minimise risk to adoptors.

So, at least in the selection of farmers to benefit from inducements such as seed kits, plant protection services and subsidized fertilizer, it is legitimate to question whether there is any bias towards 'small' farmers at the expense of the 'marginals'.

This does not appear to be the case to any significant degree. There were 17 contact farmers or demonstrators in the sample. Of these, 7 are small farmers (ie. 35% of the sample) and 8 are marginal farmers (ie. 27% of the sample). However, disregarding size of landholding and

considering quality of land, a different picture emerges with farmers who have irrigated and medium land much more likely to receive the package of support under MAY/CAP and IBFEP than other farmers. The bias, in this case, is technically determined. The varieties available and the recommended practices and inputs are based upon a level of assurance in water supply and water management that is difficult to achieve in most low lands (in the kharif) and unirrigated high lands.

On extension services there is no evidence of a bias towards larger landholders simply on the grounds that such farmers enjoy social status and economic power. The bias is towards the more innovative farmers who are, it must be said, generally better-off than their neighbours. The distinction between 'rich' and 'innovative' is nonetheless important as it would be inaccurate, on my evidence, to claim that the extension services are in some way in the pay of rich landowners. However, whether this concentration on the innovative farmers is an efficient use of extension resources is discussed in the next section.

A more plausible case could be made that access to seasonal production credit - particularly commercial bank lending - is much easier for the larger farmers (on medium term credit there is a deliberate attempt to fund poorer sections). Leaving aside Halda and Bishnupur (where the support of the HFC staff assists all demonstrating farmers to obtain credit), the pattern of access to commercial bank loans appears to be biased towards the larger and richer farmers. Poorer villages (such as Champrai, Badogan and Danbose in Rairangpur; Salanga and Odaguan in Nimapara) do not receive commercial bank visits and none of the farmers interviewed in these villages received production loans beyond small amounts (ie. Rs100-250) from the PACS. In the remaining three villages - all of which are in large part irrigated - the pattern of lending suggests a concentration of large loans (Rs1,000 plus) in the hands of farmers with 2ha and above. The evidence of commercial bank loan portfolios in Nimapara and Rairangpur broadly

confirms this pattern but as my interviews were confined to small and marginal this point cannot be taken any further.

There is, however, firmer evidence that poorer farmers have difficulty in understanding the procedures of borrowing and little effort appears to be made to clarify what is, to them, a complex system. Eight of the smaller borrowers (roughly half the sample) indicated some uncertainty with procedures: two left the entire process to the co-operative society and did not know interest rates or repayment dates, another had no pass book, two were confused over Society deposit rules, others were muddled over eligibility for subsidies and differential interest rates.

Village borrowing, partly as an alternative to formal borrowing for fertilizer loans, but mainly as a bridging operation at times of food and labour shortage, is also more widespread among the poorer groups. Interest rates cited were between 4% and 10% per month and 25% per four months, but much of this lending is in kind and real interest rates have to take into account the fluctuating price of paddy which is the main commodity used in credit transactions.

Finally, on differential access, there is the separate question of tenants. The interview evidence shows a complex pattern of leasing-in and leasing-out, and it is inaccurate to assume that tenants are poorer than their landlords. More often than not they are, but there is also considerable evidence of more successful farmers leasing-in land from poorer farmers unable to fully exploit their own land. There were, nonetheless, about eight farmers who fit the more familiar pattern of land-deficient farmers leasing-in land on a short-term sharecrop basis from farmers who also have a claim on their labour. It is this category which, on the face of it, might have difficulty in access to services, but three were included in demonstration plots (including two in Bishnupur). Elsewhere, sharecroppers claim that they have difficulty in

borrowing unless they are in collaboration with their landlord, but the general level of fertilizer and improved seed use and familiarity with the extension service is not significantly different from other marginal farmers.

3. Efficiency in Service Provision

Apart from identifying specific areas of malfunction (in the performance of different components of the public service system in agriculture) there is a range of wider questions which focus upon alternatives within the existing level of resources. In the case of extension services, for example, there are questions on the appropriateness of the range of functions given to field staff within the T and V system and the IBFEP, and on the effectiveness of the extension approach employed. In the case of credit provision and input supply, there are additional questions of relative performance and costs of different mechanisms of delivery. I call all of these 'efficiency' issues and examine, in turn, the Department of Agriculture extension services, formal credit provision, input (particularly fertilizer) supply, and the IBFEP.

3.1. Extension

There have been a number of criticisms of the way that T and V is being implemented in India. Moore, for example, citing evidence of a National Institute of Rural Development seminar⁴ claims the general record is that:

- (1) Many scheduled visits are not taking place.
- (2) Training days are often not held and supervision is poor.
- (3) There are no sustained links to research and the SMSs, in particular, are not performing a useful function.
- (4) The contact farmer system is not operating.

Some World Bank project supervision reports have also indicated doubts about the support given to T and V projects by both Department of Agriculture staff and State Governments generally. In addition to supporting

Moore's criticisms, these reports suggest that in many cases:

- (1) VAWs do not see extension work as much more than ordering farmers around, and
- (2) there remains far too wide a spread of VAW functions with a continuation of many of non-agricultural responsibilities that were supposed to be given up with the introduction of T and V.

If these criticisms are accurate, this indicates that the national pattern is of a generally under-utilized extension service dissipating its energies in tasks for which it has no particular expertise, without any consistent technical support and supervision from above, and unable to provide the great majority of farmers with the technical advice which is useful to them. If all or most of the above criticisms are appropriate to Orissa (or the parts I visited), then current extension services must be considered a misallocation of public expenditure. But the evidence used to support these criticisms comes from States other than Orissa, and it is useful to compare my own specific experience in two Blocks with what appears to be the national pattern.

In fact, several of the criticisms above are contradicted by the evidence of Rairangpur and Nimapara. First, the large majority of scheduled farm visits do appear to take place. Even on public holidays, most VAWs spend at least a part of the day with the demonstrating farmers for whom they are responsible. There were only a few exceptions to this record that I came across. In the larger units involving several hours of walking across bunds (as bicycles could not be easily used in the wet season) the more remote hamlets did not receive regular farm visits and did not have specially arranged group meetings. And where specific emergency functions had to be performed (such as seed distribution following the floods), individual VAWs were forced to curtail their visits and there was no provision for other VAWs to take over their responsibilities.

Second, training days in Orissa are scheduled for the season and from my experience, they are held as scheduled. Attendance of VAWs is normally 75% and above, with AEOs and SMSs having an even better record (admittedly with an easier means of transport). There does not appear to be the pattern of constant disruption of scheduled meetings (that I have found in African countries especially) because senior administrative and technical staff are called away unexpectedly to attend seminars, meetings, parades and so on.

On the training days, material is available to VAWs on the fortnightly crop recommendations and this is gone through thoroughly. The recommendations, and the way they are discussed, may not represent the most appropriate system of extension links to research (see below) but the training days nonetheless are a link to the work that is undertaken at the research stations.

Thirdly, it would be inaccurate to claim that supervision of VAWs is poor in Orissa. It was my experience that AEOs had their own programmes of visits and spent only a small part of their time in their offices. But, more than this, I regularly found the ADAO and DAO level staff out in the fields, normally checking on particular Department projects but nonetheless acting as a constant reminder to their junior staff not to disappear for days on end.

Fourth, the contact farmer system is operating in Orissa. It is not the contact farmer system of the orthodox T and V model, with a selected farmer acting as group leader. But it is a system under which individual farmers are assisted, on a regular basis, in the adoption of a series of practices across one season or more.

This may be encouraging evidence of how T and V is working but, in itself, it says little about the efficiency of extension service as a system of farmer support. To examine this, we need to look at the two further criticisms - of extension methods and of spread of

functions - to see if the way that extension is conducted in Orissa is the most effective way of increasing production and incomes and to see if the functions given to extension staff are an efficient use of their time and capabilities.

There are two closely related aspects of the conduct, or methods, of extension in Orissa. First, there is the concentration upon 'demonstration' areas and farmers adopting improved practices within the demonstration area. Second, there is the conduct and use of training days in the entire research-extension effort. The evidence of this study shows that extension efforts are primarily directed at farmers with the land quality, labour and capital resources appropriate to the adoption of HYV and local improved varieties with fertilizer and pesticide applications. These are not necessarily the larger land-owners and the extension service do not exclude some of the smallest and tenanted holdings. The general thrust of the extension service is transfer of a package of practices developed in the research stations. It is recognised that the full costs and risks of adoption are unacceptably high for most farmers and therefore the emphasis is upon adoption on selected plots rather than the whole farm and upon providing inducements and forms of guarantee (such as free pesticide treatments) against crop failure.

A further requirement for the VAW is that he should arrange extension support for compact areas so that all farmers in the area are included in the improved plot. The pressure on extension workers is therefore to arrange and ensure the yield levels of their demonstration areas in each village they visit.

The apparent weaknesses of this approach are twofold: first, it is frequently the case that advice and support are given to farmers who have already acquired a good understanding of new practices and continue meeting the VAW largely to obtain whatever concessionary inputs become

available rather than to obtain technical guidance. Second, this concentration of effort on promoting a package of new practices prevents the VAWs from investigating and assisting in the varied problems of the non-adopters. The argument here is that the larger returns to extension advice are likely to be found in incremental improvements in the 'non-progressive' low technology, low yield farmers rather than in the 'progressive' farmers who are more likely to pick up advice from each other.

This is not an argument I subscribe to. In practice, the distinction between 'progressive' and 'non-progressive' farmers is difficult to draw. They are extremes which are occasionally recognisable in Orissa but the vast bulk of farmers use a mix of improved and unimproved practices, often changing the mix from season to season. More importantly, it is not the case that there are large potential returns to extension among the low technology farmers. As extension training and recommendations are currently organised, the VAWs do not have much to offer by way of advice to those farmers who are not cultivating new varieties with fertilizer application and pest treatments under irrigated conditions. VAWs have made the point to me that they can only advise farmers who believe they need advice and think the VAW can provide it. This confines their utility to the demonstrating farmers; farmers elsewhere do not appear to want their help.

The bias towards the demonstrating farmers is therefore partly pressure from above to show 'results', partly pressure (or demand) from farmers, and partly difficulty in knowing what else to do. But, above all, it is due to the structure of research and recommendations design which looks upon extension as a mechanism for imparting information.

It is particularly evident during training days that extension staff are not used as a mechanism for soliciting information. The main bulk of the training day is concerned with messages of the next fortnight. Even when there are discussions on problems of the previous

fortnight they are confined to the technical problems of the demonstrating farmers. There appears to be little discussion of the reasons for non-adoption, little attempt to adapt the extension messages to make them more appropriate for a wider range of farmers locally, and little effort to gather up extension information in a way that could be conveyed to the research stations.

Department of Agriculture officials feel that I exaggerate these 'feedback' difficulties, noting the other ways that officials gauge reasons for non-adoption and inform research work in the State. Nonetheless, I believe that the present directive character of the research-SMS-extension link is not putting to full use the experience and capacities of the field level staff, and the general lack of sophistication and flexibility in recommendations is a partial reflection of this.

Another issue which affects considerations on the efficiency of the extension service concerns the functions appropriate to extension. In the pre-T and V days, it was held that trained agricultural workers were frittering away their skills in public works, social welfare, and general administration.

The first point to make is that things have not changed as much as Department of Agriculture officials claim. The VAW is still a critical figure in government emergency measures such as famine relief and while he now reports only to his Department, there is nothing to prevent the Department itself falling into line with requests from the administrative service. Since 1981 in Orissa it has been the VAW who has borne the brunt of survey work and beneficiary identification under the IRDP although very few of the IRDP loans are for crop production. It must be said, however, that while this type of work is generally regarded as inappropriate for effective extension work there is a wider government interest which must be met and in the absence of any other field service with the familiarity and village experience of the VAW there are bound to be extraordinary duties.

A more contentious issue is the involvement of VAWs, as a deliberate matter of Department of Agriculture policy, in the supply of inputs (such as seed and pesticides) and in the administration of the supply of subsidized fertilizer and credit. To some T and V advocates this is a highly damaging course of action: it reduces the VAW to a minor clerical role; it enhances the prospect of corruption and loss of farmer respect; and it biases the extension service towards the more demanding, and richer, farmers.⁵ Against these arguments, it can be held that without the inducements of input supply, the extensionist has little to persuade the farmer to adopt new practices.

My conclusion on this issue from the Orissa perspective is as follows. It is not the case that as a consequence of their help in filling in forms, or accompaniment to sales centres, or provision of seed or loan of sprayers, farmers have less regard for the advice of VAWs or Assistant Agronomists. There may be an element of corruption, or illegal payments, in the system of input supply but, on the whole, the VAWs' current role in the system does not put them in a position to be a major part of such corruption.

In any event, the level of charges that might occasionally be levied on acquiring loan forms or supplying minikits is very small and the demand and receipt of such charges does not seriously affect the standing of the VAW in the community. In my view, they cannot be regarded in the same category as the likes of co-operative secretaries and water guards.

The system of linking input supply to extension does, without doubt, influence the direction of extension services towards the more innovative farmers. But this bias - as indicated above - is largely a result of the technical content of the extension programme. In fact, I found considerable evidence that larger farmers were not monopolising available Department inputs. Seedkits in particular were widely distributed, as their size dictates, and free pesticide treatments were available,

in non-compact areas as well as compact areas, to a wide range of farmers.

The main argument for extension and input supply being linked, however, is that the Department (at present levels of private sector services) must take major responsibility for supplies. To use an entirely separate field 'service' for a function so closely linked to extension would represent an unjustifiable cost burden. And even if such a service was established, it would still require extension staff to become involved in the sorts of allocation decisions they currently take over rationed access to seed.

3.2. Credit

The first point to note about the supply of formal seasonal crop production credit in both Rairangpur and Nimapara is that it has declined substantially in volume (number of accounts) and value over the past three to four years. This is partly a consequence of commercial bank policy at branch level. There was an expansion of aggregate seasonal lending activities in both Blocks following the opening of new branches in the middle 1970s, but there have been high levels of default and a general reluctance to seek new business while problems of repayment and rephasing of loans have pre-occupied bank staff.

But a particularly important change has occurred in the period after 1981-82 when the Commercial Banks (CBs) were obliged to direct a large part of their already scarce administrative resources to medium-term lending under IRDP. In the case of a few banks, seasonal production credit lending has stopped altogether as loans officers have ceased the practice of visiting villages to arrange loans. This may also indicate a very low level of demand for seasonal credit as very few farmers appear willing to visit the banks in order to open loan accounts. But the practice has been for such

accounts to be arranged at farm level since the borrower knows that he eventually needs the endorsement of an agricultural loans officer, VAW (or HFC Agronomist). It is for this reason that the distribution of seasonal credit is very patchy: certain villages may have as many as a quarter of farmers holding accounts, others have none whatsoever.

The position of the PACS and LAMPS has changed less. They have been operating for much longer and over a wider area than the CBs. But they have shared a similar record of high default levels which has kept lending at a very low level. Many societies now have such a low volume of effective demand for seasonal credit that they have stopped supplying fertilizer altogether.

There seems little doubt that from the customers' point of view, the CBs provide a better service. Their procedures are much more quickly completed, although it is not the case that their initial loan procedures are any less demanding than those of the societies. In this respect, it should be noted that the alleged complexity of loan procedures appears to create more difficulties for bank staff than for borrowers. Because of the need to ensure eligibility for different forms of lending and to allow subsequent loan supervision, there is a high administrative cost which limits the operations of commercial banks even without the additional demands of IRDP.

There is also less likelihood of malpractice in CB procedures than in co-operative lending. In the latter case, there are more instances of dispute over such matters as level of overdues for example. One reason for such dispute is the different roles of co-operative societies and CBs. The societies are themselves input suppliers as well as lenders (or on-lenders) with subsequently greater pressures on the probity and competence of secretaries and storekeepers.

A further difference between CBs and co-operatives concerns the calibre of staff. The CBs I visited were staffed - at management level - with young, well-educated and confident staff, open to discussing credit policy and management issues. Co-operative Society and Bank staff, on the contrary, were older, suspicious and difficult to get information from, let alone ideas. It is easy to concur with the view, held by many Department of Agriculture staff for example, that the co-operative movement is inefficient, open to corruption, unable to attract good managerial material, and - as a result - an inappropriate mechanism for meeting the varied and erratic demands for inputs from smaller farmers. And the evidence of this study clearly indicates a preference for the private sector in fertilizer supply together with a higher level of satisfaction with CBs for seasonal credit. But the evidence cannot always be taken at its face value. A major example concerns the farmers' charge of late fertilizer delivery. As previously mentioned, there is also evidence to suggest that farmers deliberately inflate the fertilizer requirements in their loan application as a means of increasing the cash loan. Where farmers do not intend to lift ordered fertilizer, 'late delivery' is a convenient excuse.

If it is assumed that there should be continued government investment in improving formal credit supply for seasonal lending, it is hard to avoid the conclusion that this will have to come primarily through the co-operatives. The potential for CB expansion in places such as Orissa is severely inhibited by the high cost of lending in areas of low and erratic demand, low deposit potential, and poor recovery. As Gupta⁶ and others have noted, an expansion of lending in such areas will require new forms of subsidies to lenders on their operating costs. The high cost relative to loan portfolio, however, is less critical in the case of co-operative banks since they already have a network of branches - the primary societies - which trade in other goods and appear to have under-utilized management resources.

At present, formal seasonal lending in Orissa is falling between two stools. Poor co-operative credit performance has stimulated Government promotion for Commercial Bank operations. This has further weakened co-operative banking yet the CBs have neither the staff nor the operating cost subsidies to take over from the co-operative societies. In practice, very few borrowers have a choice of lending institutions for seasonal loans, although under current arrangements the more unscrupulous are able to obtain such loans with one institution while being in default with another.

One further issue in agricultural credit administration in India is the extent to which the distinction between production and consumption uses of credit (generally regarded as an inappropriate distinction by those who write on such matters) creates unnecessary administrative costs in loan appraisal and supervision to ensure that production loans are not diverted to consumption. Estimates of the cost of small farm seasonal lending suggests that financial effectiveness requires an interest rate of at least 20% per annum against current levels of around 12½%. This is 8% for the opportunity costs of capital, 4% (only!) for the costs of small farm default levels, and 8% for administration costs. This level of 8% for administration includes the costs of supervision. In Orissa, such supervision does not occur, as far as Bank staff are concerned, and it is only a very small, and ineffectual part of the work of extension staff to check if fertilizer and cash are in fact being used for production purposes. If administration costs are those directly attributable to the loan transaction process (that is a part of the salary of the Loans Officer, his transport and clerical support) then the figure of 8% is a slight overestimate: 7% is nearer the mark.

3.3. Input Supply

The private sector supply of fertilizer is limited in both Rairangpur and Nimapara. The low level of demand, the low profit margins for controlled-price goods, the risk of holding stock that can deteriorate, and the high capital cost, all deter existing general traders from holding fertilizer. Similar considerations apply in the case of pesticides and, to a lesser extent, seed, where commercial opportunities are restricted because of the high level of government involvement in distribution.

In the foreseeable future, the role of the public sector - in Orissa (and India as a whole) - in input supply (especially manufacture, pricing and wholesale distribution) will remain paramount; at the retail level, in Orissa specifically, the potential for a wide network of village traders, linked to publicly-provided wholesaling depends largely upon a very substantial increase in demand.

The absence of such a network is widely assumed to be a factor in the low level of consumption of improved inputs. The evidence of the study does not support this. As the section on farmer demand indicated, there is no evidence to suggest that farmers are deterred from lifting fertilizer because of the cost and time involved in visiting co-operative depots and private traders in the main towns or larger villages. There is little interest among farmers in reactivating village co-operative stores as fertilizer sales centres.

On the other hand there appear to be considerable difficulties on the part of co-operative societies and government agencies in efficiently staffing small sales centres in the villages. Co-operative stores are unreliably managed and Department of Agriculture seed stores - whilst well-managed - incur a high opportunity cost with VAWs being taken away from extension duties at critical times.

The scope for improvement in the input supply system (as far as fertilizer is concerned) is, at present consumption levels, at the wholesale, rather than retail, level. Most traders hold low stocks and have a small storage capacity. In these circumstances, their supply to customers can become erratic and inadequate if demand suddenly increases. The RCMs - even where they have the storage capacity - cannot be relied upon as suppliers to the private sector as they must meet the (often artificially inflated and unpredictable) demand from their own member societies. The State Warehousing Corporation (OSWC) is not always well-organised at the Block level. In these circumstances, investment in godowns for fertilizer use of the scale planned by IBFEP (300MT at the Block level for wholesale supply) does not look unjustified. However, the standard pattern of 300MT wholesale linked to several 100MT retail outlets per Block is not invariably appropriate, as the following section indicates.

3.4. IBFEP

At the level of service delivery, the IBFEP consists of four components: intensive extension efforts over two seasons in a single village, the block demonstration approach, initial high levels of input subsidies, and the construction of 100MT godowns as village fertilizer retail outlets.

The extension effort of HFC is more intensive than the work of the Department of Agriculture, both in terms of village coverage and number of farmers per extensionist. This is partly because the HFC Assistant Agronomists are involved in establishing large demonstration areas and providing support for inputs and credit for demonstrators. But it is also a deliberate attempt to teach farmers a package of improvements in husbandry and input use through almost constant supervision rather than occasional visits as under T and V.

The evidence of farm interviews suggests that this level of advisory support is not required in the case of many farmers, especially those who already cultivate improved varieties under irrigation and have been used to fertilizers, although on a lower scale of application.

The calibre of the Assistant Agronomists is high and they are well-regarded by farmers both for their technical knowledge and their administrative support. Their impact and utility could be widened however by increasing their area of coverage to more than one village at a time. Current workloads are heavy because of excessive reporting and survey duties; but once the transition from the initial key village to the first cluster village has been completed it should be possible to continue extension work on a reduced scale in these villages while arranging demonstrations and subsidies in new villages. The present agronomist:farmer ratio is unnecessarily high for the level of technical understanding of most farmers who often remain unconvinced of the economic viability of improvements but are not entirely unaware of the practices themselves. The technical weaknesses of farmers appear to be on timing and precise quantities of fertilizer and pesticide applications, not on the general principle of use.

The extension method - the Block demonstration - has already been discussed in the context of the MAY/CAP of the Department of Agriculture. But the larger size of the IBFEP plots, and (partly as a result) the greater extent of involvement of marginal farmers and tenants, suggests that IBFEP is proving to be a better mechanism for spreading benefits, although many of the better-off demonstrating farmers are getting a level of help and subsidy in production which they do not need as an incentive to improved farming.

This does not necessarily mean a misallocation of resources if it can be shown that the large demonstration plot that results from such a subsidy has a significant

impact on other farmers. However, this is not the case at present (admittedly after only two seasons). Few non-IBFEP farmers in cluster villages knew anything about the demonstration plots and several explicitly mentioned their indifference to visiting other farmers' demonstration fields.

The impact of subsidies is impossible to calculate on available evidence of only two seasons, but the farm interviews suggest that many farmers are unlikely to continue their present levels of pesticide and fertilizer use once the subsidy is revised. Those that will continue with high levels of use are generally the farmers who already have a record of improved input use.

There is little evidence of abuse of the subsidy system. Some dealers have seen the opportunity of collaborating with farmers in falsely issuing fertilizer and claiming the subsidy. But the involvement of Assistant Agronomists in supervision has curtailed this practice (although at a cost to extension work proper). There is some evidence of a few farmers misusing their subsidized fertilizer in the sense that it is applied over a larger area than intended, but there does not appear to be any selling of fertilizer by farmers.

The evidence of farmers clearly indicates that the provision of 100MT fertilizer godowns in the villages of Orissa is a poor investment at present levels of demand. Farmers have no difficulty travelling 20-25km to lift fertilizer and the costs of lifting away from the village are not a significant deterrent. Furthermore, unless such stores serve other functions - such as grain banks to mitigate distress selling - there is the likelihood of a low and irregular level of utilization with fertilizer sales alone unlikely to cover salary and other costs, at least at present fertilizer cost margins.

Finally, the impact of IBFEP operations on the work of the Department of Agriculture should be considered, particularly the issues of co-ordination between AA and VAW, and the duplication of extension and input supply efforts. I found some uncertainty among AAs in both Nimapara and Rairangpur about the size of the VAW unit and its schedule. There was also some confusion about the nature of support to beneficiaries. There were cases of farmers who were both demonstrating farmer (under IBFEP) and MAY demonstrator, simultaneously benefitting from both programmes, although on different plots.

These points of administrative uncertainty did not, however, impair the quality of services to the farmers. On the contrary, the close level of collaboration between the VAW (especially on seed supply) and the AA (taking the main 'extension' role) was evident. Several farmers assumed both workers were from the same Department.

The issue of duplication is less encouraging. There are strong pressures on field staff to establish successful demonstration areas and inevitably this results in a bias towards the more co-operative farmers and towards those villages with a record of improved farming (usually the better irrigated areas). As a result, both IBFEP and the Department are occasionally operating side-by-side in favoured villages while more backward areas receive little support. Because of the different time-scales involved it is impractical to suggest that Department extension activities be suspended in IBFEP villages (and not in the interests of farmers anyway), but there would clearly be merit in IBFEP concentrating its extension efforts on villages or parts of villages where previously the Department had made little impact in establishing demonstration plots.

4. How Important are Public Service Constraints?

What does this accumulated evidence on demand and supply, or access and efficiency, in two specific Blocks in India tell us about the importance of service and input supply constraints in ldc agriculture as a whole?

The public service constraints in ldc agriculture are generally regarded as:

- (a) inadequate extension services with only a small proportion of farmers covered,
- (b) research and recommendations inappropriate to the conditions of the majority of farmers,
- (c) deficiencies in the supply infrastructure and its reliability, with farmers' use of improved inputs deterred by the difficulties and costs involved in obtaining them,
- (d) lack of access to formal credit and delays in obtaining such credit for production requirements,
- (e) over-regulation and consequent opportunities for maladministration, in the supply of inputs and the rules of access to inputs,
- (f) bias in services and input supply towards the better-off and influential farmers with consequent inefficiency in resource allocation.

In Orissa, extension coverage is better than in most ldcs - not because the extension:farmer ratio is higher but because visits are regularly undertaken. Because the coverage is at this relatively high level, it is appropriate to ask whether extension is a major factor in improving agriculture, and thus ask whether, and in what circumstances, investment in extension improvement is worthwhile.

The main conclusion on Orissa is that lack of regular technical advice on crop husbandry is not regarded by farmers as a major constraint to increased production, although for a relatively small group of farmers cultivating new varieties with a largely untried package of inputs, there is a demand for technical support linked to the supply of such inputs. For farmers

outside this category there is a demand for occasional support from extension staff, and in Orissa this is particularly evident in plant protection measures and advice in seed supply, treatment, and selection.

In designing extension programmes in ldcs, this suggests that attention should be paid to the opportunity costs of concentrating upon the supply of particular packages of improvements among specific categories of adoptors. There is often a wide demand for different types of field service support which a 'supply-led' system of extension cannot easily adjust to. The function of extension per se is appropriate for a field service of Ministries and Departments primarily geared towards producing recommendations from research, but this should not exclude the local adaptation of extension functions and staff deployment to meet different types of demand from farmers which can be met most efficiently from the government agricultural service. In sum, extension services are a worthwhile investment, but only if their precise functions are sensitive to farmers' demand.

In Orissa, the lack of wider farmer interest in specific extension packages of recommendations is due to a general reluctance to incur the risks of losing relatively costly investment in recommended basal fertilizer doses and prophylactic treatments through crop failure. Similar findings come from World Bank Studies in Rajasthan and Madhya Pradesh.⁷ The lack of interest in any form of extension support comes largely from those farmers whose main source of income is from labouring or other activities, and who cannot see any realistic prospect of displacing such income with returns from their own farming.

This suggests that the general belief that many crop recommendations in ldcs are inappropriate (and - as a corollary - that investment is required in more adaptive and on-farm research) is upheld by the Orissa evidence.

Orissa evidence also indicates the opportunities for improving research and recommendations through the field service. In this case, the Department of Agriculture has a strong research base, and it has had some significant successes in improving agriculture (even if these have not yet been shown up in aggregate yield and production figures due to climatic adversities). It also has a relatively strong cadre of support staff for extension and extension training. In these circumstances (which do not apply to all ldc Ministries) the design of research and recommendations can be enhanced by the sort of improvements in extension to research links that I discussed in 3.1. above.

The evidence of Orissa on the importance of public investment in input supply infrastructure, on the other hand, goes against generally held beliefs. The indifference of farmers towards ostensible 'supply' constraints in lifting fertilizer suggests that where governments - in the absence of private sector alternatives - are involved in input supply they should recognise that the conditions of low demand that have led in part to the absence of private sector alternatives also apply to the public sector. A supply-led approach to input provision, involving the construction of warehousing and associated operating costs throughout the countryside, is not always appropriate given the resource of farmers in acquiring inputs that they require for agricultural improvement.

In Orissa, there has been a reduction in the availability of seasonal credit in recent years, partly due to the high level of default disqualifying many potential borrowers, and partly due to the restrictions on seasonal lending services as a result of the priority given to medium-term lending and subsidy transactions. The evidence of farmers does not suggest that access to credit is a major factor in decisions to adopt new practices, although this is inconclusive at present levels of adoption. Most adoptors were able to get formal credit through government support and a number of these did not bother to do so. The cost of formal credit is not, on Orissa evidence, an important factor in borrowing decisions - although the range of rates (4% - 12½%) is below the commercial rate and does not reflect

the cost of seasonal lending, and there was no substantial evidence of direct involvement in the private money market (with much higher rates) for production requirement loans.

More useful evidence was, however, obtained on the procedures of formal lending. It appears that the generally-held view that procedures are cumbersome, and therefore a deterrent to borrowers, does not always stand up to examination. Borrowers themselves do not see the procedures as particularly cumbersome because much of the burden of administering transactions does not fall upon them. Furthermore, the alleged delays caused by cumbersome procedures are not always inimical to farmer interests (as 2.3.2. indicates). This suggests that any re-design of loan eligibility procedures in credit programmes in order to reduce delays should look equally at the problems for bank staff as well as the problems for farmers.

The over-regulation of public agricultural services (for example in the rationing of subsidized fertilizer) is regarded as an important constraint to efficiency, and there is clear evidence in this study of inefficiency in the allocation of scarce professional resources to administrative tasks of regulating access and distribution. But there is not much evidence to support the view that such regulation inevitably leads to corrupt behaviour on the part of technical field staff; and there is every reason to believe that without the supervision of field staff there would be abuses of the system of subsidized delivery of inputs. The issue of whether there should be regulation at all is another matter. But wider criteria of efficiency must be applied where the Government is using its control over service provision not simply to promote agriculture but as a deliberate instrument for intervention in the rural economy; for example to redistribute incomes or to redress the economic disadvantage of poorer farmers and tenants.

Finally, there is the issue of bias in service provision towards the more influential consumers. It is generally assumed that services, particularly subsidized inputs and free seed and treatments, are captured by the networks of local political and economic power based on land ownership, money lending and

trading which are able to intimidate or bribe field agents. The evidence of Orissa suggests that this may be an over-simplified view as far as agricultural services are concerned, although it is more likely to be accurate in the case of major public investments such as irrigation and land consolidation.

A wide range of farmers benefit from privileged access to services and in most cases all that the beneficiary has to offer the field agent in return is evidence to his superiors that a demonstration plot has been properly established. The bias, in other words, is determined by the technical package itself: it often is the case that smaller farmers and tenants have a greater willingness than large and medium farmers to work with extension agents in establishing plots because the size of the concessionary inputs and the demands of the technical package are more appropriate to the scale of their farm enterprise. Where this is not the case - as with most Orissa farmers without assured irrigation or poor land resources - the answer is more appropriate recommendations and technical packages for the extension service to work with rather than writing-off field service staff as supine clients of the local rich.

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