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REFORMING AGRICULTURAL EXTENSION IN BANGLADESH: BLENDING GREATER PARTICIPATION AND SUSTAINABILITY WITH INSTITUTIONAL STRENGTHENING

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Abstract

The limited effectiveness of the Training and Visit (T&V) system of extension in sustaining agricultural growth, combined with concerns about sustainability and pressures towards greater participation by farmers and the private sector, have stimulated major reconsideration of extension strategies in Bangladesh. New approaches have been launched in the past few years, most notably through the Agricultural Support Services Project (ASSP) supported by the World Bank. Drawing on the experiences of ASSP since its inception in 1991, a National Task Force charged with defining a new policy for extension is now completing its work. This paper endeavours to synthesise field experiences since the inception of the T&V in 1978–79 through to the initial years of ASSP, in order to contribute to current efforts by the Bangladesh government and its partners to improve the effectiveness of agricultural development programmes.

The paper first offers a conceptual framework for assessing the coherence, performance and sustainability of extension strategies. Subsequent sections review the changes in agricultural production and productivity in the past two decades; improvements have clearly taken place, but the evidence of the contribution of extension is mainly circumstantial. The spread of irrigation and changes in the availability of inputs appear to be the most important in explaining the expansion of rice production in particular.

The rise and fall of T&V is then examined with particular reference to the differences between the theory and the actual practice. T&V contributed to the establishment of a national system of extension based on farmer and extension agent training; regular contact between extension and research staff; and standardised messages based on recommendations from research. The T&V approach exhibited a reasonable degree of coherence and performance. Further, the theory of T&V contains elements of the current strategy, such as linkages to research, but these failed to operate as expected in many instances.

In practice, T&V was overly dependent on routinely disseminated messages and generally failed to take farmers' constraints and priorities into account. Research-extension links remained weak with inadequate identification by research and extension staff of farmers' problems; and researchers' reluctance to see those problems as a basis for research prioritisation. A serious deficiency of T&V was its failure to consider the importance and possible roles for the private sector, notably NGOs which were rapidly expanding in number and their involvement in rural development activities during the same period.

T&V is most frequently faulted for its lack of sustainability. The massive expansion of extension staff which was aided and abetted in no small measure by the World Bank was fully consistent with the view of state leadership in agricultural development which prevailed at that time. The demise of T&V may be traceable at least as much to the fact that this view has changed as to the shortcomings of T&V itself. The government together with donors is no longer willing or able to continue to support the extension service at current levels.

The final section of the paper examines the major features of the new extension strategy which include: (i) decentralisation (deconcentration) of authority from the centre to the districts and thanas within the Department of Agricultural Extension (DAE); (ii) the use of groups rather than CFs in communications with farming communities; (iii) greater efforts to assess farmers' needs and tailor messages to their priorities for a wider range of commodities and subjects; (iv) strengthening linkages with public and private organisations concerned with research, inputs and marketing as well as extension; and (v) a sharper focus on poor and disadvantaged groups, including women. These reforms are pursued concurrently with efforts to reduce costs. The paper discusses problems and progress to date in each of these areas.

The paper concludes that although these reforms are steps in the right direction, the strategy appears to be

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based upon unrealistic assumptions regarding the willingness and ability of different organisations to make changes and work together. Whilst policy statements are replete with the rhetoric of cooperation between government and non-government agencies, the state's practical experience so far in either of these areas remains limited. Movement towards more cooperation remains largely donor-driven, with few examples as yet where either side has actively sought the other toward this end.

The initial expressions of the new strategy through ASSP are focused primarily upon changes in the extension activities of DAE and encompass a number of features that were part of the theory of T&V, but failed in practice. It is not clear that ASSP offers significantly better prospects for improving performance in several of the key areas, including research-extension linkages. The continuing difficulties in efforts to rejuvenate the national research system seriously reduces the potential contribution from the single most important source of new technologies.

Improved performance requires a combination of appropriate levels of skill and divisions of responsibilities. Experience to date suggests a major gap between skill requirements and current capacities for all actors, but especially for DAE. As decision-making is centralised, district-level staff will require a much wider range of skills, both technical and interactive. Extension staff must be able to diagnose the problems and opportunities faced by farmers; develop appropriate messages; and work collaboratively with village groups and other private sector organisations.

DAE is currently emphasising deconcentration with more authority for district staff in the planning and implementation of extension programmes. However, accountability may be adversely affected in the process. While staff are enjoined to take farmers' needs into account and to involve NGOs and others in extension plans and programmes, the extent to which field staff are actually accountable to clients at the local level appears to be mainly a matter of their own choosing. Further, as the degree of diversity in district extension activities grows, the ability of the centre to monitor and understand what is happening will diminish and with it the level of effective accountability within DAE.

The sustainability of new extension approaches is especially problematic at this stage of the process. A major feature of ASSP involves the actual reduction in the costs of the public extension services, primarily through staff reductions. Efforts to achieve savings for government quickly through divestment of functions and staff reductions could prove counter-productive in relation to the objectives of the new strategy. Although expanded involvement of private sector agencies, including NGOs and private commercial firms, could reduce the scope and cost of public sector programmes eventually, the process of successfully reaching that point is likely to require additional inputs of skill and resources.

It is not clear whether the new strategy will facilitate stronger demand from rural communities and what roles groups and NGOs will play in these processes. Nor is it clear whether the system as a whole will facilitate institutional pluralism in the generation and dissemination of new technologies. Most of the initial set of activities are primarily aimed at improving the efficiency and effectiveness of government-led development programmes, rather than fundamentally altering the status quo. NGOs are regarded by some as an additional complication being thrust upon government agencies by donors. Aside from assistance with homestead gardens and certain cash crops, there is no clear vision of the roles of NGOs and private commercial firms in providing research and extension services for farmers.

Particular attention needs to be given in the early stages to gaining an understanding of the comparative advantages of government agencies, NGOs, commercial firms, groups and farm families; and an appreciation that their roles are likely to vary between districts, commodities and population groups. The new extension strategy is revolutionary and will require time to take root. ASSP can assist by developing and testing approaches on a limited basis. However, the transformation of government services and the development of new partnerships nationwide will require more time than is available through ASSP. A key question is whether the parties involved will have the necessary flexibility, patience, will and resources to give the new approach a reasonable chance of success.

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ACRONYMS, ABBREVIATIONS AND BENGALI TERMS

Acronyms and Abbreviations

ADAB	Association of Development Agencies in Bangladesh
AEZ	Agro-Ecological Zone
AIS	Agricultural Information Service
ARI	Agricultural Research Institute
ASSP	Agricultural Support Services Project
ATC	Agricultural Technical Committee
ATI	Agricultural Training Institute
BADC	Bangladesh Agricultural Development Corporation
BARC	Bangladesh Agricultural Research Council
BARD	Bangladesh Academy of Rural Development
BARI	Bangladesh Agricultural Research Institute
BARRA	Bangladesh Rural Reconstruction Association
BAU	Bangladesh Agricultural University
BBS	Bangladesh Bureau of Statistics
BIDS	Bangladesh Institute of Development Studies
BINA	Bangladesh Institute of Nuclear Agriculture
BJRI	Bangladesh Jute Research Institute
BKB	Bangladesh Krishi Bank
BRAC	Bangladesh Rural Advancement Committee
BRDB	Bangladesh Rural Development Board
BRRI	Bangladesh Rice Research Institute
BS	Block Supervisor (DAE)
BSFIC	Bangladesh Sugar and Food Industries Corporation
BTC	Bangladesh Tobacco Company
BTRI	Bangladesh Tea Research Institute
BWDB	Bangladesh Water Development Board
CARE	CARE Bangladesh
CDP	Crop Diversification Programme
CF	Contact Farmer
CIDA	Canadian International Development Agency
DAE	Department of Agricultural Extension
DAEM	Department of Agriculture (Extension and Management)
DANIDA	Danish International Development Assistance
DD	Deputy Director
DEMC	District Extension Monitoring Committee
DEMS	District Extension Monitoring System
DEPC	District Extension Programming Committee
DG	Director General
DLS	Department of Livestock Services
DOF	Department of Fisheries
DTC	District Technical Committee
DTW	Deep Tubewell
ERP I	Extension and Research Project I
ERP II	Extension and Research Project II
FAO	Food and Agriculture Organisation of the United Nations
FFYP	Fourth Five Year Plan
FSR	Farming Systems Research
FSRD	Farming Systems Research and Development
GDP	Gross domestic product
GKF	Grameen Krishi Foundation
GKS	Gram Krishak Sangathan
GO	Government Organisation
GOB	Government of Bangladesh
HTS	Hunting Technical Services Limited, UK
HYV	High Yielding Variety
ICLARM	International Centre for Living Aquatic Resources Management

IDA	International Development Association
IFAD	International Fund for Agricultutral Development
IFPRI	International Food Policy Research Institute
IPSA	Institute of Post-graduate Studies in Agriculture
IRDP	Integrated Rural Development Programme
KSS	Krishak Samabay Samity (Farmers' Cooperative Society)
LLP	Low Lift Pump
MCC	Mennonite Central Committee
M&E	Monitoring and Evaluation
MIS	Management Information System
MOA	Ministry of Agriculture
MSFSCIP	Marginal and Small Farm Systems Crop Intensification Project
MTRT	Mid-Term Review Team
NARS	National Agricultural Research System
NGO	Non-Government Organisation
NSB	National Seed Board
NTCC	National Technical Coordination Committee
ODA	Overseas Development Administration (UK)
ODI	Overseas Development Institute
OFRD	On-Farm Research Division (of BARI)
PACT	Private Agencies Collaborating Together (US-based)
PP	Project Proforma
P/RRA	Participatory and Rapid Rural Appraisal
RDRS	Rangpur Dinajpur Rural Services
RRA	Rapid Rural Appraisal
RTC	Regional Technical Committee
SAR	Staff Appraisal Report
SCA	Seed Certification Agency
SDC	Swiss Development Cooperation
SMO	Subject Matter Officer
SMS	Subject Matter Specialist
SRDI	Soil Resources Development Institute
SRTI	Sugarcane Research and Training Institute
STW	Shallow Tubewell
T.	Transplanted
Tk	Taka
T&V	Training and Visit
TAO	Thana Agricultural Officer
TO	Training Officer
UKS	Unit Krishak Sangathan
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WB	World Bank
WREN	World Radio for Environment and Natural Resources

Bengali terms

B. aus Broadcast aus; a rice crop planted March/April under dryland conditions. Matures on pre-monsoon showers to be harvested in June/July, and is insensitive to daylength.

B. aman Broadcast aman; a rice crop usually planted in March/April under dryland conditions, but in areas liable to deep flooding. Also known as deep water rice. Harvested October to December. May also be transplanted in May into the boro crop stubble.

Bil Depressed area which remains waterlogged most of the year.

Boro A rice crop planted under irrigation during the dry season from December to March and harvested April to June. Local boro varieties are more tolerant of cool temperatures and are usually planted early in areas which are subject to early flooding due to rise in river levels. Improved varieties, less tolerant of cool conditions are usually transplanted from February onwards. All varieties are insensitive to daylength.

Char Newly-formed land near the river banks.

Kharif The wet season (typically March to October) characterised by monsoon rain and high temperatures.

Kharif I The first part of the kharif season (March to June). Rainfall is variable and temperatures are high. The main crops grown are aus, summer vegetables and pulses. Broadcast aman and jute are planted.

Kharif II The second part of the kharif season (July to October) characterised by heavy rain and floods. T. aman is the major crop grown during this season. Harvesting of jute takes place. Fruits and summer vegetables may be grown on high land.

Parishad Board or Council

Rabi The dry season (typically November to February) with low or minimal rainfall, high evapotranspiration rates, low temperatures, and clear skies with bright sunshine. Crops grown are boro, wheat, potato, pulses and oilseeds.

T. aus Transplanted aus; a rice crop, transplanted March/April usually under irrigated conditions and harvested June/July. The distinction between a late planted boro (c.v) and early transplanted aus is academic since the same varieties may be used. Varieties are insensitive to daylength.

T. aman Transplanted aman; a rice crop planted usually July/August, during the monsoon in areas liable to a maximum flood depth of about 0.5 metre. Harvested in November/December. Local varieties are sensitive to daylength whereas modern varieties are insensitive or only slightly sensitive.

Thana Administrative area, below District.

Introduction

New Directions in Extension Strategy

The agricultural development strategies which Bangladesh is currently pursuing reflect several concerns and views regarding approaches to agricultural research and extension in South Asia and other regions. These views can be summarised as follows:

(a) Development approaches and organisations during the past decade, including public sector agencies and the Training and Visit (T&V) system of extension, have been less effective than expected, particularly in serving the rural poor and disadvantaged elements of the population.

(b) Costs of public services have continued to rise and now surpass levels sustainable by government.

(c) Participation by rural communities and individual farm families with public sector agencies in planning and implementing development activities offer promising opportunities to improve performance, increase accountability and reduce costs to government.

(d) The private sector, commercial, voluntary and non-profit organisations, have made positive contributions to rural development and their expanded participation can improve the quality and quantity of services to rural communities while possibly reducing public sector costs.

(e) There will continue to be functions which the public sector has a comparative advantage in performing. The effective performance of these functions will be critical in determining the success of broader private sector participation, particularly in serving the rural poor.

(f) Significant adjustments in existing approaches to research and extension used by public and private sector organisations are required to facilitate and nurture effective partnerships. Prominent among the needed changes are decentralisation of planning and implementation by public sector agencies; and reconsideration of the roles of individual farmers and organisations serving them in the development and dissemination of technologies.

Although these views have strongly influenced policies, strategies and design of projects, they have not been widely-subjected to scrutiny in the light of actual field experiences, either via special studies or on-going monitoring, evaluation and impact assessment activities.[1] A National Task Force charged with developing a policy and strategy for extension has been created and is currently considering these and other issues (World Bank/ODA, 1995). It is hoped that this paper will contribute to the current debate as well as provide an overview and analysis of current trends.

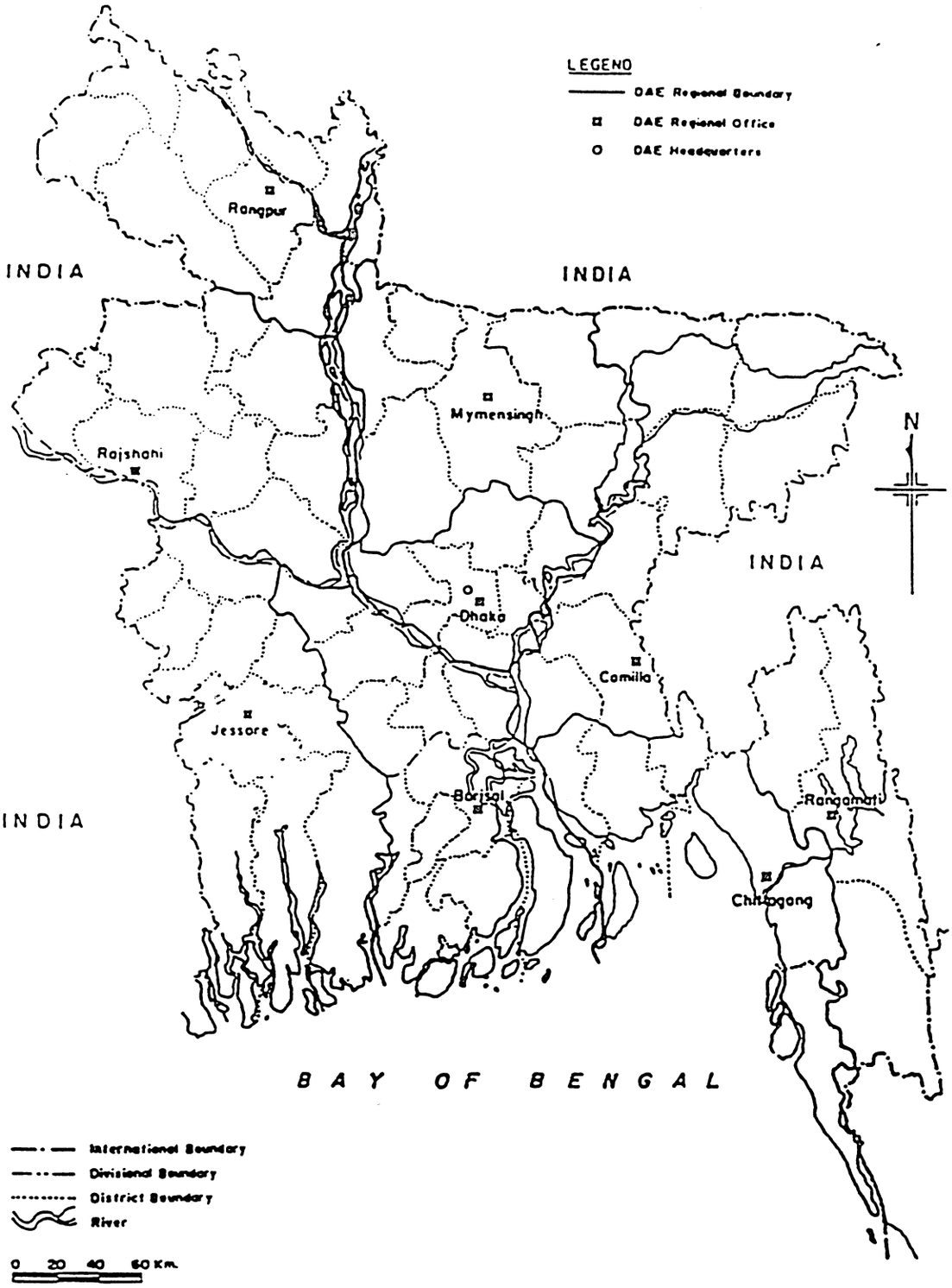
Items a-d are perceptions that are being progressively incorporated into conventional development thinking, notably in the design and implementation of projects supported by external donors. There is growing recognition that the public sector may still have some role to play (item e). Certain types of research and extension, especially those where expenses cannot be at least recouped through sales of 'products' to users, may not attract interest from the private sector. More generally, private organisations serving the rural poor, especially smaller NGOs, may require backstopping assistance in a range of technical areas which extension services and other public sector agencies are equipped to provide.

Although prospective roles for various public and private agencies are emerging with some clarity in certain areas (e.g. horticultural export development), many activities, including extension for food crops, remain in a grey zone in which it is assumed a variety of agencies will play various roles. The need for decisions not only on what will be done, but who will do it on a district by district basis seriously complicates the tasks of planners and managers of agricultural development agencies at the national and local levels. The precise nature of the roles of different participants can be expected to vary over time and between areas and commodities, and depend less on whether the agencies involved are public, private, NGO or commercial firm than on current capacities and priorities. In many instances, partnership, rather than simple off-loading of functions from public to private sector will emerge as the preferred approach.

The need for adjustments by organisations on both sides of the fence (item f) is the least understood element. Although the idea of public/private partnership in agricultural development is not new, there are few examples in practice in Bangladesh. One reason may be that organisational partnership, especially in its more intimate forms, implies changes in the ways in which individual field staff as well as decision-makers perform and interact with one another.

For instance, meaningful participation by rural communities and individual farm families involves an understanding of the specific mechanisms for 'bottom-up' or 'demand-driven' programmes and how these can be effectively synchronised with decision-making and programme implementation of research and development organisations. Decentralisation, or more correctly deconcentration, is often proposed to facilitate collaboration at the district and local levels. Further, more sharing of responsibilities for the development and dissemination of new technologies

Figure 1: Map of Bangladesh



by research, extension and farmers can foster effective collaboration. Much of this is new territory, for both managers and field staff who are accustomed to issuing and receiving marching orders within the organisation and proceeding accordingly.[2]

This paper offers a conceptual framework for assessing extension strategies from the perspectives of coherence, performance and sustainability. In addition, the framework considers criteria for determining the suitability of public and private participation in performing specific activities. Special attention is given to the processes for transition from for example centralised to decentralised systems and from unitary public sector structures to arrangements which facilitate pluralism and participation.

Major questions which cut across the debate over different extension strategies include the following:

- What are the implications of agricultural development in Bangladesh during the past 20 years for agricultural policies and strategies? (or more specifically, do either T&V or the new extension strategy take the realities of agrarian change in the country adequately into account?)
- What are the prospects for major improvements in the performance of agricultural research and development services and the agricultural sector as a whole in the near- and medium-terms as a consequence of changes in policies and strategies?
- What are the implications of changes in agricultural development services now in progress for overall costs of these services; distribution of services and costs between public and private sectors; and institutional sustainability?

While a comprehensive treatment of these questions is considerably beyond the scope of the present paper, they are recurrent themes around which the following discussion is woven.

Scope of the Paper

This paper critically examines these views and concerns in the context of evolution of agricultural extension activities in Bangladesh during the past 20 years. Our general finding is that in spite of considerably greater openness to criticisms of existing approaches and the possibilities of new arrangements, especially those involving greater participation by rural communities and partnerships between public and private organisations, there are still major gaps between the rhetoric and the reality. Until further progress is made toward improving the performances of the core public sector organisations for agricultural research and extension, little sustainable progress will be made in developing partnerships with private organisations, rural communities and individual farmers, or in the provision of services to farm families, especially the poor and disadvantaged. While our findings favour more explicit attention to the requirements for greater participation and organisational partnerships in the design and implementation of projects, they also caution against major down-grading or abandonment of efforts to strengthen the core public sector organisations.

Although extension is the primary focus of this paper, attention is also given to relationships or linkages with research and input supply agencies.[3] The following section provides definitions and a conceptual framework. Then follows a brief description of the agricultural and organisational context, highlighting major trends in production, policies, and organisations affecting the agricultural sector. We review the theory and practice of agricultural extension in Bangladesh over the past 20 years with specific focus on T&V and go on to describe and analyse current and prospective changes in extension strategy. The final section offers conclusions and suggestions for modifications in current approaches that might enhance prospects for success.

Conceptual Framework

Introduction

The story of agricultural extension in Bangladesh could stand alone, both as evidence of accomplishment and as a cautionary tale. But what does this story mean for the future and more specifically for possible modifications in extension strategy? Answenng these questions requires a blending of lessons from the past with the array of 'new' concepts, including participation, decentralisation and accountability. The fact that these concepts are not really new, either as concepts or as official policy, but have often been circumvented or just ignored by most public sector agencies for over a decade is instructive in itself.

This section offers a some definitions and a conceptual framework for examining extension approaches in Bangladesh. The purpose is to provide a context for assessing coherence, feasibility, performance and prospects of a specific approach, in addition to making comparisons between approaches. The latter is severely complicated in Bangladesh by important changes in objectives and the general policy framework over time. The demise of T&V may be traceable at least as much to these factors as to its own shortcomings.

Definitions

This sub-section attempts to define and distinguish a number of key terms which are currently in use in discussion of agricultural research and technology transfer. Not all readers will agree with the distinctions we have made nor is the following list comprehensive, but we trust that the discussion will at least illustrate the need for such distinctions.

DECENTRALISATION, DEVOLUTION AND DECONCENTRATION

Decentralisation is a key feature of the current agricultural extension strategy in Bangladesh, but a more precise term to describe what is happening is 'deconcentration'. Carney (1995) provides the following definitions:

> *"Decentralisation is process, a shift in locus of power from the centre towards the periphery ... [with a] focus on restructuring and changes in power relations within government. Decentralisation does not, however, imply that all power resides in the periphery. The centre still sets broad policy guidelines and goals and is responsible for coordination between decentralised units in addition to supplying certain key goods and services.*
>
> ***Decentralisation within the law-making, legislative branch is referred to as devolution.*** *This involves the creation or revitalisation of elective bodies at a lower level.*
>
> ***Decentralisation within the appointed bureaucracy, or executive branch is known as deconcentration.*** *This involves a shift in operational power away from the central ministry to sub-units outside the capital. It may coincide with a redefinition of the scope of a ministry, but such a change is not, in itself, an example of deconcentration."*

Carney goes on to note that devolution and deconcentration are "logically independent" but that "devolution is unlikely to be effective without some accompanying deconcentration" (Carney, *ibid.*). As discussed below, the new strategy represents deconcentration without devolution, namely decentralisation of the extension services without as yet clearly defined mechanisms which can ensure local accountability.

LINKAGES, OFF-LOADING, PARALLEL SYSTEMS AND PARTNERSHIPS

Cooperation between government organisations (GOs), private sector organisations and farmer groups means very different things to different people. The following terms are used extensively in discussions and documents dealing with the various forms of cooperation.

Linkage is a generic term which covers the entire range of interactions between different agencies (external linkages) or between different sections within the same organisation (internal linkages). Linkages can be informal, involving exchanges of information and episodic meetings to discuss subjects of common interest; or formal and structured, perhaps involving contracts or agreements which specify the responsibilities of each party. Functional off-loading and partnerships are examples of more formal linkages, while parallel systems may not involve any interactions, formal or informal. Specific linkage functions, such as information exchange, may be the responsibility of one or both of the units being linked and/or of a separate unit created for that specific purpose.

Functional Off-loading is the most common pattern to date, and usually involves a GO contracting with one or more NGOs to perform specific services in a given area. NGOs' ethos of partnership and empowerment – in practical terms, finding out what farmers need and them trying to meet those needs – argues that contracting can be a more cost-effective means of performing selected services than having the government do the job itself. However, if the off-loading is temporary in nature or is in response to the availability of special project funding, or because government cannot place staff in remote and undesirable locations, NGOs tend to be cautious. Such relationships are normally more contractual than collaborative in character. Examples include the contracts between DAE and various NGOs to assist with training and the provision of services in support of the homestead garden component of ASSP.

Parallel Systems may involve one or more government agencies operating in the same geographic and subject-matter areas as one or more NGOs. Parallelism may also involve exclusively GOs or NGOs. The creation of a special authority or unit with responsibility to implement a project can grow into a parallel system. A formal division of labour may or may not exist, but even where it does, the agencies often find themselves in competition with one another. There are several examples of parallel systems, notably where NGOs have decided to provide agricultural extension and adaptive research services in specific areas where government programmes already exist, but are perceived by NGOs to be only minimally relevant to farmers' needs. However, in most instances there is scope for cooperation which can benefit all sides.

Partnerships are agreements where the government and NGO staff members work together, based on an agreed upon division of labour. The government agency may provide technical skills while the NGO provides the critical link with the rural community through training and motivation. Success requires a synchronisation of approaches which is difficult to achieve, given the very different work styles and orientations. Government agencies tend to think in terms of technologies, targets and numbers, while NGOs often focus more on process and participation. Many NGOs clearly state their preference for partnership and, furthermore, their lack of interest in forms of cooperation that are short of this. There are few examples of formal partnerships in agriculture, but the aquaculture project involving ODA support to the Department of Fisheries provides one illustration (Lewis, 1994).

PARTICIPATION AND EMPOWERMENT

Participation, like linkages, is a generic term covering a broad range of activities in which rural communities and individual farm families play more active roles in agricultural research and development. An activity may range from a one-shot, problem identification exercise (e.g. participatory rural appraisal (PRA)), to continuing associations. Partnerships are usually more formal expressions of continuing participation. Greater participation normally implies a broader sharing of responsibilities (but not necessarily power), as between the government agencies, rural communities and private sector organisations.

Empowerment can also be an expression of participation, but goes further to imply a shift in actual power or decision-making relationships, usually away from government and toward rural communities and individual farm families. Current extension approaches in Bangladesh espouse greater participation, meaning a shift of responsibilities from government to the private voluntary sector. These activities may lay the foundations for future changes in decision-making, but aside from NGO efforts in group formation, there are few, if any, specific features of current approaches which could be called examples of empowerment.

RURAL COMMUNITIES, VILLAGE GROUPS AND FARM FAMILIES

A **rural community** consists of one or more contiguous villages in a rural area. Each community or village usually includes a number of **farm families**, each of which usually occupies a compound and constitutes a basic social unit in which decisions about sharing of resources and responsibilities among individuals in the 'family' take place.[4]

Village groups are collections of individuals usually drawn from the same rural community who come together for specific or general purposes. Such groups may be traditional, internally initiated, or induced by external agencies. They may be informal and temporary in nature, or long-standing with formal structures. All members of a rural community need not be members of the same village group. Different members of the same farm family may belong to different groups, as for example where there are different groups for men and women.

RESEARCH RESULTS, TECHNOLOGIES AND INNOVATIONS

Research results are the products of efforts of researchers and can take the form of knowledge, including the specification of individual processes; or 'hardware', including new types of plants and animals, germplasm, fertiliser, pesticides, vaccines and machinery. Research results can simply be incorporated into the stock of knowledge used by the research community; may generate techniques used by other researchers; or may form the building blocks of **technologies** which specify the combination of hardware, information and skills that are required to produce certain results under given agricultural conditions. Commonly, technologies are included in **packages** intended to improve the productivity of production, processing and/or storage of a specific commodity, which are released by research organisations for general use. **Innovations** encompass the processes by which farmers adopt and adapt research results, technologies and packages into their individual farming systems. Such processes include gaining access to the complementary inputs (e.g. water, credit) that are required for the successful adoption of a technology.

Conceptual Framework

COHERENCE OF GOALS, OBJECTIVES, STRATEGIES AND SPECIFIC TECHNIQUES

Extension approaches can be examined from several perspectives. A useful starting point, especially if one is either comparing different approaches or just assessing the internal coherence of one extension approach involves looking at three levels, namely (i) goals and objectives; (ii) strategies; and (iii) specific techniques. Internal consistency or coherence measures the extent to which:

- Goals and objectives are consistent with and compliment one another
- Strategies contain elements which are internally consistent and support the goals and objectives
- Specific techniques complement one another and support the strategy.

This framework can also serve to compare different extension approaches, as for example between T&V and the new extension strategy in Bangladesh. However, the value of such comparisons weakens where there is not a sharing of goals and objectives. Both goals and objectives appear to have shifted in Bangladesh since the launching of T&V in the 1970s, although some common features remain (e.g. improving agricultural incomes, production and productivity).

ASSESSING PERFORMANCE AND THE DIVISION OF RESPONSIBILITIES

Assessments of coherence and consistency are important in understanding the extent to which different elements of an approach relate to one another. However, such assessments do not focus explicitly on actual performance, ex-ante or ex-post. Again, there are several possible measures of performances, but those commonly utilised include: effectiveness; efficiency; and accountability. Carney (1995b, p2) defines these terms as follows:

> *"**Effectiveness** refers to the ability to meet goals, objectives or needs ... **Efficiency** refers to the way in which goals are met – it implies that this is done at as low a cost as is possible without having a*

negative impact. ***Accountability*** *is institutionalised responsiveness to those who are affected by one's actions. Thus accountability contributes to effectiveness and only institutions which are effective can be classified as truly efficient."*

These measures provide a basis not only for assessing different extension approaches, but determining levels and types of participation, including the appropriate mix of public and private sector participation required for successful implementation.

In determining the suitability of private versus public sector participation in the provision of specific goods and services Carney (1995b) focuses on

"... the two key properties of ***excludability*** *(those who have not paid for the goods are excluded from consuming them) and* ***subtractibility*** *(one person's consumption of the goods reduces its availability to others). In general, only those goods which are both highly excludable and high subtractable (private goods) are good candidates for private supply. If the supply of other types of goods is left entirely to market mechanisms, the result will be undersupply and a loss in economic efficiency. If conversely, private goods are subsidised then they tend to be used at levels higher that the economic optimum. Costs will exceed benefits and other criteria for limited supply will have to be introduced."* (p6)

In general, extension services have low levels of excludability and subtractability, especially those encompassing subsistence crops in rural communities. These services might still be provided by NGOs with their own resources or with support provided by government. In contrast, services focusing on specific commodities which are mainly sold, such as tobacco, can be good candidates for private sector participation, even without government support.

SUSTAINABILITY

Ideally, goals, objectives and strategies will have come into existence through the interaction of different forces coming from different directions to form a coherent approach having good performance prospects. But the approach may have come largely from above or from outside. An important question in the case of Bangladesh is whether the bulk of initiatives constituting the new approach to extension are donor-driven. Is there evidence that ownership of the approach is becoming more internal and gaining support within the extension service, among actual and potential organisational partners in the public and private sector, and among rural communities and farm families? Such support is critical to developing sufficient momentum for the strategy to survive long enough to prove itself and make a contribution to the development of the country. Accordingly, assessments of the **institutional sustainability** of extension strategies should take account of the support and momentum which an approach has been able to generate internally and/or its capacity to do so in the future.

In terms of **financial sustainability**, the GOB is seeking ways to reduce or at least stabilise the costs of public services. Ideally, a new strategy will not add to the costs to government in the medium to long term, and should indicate how the private sector might bear a larger share of the expenses.

TRANSITION, PROCESS AND PRODUCTS

Assessments of coherence, performance and sustainability often fail to adequately consider the importance of **the time required to move from one situation or condition to another**. When a strategy calls for coordinated action on several fronts by different actors – as is the case with the new extension strategy – the degree of change may be major and the time and effort required to make those changes large relative to the resources and timeframe of a single project, such as ASSP. Extension approaches need to be assessed from the perspective of the complexity of the required changes and the probable ease with which these changes can be made. How well does the phasing for the project take the time dimension adequately into account?

A further dimension of transition is the extent to which an extension approach defines and incorporates a **process** for achieving change. Where major shifts in the roles of different organisations (e.g greater participation) or between different parts of the same agency (e.g. deconcentration) are involved, a focus on process is a particularly important feature during the early phases of implementation. A further consideration is **flexibility** or the extent to which the process is able to accommodate adjustments in strategy and specific activities in the light of experience.

In contrast, many projects focus primarily upon the **products** or outputs which will be achieved as a result of the set of activities to be undertaken. Products are often specified in terms of rates of adoption of innovations, and increases in production and productivity. Designation of products may be translated into targets, both for inputs and outputs. Such targets provide measures of performance and facilitate accountability, especially for use by central authorities and donor agencies. However, they also introduce a strong element of inflexibility and can divert attention from the process itself. Some extension approaches, notably T&V, have a strong product focus. In contrast, major features of the new extension strategy (e.g. participation and deconcentration) have more in common with a process orientation.

Table 1: Basic demographic statistics

Population (1991)	109.9 million
Population density	763 per sq km
Population growth	
1974-81	2.35%
1981-91	2.03%
Crude birth rate (per thousand)	31.6
Crude death rate (per thousand)	11.0
Average life expectancy	56.1 years
Literacy rate	24.8%
Religion	
Muslim	86.6%
Hindu	12.1%
Buddhist	0.6%
Christian	0.3%
Ethnic/tribal	0.4%
Number of households	15.1 million
Size of household	5.4 persons
Male/Female ratio	105.9

Source: BBS, 1992; Census of population, 1981

National context

Basic Demographic and Climatic Characteristics

Situated between 20°34' and 26°38' N latitudes and 88°01' and 92°41' E longitudes, Bangladesh is one of the world's most densely populated countries with about 110 million people living in an area of about 143,999 sq km (Table 1). The average annual growth rate of population is about 2.03% (BBS, 1992) .

The topography is flat except for some small hills in the north- and south-east of the country. Based mainly on physiography, soil and climatic variations the country has been divided into 30 agro-ecological regions (Figure 1). Rivers, *bils*, urban and homestead areas cover about 15% (2.18 million ha) of the total land area (14.49 million ha). Of the rest, floodplain soils cover 67.1%, hill soils cover 10.8% and terrace soils 7.1% of the country (UNDP/FAO, 1988). Bangladesh has a sub-tropical monsoon climate with a short winter period from November to March. The monsoon period is from June to October. Average annual rainfall ranges from about 1400 mm in the north-west to more than 5000 mm in the north-east (Manalo, 1976; BBS, 1992).

Table 2: Sectoral shares (%) of GDP at current prices

Sector	1972/73	1981/82	1990/91
Agriculture	57.9	48.8	36.0
Crops	43.8	36.6	26.1
Forestry	2.8	2.9	3.4
Livestock	4.9	6.0	3.2
Fisheries	6.4	3.3	3.3
Industry	10.1	15.5	15.8
Services	32.0	35.7	48.2
Total	100.0	100.0	100.0

Source: National income (BBS, 1992); Wennergren *et al.*, 1984)

Overview of the Agriculture Sector

Agriculture is the main occupation of the people employing about 61% of the labour force. It has a key role in ensuring food security. However, from 1981/82 to 1990/91 the share of agriculture to the gross domestic products (GDP) fell from about 49% to 36% (Table 2). Although agricultural production has increased, the decrease in sectoral share was due to higher relative increase in the service sector. Crop production is the largest sub-sector, accounting for about 26% of the GDP (about 70% of agricultural GDP). Livestock, fisheries and forestry each contribute about 3% to GDP. Rice alone accounts for about 50% of agricultural output and over 20% of GDP.

In 1990/91 Bangladesh had 8.18 million ha of net cropped area and 1.55 million ha of current fallows and cultivatable wasteland. Cropping intensity was 172%. From 1972 to 1991 average cropping intensity increased by about 1.8% annually. The increase was due mainly to the expansion of irrigation facilities. About 21% of the cultivated area is irrigated (BBS, 1992). Cattle are the traditional source of draft power. However, liberalisation of trade policy, shortage of feed and a shortened turn-around time due to crop intensification have contributed to the gradual adoption of power-tillers.

General risks to crop production are drought, particularly in the north-west, salinity in the southern coastal areas, soil erosion in the *charlands* (newly-formed lands near river banks) and waterlogging in the low-lying parts of the country. Natural calamities like floods and cyclones frequently cause damage to crops as well as lives and properties of people.

The 1983/84 agricultural census showed that 38% households had no land or only a homestead plot. According to other estimates 75% of the households have access to less than 1.0 ha of land, and 4% of the households who work more 3.0 ha operate about 26% of the total area (Table 3).

Crop Production Trends

Farming in Bangladesh is subsistence-oriented. Crop-livestock mixed farming predominates in the country. Cropping patterns are determined primarily by land

Table 3: Farm size classification

Agricultural household by operated area	Households in category (% of total)	Operated area (% of total)
Agricultural labour Households without farms (operating less than 0.02 ha)	19	1
Agricultural labour Households with mini-farms (operating 0.02 - 0.2 ha)	19	3
Small farm households (operating 0.2 - 1.0 ha)	37	26
Medium farm households (Operating 1.0 - 3.0 ha)	20	44
Large farm households (operating >3.0 ha)	4	26
Total	100	100

Source : DAE/ASSP Document No. 44, July 1994

elevations and occurrence of monsoon rains or the availability of irrigation water. Three cropping seasons are identified based on the monsoon. These are : early *kharif* (pre-monsoon, April to July), late *kharif* (monsoon, June to November) and *rabi* (winter, November-April) seasons. Rice grows in all three seasons although it is the most important crop during the late *kharif*. Transplanted *aman* rice is grown in extensive areas depending on natural rainfall during this season. The pre-monsoon *aus* rice is a low-yielder crop which frequently suffers from drought. Jute is also grown in this season. Winter (*boro*) rice has become an important crop with the expansion of small-scale irrigation facilities.

Winter is the most diversified cropping season. Several upland crops including cereals, pulses and oilseeds, and a host of vegetable crops are grown in this season, as are wheat, potato, lentil, chickpea, blackgram, grasspea, mustard, groundnut, millets and various mixed crops such as of pulses and oilseeds and potato. Winter vegetables include such crops as gourds, radish, hyacinth bean, yardlong bean and eggplant. Sugarcane, sweet potato, tobacco, cotton, and spices like chili, turmeric and ginger are also important crops. Area and yield of selected crops are given in Table 4.

Due to the introduction of modern varieties of rice, wheat and other crops with a concomitant increase in the supply of irrigation water and fertilisers crop production in general has increased in the last two decades. Rice production has increased from 14.2 million metric tons in 1982/83 to 18.3 million metric tons in 1992/93 (GOB, 1994). Total food grain production in this period increased from 15.3 to 19.6 million metric tons with a concomitant decrease in rice import from 0.345 million tons in 1982/83 to 0.011 million tons in 1990/91. The increase in rice production occurred due mainly as a result of the expansion in irrigated rice area during the winter (*boro*) season and the adoption of high yielding varieties (HYVs). Expansion of irrigation facilities facilitated spread of *boro* rice production to marginal lands causing a decrease in average yields of the *boro* crop during the 1980s (Table 4). However, overall the productivity of rice production improved during this period with average yields increasing from 1.35 t/ha to 1.71 t/ha which is associated with both with the expansion of the higher yielding *boro* crop and increases in the use of HYVs for aman production, in particular.

The area of jute, once a major cash crop, has decreased slightly with little increase in its yield. The areas under pulses and oilseeds are small, and production is far below the levels required for domestic consumption. Wheat cultivation started in the early 1980s and its area and production has levelled off in the late 80s. Average wheat yield is only 0.68 t/ha. Maize is believed to have considerable potential in Bangladesh, but its coverage is still quite small (about 3,000 ha). Similarly, vegetables also have a tremendous potential, especially as marketing (including export) conditions are improved.

Table 4: Area and yield of major crops

Crop	1980/81		1990/91	
	Area (000 ha)	Yield (kg/ha)	Area (000 ha)	Yield (kg/ha)
Rice	10313	1346	10440	1711
Aus	3113	1056	2109	1101
Aman	6040	1319	5774	1586
Boro	1161	2265	2833	1891
Local	8119	1079	5838	1192
HYV	2195	2335	4598	2151
Wheat	NA	NA	599	679
Pulses	326	649	728	720
Oilseeds	308	815	569	784
Jute	635	1412	584	1651
Potato	102	9637	124	9976
Sugarcane	149	44460	191	39520

Source: BBS, 1992

Agricultural Policy as Related to Extension

The main objectives of the Government Agricultural Policy have been, since early seventies, to achieve self-sufficiency in food grains and to create employment opportunities in order to provide adequate income and basic necessities to the masses. The main elements of the Government's Agricultural Policy as they apply to the Department of Agricultural Extension, are to:

- Increase the irrigated area, in order to reduce dependence on the monsoon and to increase productivity;
- Encourage crop diversification in order to improve nutrition in rural areas and provide alternative sources of incomes;
- Improve quality and availability of planting materials;
- Provide appropriate technical and farm management advice and information to all farmers through continued improvement in extension and other support services;
- Ensure that support services are made available to all categories of farmers and members of rural households – men and women, small-holders and landless households as well as large farmers;
- Ensure that research concentrates on key constraints to production;
- Encourage private sector involvement in the supply of inputs and development of agro-industries (DAE, 1994b).

There is considerable debate over the actual and potential role of agricultural policy in the development of the sector centring on the nature and importance of agrarian structure; and the contribution of various factors, including ecology, prices, input and output markets and technology. Although concern with structure and specifically with patterns of land ownership has figured prominently in many assessments of the constraints to agricultural development (Adnan, 1995), recent studies of agricultural change give more emphasis to the latter set of factors in explaining the growth in production and productivity that has been realised. Changes in agricultural policy, notably liberalisation of prices and markets, have played important roles in this regard (Palmer-Jones, 1992; Hossain, 1995).

The policy changes are having profound effects on extension strategies, in terms of the methods used, commodity and subject coverage, target populations and the participation of private sector agencies, including NGOs and commercial firms. In essence, the objectives and modalities of government policy have changed to a degree that required a reassessment of extension approaches in any event.

Organisations

Government or autonomous organisations directly related to agriculture include those conducting research and providing education or extension services. Bangladesh Agricultural University (BAU) and its three affiliated colleges produce about 600 graduates annually in crop sciences, animal science, fisheries, agricultural economics and agricultural engineering. Several technical institutes award a few hundred agricultural diplomas each year. The Institute of Postgraduate Studies in Agriculture (IPSA) started producing Masters degrees beginning in the late 1980s and is now offering PhDs.

There are separate government departments/directorates for providing extension services on crops, livestock, fisheries and forestry to the farmers. Agricultural extension services for crops are provided by the Department of Agricultural Extension (DAE), the Cotton Development Board and the Bangladesh Sugar and Food Industries Corporation (BSFIC). Among these, only DAE has a network at the grassroots level. DAE's structure and activities are discussed further below.

Agricultural Research

Aside from the BAU and other universities which conduct agricultural research to a limited extent and some organisations which conduct policy and development related research, there are eight ministries which have responsibility to conduct research on crops, livestock, fisheries, forestry and tea. Four ministries conduct crop research. Bangladesh Agricultural Research Institute (BARI) is the major crop research institute with extensive network of regional and substations and farming systems research (FSR) sites representing the major agro-ecological regions (AEZ).

The national agricultural research system (NARS) consists of several research institutes with policy coordination in the hands of Bangladesh Agricultural Research Council (BARC) of the Ministry of Agriculture. There are commodity specific Agricultural Research Institutes (ARIs) such as on rice, jute, tea and sugarcane. BARI covers crops other than the above with emphasis on wheat, oilseeds, pulses, maize, and roots and tuberous and horticultural crops. There are separate research institutes to work on fisheries and livestock, soils, forestry and nuclear agriculture. In addition, BAU, IPSA and the Universities of Dhaka, Rajshahi, Chittagong and Jahangirnagar conduct biological research.

In terms of research themes, major emphasis has been given to increasing yields through varietal improvement, particularly for rice, wheat, potatoes and mustard (rapeseed).

For quite a few years the NARS organisations have been suffering from budgetary and leadership constraints; many of the posts in these institutes including those of the institutional heads are either vacant or filled temporarily. For the past few years,

the research system has been facing a funding crisis, partially as a consequence of delays in the finalisation of a project to be supported by the World Bank.

Research by private organisations is still in a nascent stage. Among the NGOs, Grameen Krishi Foundation (GKF) has recently initiated testing of crop varieties (e.g. hybrid maize, canola, mini tubers (from true potato seeds), groundnut, soybean sunflower, watermelon, etc.) and Proshika is testing horticultural crops. The Bangladesh Tobacco Company (BTC) has been growing hybrid sunflower; CARE-Bangladesh has intensive homestead horticultural production techniques and a rice-fish interculture system; and Bangladesh Rural Advancement Committee (BRAC) has vegetable production and vegetable seed multiplication programmes. Rangpur Dinajpur Rural Service (RDRS) has very successfully introduced treadle pumps for irrigating small land areas and is experimenting with integrated duck-fish-forestry projects. BRAC has also developed improved poultry raising methods and is involved in artificial livestock insemination. Mennonite Central Committee (MCC) has worked on varietal development of crops, farming systems and fish farming. Swiss Development Cooperation (SDC) is involved, through several national NGOs, in private sector agro-forestry research and development.

Although most of these efforts are still in their early stages, the initiatives are based on the 'felt needs' of organisations arising out of problems and opportunities they have encountered in their field operations. In a few instances, the NGOs are providing support for the research efforts and there are cases where personel from public research institutes have been involved. Such arrangements may help to build effective linkages between research and development efforts that have been lacking in the past as well as providing research institutes with a promising new source of political and financial support. However, the extend to which the leadership in the research system will pursue this opportunity remains to be seen.

Input Delivery System

Seeds: The major portion of the seed supply for most crops comes from the farmers themselves. The quality is generally low. Bangladesh Agricultural Development Corporation (BADC) is responsible for producing all breeder and foundation seeds. Concerned ARIs help BADC in producing breeder's seeds. A National Seed Board (NSB) approves release of all improved varieties of rice, wheat, potato, jute and sugarcane (called notified crops). However, vegetable seeds have been produced mostly in the private sector. Most private seed dealers are simply importers. Seed companies also have contract growing arrangements with farmers to whom they supply foundation seeds and technical assistance, and arrange credit through banks. Use of hybrid seeds in Bangladesh is negligible except for some vegetable crops and recently a good share (about 30%) of maize seeds.

Retail distribution and marketing of seeds is completely privatised. There are more than 4,000 seed retailers and about 150 seed importers/producers. However, the major share of the seed market is controlled by only about five major companies/ agencies.

A seed policy supporting the role of private sector in seed development (GOB, 1993) has been drafted recently (which is to be enacted as law). It will allow import of improved seed varieties and planting materials including breeder and foundation seed of approved varieties of selected crops. But the imported varieties must be approved by or registered with the new National Seed Board (NSB).

Irrigation equipment: Irrigation has a crucial role in increasing the agriculture production in Bangladesh. Minor irrigation technologies comprising low lift pumps (LLPs), deep tubewells (DTWs), shallow tubewells (STWs) and manually operated pumps cover 80% of the country's irrigated areas.

Public sector initiatives to modernise traditional manual irrigation were taken by creating what is now the Bangladesh Water Development Board (BWDB) in 1959 and Bangladesh Agricultural Development Corporation (BADC) in 1961. DAE also started promoting power pump irrigation in the early 1960s. BWDB started with canal irrigation and soon introduced DTWs with provision for electricity generation, pump operation and water distribution. However, this DTW project had major performance problems (Bottrall, 1983).

BADC introduced LLPs that were operated by its own staff with diesel fuel supplied by the agency. Farmers had to pay fees on a unit area basis. Later on, it introduced DTWs through Integrated Rural Development Programme (IRDP). These DTWs were rented to farmers' cooperatives (KSSs) with about 75% subsidy. The programme was reasonably successful. Around 1974-75 BADC started selling STWs; subsidies on STWs were reduced to a very low level in 1980 and credit was arranged through Bangladesh Krishi Bank (BKB) for STW purchase.

Private sector expansion started in the early 1980s when BADC started selling new and old LLPs and STWs to farmer groups although it retained STW installation, spare parts supply and mechanical services through the late 1980s. For STWs liberalised credit, decrease in import duties and private sector importation led to its rapid expansion.

From 1984 to 1987 there were, however, attempts by BADC to regain control in response to a greater than expected drawdown of ground water in some northern districts. This resulted in slow growth in irrigation and since 1987, the government has liberalised the importation of small diesel engines.

Import duties on irrigation equipment were eliminated and BADC started to shed its equipment stock. DTW subsidies were eliminated and new DTWs are no longer purchased by BADC. At present there are some concerns about adequate supply of spare parts and repair facilities for existing DTWs. For STWs and LLPs, however, there has been a proliferation of spare part shops, repair workshops and private mechanic services.

Access to DTW irrigation by poor farmers has been a frequent concern of many and exploitation of small farmers by 'waterlords' has sometimes been observed. However, with increasing ownership of STWs by small and medium farmers since the start of private sector equipment trade, the risk of exploitation has decreased greatly.

Fertilisers: Privatisation of fertiliser distribution has been a parallel process to that of irrigation equipment, and has been in progress since the mid 1970s. There has been a gradual opening up of the fertiliser market to private wholesaler and dealers. Since 1989/90 private sector traders have been authorised to purchase fertilisers directly from the government-owned factory door, and two years after this the direct import of fertilisers from international markets was allowed. The factory gate prices, however, are still controlled by a state-owned enterprise. Fertiliser subsidies have recently been virtually eliminated.

During the last few years, the non-availability and high price of fertilisers in the retail market during crucial planting periods have occasionally been a problem. For example, Bangladesh produces and exports urea. However, unplanned export of urea in late 1994 and attempts to distribute fertilisers through district administration resulted in high prices and unavailability in the market during early 1995. This caused violent demonstrations by the farmers in several parts of the country. The government wants to create a security stock of phosphatic and potassic fertilisers to manage domestic price fluctuations; this is seen by private dealers as a potential threat to the private import system. One effect of the deregulation of trading has been the adulteration of fertilisers. .

Pesticides: The quantity of pesticides used in Bangladesh is not very high although it is increasing in relation to the acreage of irrigated agriculture. In 1974 pesticides were 100% subsidised by the government. The subsidy was withdrawn completely in 1979 when pesticide trading was fully privatised. Pesticide use fell drastically, but has been increasing again since the mid-1980s. There is, however, government control of imports of insecticides, fungicides and other chemicals such as plant growth regulators.

There are eight formulating plants, including three multinational ones, and many repacking companies. About 81 pesticides (active ingredients) are registered in Bangladesh with the Plant Protection Wing of DAE for agricultural use and these are sold under approximately 258 trade names. However, several other pesticides are smuggled into Bangladesh along its border with India.

Pesticide testing, storage and disposal facilities are very poor in Bangladesh. Pesticide use tends to be indiscriminate, due in part to a high level of illiteracy among farming populations.

CREDIT SOURCES

The major portion of agricultural credit comes from informal sources. The 1987 Rural Credit Survey (BBS, 1989) showed that 38.8% of the borrowers took loans from their friends and relatives. This is usually without any interest or at a very low rate of interest. Professional money lenders provided the next largest share of credit (29.2%) – the rates of interest on such loan vary widely, but are usually high. Agricultural labourers often take loans with conditions to repay in terms of labour at about half the normal wage rate in planting or harvesting seasons.

The survey also showed that 41.6% of loans were taken by people engaged in agriculture (excluding fisheries) while an additional 23% were taken by agricultural labourers.

Members of co-operative societies, Grameen Bank, BRAC, Proshika and other NGOs also receive credit from these organisations. These loans are not available to non-members. The commercial banks, particularly the Krishi Bank, provide agricultural loans, but small farmers are usually reluctant to approach these banks because of the lengthy and cumbersome procedures involved.

The Rise and Fall of T&V

Historical Overview

One can trace the roots of structured agricultural extension in Bangladesh as far back as 1820 with the formation of the Agri-Horticultural Society (Sarker *et al.*, 1995). A Department of Agriculture was established in 1880 on the recommendation of the Famine Commission under the Department of Land Records in the then Bengal, part of which now forms Bangladesh. The Department of Agriculture was divided in 1951 into the Directorate of Agriculture (Research and Education) and the Directorate of Agriculture (Extension), the latter with responsibilities to disseminate information on improved agricultural technology. Later, the Directorate of Agriculture (Extension) was renamed as Directorate of Agriculture, Extension and Management (DAEM). Several other agencies were created with extension functions, either to promote a new crop or to emphasise a crop of particular importance (such as jute) or those requiring specialised method of handling (e.g. tobacco and cotton). Thus, in the 1970s, there were six agencies with functions related to crop extension. These were:

- DAEM;
- Directorate of Agriculture (Jute production);
- Plant Protection Directorate;
- Horticulture Development Board;
- Cotton Development Board;
- Tobacco Development Board.

All of these agencies were under the Ministry of Agriculture. Outside the Ministry, Bangladesh Water Development Board (BWDB), the Tea Board and BSFIC used to provide extension services on crops.

In the early 1980s extension departments and agencies with responsibilities for crops were merged to form the Department of Agricultural Extension (DAE).[5] Although DAE provided direction and training for field staff on technical matters, in 1987 extension workers were made administratively responsible to the newly formed local elected administrative units (Upazila). This situation remained in effect until 1991 when the field staff were formally absorbed into DAE.

Although crop-livestock mixed farming systems predominate in Bangladesh, agricultural extension has traditionally been organised primarily to disseminate technologies related to crop production. The extension services for the agricultural sector are currently divided among four ministries (Agriculture, Fisheries and Livestock, Forestry, and Water Resources). Thus the extension services for crops, livestock, fisheries and forestry are provided through separate organisations or directorates. The major organisation involved in crop extension, DAE, has a national network of extension staff, including over 11,000 Block Supervisors (BSs) who (in theory) can readily reach virtually all villages in the country. In contrast, the livestock and fisheries extension directorates have fewer staff and provide services only at the Thana level. The Forest Department's extension services are limited only to the government forest areas. Besides the formal agricultural extension organisations, BRDB provides services that are complementary to agriculture. In addition, several NGOs have started agricultural development work.

Current Structure and Functions of the Department of Agricultural Extension

The DAE has seven wings: Food Crops, Cash Crops, Plant Protection, Training, Planning and Evaluation, Administration and Personnel, and Field Services. Of these the Field Services Wing is by far the largest since it includes the national extension structure of regional, district, thana and block staff. The Department is administered by a Director General (DG) who is supported by five Directors for Food Crops, Cash Crops, Plant Protection, Training and Field Services respectively. The two wings concerned with Planning and Evaluation, and Administration and Personnel are supervised by Additional Directors.

Nationally, the DAE is organised into nine administrative regions and 64 districts. At a regional level personnel are supervised by an Additional Director. At district level, staff comprise one Deputy Director of Agriculture (DD), one Training Officer (TO) and two to four Subject Matter Specialists (SMSs). At thana level, the staff consists of one Thana Agricultural Officer (TAO), two Subject Matter Officers (SMOs), one Assistant Agricultural Extension Officer, one Junior Agriculture Extension Officer, 20 to 30 male Block Supervisors (BS) and nought to five female BS. However, the current spread of female Block Supervisors is very thin. The DAE has a total of 12,852 BS staff posts among which there are 11,600 BSs (including 560 women).

The DAE's main function is to provide extension services for all crops apart from cotton, tea, tobacco and industrial crops. The Field Services Wing is responsible for implementing and coordinating extension activities at farmer level, while the technical wings at headquarters are responsible for the supervision of field extension personnel through SMSs and SMOs. The technical wings are also responsible for liaising with the national research institutions and ensuring that the content of extension programmes is technically sound. The Training Wing manages all extension training activities.

Introduction of the Training & Visit System

The operation of several crop-based extension agencies with inadequately specified functions led to duplication of effort and confusion about the responsibilities of field staff. These agencies were promoting different crops, although they often met the same farmers, sometimes with contradictory messages.

By mid-1976 efforts were made to intensify agricultural extension at farm level and reorganise agricultural extension services. With World Bank assistance the T&V system of extension was introduced during 1977-78 in the north-west region of the country under the first Extension and Research Project (E&RP I).

The basic features of the T&V system are well known (Benor and Baxter, 1984; Benor *et al.*, 1984). These include the regular fixed schedule of visit by front level extension workers or Block Supervisors (BS) to contact farmers with clear cut extension messages, called 'impact points', and fortnightly training of the BSs by specialists at the district level. The T&V system was introduced with provisions for a major increase in numbers of BSs, better housing, improved mobility and supervision, and strengthened extension-research linkages. In 1985, an Extension Manual was published outlining the concepts, components and operation of the T&V system, along with the duties and responsibilities of the different levels of extension personnel (DAE, 1982). The key points in the manual are summarised in Box 1.

Box 1: Key points in DAE 1985 Extension Manual

1. Regular scheduled visits by able and qualified extension staff.
2. Regular, frequent staff training to upgrade technical skills.
3. Focus on contact farmers and groups to reach most farmers.
4. Two-way linkages between research, extension and farmers to ensure flow of information from research and feedback from farmers.
5. Supervisors to focus on training and monitoring of field staff.
6. Initial focus on major food crops, gradually extending to other commodities.
7. System shoudl be adapted to local requirements with a basic operational framework.
8. Institutional structure should have clear lines of command, responsibilities and authority and provide an effective feedback and monitoring system to promote professional competence and staff morale.
9. Field staff should be concerned in the overall welfare of whole farm family.

(adapted from Sarker *et al.*, 1995, p7)

The reorganisation seemed to improve the quality of the extension service and increase agricultural production particularly of wheat in the northern districts. Thereafter, the T&V system was extended to 46 out of 64 administrative districts (excluding some hilly and low-lying districts in the south and the east) during 1982-83 with a five-year credit support from the World Bank in the form of the Second Extension and Research Project (E&RP II). E&RP II was extended through June 1991 and expanded to cover areas previously omitted, except for the Chittagong Hill Tracts.

E&RP II made provisions for introducing a cadre of well-trained subject matter specialists (SMSs) at the district level, bringing the overall ratio of extension worker to farmer families to approximately 1:1000, and made provisions for strengthening the linkage between research and extension.

Strengths of T&V

As summarised in the World Bank's 1994 review of extension projects, T&V sought to improve the performance of the extension service by:

- adopting a well-defined extension method which obliged expanded and regular farmer coverage and identified clear expectations and responsibilities at all levels in the bureaucracy;
- providing supporting facilities and transport to enable better farmer coverage and increased proportion of time in contact with farmers;
- avoiding those service functions of field staff not associated with agricultural technology transfer;
- ensuring staff numbers at various levels in the institution were adequate to enable the intended farmer coverage and implementation of the method, by recruitment or reorganisation of existing public sector staff or both;
- improving the institutional human resource base by regular technical training of field staff, and by technical back-up for field staff;
- improving linkages between research and extension to ensure the continued availability of relevant technology;
- obliging field staff to feed back farmer concerns into the extension and applied research system; and
- increasing technology demonstration in large numbers of small plots in farmers' fields (World Bank, 1994, p.15).

The Project completion report of E&RP II found that on the whole most of the key performance indicator targets of the project were met, and that it undoubtedly contributed to the establishment of a national system of extension based on regular farmer and extension agent training, and contacts between extension and research staff (World Bank, 1992).

Weaknesses of T&V

A major problem of the T&V system has been its over-dependence on messages disseminated routinely by the BSs. The extension messages or 'impact points' identified by the senior officials were 'taught' to the BSs who in turn 'delivered' them to the contact farmers (CFs). The CFs were expected to apply the messages in their own farms and encourage other farmers to use these.

There appear to have been weaknesses in each of these key elements of the system, namely the impact points, their delivery and the Contact Farmer concept. Impact points were based mainly on the knowledge of extension workers (aided by local researchers) about what should be done by the farmers at a particular time of the year. These were in many cases not relevant to the farmers' actual needs because:

- Location-specificity was rarely considered in formulating the impact points. Since farmers' risks and constraints in the prevailing farming systems were not analysed, many of the messages were irrelevant to the farmers. There were tendencies to keep messages in the list for the major crops in a geographical area (i.e. the thana). As a result, many of the impact points were not relevant for large numbers of farmers.
- Timing of the messages were not based on farmers' actual practices but on ideal practices based on research results. Farmers in many cases plant their crops later (or earlier) than the recommended time

for convenience of labour and water management and various other reasons including higher price at early harvest periods. As a consequence, when farmers were preparing seedbeds for rice, BSs were advising, for example, about top-dressing the crop with nitrogen.

- Recommendations from research organisations were general (considering the national needs). Location-specific adaptive research was initiated in BARI together with the T&V system through a group of on-farm research teams, but output of the on-farm research could not match farmers' needs for technologies mainly because :
  (a) there was only a small stock of 'of-the-shelf' technologies available from applied research that could be adapted to local conditions;
  (b) while there were immediate needs for location-specific technologies, the additional research needed to produce such innovations required time, even assuming that the research system had been more responsive to farmer needs than it was;
  (c) on-farm research teams were composed of newly recruited young graduates from the universities and some senior researchers who did not fit well in other programmes. They had good financial support for quite some time but lacked technical backstopping. They failed to deliver what they were expected to. Also considering the large number of crops and areas that were supposed to be covered by the on-farm researchers, the strength of the on-farm research component was not adequate.
- T&V provided messages but did not facilitate their adoption. Messages alone do not guarantee adoption of improved technologies. Farmers lacked the means to apply those in their farms due to non-availability of cash, credit, seeds or other resources. Or, there was insufficient incentive to adopt improved technologies due to unfavourable pricing or input delivery systems. Finally, some of the technologies were not sufficiently attractive to farmers in the first place to be adopted even with special incentives.
- There was also a basic difficulty in delivering the messages to the farmers. The impact points were in most cases 'unsought free goods'. The responsibility was primarily of the BSs to 'deliver' them to the contact farmers. There were not enough interactions between BSs and contact farmers about the contents of the impact points and in many cases these messages were not relevant to farmers' existing systems. Therefore the farmers lacked eagerness to 'receive' them. Over time this delivery of messages became more of a routine to the BSs and eventually non-existent.

Weaknesses in implementation were crucial. Many BSs did not have the basic qualifications and required training. Nor were they required to go beyond the routine work to analyse and understand the existing farming systems. DAE management could not supervise the large number (about 12,000) of BSs and their performance fell. During the late 1980s it is probable that only a minority of the BSs actually visited the contact farmers as frequently as was determined by the T&V system.

Often, CFs were not selected based on merit (representativeness, willingness to cooperate, etc.) but on their local influence, and in some cases to the advantage of the BSs. They tended to be richer farmers and village elites and sometimes even absentee landlords who operated through share croppers or hired labour. As a result the CFs did not have much incentive to contact other farmers, particularly the poor,, and pass on the messages delivered to them (if at all) by the BSs.

Another key difficulty in the implementation of the T&V system was that the SMSs were not designed to be specialists, rather they were developed as generalists who could give advice on farmers' common problems of crop production. They were transferred frequently from one discipline to another and spent a major share of their time in receiving training on various aspects.

A key issue is whether the move towards a more 'broad-based' extension service in which individual staff have responsibility for several areas should continue or whether some degree of specialisation is more effective. Although some specialisation seems in order, the cost of maintaining field staff in sufficient numbers to provide reasonable geographic as well as subject-matter coverage is a major source of concern, particularly in relation to the requirement under the project to reduce the current DAE staff.

With over 24,000 staff, DAE became too large an organisation to manage efficiently. Management style varied in different projects based on donors' requirements and the nature of funding. Field Service Wing with its large network of field offices dominated over the other Wings of DAE. Cash Crop, Plant Protection and other Wings did not have the required support and emphasis and have almost become obscure.

The Project Completion Report of E&RP II found that:

> "*... over-centralised planning and control of the extension messages delivered has produced a mechanistic extension system that failed to respond to local farming problems and as such does not yet enjoy the full support and confidence of farmers.*" (World Bank, 1992).

Similarly, the ODA Project Document of the ASSP stated that:

> "*... despite providing a sound administrative discipline to the (Extension) service ... the T&V*

concept in Bangladesh has failed to develop effective communications with the farming community at large, particularly with small and marginal farmers and women. Messages have not been effectively passed on by contact farmers, who tend to be the richer elite. Also, due to weak or inappropriate technical messages and skill limitation of BS, the service has not been effective at identifying farmers' problems and reporting back to researchers." (ODA, 1991a)

An evaluation conducted by the Ministry of Agriculture also noted similar inadequacies of the T&V system (Mahtab, 1993).

Research-Extension Linkages

E&RP I&II provided support for the major research institutes as well as the extension system; and sought to strengthen linkages between research and extension. The mechanisms developed to serve this purpose were as follows (Abedin and Chowdhury, 1989):

- Formation of technical committees as at District, Regional and National levels to discuss local problems and identify impact points for dissemination by BS.
- Monthly Research Extension workshops organised by ARIs to exchange views. This was also aimed to serve the purpose of informal training of SMSs by research staff.
- Joint visits by research and extension personnel to the adaptive research sites and farmers' fields.

The extension-research linkages seemed to develop well in the early 1980s during the first phase of the T&V system. Later, when T&V was extended to the whole country, the linkage mechanisms were not effective primarily for two reasons. Firstly, research stations are spread too thinly making it physically difficult to build effective linkages in all the districts, and secondly, the emphasis on linkage varied in different districts due to differences in perceptions of linkage and the management style of the Deputy Directors.

Particularly in BARI, senior managers did not take responsibility for building and maintaining linkages with DAE. Many ARIs failed to give sufficient priority to linkage activities relative to other functions and thus failed to be regularly represented at District Technical Committee (DTC) meetings and other activities. As noted earlier, there was also a shortage of readily adoptable technologies.

In practice the Regional Technical Committee (RTC) and National Technical Committee (NTC) have not functioned in most cases. The effectiveness of many of the DTCs was also limited due to irregular participation by research personnel. There were too many DTCs (64) for the research system to serve adequately in the fashion envisaged in E&RP I and II in any event. Research staff could not regularly attend all the meetings. The minutes produced of each DTC monthly meeting were circulated to the relevant ARIs, but little effort was made to systematically review them for relevance to research plans or even to ensure they reached sections and individuals that might provide assistance. Most of the DTCs failed to make proper mention of farmers' problems that could be addressed by research.

The monthly extension-research workshops held at the research stations became routine to many of the concerned staff and therefore failed to serve the intended purpose. At one point DAE suspended their participation in the monthly E&R workshops.

BSs lacked the skills to articulate farmers' problems and were not required to provide regular feedback on farmers' problems and performance of technologies to the researchers. The mainstream research in the ARIs did not perceive feedback as priority areas for research.

Impacts on Production and Productivity

In terms of actual impacts of T&V on production, the evidence is mixed. Many farmers altered their farming practices, and both production and productivity of rice and wheat improved during this period. Progress appears to be most clearly associated with the expansion of irrigation and the spread of HYVs for these commodities. Changes in other commodities were less dramatic, in part due to deficiencies in the technologies being offered.

Although there is a general consensus that extension probably accelerated the adoption of new technologies, farmer networks appear to have also played a significant role in this process.[6] Wood (1995) argues that producer decisions on varieties, crop management practices and cropping sequences have been increasingly driven by the requirements of coordinated action in the use of water. Cropping decisions taken by the leadership of pump groups which may contain 20 or more farmers, have simply been followed by many members, large and small. Control over water distribution has extended into other areas including collective acquisition of inputs and other services such as ploughing.

Palmer-Jones (1992) argues that improvements in agricultural production and productivity are largely traceable to the spread of shallow tube wells (STW), rather than to any specific features of agricultural policy or development projects generally, many of which favoured other forms of irrigation, including deep tubewells (DTW).[7] The same paper presents evidence that agricultural growth had positive effects upon the real wage rates of agricultural labourers and poverty levels. The serendipitous emergence of private water markets in the midst of government efforts to

regulate groundwater usage, and an array of programmes and projects that were more often than not leading in other directions, contributed to the improvements in the efficiency of water use and thus to increases in the productivity of land and labour.

It is difficult to assess the contribution of T&V in these processes. For example, the extent to which pump group leaders may have drawn upon information from the extension services and the specific role of T&V in this is basically undocumented. The fact that increases in production and productivity coincided with the T&V period may be more a matter of coincidence than design. One is tempted to conclude that the power of circumstances was such that innovations would have spread even in the face of glaring deficiencies in both extension strategies and institutions. However, this is hardly a reliable course for the future, when readily adoptable technologies will be required for a wider variety of commodities and areas combined with more efficient utilisation of water resources through DTWs, whose performance to date has been well below expectations. In short, changing conditions will place significantly greater demands upon extension and other agricultural services than in the past.

Whether T&V could have evolved to meet the challenges of the present and future seems at this point to be an academic question. A decision has been taken to pursue a new strategy. However, one can question the extent to which this decision should have been based on a perception that T&V somehow failed to contribute adequately to agricultural change. Dramatic change did take place and there is at least circumstantial evidence to suggest that extension activities made a positive contribution.

Coherence, Performance and Sustainability: A summary perspective of T&V

The T&V approach was consistent both with the policy framework of the 1970s and 80s and with prevailing views on the role of the state in agricultural development. A new, national extension strategy and the dramatic expansion of government intervention in the form of additional field staff and major growth in the research system and parastatals responsible for inputs and marketing such as BADC. Further, the actual practice of T&V fit in well with the bureaucratic norms of the public sector. Programmes were planned at the centre which included sets of specified activities and targets for districts which could be readily translated into marching orders for each thana and block. Performance could be readily monitored through comparisons of achievements with targets.

The policy objectives of the period focused more on growth and specifically increases in food production than equity. Growth in agricultural production was to be achieved through the rapid dissemination of productivity increasing technologies, including irrigation services, high yielding varieties and associated inputs. There was less concern about adjusting innovations and approaches to differences between groups and areas since it was assumed that the spread of irrigation would serve to reduce these variations in any event.

In terms of performance, significant growth in production and productivity did, in fact, take place, although one must accept the notion that T&V played a significant role in this process largely on faith. The fact that growth was associated with the adoption of improved varieties and practices for the same commodities and inputs (rice and water) that were the focus of government development efforts provides some reinforcement for such faith. However, the evidence remains mainly circumstantial and most studies (e.g. those by Hossain, Rahman, Palmer-Jones, and Wood) find that other factors weigh much more heavily as discussed earlier.

In terms of accountability, the top-down development of plans and the monitoring of performance against centrally determined targets provided a system which could be readily monitored, at least by managers within the government extension service. However, with the notable exception of the World Bank, accountability to clients and other stakeholders, including farmers, tended to be weak or non-existent. The fact that field staff were administratively responsible to locally elected bodies does not seem to have positively affected accountability to clients at that level. In terms of research-extension linkages, the theory of T&V provides for feedback from farmers to extension and from extension to research, but for reasons discussed earlier, the effectiveness of the key communication points, including the DTCs, was never great and deteriorated at an early stage.

T&V provided a very clear division of labour. The job of extension was extension – only. In the context of state leadership in agricultural development that meant that the public sector extension service had an effective monopoly on extension. No account was taken of the increasing importance of NGOs in particular in a range of rural development activities (Sarkar *et al.*, 1995). The possibility of private sector participation by NGOs and commercial firms was not considered a viable alternative (or rather it was simply not considered!).

A major exception to this characterisation lies in the use of contact farmers (CFs) to provide the critical link between the BSs and the majority of the farm population. Although CFs were not formally compensated, they presumably received benefits in the form of status and inputs which they either used themselves or distributed to others. The CF system has been criticised as being dominated by elite male

farmers who failed to communicate information to others, especially the poor and disadvantaged groups.[8] We were unable to find studies that provide evidence on the character and performance of the CFs. However, the fact that innovations did indeed spread suggests that at least some of the CFs may have made positive contributions.

It is in the area of sustainability that T&V is most frequently faulted. The massive expansion of the extension establishment associated with the adoption of T&V as a national strategy had major implications for the recurrent budget. This expansion, which was aided and abetted in no small measure by the World Bank, was fully consistent with the view of state leadership in agricultural development which prevailed at that time. The demise of T&V may be traceable at least as much to the fact that this view has changed as to the shortcomings of T&V itself. The government together with donors is no longer able or willing to continue to support the public sector establishment in general and the extension service in particular at current levels.

Progress in developing and implementing new extension strategies

From 1978 to 1990, the DAE implemented a modified T&V system through E&RP I and II. Deficiencies in the T&V system, as described in the previous section, figured prominently in the design of the Agricultural Support Services Project (ASSP) in 1991 with support from the World Bank and ODA. The ASSP Staff Appraisal Report called for a fundamental change in the approach from that of a supply-driven, top-down approach to one that was bottom-up and demand-led (i.e. reflecting the needs articulated by farmers) (World Bank, 1991). The change in strategy would be facilitated through a number of institutional reforms. Although several of these reforms are currently being implemented, at least on a pilot basis through ASSP, they have not been formally incorporated into a new policy statement. Finalisation of a new extension policy statement is the responsibility of the National Extension Task Force which is currently completing its work. A description and analysis of the major elements of the reforms pursued through the ASSP are the foci of this section.

Major Features of Current Extension Strategy

DAE is now pursuing a decentralised and farmer-responsive extension strategy. Keeping in mind the changes occurring in the extension approach in different parts of the world, the current strategies of agricultural extension in Bangladesh are formulated to include the following:

- **Decentralisation:** Delegating greater authority to the region, district and thana in order to make extension plans more responsive to local needs for greater diversification and for ensuring their speedy implementation;
- **Group Approach:** Reorienting the existing 'T&V' system away from an individual and elitist contact approach targeted at a small number of farmers, towards a group approach covering a larger number of farmers representing various farm interest groups.
- **Demand-Driven Development of Extension Methods and Messages:** Reorienting technology messages away from blueprint messages which are determined centrally, towards a 'responsive' approach based on farmers' problems, needs and resources; and introducing a systems perspective, similar to that of the FSR teams, in providing messages not only for crop production but also for post-harvest operations and processing; and building linkages with other agencies providing services for inputs and marketing. A variety of extension methods will be used based on local conditions and preferences.
- **Research Extension Linkages**: Forging stronger extension-research linkages through the efficient functioning of technical committees at national, regional and district levels in order to facilitate a two-way flow of information on farm-level problems pertaining to technology needs, technology generation, thereby promoting rapid generation and dissemination of appropriate technology relating to diversified farming.
- **Broadening Participation:** Strengthening linkages and collaborative activities with other extension agents, government, NGOs and the private sector.
- **Resource-Poor and Disadvantaged Groups:** Sharpening the focus of extension efforts on the poor and disadvantaged groups.
- **Institutional Reform:** Rationalising and in some cases restructuring the activities of the various service wings of the DAE and their functional relationship with one another at headquarters.
- **Sustainability:** Achieving cost-effectiveness in the extension system through appropriate mixes of various outreach programmes, which will help reach a larger number of clients at minimum cost. This will also call for reductions in staff and in unproductive activities (MTRT, 1994; World Bank, 1991).

These objectives and approaches are largely an result of deliberations involving GOB, the World Bank and ODA in the course of the preparation and finalisation of the agreements for ASSP (World Bank, 1991; ODA, 1991a, 1991b; GOB, 1991). Although these agreements have guided the implementation of ASSP to date, a formal statement of GOB policy on extension is yet to be adopted. In a sense, the initial years of the ASSP constitute an experiment in new approaches. Further, one of the functions of ASSP was

to provide assistance to GOB in the preparation of a new policy statement on extension guided in part by the experience gained during the early years of ASSP.

A draft extension strategy was prepared by the ASSP consultants in an effort to develop a formal extension policy (see DAE, 1994c). The draft was revised later to clarify the roles of DAE, NGOs and the commercial agencies in extension provision and was circulated to DAE headquarters and field offices, research institutions, universities, NGOs and relevant commercial agencies for comments. The revision resulted in two documents: the draft National Agricultural Extension Policy (NAEP), and the draft Extension Manual.

A 19-member National Extension Task Force with representatives from all major stakeholders was formed in January 1995 to finalise the NAEP and prepare its implementation policy.[9] A sub-committee of the Task Force will collate all comments on the draft NAEP, revise the draft and arrange approval of the document by the government in the last quarter of 1995. The draft Extension Manual was circulated by DAE to all DAE field staff and to other agencies involved in extension. At the local level the proposed District Extension Programming Committees (DEPCs) are supposed to collect comments from other agencies on the draft.

Deconcentration of Planning and Implementation

Responsibility for the design of annual thana extension programmes rests with the Thana Agricultural Officer (TAO), other thana staff and the BSs. Thana programmes, after approval by the Deputy Director (DD) for extension of the district, will be compiled into a draft district extension programme by the proposed DEPC and will then be reviewed for technical content by an Agricultural Technical Committee (ATC).[10] Together with the proposed budget, district plans will be forwarded to the regional Additional Director for information and subsequent supervision of implement-ation. Each district plan is submitted to the Director, Field Services Wing, for inclusion in the Annual Development Plan.

Most of the critical features of the deconcentration process remain in the pilot and proposal stage. However, the decentralisation that has occurred since the inception of the ASSP has contributed to a new sense of purpose at the field level, in which many staff feel they have more control over what they do. This is illustrated by the institutional framework which is evolving at the district, thana and block levels.

Thana and Block Level

DAE staff at the thana and block level have considerable responsibility and latitude for ensuring that the technology transfer activities implemented reflect the needs of all farmers. The planning is supposed to start at this level.

The results of pilot efforts are encouraging in this regard, in spite of some logistical support problems. An additional constraint is the fact that the group approach has still to be implemented in most areas, and this limits the extent to which farmer concerns are explicitly taken into account in the planning process.[11] However, many staff, particularly at the BS level, have gained respect because of the services and functions that they can provide as a result of the ASSP and other projects (e.g. Crop Diversification Programme). Part of this takes the form of improved communications between the BSs and farmers, and it is anticipated that this will increasingly affect extension plans.

District Level

A key mechanism of deconcentration is the DEPC. The functions of the DEPCs include:

- monitoring progress and dealing with the problems of current extension activities in the district;
- assessing extension approaches and activities in the district in relation to farmers' needs through feedback from DAE staff at thana, block and unit level;
- planning and reviewing extension messages;
- co-ordinating agricultural development activities between the 'actors' in the district (e.g. farmers, extension workers, research, NGOs, private agribusiness dealers, etc.);
- facilitating the identification and testing of innovations through adaptive research programmes and to provide a conduit for channelling unsolved problems back to sources of innovations (including but not limited to ARIs and other organisations).

Districts have more authority to plan and implement activities than before. However, their success will depend largely on the leadership capability of the DDs; initiatives taken by them to understand the needs of the farmers; availability of technology; willingness to go through a trial and error period; and creating an environment for more constructive interactions with other organisations, such as ARIs, NGOs and private commercial firms.

National and Regional Levels

The essence of deconcentration is the delegation of responsibilities and authority from the centre to the district and local levels, as described above. In one sense the role of DAE at the national headquarters level remains the same, namely to review and approve plans forwarded from the districts. However, deconcentration implies that: (i) guidelines for district plan preparation will be more flexible than in the past, e.g. specifying fiscal guidelines, but omitting specific output targets; and (ii) the review of district plans at the national level will focus on conformity with the broad guidelines. In short, diversity should be expected and encouraged.

Extension Methods

GROUP APPROACH

During the T&V period, extension staff worked with individual contact farmers (CFs) who in turn were expected to disseminate the message to other farmers. In practice this did not happen to the extent expected, as discussed in the previous section. To increase farmers' participation, Block and Thana level staff will work with farmer groups in order to:

- improve the coverage and cost-effectiveness of the BSs;
- be equitable, enabling the needs of all the different types of farmers to be addressed, including those of women;
- be an efficient way of eliciting farmer needs;
- improve the efficiency of technology transfer.

Guidelines for implementation of a group extension approach in the ASSP were developed and circulated by the DAE in December 1992 (HTS, 1992). The Marginal and Small Farm Systems Crop Intensification Project in Kurigam District was used as the basic model. The proposed approach involved forming heterogeneous farmers' groups at three levels, namely, Village Farmers' Associations (Gram Krishak Sangathan) consisting of 30–40 farmers meeting fortnightly, Unit Farmers' Associations (Unit Krishak Sangathan) at Unit level, and Sub-Zone Associations (Sub-Zone Krishi Sangathan) at the thana level.[12] The groups were expected to serve three major purposes: as savings/loan groups; as a means of efficiently determining farmers' problems; and as a means by which suitable technologies could be transferred to all types of farmers, including women farmers. Extension staff were expected to assist with the establishment of these groups.

In practice, there have been several problems with the group approach as initially implemented. Field staff generally lack experience in forming groups. The guidelines called for a standardised approach without regard to existing groups and differences within and between communities and areas. No attention was given to existing community groups or ways in which communities might be consulted on the character and functions of groups or other measures which might better ensure that group leadership and responsibilities remained with farmers from the onset. Progress in this area was very limited following the issuance of the guidelines, in part because of the large number of other changes that were being introduced at the same time.

By 1994 there were growing reports of confusion about working with groups among field staff. As a consequence, consideration is being given to more flexible guidelines as follows:

(a) In recognition of deconcentration within the DAE and the desirability of flexibility in exploiting opportunities and addressing constraints at the local level, a range of approaches are to be used varying from temporary informal groups to formal permanent groups that may have other specific purposes (e.g. tubewell groups, credit groups, etc.).

(b) In the short-term, the DAE is trying to concentrate its attention on existing groups (i.e. not only those formed by the DAE, as in Rangpur District, but also those formed outside the DAE such as DTW/STW associations, NGOs, etc.), identifying the needs of these groups and preparing programmes to address these needs.

(c) In the longer run, once BSs have experience in working with groups and training in forming groups, they should allow the farmers to decide on the type of group that they want (i.e. in a 'process' approach) and, in doing so, accept that they may wish to change over time.

Although there has been no formal assessment of the status of the group approach, some reports from the field suggest that many staff have already opted to go different ways. Garforth (1995) describes developments with the group approach in four districts, only one of which had closely followed the original guidelines for forming GKS in all sub-blocks. In that district, BSs had dutifully prepared lists of all the 170,000 members of the 4200 GKSs. Schedules had been prepared by which each GKS would be visited once each fortnight to hold meetings and attend to other activities (demonstrations, etc). The DD saw the group approach as being able to accommodate many of the essential features of T&V and simply substituting the GKS for the contact farmer in the delivery of innovations or impact points.

However, in the other three districts, extension staff were found to be working with NGO-related groups or with less formal 'crop-oriented' groups which came together temporarily for purposes of specific activities such as field days and demonstrations. In one district the focus was very much on demonstrations, rather than groups per se.

Garforth's limited sample strongly suggests that modification of the guidelines were more the rule than the exception, possibly even before headquarters felt that some adjustments might be needed. These observations also provide evidence that deconcentration is a growing and welcome reality. However, with respect to the group approach, more questions are raised than have been answered. This need not be a problem unless key decision-makers lose sight of the ultimate aims of the entire strategy, and focus instead on what appears at this stage to be considerable uncertainty, confusion and even disorder.

Working with groups will require a variety of approaches and diversity in demonstrations and extension messages since farmers' needs will be diverse. Again, there can be different types of groups ranging from formal, permanent groups to collections

of people who come together for a particular activity e.g., a field day. The MTRT suggested that it is likely that the groups that will be most equitable and effective are those that are homogeneous and informal in nature. However, groups must have a specific focus and objective and are not formed as an end in themselves. A group approach comprises an important component in moving from a top-down to a bottom-up approach and there should be flexibility in the way the group approach is implemented at the local level.

Efforts by public sector agencies to utilise a group approach have not been very successful in the past (except the early achievements in the late 1960s). The cooperative societies formed throughout the country by the Bangladesh Rural Development Board (BRDB) have not functioned particularly well. Although the general membership obtained some benefits at the early stages of cooperatives, gradually the leadership went to a few well-to-do members of the groups which resulted in the failure of many societies. Attempts to use these groups for other purposes, such as distributing DTWs and providing technical support for making effective use of water did not succeed.

In many instances, the impetus for group formation and operation was directly associated with the provision of services from government agencies in the form of gifts or loans. Groups were brought into existence for purposes of qualifying for these services, but often failed to continue to function once the tubewell had been installed or the loan had been disbursed. Groups were not generally regarded as a means by which rural communities could express their needs and help themselves make effective use of a communal resource, such as water, but rather they were managed in a top-down fashion by government staff concerned with meeting performance targets or not at all.

In recent years, some NGOs have demonstrated the usefulness of the groups for a variety of purposes. Given the fact that there are a large number of NGOs working in the country, all targeting the poorer section of the community, in many areas there is competition among NGOs to attract participants.

The groups formed by the NGOs are usually made up of all female or all male landless or marginal farmers. Most of the NGO-formed groups have approximately 20 members. The services provided to the groups by NGOs include training in functional literacy and numeracy, and health and nutrition awareness. However, the main driving forces in keeping the members together are the compulsory small weekly savings and provision for credit. The credit is usually utilised by the members in small income-generating activities for which the NGOs provide very little training. Use of credit in agricultural activities is limited mainly because the members are landless or functionally landless. There are, however, a few NGOs that work in such agricultural areas as homestead vegetable production and cow fattening. GKF provides credit (cash or kind) for agriculture to all types of farmers (not really a group approach) although, in this case, it works as a commercial organisation seeking a share of the farmers' profits.

Given the lack of experience of most DAE personnel in forming and operating groups, it seems highly desirable to use existing groups where these exist and to explore cooperation with NGOs in their respective areas of operation. There are several promising possibilities in this area as discussed below and in the concluding section.

An important point to consider in the context of the total strategy, is the time and skills which extension staff require to operate successfully with groups, rather than individual farmers, whether or not this is done directly or in partnership with an NGO. Many innovations in agriculture involve individual decisions rather than group consensus. The assumption is that groups are an efficient means of reaching larger numbers of farmers more effectively. This may be true. But groups can also change the character in which extension operates, including the innovations selected for promotion and the methods utilised in this process. Specifically, the existence of groups may bias extension efforts toward innovations which concern the group as a whole, such as managmentof communal lands, and away from technologies such as improved seeds which are matters for individual decisions.

Groups may also consume major quantities of extension staff time, especially if BSs become directly involved in group formation and management. Further, the relationship between groups and other farmer information networks which continue to facilitate the spread of agricultural innovations, such as the STW associations, is not clear. Groups can be a valuable part of extension programmes, especially in areas where effective groups already exist and for subjects, such as irrigation, where a degree of group consensus is required. However, the group approach should be used selectively, rather than being put forward as an essential feature of the new extension approach in all instances.

The shortcomings of the individual contact farmer (CF) approach were perhaps more a function of the manner in which the CFs were selected, rather than of the basic concept. Unlike the group approach, the CF approach assumes the existence of informal farmer networks by which messages can be spread and feedback provided. Such networks can be particularly effective in communicating information on innovations involving individual, rather than group decisions. The first step is see if such networks exist in a specific area and how they operate. It is likely that there will be significant variations between areas and commodities and in the context of decentralisation, it

Table 5: Methods for identification of farmers' problems and decentralized planning of extension messages

Method/Activity	Purpose	Decentralization element
Participatory and Rapid Rural Appraisals (P/RRA)	Identify farmers' problems, constraints and information needs, promote group contact	Determine extension priorities and strategic plans; develop responsive relationship between local extension staff and farmers
Problem census	Help farmers identify their problems by themselves	Local level (Thana) extension planning
Formal survey	Identify farmers' sources of agricultural information, preference between sources and farmers' perceived requirement of additional information and main non-information constraints	Facilitate preparation of strategic extension programme at district level

Source: DAE/HTS (1994)
Note: Two types of P/RRA namely grassroots P/RRA (i.e. by BSs) and expert P/RRA (i.e. by senior DAE and research personnel) are conducted.

should be left to the local extension staff to work out the specific modalities. This is very new territory for field-level extension workers, most of whom have doubts whether they will be successful in forming and maintaining groups in an effective way, unless these are directly associated with the provision of loans or other services which farmers find useful.

A further dimension of the group approach which may be generally recognised by farmers and NGOs, but is less appreciated by the public sector, is the potential role of groups in actually influencing the character of research and development efforts. A degree of empowerment is at least implicit in several pillars of the new strategy, but with the group approach, more attention to date has been given to its role in increasing the efficiency of extension, rather than fundamentally changing what is done. The formation and operation of groups is regarded as a means, not an end in itself.[13] However, if empowerment, rather than simply more 'efficient' extension is the real key to a sustainable and effective set of services for farm families, the group approach could take on new meaning in the future.

Assessment of Farmers' Needs

Traditional extension messages have been identified and developed on the basis of research results forthcoming from the research system. The decisions about the messages and manner in which the research itself was designed and implemented has been quite 'top-down' in character, with more attention to technical efficiency (e.g. higher yields) than farmer needs and constraints. A fundamental principle of the new strategy is that the DAE staff must be responsive to the needs of farm families of all types and economic levels. Toward this end, the needs of the farmers must be identified correctly and satisfactorily addressed.

Several methods have been tested by DAE for identifying farmers' needs and some participatory methods are being adopted. Although DAE has had no experience in these methods, it is testing the methods on a pilot basis and providing on-the-job training to field staff in the process. A summary of the techniques used for identification of farmers' problems is given in Table 5.

Recent field-level testing of the 'problem census survey' technique appeared very promising (Bhuiyan and Walker, 1995). This method was tested on a pilot basis at Jessore and on the basis of the results DAE (1995) has published the guidelines for conducting the problem census. The important features of this method are:

(a) the location is a village instead of a departmental office or market place;
(b) informal working group discussions facilitated by BSs, each involving people of the same socio-economic category;
(c) the discussions are iterative and facilitate interactions between working groups as well as a progressive focusing on issues of highest priority to participants;
(d) the discussions conclude with suggestions from participants on possible solutions and explainations on the types of assistance that DAE may be able to provide.

DAE staff undertook a process evaluation of the problem census exercise in Jessore and concluded that the pilot was valuable as an input to extension planning, and as a means to develop awareness among rural communities about specific and general possibilities for self-development. At the same time farmers and BSs participating identified several areas in need of improvement, many of which require extension staff to learn additional skills and/or the involvement of representatives of other organisations

with responsibilities for key problem areas identified by participants which lie outside the mandate of DAE (Bhuiyan and Walker, 1995).

It is yet to be determined which technique is more suitable and whether one or a combination of methods should be used. The informal techniques are well-suited to an extension system that is implementing a group approach. Thus success in identifying all the different types of farmers' needs is likely to be enhanced when the group approach becomes part of the mainstream of the DAE activities.

PRA techniques are useful not only in identifying farmers' needs and ranking of problems, but also in evaluating the technologies that are being disseminated. However, although RRA and PRA techniques are very valuable when used properly, these can give highly misleading results when incorrectly applied (Mosse, 1995). Given the skill levels of BSs, there are reasonable doubts of what can be accomplished by them operating on their own (i.e., the so-called 'grassroots RRA approach'). The present strategy is to supplement the grassroots RRA, in selected areas, with an 'expert rapid appraisal approach' implemented by an interdisciplinary team consisting of extension, research and development staff. Researchers, particularly farming systems groups, and NGO personnel can play potentially important roles in both types of rapid appraisal approaches.

The appropriate balance between formal and informal techniques is required. While there may be some role for formal structured surveys both in eliciting farmers' needs and in problem ranking, informal techniques are superior in probing the reasons underlying cultivators' practices and preferences. Formal surveys require a relatively long time to complete, and usually limited use is made of such relatively expensive studies compared with the results of more 'qualitative' enquiries arising from the application of P/RRA techniques that can be relatively cheap. MTRT felt that formal surveys should on the whole be confined to M&E activities. They also suggested that materials on a number of options for assessing farmers' needs should be developed, and the decision left to the districts as to the method(s) to adopt, taking into account the value of P/RRA and the local situation (i.e. other projects including research, presence of NGOs, etc.).

Since the state of knowledge about farming conditions and farmers' needs varies significantly between areas and commodities, it seems sensible to encourage local staff to make their own determinations regarding approaches to needs decisions. However, few extension staff at the district level possess the necessary skills and information to make such decisions easily. Workshops can assist in acquainting staff with the options, and perhaps NGOs and farmer representatives might usefully be involved in such workshops to assist in making selections.

Ideally, farmers and farmer groups will increasingly take the initiative in identifying problems and testing their solutions. Too often in the past, 'needs' assessments have been derived from what rural communities perceived public agencies could provide that they wanted. In most instances, this involved technologies which farmers already understood and accepted (such as irrigation), rather than innovations. Hopefully, the new extension strategy will assist in shifting the focus of interactions with farmers toward the identification of types of innovations which they themselves might test and refine. Farmers' needs often require translation into specific subjects that are either researchable or relate to existing technologies.

Farmer needs assessment should be an integral part extension planning and the process of technology testing, message development and promotion. Although there appears to be general agreement on the need for strong connections in these areas, the linkages between needs assessment, planning, choice of methods and message development appear to be less 'tight' during the early stages of ASSP, than might be desirable. In part this reflects the need to identify and test different methods for each component (needs assessment, planning, methods, etc), but there is a danger that a relatively compartmentalised approach at the early stages will not lead to a well-integrated system at the end of the day.

Message Development

The DTCs are currently responsible for formulating recommendations or messages to be disseminated to various groups of farmers and deciding on technologies to be demonstrated in farmers' fields. In contrast with the T&V system, the messages and the demonstrations must be adapted to the local situation and suited to the farmers' needs. For making recommendations, there must be technology readily available and documented. There is a considerable amount of information available on many aspects of agriculture in Bangladesh, but most of this is in the form of technical writings that has not been translated into extension recommendations. There is no current DAE 'Extension Handbook' summarising recommendations for all crops. One was published in 1987, but none has been produced since then. Current research recommendations are usually generalised in nature and do not address the issues at the thana level. Therefore, SMSs often use general textbooks when formulating recommendations.

To make the new strategies operative SMSs and SMOs must be able to modify general recommendations currently available from research organisations to make them fit the local situation. But they have limited previous experience and almost no guidelines as to how this should be done. Considering their experience and educational background SMOs are not expected to be able to perform this 'adaptive'

role with any degree of success, unless they are helped in this effort by researchers (e.g. the FSR teams where they are available). As a result, the extension messages usually address routine issues whose solutions farmers probably already know.

Technical Bulletins are a means of getting new technology out to the field. To date, the DAE has prepared Technical Bulletin 1, which is an up-dated version of fertiliser recommendations for non-rice crops. In order to assist SMSs and SMOs to produce more relevant leaflets, there is a need for them to be provided with up-to-date materials. Few of the bulletins produced by research are actually available at either district or thana level.[14]

Extension managers find themselves faced with the same set of constraints that existed within the T&V system in the area of message development. The linkages with the research system remain weak. The situation is more critical now than before since: (i) there are few, if any, dramatic breakthroughs, such as HYV rice and wheat, which combined with expanded irrigation are likely to produce major improvements in the near term; and (ii) the research system is itself currently in a weakened condition and unlikely to be able to respond to new demands and opportunities. Prospects for improving research extension linkages are discussed further below.

Current approaches continue to focus on traditional sources of information on innovations, namely the research institutes. Actively to encourage DTCs to seek assistance in message development from multiple sources, including the private sector and farmers themselves, would be a natural complement of the new strategy and the liberalisation policies which the government is pursuing in such areas as seeds. The current regulations, in fact, specify that promotional messages can utilise information and materials from a wide range of sources and are not restricted to what has been formally released from the ARIs. However, the ease with which DTCs will make the necessary connections to tap multiple sources of information on new technologies effectively remains to be seen.

Technology Transfer

T&V represented an effort to focus the work of the extension service on technology transfer, partially in response to problems in being multifunctional in earlier programmes (World Bank, 1994). The new strategy continues this focus, but with a wider variety of approaches and greater freedom of choice by district, thana and block level staff as to what methods to use. The major means of technology transfer include the following:

- implementation of demonstrations under the supervision of BS;
- use of media (i.e. sound, written and visual) both at the national and local level;
- District and Thana fairs.
- short training courses for demonstration farmers, women farmers, rural youth and agricultural dealers at Extension Centres (i.e. two per district constructed under the ASSP) and Agricultural Training Institutes (ATIs), and through visits to regional research stations.

Demonstrations: DAE has introduced diversity in the demonstration of technologies. As opposed to package demonstration of the 'optimum' combination of inputs, extension staff are encouraged to design demonstrations of single intervention technologies. The contents of demonstrations and the crops are selected by local extension staff based on farmer needs and circumstances. Whereas the focus formally was primarily on major grain and cash crops (rice, wheat and jute), demonstrations now commonly include innovations for homestead vegetable production technology, rice-fish interculture, and postharvest preservation of crops.

Currently, DAE sets targets for the number of demonstrations for each crop season, in accordance with the specifications in ASSP (WB, 1991). In 1993–94, approximately 36,000 demonstrations were established throughout the country. The results show an increasing variety of subjects which hopefully reflect local needs and priorities. Women's involvement in demonstrations has grown. However, it is not clear that the involvement of resource-poor farmers has increased appreciably. Given the long standing association of the BSs with the village elites, it may take time before the involvement of poor farmers increases significantly particularly in the conduct of demonstrations.

There are serious concerns about the quality and effectiveness of many of the demonstrations. ASSP monitoring during 1993/94 revealed several major problems including poor site selection, design and implementation, all of which can be traced to the inexperience of field staff. These problems were aggravated by a lack of backstopping from researchers. Extension staff can learn from experience and training workshops can accelerate this process. In addition, advisory assistance and training from researchers, particularly the FSRD teams, could improve the present situation.

There is a danger that quality problems in the demonstrations in particular could compromise deconcentration efforts, especially as the diversity of activities pursued at thana and block levels increases. There are large variations in managerial capabilities among the DDs and in the expertise of the technical staff (SMS and SMO).

The current situation is further complicated by concerns within the DAE about achieving an equitable 'farmer client' focus and therefore increasing efforts to:

(a) demonstrate single intervention technologies;
(b) design demonstrations that take into account the

fact that the crop demonstrated will constitute only one component in a cropping pattern;

(c) address the field and homestead needs of farmers with different resource levels (HTS, 1994).

Identification of the appropriate single intervention technologies is complicated by the fact that the technology package mentality continues to dominate most technology development. Research in which scientists delineate the optimal step-wise approach to adopting the various components in the package, has rarely been undertaken. However, such insights will be necessary in selecting the best single intervention technology. For example, a specific crop planted in a sequence, in the interests of maximising the return from the cropping pattern as a whole, may not be planted at the optimum time.

Experiment station-based scientists have usually assumed homogeneity in terms of the farmers' socio-economic situation, while in reality, investment in improved inputs is likely to depend on the economic position of farmers. Resource levels, and the different farm work responsibilities of men and women, have rarely been taken into account in drawing up recommendations.[15]

The experience with demonstrations to date through ASSP and the ensuing debate illustrate the understandable ambivalence which many extension staff and decision-makers have about the new extension strategy at this stage. Demonstrations represent a practical, hands-on means of communicating information on innovations to farmers. They are currently an important centerpiece of extension activities in the districts, notably for the group approach, farmer field days and media. As such, 'poor' demonstrations, especially those where the weaknesses are traceable to failures on the part of extension staff, can be very counter-productive. Extension staff can certainly learn from their mistakes, but persistent failures at the early stage will undermine their credibility with rural communities. SMO/SMS staff can and should provide additional training and assistance, but they are stretched very thinly, especially in the absence of effective backstopping from research.

In this context, the practice of setting national and district targets for numbers of demonstrations seems a counterproductive throw-back to the T&V period. It is more important for extension staff at this stage to receive additional training on how to run trials and to start with a few trials that are planned and implemented carefully in collaboration with farmers, SMO/SMS staff, and researchers where this can be arranged.

More fundamentally, it is important for all parties to carefully reconsider the purposes and effectiveness of the demonstrations in relation to the central tenets of new strategy and the realities of current experience in the field. Demonstrations consume considerable amounts of time and money during a period when extension staff are supposed to be exploring an entire set of new relationships with groups, private sector organisations, women and disadvantaged sections of the community.

One possibility would be to drastically reduce or even eliminate 'demonstrations of proven technologies' as part of the extension approach. The term 'demonstration' carries the connotation that the innovation is adoptable, as opposed to 'trial' or 'test'. Since groups and individual farmers are supposed to be involved in the selection of innovations to be demonstrated or tested, perhaps this should be extended to encouraging them to undertake tests on their own with backstopping from extension staff. Most of the current set of demonstrations might be placed in this category in the future. This may not actually be too different from what already exists, but the important differences are that the farmer designs and manages the 'demonstration'; and that these are farmer tests of innovations farmers themselves have selected, not demonstrations. The role of the extension staff shifts from overall direction and responsibility for the trials to one of providing options to farmers; advising on design, site selection and implementation; and monitoring what happens. Farmers and extension staff will learn together in this process. Ideally, adaptive research staff would also be involved.

A further consideration is the possible relationships between demonstrations or farmers' trials and farmer information networks which appear to have been so effective in the spread of innovations during the past two decades. Shifting more responsibility to farmers could help in strengthening this connection, but more information on how the networks function is needed to understand how this might work. Such an understanding could also profoundly influence the character and importance of other features of current extension programmes, including field days, fairs and media campaigns.[16]

Farmer Field Days

Four types of field day-type activities were planned in ASSP as follows:

(a) farmer field days/chashi rallies;

(b) monthly field days at each block for farmers, NGOs, private traders, etc.;

(c) monthly field days at each thana for NGOs, commercial farm input suppliers, and formal and informal groups;

(d) monthly field days in each district for NGOs and traders.

So far only the type (a) activity has been implemented. Currently, three farmer field days are organised per demonstration, once at establishment, once during the vegetative period of the crop and

finally at harvest. Around 15 farmers attend each of these field days although this number could probably be increased to around 50. Until 1993–94 only 48% of the targeted number of 248,297 field days were held. None of the other three types of field days were held, possibly reflecting the limited emphasis that has thus far been placed in the involvement of private sector agencies.

Traditional field days in which lectures by senior officials consume much of the day's time are gradually to be replaced by shorter meetings (2–3 hours) in which farmers visit the fields, ask questions and interact among themselves. Farmers involved in the demonstrations can play a substantial role in explaining the demonstrations, including what they have done since the last field day and their opinions about using or modifying such practices in the future.

The MTRT suggested that demonstrations should be more closely linked to training, experimentation and adoption. Farmer field days can be used toward this end as follows:

- farmers' training can be linked to practical work connected with the demonstration plots, for example, pollination of teasel gourd, method of application and doses of fertiliser, IPM, etc.;
- field days might be combined with visits to demonstrations, FSRD-sponsored work and innovative farmers in the vicinity;
- field days might also be held at the post-harvest stage to provide farmers with an opportunity to obtain seed or planting materials and make overall assessments of the innovations compared to current practices.

In addition, farmer-to-farmer types of initiatives need to be encouraged and supported. There is value in monitoring such activities to provide guidelines for future action. Again, there is a prior need for DAE itself to gain a better understanding of existing farmer information networks and the various dimensions of participation.

Thana and District Fairs

The thana and district agricultural fairs organised by DAE staff have been well received and have emerged as one of the best places to get messages across to large numbers of people. The MTRT suggested increasing the frequency (e.g. holding one in the Kharif and one in the Rabi season), or at least lengthening the duration of the ones that are held. Further, ways should be sought to use regional radio, television and local papers to advertise the fairs and report their activities.

Media campaigns

Major attention has been given to media campaigns since the initiation of Crop Diversification Programme and the ASSP. The DAE has produced 15,000 diaries mainly for use by the BS. Extension and training materials to facilitate technology transfer have been produced and used at the thana, district and national level.

At the national level, a Media Cell has been established in the DAE with the objective of increasing the productivity, efficiency, accuracy and timeliness of the information disseminated via the media and extension publications. The Cell consists of representatives of all Wings and Projects within the Department and provides support services to district extension programmes.

Bangladesh Radio and Television produce programmes on farm issues and the ASSP Farmer Information Needs surveys confirm that radio is an important source of new information. The production of radio programmes has therefore been adopted as a priority. Since the middle of December 1993, Bangladesh Radio accompanies the DAE staff every Tuesday to record on-farm broadcasts with farmers and Block Supervisors.

ASSP supports the production of posters, leaflets and banners for use in districts and thanas. In 1993–94, districts were allocated funds for the production of monthly bulletins and other extension publications. Guidelines have been produced and funds allocated for the production of district and thana publications for their outreach programmes. However, many of the messages contained in the present leaflets appear to be very broad and might be improved by emphasising specific points and using sketch illustrations (MTRT, 1994).

The MTRT found the media component of ASSP to be 'top-down' and possibly less effective in reaching resource-poor and illiterate farmers. There was little evidence that either the media utilised or the messages given are closely linked to farmer problems based on the needs assessments.

Handling of Farmers' Feedback

There are primarily two types of feedback expected to be provided by the extension personnel to the research organisations:

- feedback on the performance of the improved technologies recommended by the research organisations, and
- feedback on farmers' problems for which know solutions are not readily available at the local level, but may be accessible elsewhere, or may require additional research.

In addition, DAE seeks feedback from farmers on the effectiveness of its various activities.

Although field staff are making an effort to obtain feedback and record it in their diaries, there has been limited progress in synthesising and communicating this information within DAE or to research.

More formal monitoring and evaluation (M&E) activities also have the potential to obtain, assess and communicate feed back from farmers. Under ASSP,

M&E programmes have been prepared and are currently being tested on a limited basis.

One of the difficulties in dealing with feedback, is that there is limited capacity to respond and make adjustments, especially as one moves beyond the district level. As discussed below, efforts are being made to improve linkages to research and to provide financial support in the form of contracts to research institutions to perform tasks on behalf of extension programmes in the districts. Such tasks could include addressing issues arising through farmer feedback. However, at the present time, mechanisms to link these activities remain weak.

Improving Linkages and Participation

The proposed extension strategy indicates a marked shift away from institutional self-sufficiency toward partnership and interdependence involving different public and private organisations and rural communities in providing extension and agricultural support services. Linkages are mechanisms which can serve to access information and resources on the one hand, and provide services and feedback on the other. In effect, linkages between the DAE and other institutions (both public and private) concerned with agricultural development can help broaden participation in agricultural extension activities and improve its performance. Potentially significant in this regard are the additional resources that can be mobilised through such participation. To this end, the MTRT felt that ways should be found to make the DTCs, in particular, more effective in establishing and strengthening linkages in the following areas:

(a) **Sources of Innovations**: The technology transfer process requires a reasonable and continuing flow of appropriate technologies. Consequently, it is critically important that collaborative and interactive linkages are established between extension and the sources of innovations, including research.

(b) **Other Extension Services**: For farmers with integrated farming systems consisting of crops (i.e. including vegetables), livestock, fish and off-farm employment, it is important that DAE staff should interact constructively with staff responsible for extension in livestock, aquaculture and agro-forestry.

(c) **Input and Output Markets**: From the farmers' perspective it is important to ensure an integrated system linking the availability of inputs; the production system itself; and the marketing of the products. Effective and operational links between the DAE and NGOs, banks and private dealers who provide inputs and other services become very significant.

(d) **NGOs**: To help small, landless and women farmers, interactive, collaborative and field level linkages should be established with NGOs who are currently working with these groups.

Research-Extension Linkages

The key formal institutional Extension-Research linkages in the design of ASSP were the DTCs which are chaired by the DD and in which research institutes, other extension agencies and private sector organisations are represented. The DTCs were empowered to make decisions about technical messages based on information and materials they could obtain from any source, including sources outside the country. This represented a major departure from previous practice in which all decisions on technical messages were based upon formal releases from the national research system.

The devolution of responsibility for formulating technical recommendations at the district level has considerable merit in enabling:

- a degree of locational specificity in tailoring recommendations to the local situation;
- decisions concerning the appropriate recommendations to be made by the individuals who are most familiar with the local situation.

However, such decisions require technical knowledge, socio-economic analytical capacity and a farming systems perspective. These capacities are limited at the district level. Some technical staff have a foundation of knowledge which can be considerably strengthened through direct interactions with research staff in their respective areas (notably with the FSR teams where these exist). As well as helping in the process of drawing up relevant recommendations, researchers could help in deriving solutions to problems through adaptive research at the local level. Unfortunately, such linkages do not currently exist in most of the districts. An expansion of FSR capacity might be considered either in the context of extension projects, such as ASSP, or future support to the research system.

The DTCs could be an important forum for interaction among various organisations involved in agricultural research and development. However, as during the T&V period, researchers miss many DTC meetings, and attendance by NGO, livestock, fishery and forestry staff is also often poor. These absences mean that the effectiveness of the DTCs is severely impaired. Reasons for poor attendance include the frequency of the meetings, the perceived lack of relevance of many agenda items by researchers, farmers and NGO representatives, and shortages of travel funds to attend meetings. In the light of this, it has been proposed to replace the DTCs with about 20 Agricultural Technical Committees (ATCs) based on the former Greater District format (i.e. which tend to be ecologically more homogeneous than the regions, which are politically determined).

The proposed functions of the ATCs are:

- to review the progress and problems of on-going extension work in the districts and suggest possible solutions;
- to review the draft extension programmes of each district for the coming season;
- in conjunction with research, delineate the appropriate technology messages for different groups of farmers and find solutions to technical problems through drawing on the experience and knowledge of researchers or communicate unresolved problems to them for solution;
- to develop and nurture constructive, collaborative and functional linkages with other institutions represented on the ATC (e.g. NGOs and organisations involved with inputs and product marketing (DAE, 1994a)

The core membership of ATCs would consist of the DDs, Training Officers, SMSs, district level officers from the Departments of Fisheries, Forestry and Livestock, and representatives from local research stations. Additional membership (e.g. agricultural based NGOs, Bangladesh Water Development Board members and progressive farmers) can be co-opted or consulted on specific issues. The ATCs will normally meet three times per year, in advance of each crop season. Minutes of meetings, together with a separate list of unsolved problems, will be sent to senior managers in DAE and the relevant ARIs.

To fulfil the extension planning and monitoring roles of the DTCs, District Extension Programming Committees (DEPCs) would be created with much more restricted membership.[17] The DEPCs will be mainly responsible for reviewing and approving the annual thana extension programmes and compiling them into a district extension programme.

Activities: In the past the DTCs have concentrated mainly on the formal approval of the impact points, putting suggestions on the agenda for adaptive research, and discussing emergency issues on agriculture, such as pest outbreaks, large-scale crop damage due to flooding, etc.

The new extension approach envisages more intensive linkages between adaptive research (particularly FSR), government extension activities, development efforts of the NGOs, and agencies involved in input supply and marketing. Not all of these linkages can be maintained effectively through formal committees, such as the DTC. More informal collaboration will therefore be required.

A key ingredient for the success of the new extension approach would be the availability of location-specific technology for local level planning of extension. While DAE is required to search for innovative technologies used by farmers and NGOs, an active collaboration between local extension staff and FSR personnel for developing new technologies would be of paramount importance. This would require joint extension-research efforts in identifying farmers' problems, designing and implementing FSR activities, and collecting and incorporating feedback from farmers in planning of both extension and FSR activities (Chowdhury *et al.*, 1993).

Contracts: For the DAE in particular, ASSP breaks new ground by both calling for stronger linkages and broader participation in agricultural development across the full range of public and private sector organisations as well as offering support to potential partners towards this end. There are four areas in which a contracting mechanism is being employed:

- contracts for research and other services through the Thana Special Initiative Fund;
- contracts with NGOs under the Homestead Production component;
- contracts with organisations to provide training; and
- contracts with individuals, directly and through consultancy firms, to provide technical assistance.

The following discussion focuses on the first two of these. As yet there have been no examples of contracts specifically for training. Contracts have been made for consultancy services, most notably with Huntings Technical Services, to provide a range of local and externally recruited technical advisors for the project.

Technical problems identified by the BSs and other extension personnel that are unsolvable at the DTC level are supposedly fed back to the DAE headquarters for incorporation into the research programmes of BARI, BRRI or other research institutes. The aim is quickly to identify solutions that can be used by the DAE in its activities. In the past, DAE has failed to provide systematic feedback to research, and research institutes have not seriously considered such feedback to be important in formulating research programmes. In an effort to reinforce the importance for research to properly address requests for assistance from extension, ASSP has made provision for a Contract Research component in the project.

The Thana Special Initiative Fund was set up primarily to support the involvement of local government in the direction of extension activities. The proposals for funding were to be screened by the DTCs and required the formal endorsement of local government authorities. It was subsequently agreed that these funds could be used for contracting the services of NGOs, private commercial firms and other public sector organisations, notably research institutes, to perform specific services in support of the objectives of the ASSP.

Separate Memoranda of Understanding have been drawn up between DAE and each of the four main research institutes to facilitate cooperation and formal contracting. District extension personnel identify potential topics for Contract Research; these are subsequently compiled at the DAE headquarters and relevant topics are sent to each research institute, with

a request that they prepare proposals for projects to investigate the problems identified. Prior to the first round of awards in 1993–94, 80 problems were articulated by DAE which were initially classified as solvable and unsolvable.

Examples of Contract Research that have been initiated based on the unsolved problems (farmers' feedback) include multi-locational trials on short-cycle rice by BRRI in a number of districts, and disease issues relating to a number of crops for which BARI is responsible. It is too early to evaluate the results of the research.

Although demand-led contract research shows some promise for developing location-specific technologies, the value of this initiative will diminish if problems are not efficiently identified and transmitted by BSs through DTCs to research. Most BSs need additional skills and experience in this area so that they can handle many questions on their own. This is especially important given the work load of district technical staff (SMO/SMS).

Some of the problems identified can not be easily translated into researchable issues. However, many farmers' problems can often be broken down into several researchable topics and there is usually more than one way of addressing such problems, not all of which are technical or scientific in nature. Problem identification, and the search for relevant researchable issues and solutions, has to be a joint effort on the part of farmers, extension and research. Ideally, at least some interactions between farmers, extension staff and researchers can take place in the field rather than having information on problems and solutions entirely filtered through DAE headquarters.[18]

The time lapse from problem identification to the approval of contract research is reportedly very long. The delay occurs in receiving and compiling the feedback by the DAE headquarters, receiving reactions from the research organisations and in obtaining approval by a committee. The MTRT suggested that ways should be sought to decentralise decision-making with respect to what should be the contract research topics, closer to the field level, while keeping headquarters personnel fully informed.

Although initially there has been some difficulty in awarding the contracts to NGOs for homestead garden activities, by May 1995 the first 19 contracts were signed and the rest are expected to be signed by October 1995. MOA facilitated the signing of the contracts by taking over the responsibility of countersigning them. The National Extension Task Force has formed sub-committees on linkages and homestead production activities and is expected to approve guidelines on DAE/NGO linkages.

The NGO homestead production component of the ASSP was designed to contract experienced NGOs to provide information and training support services to horticulture and other homestead production enterprises. NGO-managed programmes could be linked with the technical expertise available in the DAE and involved in DAE's message formulation process. The ultimate objective of this approach is to encourage partnerships between the DAE and NGOs and mutual exchange of expertise (ODA, 1991a).

The process of contracting NGOs has proven to be slow and complex. An initial reluctance by DAE to accept the principle of contracting NGOs seems to be based on a lack of understanding of the reasons that funds that DAE perceived as a grant to the GOB, were being given to NGOs. The DAE staff also express concern regarding accountability for these funds. A DAE/NGO Liaison Committee has now been established with representation from the DAE and NGOs.

Linkage with Other Government Organisations

Virtually all government agencies concerned with agricultural development have national responsibilities, but only DAE has a truly national network of field staff. Thus, other agencies are not equipped to reach a large proportion of the rural population directly. The needs of farm families include issues which are encompassed by the mandates of these agencies, particularly in the cases of livestock, fisheries, forestry and water resources. Furthermore, there are important interrelationships among these subjects at the rural community and farm household levels which ideally should be taken into account in the design and implementation of development projects and programmes.

Although the relevance of these interrelationships is generally recognised, there are few examples in public sector programmes (i.e. outside the confines of specific donor projects, such as the CDP) of regular, on-going collaboration across organisational and discipline lines to provide agricultural services to rural communities. An important exception is the network of FSR units which are operating in several ARIs. The FSR teams are currently located in approximately 20 sites in different Agro-Ecological Zones throughout the country and in many cases possess adaptive research capacity encompassing livestock, forestry and fisheries as well as crops. These teams have considerable potential to link the DAE activities throughout the country to sources of innovations and generally to backstop the efforts of subject-matter staff with the identification and design of appropriate technologies for specific ecologies.

Linkages with Private Commercial Firms

Encouragement to private commercial firms is a prominent feature of efforts to promote the production of horticultural commodities for export under the agri-business component of the ASSP and more generally in serving the needs of larger-scale and commercial agricultural producers. The involvement of producers,

marketing agents and input delivery companies in the provision of information and services to producers can allow the DAE, other extension services, and NGOs to focus their efforts on staple foods and, more generally, on the needs of poorer rural households.

ASSP Mid-Term report (1994) identified the following strategies on linkages and procurement of services from the private sector:

- The existing programme of dealer training should also be expanded as this programme affords the opportunity to provide extension advice to a substantial number of farmers at little cost to GOB.
- DAE might contract extension services for a few selected thanas to private companies.

There is considerable potential for the participation of small homesteads in the provision of inputs, information and services to neighboring communities. These services can provide income and employment for landless and marginal farm families. As an illustration, some homesteads associated with the SRTI FSD teams in Rangpur have been producing sugarcane seedlings to be sold to farmers for transplanting. The single transplant seedling system which was developed by STRC has the potential to more than double yields, although requires additional labour. A significant portion of such labour along with the seedlings themselves is being supplied by these homesteads.

Active promotion of linkages **between** government and private sector organisations in the agricultural sector is a relatively recent feature. Examples where linkages go beyond episodic consultations on matters of mutual interest (e.g. advisory committees) and involve formal agreements (contracts) are still rare.

Linkages with NGOs

A valuable input to the DAE's efforts in deconcentration process can be provided by the experience and networks of other organisations, especially NGOs, that are more broadly involved in rural change than the DAE, and have experience with groups and farmer participation; and targeting marginal and small farmers, women and other disadvantaged groups. Partnerships with NGOs offer considerable potential for enhancing the effectiveness and image of the DAE in rural communities throughout the country.

Cooperation between the DAE and NGOs could have considerable advantages for both. For the DAE, the advantages include increased coverage for little extra cost, improved links with local communities at the grassroots level, and the possibility of extension programmes being more closely aligned to real needs and circumstances. Improved links could also ensure that, in the event of government retrenchment and staff reductions, effective extension services to rural communities could be maintained. For NGOs, links with the DAE could bring the benefits of improved access to technical expertise on a wide range of agricultural subjects and research developments, and the opportunity for better inter-NGO coordination (ASSP, 1994: p.3.12).

There are reputedly over 30,000 NGOs in Bangladesh of which more than 6,000 are registered with the Government's NGO Bureau. Government policy is to co-operate with NGOs and involve them in the provision of selected service. Although there has been limited co-operation between the DAE and NGOs, agreements exist between the Ministries of Livestock and Fisheries and NGOs. Initially, efforts to involve NGOs with DAE programmes have been limited to contracting NGOs to assist with the expansion of homestead gardens.

In locations where NGOs already work, it is envisaged that they will link up agriculture extension staff, and where appropriate, research scientists, for co-operation in such areas as group identification/ formation, needs assessment, feedback, training, adaptive research, institutional development, information exchange, monitoring and evaluation.

In a few districts, DAE is working with selected NGOs, including Rangpur Dinajpur Rural Services in the dissemination of homestead agricultural technology. The Grameen Krishi Foundation has contracted with BARI to provide services from the On-Farm Research Division to assist in efforts to improve the utility of tubewell irrigation and provide technical support to farmers who receive GKF credit. With BARI's support GKF has successfully introduced several field crops and seed production of vegetable crops like tomato, gardenpea, radish, etc. with farmers.

There are many positive experiences of cooperation between government and NGOs in Bangladesh both in the wider agricultural sector and in other sectors. Many NGOs successfully combine strong management and financial accountability with outreach to rural communities which are poorly served by government programmes. The lack of access of many farm families to extension services limits their ability to understand and utilise new technologies.

The challenge is to develop a structure for collaboration which enables both parties to share their expertise and thus complement one another's efforts. The current programmes of DAE/NGO cooperation assume that innovations exist, or can easily be developed, which will improve the livelihoods of large numbers of farm families immediately and directly, if not dramatically. The validity of this assumption varies significantly between commodities, subjects and geographic areas. Where tangible progress in agriculture is possible, it can give individuals and communities the confidence in the future that they so often lack. Such confidence is a prerequisite for participation and real development.

Serving the Poor and Disadvantaged Groups

INCORPORATING GENDER SENSITIVITY

The primary objective of ASSP is the improvement of the impact of agricultural support services as a means to raise the standard of living of the farming community as a whole, irrespective of gender or land ownership (ODA, 1991a; World Bank, 1991). This is intended to be done via increased access by disadvantaged groups to agricultural support services and employment opportunities. Improvements in the health of the rural population (particularly women) are sought via increased food sufficiency, quality and variety (ODA, 1991b). The needs of women involved in agriculture will be specifically addressed by making the technology transfer more responsive to farmer needs, and improving the outreach capabilities so that all sections of the rural community, including women have access to improved technology (World Bank, 1991:11). The ASSP would address this by:

> "... *initiating a transformation of the hitherto entirely male-operated and male-targeted extension system to one which is equipped to support and exploit the scope for women's enhanced participation and benefit from improved technology.*" (ODA, 1991a:10).

There is a homestead production component to facilitate this process.

The GOB perception of the role of ASSP in realising the GOB Fourth Five Year Plan 1990–95 (FFYP) highlights the need for a socio-economic as well as technical approach to agricultural extension in serving the needs of women. Specifically the FFYP aims to accelerate economic growth, alleviate poverty, generate employment and achieve self-reliance, and advocates the

> "... *integration of sector-based planning with socio-economic group based planning ... and bringing women in (to the) mainstream of development planning ... A goal of extension services during the Fourth Plan period would be to shift extension services from larger and more affluent farmers to 'resource-poor' farmers.*"

With regard to agricultural extension the Plan envisages the following:

- employment of more women in agricultural extension, training and information services responsive to women's needs in agriculture;
- promotion of technological innovations to improve women's productivity in agriculture;
- introduction of agricultural credit schemes for women;
- urging NGOs to undertake agriculture-related projects incorporating women's concerns;
- inclusion of women's concerns in agriculture-related training programmes;
- strengthening of women's training programme in poultry-keeping, tree plantation and small-scale fisheries.

Initially, DAE had little experience or resources in working with women. However, because of its extension network throughout the country, and the increasing involvement of women in all agricultural activities, there is an enormous potential to develop DAE's activities to meet the needs of female as well as male farmers.

DAE has traditionally limited its extension activities to the major field crops for which male family members are usually responsbile. However, services supported through ASSP in theory can relate to all agriculturally-related operations and activities in the household that contribute to improved family well-being.

Implementation of this programme requires an understanding of the division of labour on both field crop production as well as the selection of seed and storage operations, post-harvesting processing, food preparation (with its implications for nutrition), and other farm production activities such as homestead farming, animal husbandry, fish ponds and agro-forestry. Women predominate in many of these areas. This gender-based approach has much in common with farming systems research in that it considers the farm family and its various roles and contributions as a whole.

The need for specific initiatives to be taken to support DAE in adapting and expanding its programmes to meet the needs of women has gained acceptance both by DAE and the donors. Gender training has been incorporated into the training component of ASSP. At a policy level, a symposium was held in October 1993 to help DAE formulate its gender policy. Since then, training in gender awareness has been successfully provided to senior staff at national level and in seven of the nine regions.

Overall progress by ASSP on meeting the needs of women farmers has been slow. Almost all resources, personnel and financial, are targeted to agricultural activities where men dominate. Even in the homestead production component, which was designed specifically to expand services to women, two-thirds of demonstrations carried out in Kharif 1, 1994 were implemented by men. No field crop demonstrations are targeted to women.

A very cautious approach to gender issues has been adopted for which several explanations are offered. These include the prevailing assumptions that only female extension workers can effectively work with women. The experience of other large-scale agricultural extension programmes in Asia demonstrate that male extension workers can reach and train village women. Examples of male extension workers working with women include the Indo-British Fertiliser Education Project which was operational in five states in India, and the Rainfed Farming Project in

Eastern India, both funded by ODA and implemented by the Hindustan Fertiliser Corporation. Particularly in poorer households, the division of labour is less clear, and the seclusion of women less rigid, than in better-off households. Neither agriculture nor gender roles are static, thus, the extension service needs constantly to up-date itself through gender desegregated data and analyses of farmer practices, problems, preferences, options. While there continue to be concerns within the ASSP and DAE about dealing with women farmers, the intention is that 'women's' extension programmes should form part of the mainstream activities of DAE.

The MTRT made a number of suggestions aimed at making field activities more relevant to women including the following:

- Separate **field days** should be held for women farmers. The criteria which women use to assess crops should be compared with those used by men (e.g. women may be more concerned with colour, taste, cooking time, processing time, and suitability for fodder or fuel).
- **Farmer training** for women should be held at the village level because the majority of women will not be able to travel. Consideration should be given to the development of mobile training courses, to be given by thana staff. Key women in the village who have particular skills should be used as resource persons.

  Content should relate to the role women play in agricultural production in the local context (e.g. cultivation of field crops/homestead crops, post-harvesting processing and preservation, seed selection and storage, use of organic compost, livestock care).
- **Fairs** should be held at the village level (village women will not be able to attend district fairs) and might be organised by a women's group in conjunction with DAE staff. Food fairs could be organised to demonstrate new pulses and vegetables, and methods of preserving foods.
- **Motivational tours** can be organised for women. In view of the constraints to women's mobility, they provide a unique opportunity to expose women to happenings and activities outside the village.
- In terms of **media**, radio programmes and publications should represent the lives of women farmers, their work and responsibilities.
- The timing of **extension visits** by BSs to women farmers will have to take account of their other responsibilities. For example, women tend to be very busy in the mornings and evenings preparing food, washing children, etc.
- Apart from a Post-Harvest Technology Handbook produced by the Crop Diversification Programme (CDP), an important issue is the almost total lack of any **messages on technologies for women farmers**. There is a need to identify the information and technology needs of women farmers by collecting information on women's farming activities to identify their needs, constraints and aspirations. This can be done through P/RRA exercises which disaggregate socio-economic and agricultural data by gender, by farming systems research and development staff, and feedback from extension.

STRENGTHENING SOCIAL DEVELOPMENT WITHIN THE EXTENSION SERVICE

The MTRT noted several factors affecting the extent to which social issues are addressed in DAE:

- Limited attention is paid to specific measures to improve the participation of resource-poor farmers and disadvantaged groups in extension activities, including needs assessment, adaptive research and demonstrations.
- Homestead production, practised by 13 million households (and the only land available to marginal and landless households), is not a priority for DAE which concentrates on field crops. The homestead production component of ASSP has been very slow to start, and DAE field staff do not have the relevant skills to provide technical support.
- There are few linkages with NGOs who are often to be found working in the same villages as DAE, and working successfully with women.
- Expertise in socio-economic fields necessary to support the planning, implementation and monitoring of ASSP funded activities so that the needs of all farmers are addressed, is almost totally absent.

Both DAE and the research institutions have weaknesses with regard to social analysis and have requested assistance from ASSP to strengthen social analysis and planning. In view of the relatively short time-frame of ASSP, the MTRT suggested that assistance should be focused on strengthening social development capacity within DAE by:

- examining the range of experiences with approaches to social issues in other projects in Bangladesh and neighbouring countries, including a literature review, visits to sites, organisation of an in-country workshop;
- design and pilot-testing approaches for addressing a few key social issues to make ASSP more relevant to resource poor farmers;
- assessment of the integration of successful models into district planning.

The group approach has potential to address these issues. However, as discussed earlier, there is currently considerable confusion over what this means and how to do it.

Institutional Reforms and Manpower Development

The merger of six departments into one unified

service achieved some success in coordinating and integrating activities. However, a new set of operational problems was created in the process. The importance of the crop and subject matter specific wings has been greatly reduced and their effectiveness has suffered as a consequence. There is widespread dissatisfaction with the current structure, notably in the Plant Protection, Food Crops and Cash Crops wings. Furthermore, the top officials of the DAE consider that the present structure is unmanageable and that they have limited authority to co-ordinate and oversee the activities of the seven wings. The same officials argue that the performance of the DAE as a whole had dropped substantially since the restructuring and that it had failed to achieve its purposes.

With support from ASSP, DAE is undertaking an ambitious programme to upgrade the skills of existing staff. The MTRT reviewed these programmes in some detail and generally found them to be adequate in terms of improving basic technical and extension skills. However, little attention was being given to several areas, such as working with groups, NGOs and other organisations which are key elements in the new strategy.

Sustainability

A major concern in the design of ASSP and in the retreat from T&V is the cost to GOB of maintaining the extension services. This concern reflects the perceived inability of the government to sustain the range of services being provided, in extension as well as in virtually all other areas. Maintaining services at current levels would require continued dependence on external funding for the foreseeable future. This scenario is rejected by donors and thus ways must be explored for reducing the cost of these services. The most common approach advocated involves a reduction of staff, through elimination of posts and/or by blocking filling of posts which are vacated through normal attrition.

In 1989 DAE was spending more than 95% of its recurrent budget on salary and allowance payments (World Bank Public Expenditure Review, 1989). The original IDA and ODA project design was aimed at

> "... *improving the cost-effectiveness of extension by replacing a significant number of staff positions with alternative outreach techniques, and upgrading the working environment and mobility of the remaining field officers.*" (World Bank, 1991, p12).

This condition was imposed against the backdrop of serious current and prospective pressures on government finance availability and a desire to move toward financial sustainability for the extension service through a reduction in dependence on external assistance.

Reducing costs while simultaneously increasing capacity and performance seems like a contradiction in terms, but this is precisely the strategy being pursued through ASSP. This approach contrasts sharply with that of E&RP I&II which involved an expansion of field staff to operate the T&V system.

The design of ASSP:

> "... *envisaged that staff reductions would involve at least 450 middle level professional staff and 2,500 Block Supervisors (BSs) using normal retirement and a hiring freeze. In addition GOB will explore the possibility of accelerating staff reductions through the use of inducements for early retirement.*" (World Bank, 1991, p.12).

There have been a number of discussions relating to staff reductions between GOB and IDA which have, as yet, failed to resolve this matter. Limited overall progress has been made, not least because the vast majority of lower and middle level staff members are well short of the retirement age. The large numbers recruited into BS cadre which took place during the 1970s and early 1980s as a direct consequence of IDA projects will not begin to reach retirement age until well into the next century.

Bringing the concept of cost-effectiveness into extension approaches should be an important consideration when planning for extension. Cost-effectiveness should be taken into account more explicitly in decisions about the mix of extension approaches and methods in terms of quality and coverage per extensionist, as well as per unit of money spent. The ultimate objective will be to shift away from demonstration-led extension to a system having appropriate mixes of a variety of approaches. Current funding arrangements tend to favour use of specific approaches (e.g. media) and thus can distort decision-making on extension approaches at the district level.

The MTRT offered guidelines for resolving this issue which reflect both the project objectives and the realities of the current situation as follows:

1. The GOB and the IDA should agree a set of guidelines and targets for the extension services, aimed at achieving a specified level of financial sustainability within a given time frame. The targets should be expressed in terms of the following:
   - net costs of the extension services to the government;
   - levels of operating and maintenance budgets per field worker;
   - reductions in dependence on external donor assistance.

   The current focus on staff reductions in specific job categories is counterproductive in relation to ASSP objectives. This focus should be abandoned in favour of financial sustainability and cost effectiveness. Further, the scope of enquiry should be extended to encompass the extension services

for fisheries, forestry, livestock and water resources, in line with the need to improve linkages and the provision of non-crop extension services.

2. In the context of efforts to decentralise the extension services and make them more 'demand driven', GOB as a matter of urgency should identify and install mechanisms for the direct beneficiaries of these services to cover an increasing portion of their costs of operation.

   The MTRT offered a number of specific suggestions including the following:

   - Farmer groups, NGOs and the private sector should be actively encouraged to undertake agricultural extension tasks, with a view to reducing the costs of these services to the government. Thana and district offices should prepare an inventory of agricultural development activities by private agencies in their areas of operation and take these into account in developing workplans, and setting Block boundaries.
   - Rather than targeting a specific category of staff for reduction, posts should be selectively eliminated, both in DAE and other extension services, which are judged to be redundant or serving a limited purpose within a restructured extension service. Individuals currently occupying these posts would be eligible for transfer to fill vacancies and be given incentives for early retirement.
   - Explore possibilities for selectively transferring DAE staff to other publicly supported programmes where there are openings for personnel with qualifications similar to DAE staff. An important example is agricultural education work in schools.
   - Performance considerations should be given at least the same weight as cost reduction in the development of financial sustainability plans.

Conclusions

The central features of the reforms Bangladesh is undertaking in the extension services for crops include:

- deconcentration;
- group approach;
- demand-driven development of extension methods and messages;
- stronger research-extension linkages;
- broader participation;
- focus on poor and vulnerable groups;
- institutional reforms; and
- improved prospects for sustainability.

In general, these reforms are steps in right direction, but they make more demands on management systems than T&V did and require that a strategy for implementation be clearly developed, locally owned and closely monitored over a period of time.

The structure of this section follows the six points (a-f) in the introduction which underlie the new extension strategy. These points are examined in the light of the preceding discussion of T&V and the present directions in extension. The paper concludes with a discussion of the coherence, performance and sustainability prospects for the new strategy.

Past Performance of the Extension Services

The introduction of T&V and the reorganisation of the extension services under one umbrella provided agricultural extension with an opportunity to coordinate extension services for different crops. T&V required a strict routine for the training of extension agents, dissemination of messages, and monitoring performance. Extension staff and managers functioned within a straightforward system of training, formulating extension messages and contacting farmers. As such, T&V offered a relatively clear, top-down system that blends well with the norms of the public service and established chains of command.

After ten years of implementation, T&V appears to have failed to produce the anticipated benefits particularly for the large number of small farmers in Bangladesh. Improvements in the quality of extension services and increases in crop production were less than what had been expected. Although it is difficult to isolate the effects of extension from other factors, the recent increases in rice production in Bangladesh are thought be more due to the expansion of small-scale irrigation than the result of T&V. Privatisation of fertiliser marketing and farmer-to-farmer exchange of seeds have also enhanced the adoption of HYV rice and wheat in Bangladesh.

The Contact Farmers (CFs) constituted the key element linking extension with the mass of farmers. Evidence is mixed, but the extent to which CFs functioned effectively in communicating new technologies or impact points to their neighbours appears to be much less than expected. CFs were selected by field staff and tended to be men from the wealthier or elite groups in rural communities. This meant that communications to and from less well-to-do families and disadvantaged groups was limited.

Aside from CFs, the T&V system did not include provisions for cooperation with private sector organisations and individuals. T&V was a reaffirmation of the primacy of the role of the public sector in serving as the link between sources of technology and farmers. In spite of the use of CFs, it was necessary to simultaneously expand the numbers of field staff and upgrade their skills and mobility.

The size of the extension service (i.e. DAE) grew rapidly during the initial years of T&V and soon exceeded 20,000 employees following mergers and fresh recruitment. As coverage approached the entire

country, additional burdens placed on central management increasingly exceeded capacity. The capacity was further dissipated by the tensions which followed the departmental mergers. T&V requires tight reins to operate effectively. Slackness progressively worked its way through the extension service. Training became more mechanical; monitoring visits by extension agents were irregular; message formulation was done without much regard to the farmers' needs; and the performance of field staff declined. On the whole, the extension service became increasingly out of touch and unresponsive to the rural communities they were supposed to serve. Concurrently, costs rose dramatically, fuelled primarily by E&RP I and II.

T&V failed to establish effective linkages with research and to incorporate farmer feedback. The development of extension-research linkages suffered from several constraints and was not given priority. It may be noted that FSR was designed in part to specifically address these issues but the latter also failed to live up to expectations in Bangladesh. In practice FSR was operated in the ARIs as marginal programmes without having effective linkages with mainstream research or extension.

As these conditions became increasingly apparent, the tide of opinion among public and private agencies concerned with agricultural development in Bangladesh as well as among donors increasingly turned away from T&V. The World Bank's staff appraisal report for ASSP in 1991 gave formal notice of both the 'failure' of T&V and the launching of a new strategy (World Bank, 1991).

Costs and Sustainability

There have been no specific studies on the cost-effectiveness of the T&V system that has been operating in Bangladesh since 1978. Also there has been no study to assess the extent to which the total (or per unit) cost of the extension service will be more or less in the current decentralised system of extension. As noted in the discussion on sustainability, the formal agreement on ASSP required that economies should be achieved primarily through a reduction in field staff. However, the project is now more than halfway through its current phase and little progress has been made in resolving this issue. GOB is understandably reluctant to deal with the issue and as noted in the MTRT report, there has been little effort by either DAE or donors to reconcile the magnitude and character of the proposed cuts with the emerging extension strategy. In the long run, a decentralised system with major participation and support from the private sector could result in economies for the government as well as improvements in overall performance. Although greater collaboration with the private sector and research features in the ASSP plans, in its current phase the project's efforts are focused almost entirely on the changes which DAE itself must make to successfully accommodate the new strategy. The MTRT report notes that other features, including participation by NGOs and the private sector, will not just fall into place. Major additional investments will be required which will further complicate the search for cost reductions and sustainability.

There are increasing pressures on DAE as well as other public sector agencies simultaneously to reduce cost and increase effectiveness. Many donors are simply writing off public sector institutions in the belief that the private sector has a comparative advantage in many areas because of their flexibility in operation and responsiveness to clients.

Various forms of cost recovery and cost sharing have been tried in countries where agriculture is commercialised (rather than subsistence oriented) and farmers can afford to pay for the service. Under Bangladesh conditions, the private sector might assume a major portion of the costs for research and extension services for commercial exports such as certain horticultural crops. However, cost sharing would be quite difficult for the poorer segments of the rural population to accommodate, other than by contributing of their time. There are several possibilities for cost and task sharing between DAE, NGOs, commercial firms and rural communities which should be more carefully explored. However, in the near term, the new extension strategy offers little hope for a significant decrease in public sector expenditures on research and extension. More likely costs will increase at least for the next few years. It is not clear that any of the parties involved are anxious to address this issue in a fashion that might bring the debate to a constructive resolution. However, failure to do so risks seriously jeopardising the future of public sector involvement in agricultural research and development.[19]

Participation

At the conceptual and rhetorical levels, major progress has been made in gaining acceptance of the desirability of broadening participation in technology development and transfer. There are also an increasing number of examples of private sector involvement in agricultural development activities. This marks a major departure from the T&V period during which, aside from the contact farmers, participation by others was not encouraged. However, in practice progress on this front has been slow and fitful.

Rural Communities and Farmer Groups

At the field level, the practice of participation for DAE has not extended much further than the formation of

village groups about which there remains a fair degree of confusion. In the early stages of ASSP there was little more than a general statement in the SAR that groups would replace contact farmers. In response to increasing questions about the group approach, DAE issued directives on group formation in 1992. The directives called for groups to be formed at the village, Unit and Sub-Zone levels according to standardised formula patterned after the approach used in Kurigam District. No account was taken of pre-existing groups formed by NGOs or by the rural communities themselves. DAE groups would be created explicitly to serve an extension function as defined by DAE, thus replacing the contact farmers.

In 1994, DAE leadership modified its initial directive on groups to allow greater flexibility to the district and field staff in determining how to use groups and which groups, including pre-existing ones, to work with. There was a recognition that the successful formation and operation of groups involved a new set of skills which very few, if any of the field staff possessed. More fundamentally, a standardised national directive of such a matter seemed inconsistent with the theory and practice of decentralisation.

NGOs

Efforts to involve NGOs and private sector organisations in the planning and implementation of extension activities at the district levels and below has been very limited, in part reflecting DAE's desire to develop and master the basic mechanisms of the new, decentralised system itself before including others. Within ASSP, the participation of NGOs was initially largely equated with homestead gardens. Even with this somewhat narrow subject-matter focus, the MTRT report found that very little progress had been made. There is a danger that the difficulties DAE is experiencing in getting proposals developed, approved and operational will only serve to confirm the scepticism of potential NGO partners about such arrangements.

Aside from delays in initiating collaborative activities, there are differences in objectives which are likely to lead to tensions during implementation as illustrated by the experiences of the aquaculture project which involves the Fisheries Research Institute (FRI) and the International Centre for Living Aquatic Resources Management (ICLARM) and several NGOs. FRI is primarily interested in measures which will achieve production targets whereas NGO concerns focus more on improving incomes and a range of equity and environmental issues (Farrington and Lewis, 1995).

The rhetoric notwithstanding, the operational reality of ASSP during its initial years reaffirms the primacy of the public sector (DAE) in meeting most of the extension needs of the farmers of Bangladesh. Many DAE managers and field staff continue to see NGOs more as an additional complication that is being thrust upon them by external donors, rather than as potential allies. In many instances these reservations are strongly shared by the NGOs. As such, the limited progress of participation is not surprising. Neither side is taking the initiative in seeking the other out nearly as much as the designers of ASSP had envisaged would happen.

Future links with NGOs should be pursued at two broad levels: first, in areas where decentralisation is well-established and there is already sufficient confidence in relations between NGOs and the DAE, close working partnerships need to be formalised through contracts, but without unduly constraining the flexibility that NGOs require. Second, in other areas, confidence between the two sides needs to be built up over time by informal interaction, including joint field visits, sharing of draft action plans and participation of each side in the monitoring and evaluation missions of the other. The ASSP needs to ensure that adequate funds can be drawn upon as necessary to meet these requirements. Scope for working with NGOs will hopefully be reflected more explicitly in the National Extension Strategy which is now being finalised.

Private Commercial Firms

Progress has also been slow in developing patterns of partnership with private commercial firms in the case of seeds, other inputs and horticultural exports. However, there appears to be a growing consensus that government should continue to retreat from these areas and, in effect, hand over most functions to the private sector. It remains to be seen whether the private sector will, in fact, fill the void created by public sector withdrawal.

Nurturing Participation

Successful collaboration requires considerable nurturing, patience and persistence by both government and NGOs. An issue to be addressed by the ASSP is the debate on the extent to which collaboration is 'driven' by donor funding as opposed to being an integral part of the DAE's extension strategy, recognising the strengths and weaknesses of both parties, and the potential for working together. Government policies have opened doors to more participation, both by rural communities and individual farm families as well as by private sector agencies (commercial firms and NGOs). Decentralisation can facilitate this to the extent that district and thana level extension staff can now explore new forms of partnerships and approaches to participation.

The basic thrust of ASSP is the improvement of DAE and specifically the extension services for crops, with broader participation by rural communities and private sector very much a secondary theme. The

demands of new strategy on DAE are so great that insufficient attention may be devoted to exploring partnerships with the other organisations, GO, NGO or rural communities, especially if demands from outsiders remain muted or non-existent. However, if decentralisation and other reforms of DAE are successful, this could set the stage for more effective partnerships and broader participation in the future. DAE would be entering into such partnerships possibly with more confidence and sense of direction, rather than being pushed into such arrangements by donors because they are unable to fulfill their responsibilities properly or because there is not enough money.

Some of the questions that are yet to be adequately addressed include:

- Will the proposed procedures for thana and district planning, monitoring and evaluation be effective in facilitating greater inputs from rural communities and individual families into the planning and decision-making on extension programmes?
- Will NGOs and other intermediaries assist in this process or just be another level to work through?
- Should efforts to broaden participation in extension focus on a few areas initially and should this choice be left to the districts and thanas?

A key issue for NGOs will be the degree of flexibility they will require for successful development activities. Any collaboration with NGOs should take place within an agreed framework that supports the extension system, but NGOs should be able to develop their own approaches to implementation. DAE may possess the resources and infrastructure to provide extension services nationwide, but it currently lacks the flexibility to adjust approaches to local conditions. NGOs can assist in making the adjustments required to match innovations better with the conditions of different areas and categories of farm families. However, they must be given the latitude for successful implementation. Deconcentration of the planning and implementation of agricultural research and extension efforts is a prerequisite to the development of an extension service that is responsive to farmers' needs. It is also a prerequisite to the development of strong partnerships between the DAE and NGOs at the local level.

Reforms and Future Roles for the Public Sector

The key question is whether there are still important roles in technology development and transfer which public sector institutions are in the best position to provide and whether the necessary improvements in performance can be achieved for them to play those roles effectively. We feel that there are important roles for the public sector in this process, particularly in research and in efforts to serve resource-poor and disadvantaged groups, but are less optimistic about the ability of government, donors and the private sector to agree on and support the major transitions that are involved. Given the long tradition of top down approaches, DAE personnel would require intensive training on techniques for analysing farmers' needs and tailoring services to those needs. This will involve costs and time. Without substantial improvements in the efficiency of the local extension staff it is not reasonable to expect that DAE will be able to provide the desired services to all the people who need it. With staff reductions, it will be more difficult to do so unless complementary partnerships can be successfully developed between DAE, NGOs and other service-providing agencies.

On the positive side, elements of the new extension strategy, notably deconcentration, are being implemented with some success. Further progress on this front will strongly influence the character and rate of change in other areas, such as the group approach and partnerships.

Deconcentration

The overriding feature of institutional change to date is the process of deconcentration that DAE has embarked upon. Deconcentration represents a major shift in the extension approach that will require nurturing and adjustment as it evolves. Effectively addressing social and gender issues is a further dimension of this process. As technology changes impact upon, and in turn, are affected by social change, it will be necessary to proceed carefully, on a pilot basis, to identify socio-cultural and technical differences that require special approaches, develop and test such approaches, and determine their effectiveness. Currently, ASSP is providing support for the piloting of such district plans.

Ideally, districts and thanas should be exposed to a range of possibilities and be asked to develop their own approaches to addressing these issues through their incorporation into district plans. The plans and experiences of different districts would be monitored so that lessons can be learned and shared. Fundamental to the approach should be the integration of social issues into all stages of the core participatory processes now being embarked upon by DAE with regard to appraisal, needs assessment, planning, implementation, and monitoring and evaluation at district and thana levels. The FSR approach can play a central role in this cycle. In terms of targeting marginal and small farmers, it will be necessary to review criteria for identifying poor farmers by comparing the criteria used by DAE (i.e. land size) with those used by farmers themselves. Additionally, the process of data collection will need to be revised to reflect the diversity of socio-cultural contexts and farming practices.

RESEARCH

The success of future extension efforts will depend heavily upon an increased flow of readily adoptable innovations to farm families. Current policies encourage districts to seek innovations from a wider variety of sources than in the past and give DTCs the power to make decisions on what is promoted. Efforts to facilitate farmer experimentation and farmer-to-farmer spread of information on innovations are wholly consistent with this new approach, yet limited progress has been made to date. However, if agricultural development programmes must proceed with only new or non-traditional sources of innovations, they will do so with at least one arm tied behind their backs.

A responsive and effective national research system is an essential complement to the national extension strategy. With the NARS in a seriously weakened state at present, the prospects for dramatic increases in production and productivity dim significantly in spite of the moves toward a more farmer-responsive extension service.

The process of formulating appropriate recommendations, and hence demonstrations, suited to various agro-ecological situations and the needs of different socio-economic groups is quite complex and a radical departure from the practice of T&V in Bangladesh. To facilitate the development of relevant technological recommendations, the DAE field-level staff need to develop close working relationships with local research teams, particularly the FSRD teams working in their areas.

At the national level, a panel of experienced extension staff, farming system researchers, and station-based researchers should assemble sets of best-bet recommendations differentiated, when possible and necessary, in terms of agro-ecological zone, resource base of male and female farmers, and in the case of packages, according to a step-wise approach. Representatives of FSR teams working in different areas may be members of the panel since they can contribute to the process because of their:

- farmer-centred focus;
- local knowledge of the physical and socio-economic environment in which farmers operate;
- systems focus; and
- concentration on adaptive-type research.

This exercise would provide an inventory of technologies that could be useful to SMOs in selecting what would be appropriate in their areas. It would later be helpful in highlighting gaps in present knowledge, which can help in prioritising research programmes in the different research institutes.

So far research organisations have given little attention to making recommendations for specific socio-economic groups. To feed the long-term needs of the decentralised extension system, research should identify different technology options for male and female farmers in each of the different socio-economic farmer categories (large, medium, small, marginal, and, where relevant, landless e.g. homestead agriculture). The design and testing of improved technologies should be based on an assessment of the impact of innovations on intra-household members and with regard to the disparate socio-economic groups of farmers.

We believe the preceding suggestions are feasible and lay the foundations for a new set of relationships between research and development organisations, public and private. However, strong institutions are required on the research side to make this a reality. Hopefully, the impasse on future funding for the research system will be resolved in the near future and the current slide in NARS status and capacity will be arrested.

REACHING RESOURCE-POOR AND DISADVANTAGED GROUPS

Well-to-do and even moderately well-endowed farm families have arguably been the major beneficiaries of agricultural research and development efforts in Bangladesh over the past two decades. Almost regardless of what programmes and policies are pursued during the next two decades, this situation seems likely to continue and in terms of economic growth and food availability, is not necessarily a bad thing. The new extension strategy continues assistance to all farmers, but increasingly shifts responsibility for serving the needs of commercial and better off farmers to the private sector. This makes it possible for the limited services available from DAE and other public sector organisations to be focused more upon the needs of resource-poor and disadvantaged groups. NGOs are expected to play an increasingly important role in efforts to serve these groups. However, most NGOs lack the necessary skills, experience and infrastructure to mount self-sufficient programmes in agriculture. Further, their combined efforts are unlikely to reach more than a modest fraction of the population in the medium-term.

Although DAE now has a clear mandate to focus on the poor, the bringing together of the two disciplines of agricultural extension and social development will pose a substantial challenge to the organisation. DAE has a wealth of experience in agriculture, but limited capacity for addressing social issues. The social issues to be addressed are complex and necessitate a new decentralised approach to extension. Initially this should involve a focus on greater participation by farmers of all socio-economic strata and by women, and using groups and NGOs as the central outreach strategy. More complex socio-economic issues will emerge as a result of this process which will impact on technology adoption, for example, tenancy, access to communal resources such as water, access to irrigation facilities, labour issues, and the need for joint initiatives by farmers of different socio-economic

status for such activities as block planting and harvesting of early varieties to facilitate second cropping.

If justice is to be done to social issues and to improving the capacity of DAE to serve different farmers in different communities, a programme of activities is likely to be required which will extend beyond the present time frame of the ASSP.

Over the next two years, in order to implement DAE's policy of main streaming gender issues in its work, the focus must be on enabling extension service staff to effectively reach women and men farmers. This requires the following:

- all operations and activities in the farm household that contribute to improved family well-being be addressed. This will require collaboration with other extension services that have a comparative advantage in providing certain services (e.g., Ministries of Livestock and Fisheries, Forestry, and NGOs);
- extension assistance must be given directly to the persons responsible for the tasks being addressed.

At the village-level, the move towards working with groups of farmers should provide opportunities for working with women. Currently, there are no separate groups for women within DAE activities but these should be promoted. Indeed, groups of women already exist in many villages and women leaders are to be found (e.g. where the Grameen Bank operates, weekly meetings are held with members, the majority of whom are women). By establishing links with other extension workers, initial channels of communication for working with women can be opened until BSs have developed their own rapport with farmers (e.g. family planning volunteers, health workers, teachers, and NGOs). The group approach should significantly strengthen the participation of women farmers in identifying technology and research issues.

Coherence, Performance and Sustainability: Prospects for New Extension Strategies

At the level of goals and objectives the new strategy exhibits a fair degree of coherence, although the scope of concerns has been broadened significantly. Equity considerations, namely improving the livelihoods of poor and disadvantaged groups, are more explicitly part of new approaches than was the case for T&V. Policy-makers and donor agencies generally view this focus to be consistent with development objectives which emphasise improvements in agricultural productivity and production, particularly in terms of the role of public sector agencies such as DAE. Increases in production for export, notably in the case of horticultural commodities, remain part of the overall objectives, but these are areas in which the role of the private sector is expected to increase.

Just as the current set of goals and objectives recognise the different needs and conditions among rural communities, households and individual household members (notably men and women), the extension strategies, notably deconcentration, encourage flexibility in the selection of innovations to be promoted and the methods used. Flexibility extends to the choice of partners, including other public sector agencies (e.g. ARIs and extension staff in other debarments), NGOs, private commercial firms and village groups.

In terms of performance, there is some evidence that the new strategy is indeed encouraging a diversity of approaches at the district level, thana and block levels. Understandably, most attention has been given initially to the activities of DAE, although connections have been made with other partners in a number of instances. Most significantly, it is clear that a variety of approaches are being followed and that local extension staff generally welcome and are taking advantage of the flexibility which deconcentration provides. Attention is being given to the assessment of needs of different groups of clients and to the incorporation of the results of such assessment into extension plans and programmes. Positive energies have been released which can contribute to performance and creativity, although it is still too early to make an assessment of results and impacts.

Deconcentration and diversity have significant implications in terms of the skills required. Although a major training effort to upgrade the skills of DAE staff is a central feature of ASSP, the MTRT report and other documents have expressed doubts about the extent to which the training provided is well matched to the new requirements, particularly in such areas as working with village groups and other partners.

More generally, the new strategy makes very brave assumptions about the emerging roles of public and private agencies and village groups in agricultural development which do not appear to be based on any careful analysis of existing capacities, skill requirements and orientations of the parties involved. This need not be a problem as long as specification of divisions of labour at the national level are sufficiently general as to allow substantial deviation from such norms in individual districts. In short, the new strategy has set a process in motion by which districts, thanas and individual rural communities are encouraged in varying degrees to find their own ways. One must expect those ways to differ from one another. But the lack of uniformity in roles and divisions of labour presents major challenges for the agencies involved, particularly DAE.

In terms of the three dimensions of performance – effectiveness, efficiency and accountability – the new strategy offers a very mixed picture. At the theoretical and conceptual levels, the strategy appears as an

impressive feat of convergence. Effectiveness and efficiency are enhanced through a combination of deconcentration and broader participation. The use of groups and the emphasis on needs assessments is supposed to enhance the accountability of the extension staff at the local level.

In practice, there are causes for concern, even at this early stage of implementation. Realisation of greater efficiency and effectiveness requires a combination of appropriate levels of skill and divisions of responsibilities. Experience to date suggests a major gap between skill requirements and current capacities for all actors, but especially for DAE. Further, progress in the development of partnerships has been very uneven. Deconcentration can improve accountability to clients at the local level, if it is accompanied by mechanisms such as responsibility to local elected bodies. Currently, DAE district level staff are not answerable to such bodies. Although NGOs and others may be represented in DTCs and participate in specific programmes, the extent to which district level DAE staff are actually accountable appears at present to be mainly a matter of their own choosing. If they wish to take participation and responsiveness to farmer needs seriously, this can translate into arrangements which facilitate greater accountability, but most officials may prefer not to share their new powers more than is absolutely required.

Accountability of local staff to senior officials in Dhaka continues to exist. However, deconcentration of planning and implementation greatly complicates the task of monitoring and assessing performance. Under such circumstances, senior managers are likely to continue to want to see targets in such areas as demonstrations and to focus sharply on performance in relation to those targets despite the inconsistency of doing so with the spirit of deconcentration. As the degree of diversity in district extension activities grows, the ability of the centre to monitor and understand what is happening will diminish and with it the level of effective accountability within DAE.

The sustainability of new extension approaches appear especially problematic at this stage of the process. First, aside from the existence of ASSP and the agreements associated with its implementation, a formally endorsed extension strategy to replace T&V is not yet in place. This awaits the completion of the work of Task Force on National Extension Strategy and government action on their recommendations. Second, there is little evidence of a national consensus on what the new strategy should be although support for certain aspects, notably deconcentration, appears to be growing. Other extension projects are following approaches which differ from those of ASSP, even within DAE. In short, there is still some way to go before one can truthfully say that a new extension strategy is in place.

The financial dimensions of sustainability are summarised in the discussion under *Costs and Sustainability*. A major feature of ASSP involves the actual reduction in the costs of the public extension services, primarily through staff reductions. This has not yet taken place to the degree envisaged. Further, many aspects of the new strategy are likely to increase costs at least in the near term. Although expanded involvement of private sector agencies, including NGOs and private commercial firms, could reduce the scope and cost of public sector programmes eventually, the process of successfully reaching that point is likely to require additional inputs of skill and resources.

Concluding Observations

We conclude that continued efforts to strengthen key public sector institutions in research and extension are essential parts of developing approaches which are participatory, demand-driven, sustainable and effective, especially in terms of services to the poor and disadvantaged. However, in order to accommodate support specifically for private sector participation as well as to be consistent with current and prospective resources available for research and development programmes, support will have to be more sharply targeted than in the past. To facilitate this process, areas in which the private sector is willing and able to make contributions should be recognised, as is being done in the case of seeds and horticultural exports.

In the near term, there is no easy or inexpensive way out. Deconcentration requires a range of skills for district and field level staff that they are only now acquiring. Indeed, the basic mechanisms of planning, new extension approaches and monitoring are currently being worked out through ASSP on an experimental basis. In addition, there are the considerable skills and perseverance required to make broader participation a reality. We believe the basic logic and elements of the new extension strategy are sound and should be pursued. Current approaches grow out of the perceived shortcomings of T&V, but without evidence that the lessons from that experience have been fully digested.

Key elements of the new strategy may be based on very tenuous assumptions about the readiness of the parties involved – Extension, Research, NGOs, Commercial Firms, Rural Communities and individual farm families – to work together harmoniously and effectively. Finally, all parties may be seriously underestimating the extent to which government organisations can change to accommodate the proposed reforms; and the gaps that will be created if government agencies simply step aside. There are many who do not believe in or really want the new strategy to succeed and will seek to channel efforts

and resources in other directions, notably toward the preservation of past structures and modes of operation. Resisting these forces will require greater determination and resources than the principle supporters of the new strategy seem to have been able to muster to date. Currently, deconcentration appears to offer the best hope for building grassroots support for the new strategy both within DAE and among its partners and clients. However, if deconcentration is not combined with devolution of authority within the elective legislative branches of government, it risks losing its way because effective mechanisms for accountability at the local level simply will not be in place.

Endnotes

1. A notable exception is a recent review of lessons from agricultural extension projects prepared by the World Bank (World Bank, 1994).
2. The 'top-down' orientation is not found solely in government organisations. Further, this statement is not meant to imply that there is no role for hierarchical command structures or clear divisions of labour.
3. Input suppliers include public and private agencies and individuals producing and supplying the full range of inputs utilised by farm families e.g. credit, water and equipment in addition to planting materials, fertiliser and agricultural chemicals.
4. The unit often consists of a nuclear family, but that is not necessarily always the case. Further, substantial differences or even tensions exist within and between families and communities in terms of opportunities, constraints and control over resources.
5. The merged departments and agencies included: (i) Directorate of Agriculture (E & M); (ii) Directorate of Agriculture (Jute production); (iii) Directorate of Plant Protection; (iv) Horticulture Development Board; (v) Tobacco Development Board; and (vi) Central Extension Resources Development Institute. In addition, the extension service of the BWDB was partially brought within the ambit of the DAE. The Cotton Development Board was expected to be merged with the DAE by 1985, but it has continued to be a separate agency.
6. Available studies do not indicate the relative contributions of formal extension and other sources such as farmer networks. However, several studies suggest other farmers were a major source of information and inputs such as seed (e.g. Wood, 1995). It is probable that a significant portion of the farmer-sources themselves obtained information from extension services directly or indirectly.
7. This view contradicts to some extent the one put forward earlier in this paper, relating the spread of STWs to the goverment's policy of liberalising the import of small diesel engines during the late 1980s, and simultaneously reducing the subsidy on DTWs.
8. The tendency of representatives of elite groups to dominate the ranks of CFs, if true, is a failure of practice rather than theory. Benor and Baxter (1984) include specific guidelines for the selection of CFs which stress representativeness.
9. The Task Force is to establish sub-committees comprising members and other relevant co-optees to deal issues related to: (i) national extension policy, (ii) extension methodology, (iii) human resources development, (iv) partnership, (v) homestead production, (vi) linkages, and (vii) institutional issues.
10. ATCs have been proposed to oversee technical recommendations and adaptive research activities for one or more agro-ecological zones and thus encompass more than one district in most instances.
11. The group approach and needs assessments are discussed under *Extension Methods.*
12. The Unit is equivalent to DAE's blocks, and two Sub-zones were created in one Thana for the convenience of management.
13. Unless specific targets are set down and enforced for group formation! In this regard, extension plans should perhaps avoid explicit targets for forming groups.
14. For example, the former USAID-supported FSRD project produced over 100 technical bulletins. ASSP support might assist in duplicating and distributing these to districts or thanas. These may also be used as a basis for preparing new location-specific extension materials.
15. One notable exception in the Bangladesh context is determining fertiliser levels for farmers with different resource levels.
16. Wood's (1995) discussion of water management groups provides insights into their considerable influence in range of decisions on inputs, management practices as well as cropping sequences and timing. These same groups could conceivably play major roles in the new extension strategy, but their existence and potential in this regard has thus far largely escaped official notice.
17. Membership might be limited to the DD, Training Officer, SMSs and TAOs, and the committee would meet three times per year.
18. On paper, all communications from extension to research should go through DAE headquarters in the first instance, which is consistent with official protocol, but seems at variance with the spirit of decentralisation.

19. The consequences of the funding hiatus in the research services provide a major illustration.

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