

Country Study: Bangladesh
FARM MANAGEMENT IN AGRICULTURAL EXTENSION AND ADVISORY SERVICES

1. Introduction

- 1.1. Farm management in extension and business advisory services method are widely used in the western agriculture by the researchers, planners and service providers to assess performance as well as scope for intervention in agriculture (Dorwords at el., 1997). Farm management in agricultural extension and advisory services used to assist in the identification and allocation of resources to meet livelihood objectives of the farmers of different categories.
- 1.2. The use of farm management and business advisory services techniques in the less developed countries like Bangladesh has been relatively less or partial both in terms of analysing small farmers conditions and farmer decision-making processes. However, some level of farm management in agricultural extension and advisory services methods have been used primarily in the farming systems analysis by the researchers of the National Agricultural Research Systems of Bangladesh (NARS) such as Bangladesh Agricultural Research Institute (BARI), Bangladesh Rice Research Institute (BARRI) and Bangladesh Agricultural University (BAU). Some non-government organisations (NGO) are also associated with the farm management in agricultural extension and business advisory services. Only recently in the public sector, some of the projects of the Department of Agriculture Extension (DAE) of the Ministry of Agriculture has been partially introduced the concept of farm management and business advisory services.
- 1.3. Individual farm households in the country operate, in general, at the subsistence level. The conventional farm management in extension approach through model/progressive farmer strategy paid little dividend. If the aim of agricultural extension is to disseminate innovations, the prediction made for the farmers of Bangladesh, as in most other developing countries, proved largely as not very effective. These conventional farm management and advisory approaches and agricultural extension services adopted are based on the gross margins or partial budgets, profit and loss accounts, balance sheets, cash flows etc.

- 1.4. However, the 'green revolution' technologies of the 1960s brought up significant increases in rice and wheat yields in many parts of Asia like Bangladesh. Based on the success, Daniel Banor, a World Bank consultant, developed the Training and Visit (T&V) System of farm management in agricultural extension. The system envisaged a rise in agricultural production through continuous dissemination of extension messages. It stressed on improving farm and agricultural management practices, better land preparation; improved seed-bed and nursery maintenance, use of good and quality seed, need and use for seed treatment; timely field operations, proper spacing of plants, etc. (Banor and Harrison, 1977) and all those were largely based on the partial budgets farm management in agricultural extension and advisory approaches and techniques. The rationales and assumptions were however improved cultural practices, involve less risk, require more work (for which labour is abundant assumed) and require relatively less cash.
- 1.5. The T&V System as farm management in extension advisory services was introduced in Bangladesh around mid 1970s and continued to the end of 1980s. By then, it became evident that the system relatively failed to be effective when it was applied on nation wide, but also it was fraught with some inherent problems. Some of the problems were as follows:
- (i) The system was rigid, top-down and farmer's needs of different resource bases were not taken into consideration,
 - (ii) Farmers' participation in decision making in farm management extension activities was a missing link,
 - (iii) Field demonstration was neglected in favour of carrying messages to farmers. Demonstrations were based on the partial focus of the entire farming systems,
 - (iv) The needs of resource poor farmers were not given attention to cater primary and basic needs and resource endowment,
 - (v) The linkages between research and extension did not improve as was expected, and
 - (vi) The technology transfer to 'contact farmers' did not have the desired impact on other farmers,

As elsewhere, the T&V System faded out in Bangladesh by the end of 1980s. Also, as elsewhere, the extension services in Bangladesh that has been seen as a public good and run by the state, is currently passing through a transition. There are several reasons for this such as, there is a declining trend for the fund available for public extension services, the NGOs and the private sector are coming up with services for farmers, the role of the

'third' sector (farmers/professional organisations) is gaining focus so that the users of technologies can take on more responsibilities in technology innovation and transfer, and the role of the public sector is increasingly being seen as more concentrated on policy framing and regulatory activities.

2. The Institutional Context and Setting

- 2.1. The delivery of farm management advice and agricultural extension services to farmers is largely done by the Department of Agriculture Extension. The DAE's mission is to provide efficient and effective needs based extension services to all categories of farmers, to enable them to optimise their use of resources, in order to promote sustainable agricultural and socioeconomic development. The DAE is the key implementing agency of the New Agricultural Extension Policy (NAEP)¹. Apart from its own direct interventions, there are various bilateral programs/projects which complement DAE in providing farm management extension services to the farmers and other client groups (such as teachers, imam, widow, rural youth, women farmer, ansar-VDP members, fertilizer dealers, pesticide dealer, agricultural equipment dealer, seed dealer, village mechanics, farm technician blacksmith, block leader, LLP users, water users and pump operator/driver).
- 2.2. The institutional context and setting of the agricultural extension and advisory services in Bangladesh has undergone several organisational metamorphoses.
- 2.3. First, the Directorates of Livestock and Fisheries were carved out of the Ministry of Agriculture to form the new Ministry of Livestock and Fisheries.
- 2.4. During the 1960s, the Directorate of Agriculture introduced 'group approach' of extension under the BARD Comilla Model. At about the same time, the Bangladesh Agricultural Development Corporation (BADC) was created. The Corporation, BADC took over sales of seed and fertilisers, and started providing irrigation facilities to farmers. In fact, with the introduction of 'green revolution' technologies towards the end of 1960s, irrigation became an essential component of crop production and farm

¹ The primary objective of the NAEP is to facilitate and accelerate technological transformation with a view to becoming self-sufficient in food production and improving the nutritional status of the population. The goal of the NAEP is to encourage the various partners and agencies within the national and agricultural extension system to provide efficient and effective services which complement and reinforce each other, in an effort to increase the efficiency and productivity of agriculture in Bangladesh.

- management practices. This area (irrigation) received no or least attention to the public sector before.
- 2.4. After the liberation of Bangladesh in 1971, the Directorate of Agriculture was bifurcated into two directorates: the Directorate of Agricultural Extension and Management (DAEM) and the Directorate of Agricultural Research and Education (DARE).
 - 2.5. Soon the various agricultural research institutions became autonomous, and apparently as a corollary, as many as six different directorates for agricultural extension and advisory were created out of DAEM.²
 - 2.6. It soon became apparent that all these extension advisory agencies were approaching the same farmers but separately and with different messages. This led to confusions at the farm level (Kibria, 1988). Needless to say, the multiple extension advisory agencies also engendered high cost and competition for scarce resources.
 - 2.7. The Government of Bangladesh undertake another programme of reorganisation and the six Directorates were again merged in 1982 and formed the Department of Agricultural Extension (DAE).
 - 2.8. The major production inputs such as seed, fertilisers and irrigation had been the responsibility of the Bangladesh Agricultural Development Corporation (BADC). Out of these, the irrigation and fertilisers distribution were given to the private sector towards the end of the 1980s, with only seed was left to BADC to deal with.
 - 2.9. The farm management and agriculture extension services in 'broad agriculture', as far as the farmers of Bangladesh are concerned, are provided to the public sector organisations, the NGO sector and the private sector. The public sector organisations involved in farm management extension and advisory services are shown in Table 1.

² DAJP - Directorate of Agriculture (Jute Production); DAPP - Directorate Agriculture (Plant Protection); HDB - Horticulture Development Board; TDB - Tobacco Development Board; SCA - Seed Certification Agency; CERDI - Central Extension Resources Development Institute.

Table 1. Public sector organisations involved in farm management extension and advisory services.

Extension organisation	Ministry	Major responsibilities
1. The Department of Agricultural Extension (DAE)	Ministry of Agriculture	crops sector extension services
2. The Bangladesh Agricultural Development Corporation (BADC)	Ministry of Agriculture	crops sector extension services
3. The Department of Livestock (DLS)	Ministry of Livestock and Fisheries	livestock and poultry extension services
4. The Department of Fisheries (DoF)	Ministry of Livestock and Fisheries	fisheries extension services
5. The Forest Department (FD)	Ministry of Environment and Forst	forestry/agroforestry extension services
6. The Bangladesh Water Development Board (BWDB)	Ministry of Water Resources and Irrigation	irrigation and drainage <i>vis a vis</i> agricultural extension
7. Local Government Engineering Department (LGED)	Ministry of Local Government, Rural Development and Cooperatives	small-scale irrigation and rural infrastructure development <i>vis a vis</i> agricultural extension
8. Bangladesh Rural Development Board (BRDB)	Ministry of Local Government, Rural Development and Cooperatives	farmers' cooperatives and 'One Household, One Farm' programme of extension services
9. Bangladesh Academy of Rural Development (BARD)	Ministry of Local Government, Rural Development and Cooperatives	rural development <i>vis a vis</i> agricultural extension
10. Rural Development Academy (RDA)	Ministry of Local Government, Rural Development and Cooperatives	rural development <i>vis a vis</i> agricultural extension
11. Bangladesh Agricultural University (BAU)	Ministry of Education	farming systems <i>vis a vis</i> agricultural extension

2.10. The NGO Sector is increasingly making its mark in agricultural and farm management and extension in Bangladesh. Initially NGOs were associated with the agriculture extension and small farm management with specially small scale vegetable crops, poultry, fisheries, agro-forestry /social forestry. Subsequently, NGOs are moving towards extension and farm advisory activities on some of the major crops like hybrid rice, maize, etc. More than one hundred local (coveragre wise), national and international NGOs are involved in agricultural extension and advisory activities of some sorts. The following are worth mentioning:

2.10 BRAC, PROSHIKA, CARE-Bangladesh, Mennonite Central Committee (MCC), Helen Keller International, Christian Commission for Development Bangladesh (CCDB), Rangpur-Dinajpur Rural Services (RDRS), Friends in Village Development Bangladesh (FIVDB), Gono Unnayan Prochestra, Save the Children Funds-USA (SCF-USA), Gono-Kalyan Trust (GKT), Voluntary Paribar Kalyan Association (VPKA), Karmajibi Kalyan Society (KKS), World View International Foundation (WIF), Development Service Centre of

Bangladesh Mission, UPAKAR, Jogorani Chakra (JC), Thangamara Subuj Mohila Sangha(TMSS) etc.

- 2.11. NGOs form groups of target farmers, mostly of landless and marginal categories and in many cases they focus on women. Services provided by NGOs usually include credits, inputs supply and training. In some areas, NGOs target categories of farmers that practically fell out of the public sector extension services. The public sector extension and advisory agencies have relatively narrow focus (i.e. DAE focuses on crops, DLS focuses on livestock, DoF on fisheries, etc), NGOs, on the other hand, have become attuned to providing multiple services to their beneficiaries.
- 2.12. Most of the NGOs are, however, handicapped by the limited land area of their beneficiaries (landless and marginal farmers).
- 2.13. The private sector agencies related to agriculture extension and advisory services include the burgeoning seed companies, fertiliser dealers and pesticide dealers. Also included in the private sector are small plant nurseries, often owned by individual farmers, that have sprung up throughout the country during the decades of '80s and '90s. Many of these nurseries have, however, been established with NGO assistance.
- 2.14. These nurseries have been the major sources of planting materials of fruit and timber trees, vegetable crops, flower and other beautifying plants, etc. These planting materials were hardly seen, if at all, in the market twenty years ago. The nursery owners are now making these available virtually in every corner of the country. The role of the public sector in the agricultural extension and advisory services of these planting materials, if any, has been minimal.

3. Farm Management in Agricultural Extension and advisory Services

3.1. The major activities of the public sector agricultural and farm management in extension and advisory agencies are summarised below:

3.2. The Department of Livestock

- Animal disease diagnosis and disease control
- Livestock and poultry breed improvement
- Artificial insemination
- Training on beef fattening, dairy farming, calf rearing, broiler farming, layer farming and hatchery management
- Establishment of nursery for fodder production and distribution of planting materials of fodder crops, etc.

3.3. The Forest Department

- Production of fuelwood and timber
- Raising seedlings for distribution
- Village afforestation
- Institution plantation
- Strip plantation
- Embankment plantation
- Fore shore plantation
- Establishment of nurseries
- Training of farmers and villagers in forestry, and agro-forestry etc.

3.4. The Department of Fisheries

- Motivation of fish and shrimp farmers through direct communication (personal contact), group method (result demonstration) and mass communication method (radio and television programmes, booklets and posters, etc.)
- Technical inputs for bank credits to farmers
- Training of fish farmers and fishermen.
- Fish seed production

3.5. The Department of Agricultural Extension

- Executing Farmers Information Need Assessment (FINA)
- Bottom-up extension planning
- Providing demand-led extension
- Working with all categories of farmers
- Use of a range of extension methods including group extension method
- Use of innovative extension approaches (Integrated extension, Farmer-led extension, etc.)
- Partnership with related organisations (GOs and NGOs, etc.) for providing integrated extension and for sharing resources.

3.6. Until recently, the concept of extension of new technologies within a farming community was that described by Rogers (1962). According to this concept, an innovation is first adopted by a very small group of people - the 'innovators', who are sufficiently educated to realise the potential for profit from the innovation, who are sufficiently rich to invest in the inputs required, and can afford to take the risks involved. The innovators are followed by 'early adopters'. The technology spreads at an accelerated pace, and the bulk of the farmers follow suit. The last to adopt are the 'laggards' -

the poorest, eldest, most conservative and the most averse to take risks. The strategy adopted by extension services in Bangladesh was no exception.

- 3.7. Based on Roger's model, the 'progressive farmer' strategy was developed. According to this strategy, (a) extension efforts should be concentrated on the innovators, and (b) it is useless for the extension worker to devote himself to the laggards (Arnon, 1989). One the innovators have adopted the new practice the others will follow in any case. The strategy gives justification and legitimacy to the extension workers to spend most of their time with the large and prosperous farmers. Again, Bangladesh was no exception in adopting the strategy.
- 3.8. Since the early early 1970s, however, the realisation has grown that the strategy is misleading. Because, in addition to reluctance to adopt innovations, one should also consider the practical inability of a farmer to adopt new practices (Galjart, 1971). The so-called laggards were shown to be people with little or no access to resources (Engel, 1976).
- 3.9. Furthermore, in order to maintain the existing social status as well as the economic advantages accruing to the innovator, the early adopter may very well be motivated to withhold, delay, or distort information, if such behaviour is to his advantage (McAllister, 1981).
- 3.10. Rolling (1982) summed up his experience in technology transfer in LDCs as follows: "*In rural communities that are very differentiated in terms of access, it is non-sensical to expect innovation to diffuse from 'high access farmers' to 'low access' ones. In general, innovations will only diffuse within groups of people who are homogeneous in access.*"
- 3.11. In the post T&V era, the progressive farmer strategy is seen as contributor to the rapidly increasing gap between the privileged and the unprivileged sectors of the rural society (Arnon, 1989).

4. Farm Management and Agricultural Extension and advisory Approach

- 4.6. The public sector extension in Bangladesh, working on the tenet of progressive farmer, has indeed not been known for its effectiveness (Hossain, 1999).
- 4.7. NGOs in Bangladesh did not have, until recently, a ready access to information and the technologies developed in the public sector research system. However, in recent years, the roles of NGOs in the national development arena have been widely recognised and the public sector is moving towards NGO collaboration, in most cases with stimulus from donors.

- 4.8. NGOs nonetheless have limitations. They are not always technically well equipped, and their beneficiaries, mostly marginal and landless farmers, are handicapped by their limited land area (Ahmed, 1995).
- 4.9. Up to the time of T&V system, various direct supports from government organisations went largely to so-called 'contact farmers' who were in fact the large prosperous farmers.
- 4.10. Large-scale farmers have different possibilities for developing their farms. They have better access to resources and are usually better informed. NGOs, on the other hand, focus attention to poverty alleviation programmes where landless and marginal farmers are the targets. Small farmers, who constitute the bulk of the country's farming community, have largely escaped the attention of major extension efforts.
- 4.11. What is even more disturbing is the lack of felt need on the part of virtually all categories of farmers for information on new technologies and practices. In a study undertaken by the author, only about 5% of the farmers expressed the need of assistance with such information (Hossain, 1999).
- 4.12. Institutional research and extension, as we saw particularly with 'green revolution' technologies, triggered the so-called "blue print agriculture" in the South where CDR (Complex, Diverse and Risk-prone) agriculture has been the fundamental feature. For the blue print agriculture, the (crop) environment had to be adapted or modified to meet the needs of the technologies developed within the confines of the research institutes and under the so-called 'ideal conditions'. The consequence was not only over exploitation of natural resources (soil, water and energy resources) but also disappearance of agrobiodiversity and along with them thousands of years of indigenous knowledge (Hossain, 1997).
- 4.13. In Bangladesh, predominantly the Linear Model of Technology has been followed which works in on the principle: *research generates technology, extension delivers it, and farmers use it*. The failure of this top-down approach may be attributed to the lack of in-depth understanding, on the part of both research and extension, of the subsistence level farm management, the dominant feature of Bangladesh agriculture.
- 4.14. However, farming system research and development (FSRD) has been going on in Bangladesh for the last two decades. But the lessons learnt from FSRD and their reflection in extension are yet to be visible.

- 4.15. Again, the Linear Model focuses on technology and/or commodity aspects (high yielding varieties, improved breeds of livestock, irrigation, inputs, etc.) The focus is often on factor at a time and is disintegrated. Problems such as natural resources degradation in relation to land use patterns, soil fertility and soil biomass, inundation and floods, waterlogging and drainage, conservation of biodiversity, etc. received either little or no attention at all. Also socio-economic problems like marketing, credits, input and commodity price received little or no attention (Hossain, 1997).
- 4.16. Perhaps the most disappointing of all is *we have not given attention to and serious thought yet how to transform subsistence farming to commercial agriculture* (Hossain, 1995).

5. Addressing Gaps in Farm Management and Agricultural Extension Advisory Services

- 5.1. In order to address the gaps, efforts are now being made through various extension projects. For examples, the following projects approach holistic farm management in agricultural extension advice:
- 5.2. (i) Agricultural Support Services Project (**ASSP**, 1992-1999),
 (ii) Agricultural Services Innovation and Reform Project (**ASIRP**, 1999-2003),
 (iii) Agricultural Diversification and Intensification Project (**ADIP**, 1997-2004),
 (iv) Thana Cereal Technology Transfer and Identification project (**TCTTI**, 1995-2000),
 (v) Integrated Soil Fertility and Fertilizer Management Project (**SFFP**, 1993-2000), etc.
- 5.3. **ASSP** (1992 - 1999): In Bangladesh, the Agricultural Support Services Project (ASSP) succeeded the T&V System in 1992. The project emphasised a number of issues hitherto not given adequate to (see Agricultural Extension Manual, 1995, Ministry of Agriculture, GoB). These included the following:
- The basic unit of agricultural production is the rural household and its farm where various activities are performed. The extension staff, therefore, needs to take the 'whole farm system' into account when transferring technology.
 - Homestead, storage, processing are important parts of the production system. As women are responsible for much of these activities, both men and women should have access to extension services.

- Resources and circumstances of farmers vary. Larger farmers have different possibilities for developing their farms than the small and the resource-poor farmers. Therefore, the extension staff should be aware of the variation and provide appropriate information and services to all categories of farmers based on their needs and circumstances.
- Farmers adopt technology and farming practices that benefit them. Often the extension staff encourages farmers to adopt changes that may meet the strategic agricultural needs of the country but not essentially meet the immediate needs of the farmers.

5.4. Based on these considerations, the ASSP developed five principles of extension:

- (i) Responsiveness to farmers needs - this requires a comprehensive Farmers' Information Needs Assessment (FINA) by Block Supervisors and other field staff to develop extension plans in Upazilas and districts.
- (ii) Working with groups - this would increase contacts with greater number of farmers (than was the case of working with individual farmers).
- (iii) Decentralisation of extension planning - Upazila and Districts develop their own extension plans while the DAE headquarters will concentrate on monitoring and supervisory functions.
- (iv) Targeting all categories of farmers - extension plans are carefully targeted to all categories of farmers (big, medium, small, marginal and landless, and also women farmers).
- (v) Using a range of extension methods - methods would include not only training and visits to farmers, demonstration, but also group meetings, motivational tours, folk media like songs and drama, etc. (Agricultural Extension Manual, 1995, Ministry of Agricultural, GoB).

5.5. The ASSP sought to utilise a 'process' rather than a 'product' approach (Report of the ASSP Evaluation Mission, 1998). Its achievements are summarised as follows:

- introduction of a New Agricultural Extension Policy (NAEP) in 1997 based on the principles outlined above
- establishment of linkages among related agencies involved in agricultural and rural development (Departments of Crops, Livestock, Fisheries and Forestry, related parastatals, NGOs and the private sector)
- decentralised, bottom-up and demand-led extension planning
- partnership of government departments and NGOs

- establishment of a regular monitoring and evaluation procedure.
- 5.6. In the Bangladesh context, these were significant achievements that opened up avenues for participatory, situation-based technology development and transfer that can mobilise local creativity, energy and experience, and capitalise on diversity.
- 5.7. **The Agricultural Services Innovation and Reform Project (ASIRP, 1999 - 2002)** is a follow up project based on the achievement made and the organisational changes initiated during the ASSP (1992 - 1999). The project aims to improve "agricultural extension services which in turn will contribute to rising agricultural productivity and so declining rural poverty." The goal of the project is:
- "To improve the capacity of all categories of farmers, especially landless, marginal and small farmers, to optimise their use of resources on a sustainable basis."
- 5.8. The purpose level objectively verifiable indicators (OVIs) of the project include, among other things:
- (i) "Accelerated implementation of the New Agricultural Extension Policy including a significant increase in the number and scope of partnership activities." This aims at cross-sectoral partnership (e.g. crops, livestock, fisheries and forestry, etc.) in order to address farmers' needs. In other words, the project aims to address issues related to holistic farm management.
 - (ii) "Innovative approaches to agricultural extension piloted and evaluated." This aims at addressing holistic needs of farmers through integration of various extension services (crops, livestock, fisheries, forestry, etc.). This thus also addresses farm management issues.
- 5.8. **ADIP: Agricultural Diversification and Intensification Project (ADIP, 1997-2004)** aims to:
- (i) enable small farmers to intensify and diversify crop production as well pursue other rural enterprises.
 - (ii) enable landless and marginal families to increase their incomes and improve their nutrition through poultry and fish enterprises, agro-processing and other income generating activities and homestead gardening.

The project seeks to achieve above objectives through creating favourable environment of technology transfer, market and land development, using group formation and community development.

- 5.9. **TCTTI:** The Thana Cereal Technology Transfer and Identification Project (TCTTI, 1995-2000) aims at sustainable intensification of production and productivity of rice under irrigated conditions. In order to achieve its objectives, the project identifies appropriate varieties and location specific package of technologies that permit crop diversification and development of sustainable intensive rice based farming system.
- 5.10. The project adopted "farmer's-first approach" for technology transfer and established linkages between researchers, extension officers and farmers for technology identification to suit farmer-needs under specific ecosystem niches. By compact block demonstration using farming system approach and encouraging need based crop diversification the project addressed issues of farm management. In addition "Community Nurseries", "Integrated Rice cum Fish Culture" and promotion of grain legumes and/or green manuring in the cropping system helped ensure sustainable intensification of rice crop production.
- 5.11. **SFFP:** Most of the soils on high and medium highland of Bangladesh (comprising 60% of the total cultivable land) have become deficient in essential nutrients such nitrogen, phosphorus, potassium and sulphate. Furthermore, deficiency in secondary micro-nutrients including sulphur, magnesium, zinc, boron, molybdenum have been identified. One of the main concern about soil fertility is that majority of soils have a very low organic matter content, often less than 1.5%.
- 5.12. The objectives of the SFFP project is to improve soil fertility by assuring that farmers adopt improved farm management practices in relation to soil fertility and fertiliser management. The extension messages focus not only on a balanced use inorganic fertilisers, but also on integrated soil improvement approach including the use of organic fertilisers such as green manure, compost, crop residue, farmyard manure, biological nitrogen fixation, etc. It also aims to develop new practices in soil fertility management that are subject test by research and to establish better linkages extension and on-farm research.
- 5.13. The project uses field demonstrations of cropping patterns in relation to balanced fertiliser application, green manure, farmyard manure, biological nitrogen fixation with grain legumes and use of inoculum, block demonstration, training, posters, pamphlets, manuals, etc.

- 5.14. **JOBS an NGO** funded by the USAID for initiatives and assistance for small, medium and micro enterprise to expand and/or start-up new enterprises through a wide range of technical assistance and other support initiatives, which include improving business management/marketing skills through training, assisting groups of enterprises to participate in Bangladesh and/or export market trade fairs to promote and sell their products on a "cost sharing basis", developing marketing, distribution and sales linkages between SMMEs and Bangladesh and/or export buyers, assisting selected enterprises, with a perceived potential to successfully expand their business, to prepare and submit business/marketing plans and bank loan applications, training bank loan officers in the special needs and requirements aligned with lending to the SMME sector in particular, introducing improved and/or new technologies and processes, and create through a range of policy/advocacy initiatives, a more conducive environment within which SMMEs can expand their enterprises.
- 5.15. JOBS has three key components: the SME (small and medium enterprises) component, the ME (micro enterprise) component and the Policy component. SME has four units: the Enterprise Development Unit which identifies and assists enterprises with sound sustainable growth potential to increase sales, introduce new products/technologies and open-up new Bangladesh and export markets; the Womens Business Development Unit to support and strengthen the Bangladesh gender, womens entrepreneurship and management development sectors; the Communications and Training Unit to develop and implement a wide range of improved skills training programs, designed to assist enterprises to more successfully expand their business; and the Loan Facilitation Unit to assist SMEs with identified, sound growth potential to prepare and submit business/marketing plans and bank loan applications to raise increased working capital to help them expand their businesses.
- 5.16. The ME component seeks to assist selected micro enterprises with the potential to expand their businesses upward into the "small enterprises" category. It work closely with a number of leading ME NGO partner and sub contractor organizations to primarily select "top end" micro enterprises with the perceived potential to expand their businesses, offering the necessary, strong "hands on" JOBS Program entrepreneurial business/marketing development, technology transfer advice and support etc. to ensure that successful enterprises expansion takes place. The ME works closely with SME component to open-up new marketing linkages and opportunities at both a Bangladsh and export markets level on behalf of selected ME NGOs and enterprises.

- 5.17. The Policy component works with the SME and ME components to understand the special regulatory needs, issues and inhibitors frustrating the successful expansion of SMMEs, then seeks to persuade influence makers to make the necessary changes to create a more favorable, conducive climate within which SMMEs are able to expand their enterprises.
- 5.18. The ME component is working in 25 areas all over the country with Proshika, one of the largest NGOs in the country and with Yogsutra, an umbrella of several local NGOs. The component is striving to create employment for the poor through training the entrepreneurs and forming linkages between them and credit organizations. It is also enhancing the credit disbursement and management capacity of different Micro Finance Institutes (MFIs) through providing training on trade-specific and business management skills for the field staff and selected entrepreneurs. The ME component is forming a resource base for the general entrepreneurs in the villages - something they could seek support and advice from when they embark on a venture.
- 5.19. Record Keeping - JOBS put strong emphasis on record-keeping activities by their beneficiaries as a method of monitoring and evaluation and as basis for future planning. CARE-Bangladesh recognizes record keeping as an important aspect of farm management, however, record keeping by their beneficiaries is an optional work as most of them are illiterate.
- 5.20. Some examples of Success Stories of JOBS Programme. Chicken Rearing Project - Lilia Begum is a member of the Prodip Mohila Samitee of the Proshika Kaliakor Development Center. Before she became a member, her husband was facing difficulty running their five member with his meager income. In December 1998, she received a 6 day formal training on poultry management from JOBS program, and became interested to start an enterprise on poultry rearing. Her group also encouraged her to try this venture. After applying to Proshika for a loan, she received Taka 70,000 in February 1999 and bought 636 chicks with the money. She said that about Taka 83,500 (including shed and material cost) would have to be spent for the first batch of chicks from which she is expecting a profit of about Taka 8,000. With increasing profits from the next batches, she expects to earn Taka 1,30,000 from five batches in the next two years. She and her son are engaged full-time in the venture, while providing her husband and daughter with part-time employment. Now she is planning to launch another business, regarding layer and broiler chickens, where she plans to employ 5 full-time and 8 part-time employees. Hoping to become an affluent female

entrepreneur, Lilia Begum said she would encourage her group members to initiate such ventures through this type of credit program.

- 5.21. **Livestock Project** - Hajera Begum along with her husband used to work at other people's households, and their income was not enough to run their family. In 1993, Hajera Begum joined the Maer Asroi Mohila Samittee of Kaliakor thana in Gazipur district, and initiated a livestock venture with a Taka 10,000 loan from Proshika. The income from this enabled them to live in relative ease compared to their previous condition. As a successful livestock entrepreneur, she was selected to receive training from JOBS on livestock, after completing which she was given a Taka 12,000 loan. She used the money to purchase a cow, which is now giving 10/12 litres of milk. Her husband and one of her sons are involved in looking after the cows and selling the milk at the local market.
- 5.22. **CARE-Bangladesh:** CARE is one of the leading NGOs promoting need-based farming systems in Bangladesh. Its ANR (Agriculture and Natural Resources) Program is undertaking various farming systems projects such as Integrated Rice and Fish, Cages, Golda (freshwater shrimp), IPM, Low External Input for Rice Production, Fish Seed Production and Dike Cropping projects. The ANR Program of CARE is being funded by the Department for International Development (DFID). The ANR Program operates in partnership with different local level NGOs, community-based organizations, farmer groups, has established partnerships with the DAE of the Government, and establishing partnerships with different educational and agricultural research institutions. Types of support to the NGOs have focused on training, cross visits, coordination meetings and issue based workshops. The partnership with the DAE entails training of Block Supervisors, making cross visits and sharing of information.

6. **Farm Management and Extension Advisory Training and Materials**

- 6.1 DAE prepares Master Training Plan every year which have been formulated based on the Training Needs Analysis carried out by the DAE Training Wing. DAE's training strategy is to relate training to the new DAE policies and strategies, incorporate all training carried out by projects operating within DAE or that have a component that involves DAE staff, institutionalize training through the use of existing DAE facilities and other organizations in Bangladesh, strengthen the role of the DAE Training Wing in the management and implementation of DAE training programs, improve the skills and knowledge of all DAE staff, adopt a qualitative approach as opposed to a quantitative approach, and utilize training funds

from all projects effectively. DAE training plans cover all DAE officers and staff including farmers and other client groups.

- 6.2 TCTTI has developed a handbook on Participatory Rural Appraisal wherein different approaches and methods to enable farmers to share, enhance and analyze their knowledge of life and conditions of life and conditions to plan and to act, are described. The handbook has been prepared for agricultural extensionists and research scientists associated with agricultural programs/projects. The goal is to improve the capability of extension officers in planning, execution and evaluation. There are 16 techniques, i.e. transect walk, physical map, social map, venn diagrams, institutional profiles, seasonal calendar, trend lines, flow chart-production flow chart, matrix ranking, problem analysis chart, indigenous technical knowledge, preference ranking, income and expenditures matrices, farming systems diagrams, triangulation, and sustainability of technology, described in the handbook which are considered more relevant for agricultural development.
- 6.3 SFFP undertakes material development and PR/Awareness campaigns. The activity covers production of posters, pamphlets, manuals and training material, etc. related to soil fertility issues. Materials produced are not only for the project but for the whole extension system and NGOs.
- 6.4 Since its inception, the ME component of JOBS Program has conducted 14 capacity enhancement training programs for NGOs to enable them become more eligible in the eyes of the funding organizations. Attended by a total of 273 participants from different NGOs, the training program were conducted in cooperation with CDS, TARD, CDF, IVS, RDA and VERC. As a results of such training, 3247 job opportunities have been created till now.
- 6.5 CARE's ANR program is implemented through the Farmer Field School (FFS) approach which combines both learning and follow-up support sessions. Support is provided to farmers through FFS in which male and female groups of farmers gather to participate in learning sessions on integrated farming systems. Learning takes place in the "field" rather than in a classroom.
- 6.6 FFS objectives are to make farmers expert and self-reliant in their field, develop their capability for making critical and logical decisions that enhance profitability and sustainability in their integrated farming systems, develop the problem solving abilities of the farmers, and to assist farmers to organize themselves to identify and address issues in their communities.

- 6.7 FFS follows the principles of using the rice field as the main learning tool (study plot), emphasizing adult education, applying cooperation and collective approaches, and using experiential learning cycle.
- 6.8 FFS implementation process is based on the group members active participation and interaction, and all topics discussed during learning sessions are tested out in practice by farmers in study plots. The learning curriculum is a needs-based one and determined by the farmers. It is entirely up to the individual farmers which management practices they want to test out in their own plots, since they are their own decision-makers. The FFS may, over time, develop into a community organization run by farmers where they will continue to meet and discuss issues important to them.
- 6.9 Some of the materials required to support FFS activities include plywood sheets (as bases to draw on), large pieces of newsprints or poster paper, color pencil, and large felt-tipped pens, vials, food color dye, etc. Each field school should have as many as "insect zoos" - a special topic activity. Insect zoos consists of one hill of paddy, either in the field or in a pot or bucket, covered with narrow mesh netting or plastic. Farmers can study interactions between insects and between insects and the plant under controlled conditions and learning to answer questions for themselves.
- 6.10 In-service training programmes: DAE conducts a fortnightly/monthly training session for thana and district staff. The course deals on issues such as fertilizer recommendations, soil plant nutrients, working with farmers and NGOs, preparedness for disaster/natural calamities, IPM in rice, vegetables and fruits, rodent control, plant disease management, safety in the use of chemicals, water management, gender awareness and technical upgrading for female block supervisors.
- 6.11 To increase the capacity of extension service personnel in regard to farm management, DAE includes Foreign Training and Study Tours for their extension staff.
- 6.12 Since 1996, TCTTI facilitated training and workshops at various levels (extension officers/block supervisors, farmers and researchers). Subject matters of the training and workshops related to a) Technology Dissemination: PRA (all levels), on-farm seed multiplication (eo/bs levels), selection and storage, location specific technologies (eo/bc levels), awareness building (all levels), and quality seed production (farmers level). Seasonal training/workshops were also organized for the extension officers, block supervisors and farmers. And b) Technology Identification:

farmer-research-extension (all levels), on-farm multiplication and selection, varietal improvement and selection in rice, maize breeding techniques, varietal improvement in pulses, disease resistance breeding in pulses, hybrid maize seed production, and rice breeding and hybrid rice development (all for eo/bs and researcher levels). Study tours and training fellowships were also facilitated for EO/BS and researchers.

- 6.13 To increase the capacity of extension service personnel in regard to integrated approach and increased knowledge of improved plant nutrition and cropping pattern recommendations, SFFP has the following activities:
- 6.14 Centrally organized seminars, workshops and meetings for senior level staff, e.g. Adl. Directors and DDAEs to give orientation to new areas, discuss results and review demonstration activities, and to bring together extension and research officers in discussions of new technologies and on-farm research activities, etc.
- 6.15 Centrally organized Regional and District training for district and thana staff targetting the Adl.AOs and AEOs. Before each cropping season, i.e. Rabi, Kharif I and Kharif II, a one-two day training course is organized covering technical as well as more general project and administrative issues. Each year, 6-days courses is organized for Adl.AOs and AEOs from new thanas emphasizing on soil fertility management and integrated plant nutrition systems.
- 6.16 Thana Block Supervisor Training, a 1-2 day training before each new crop season. Topics discussed are the economics of fertilizer use based on local results, farm economics in general and socio-economic conditions of the farm families in the thana.
- 6.17 Thana Review Workshops to provide a forum for disseminating location specific soil fertility messages to the participants, provide feedback to the implementers of demonstration and training programs at thana level, and discuss results and experience, technical and economical, with the farming community, NGOs and others.
- 6.18 Thana Nirdeshika BS Training, a 5-day course organized by the DDAE in coordination with SRDI.
- 6.19 Foreign Training and Study Tours with funding provided mainly by the DANIDA Fellowships grant.

- 6.20 JOBS Program recruits highly qualified personnel usually with long years of professional experience, hence, the need of in-service training for their staff does not arise. CARE's human development program includes fellowships studies, foreign training and study tours.

7. Extension Models and Types of Extension Approaches

Extension Models

- 6.1. Three major models of extension can be identified: (a) Linear Model, (b) Chain Link Model, and (c) Participatory Model (Epnou, 1993).

(a) Linear Model: This is the model that has been in operation in most developing countries, including Bangladesh. It works on the following premises:

- researchers considers itself as the sole source of technology;
- the model does not give emphasis on the synergy among different agencies involved in and there is clear division of labour: *research generates technology, extension delivers it, and farmers use it.*
- the technology transfer agencies and farmers are excluded from the generation process.
- the linkage between researchers and extensionists or between extensionists and farmers amounts practically to brief communication.

The Linear Model, as mentioned earlier, has not been effective, particularly for resource poor farmers and those that promote sustainability (see Eponou, 1993).

(b) Chain Link Model: Under the model potential markets are captured through innovation, testing, refinement, production, distribution, and marketing. Linkages take the form of feedback loops, especially between distribution and marketing on the one hand, and units performing other tasks on the other (Eponou, 1993).

The model is often used for commodity subsystems (i.e. commercial crops like tea) that generally can afford complex linkages (Eponou, 1993).

(c) Participatory Model: This model emerged as a response to the needs of resource poor farmers who could not be served effectively either by the Chain Link Model or by the Linear Mode. It has the following characteristics:

- control over technology development lies, at least in part, with the farmers;
- heavy emphasis is placed on local or indigenous knowledge and experimentation, with little use of off-the-shelf solutions;
- linkages between researchers, farmers and extension are built into the model as all tasks are performed in a participatory manner;
- the model is particularly suitable where adaptive research is carried out and farmers have an influence on the institutions involved in technology development and transfer (see Eponou, 1993).

8. Linkages of Extension Models with Farm Management Extension Approaches

- 6.2. The linkages of the models with types of approaches are illustrated in Figure 1.
- 6.3. Individual farmer approach: This approach is based on the progressive farmer strategy. The target is usually a farmer. The approach has been practised in most developing countries and is usually used under the Linear Model.
- 6.4. Individual farmer approach, which often happens with well-off farmer, is, as experiences have shown, not very effective. Because technologies from well-off farmers do not necessarily trickle down to other farmers or other groups of farmers (McAllister, 1981; Rolling, 1982).
- 6.5. Group approach: The target here is a group or groups of farmers. It precludes any individual farmer approach. The group approach, though theoretically feasible under the Linear Model, in practice the approach warrants (on the part of research/extension) consultation with and cooperation from all members of a group. Therefore, for all practical purpose the group approach needs to be participatory.
- 6.6. Members of a group can divide different task (e.g. input requirement, field level activities, marketing of produce, etc.) among themselves, form feedback loops in the entire chain, and not disjointed as is the case with Linear Model. The group approach is thus feasible under the Participatory Model as well as the Chain Link Model.
- 6.7. Area Approach: When the target of technology transfer is a particular (geographic) area, either because of its advantage for a specific technology or because an area development programme is being undertaken, the approach may be referred to as 'area approach.' The approach cannot normally be deployed with individual farmer because a particular

(geographic) area is inhabited by a large number of farmers. These farmers can be targeted as a group or groups.

- 6.8. Like group approach, area approach of extension warrants consultation with and cooperation from farmers in the area. Therefore, for all practical purposes, the area approach will need to be participatory and it can be undertaken under the Participatory Model. It can also be undertaken under the Chain Link Model for similar reasons as stated above for group approach.
- 6.9. **Sustainability approach:** This refers to cases where sustainability of resource bases is the primary target. This may include conservation of soil, water or biodiversity, or tackling environmental pollution(s) through the use of a technology or a set of technologies. Such a target may not preclude crop production. The approach will normally encompass a (geographic) area. Thus sustainability approach can be an area approach too. The primary goal in area approach may not, however, essentially coincide with the goal in the area approach. Therefore, the two approaches need to be distinguished.
- 6.10. Like the area approach, the sustainability approach needs working with a group or groups of farmers. Thus it can be combined with group approach also. Again, the sustainability approach, like the area approach of extension, is feasible under the Participatory as well as the Chain Link Models but not compatible with Linear Model that works on progressive farmer strategy and with a clear division of labour.
- 6.11. If one accepts the linkages as illustrated in Figure 1, it becomes apparent that the Linear Model stands alone with the individual farmer approach. Ironically, this is what we have followed in the past, and we achieved very little to benefit our farming community at large. It is time that we widen our horizon.

References

- Ahmed, K. U. 1995. Role of farmwers, private sectors, NGOs and the government in vegetable crops agribusiness. In: AVRDC. 1995. *Vegetable Crops Agribusiness. Proceedings of a Workshop held at BARC, Farmgate, Dhaka, Bangladesh. 2-4 May 1995.* Asian Vegetable Research and Development Centre (AVRDC), Tainan, Taiwan. Publication No. 97-457. 223 p.
- Arnon, I. 1989. *Agricultural Research and Technology Transfer.* Elsevier Science Publications Ltd. Essex, England.
- Banor, D. and Harrison, J. Q. 1977. *Agricultural Extension.* The World Bank. Washington D.C.
- Engel, P. 1976. *Agrische Strukturen Verspreiding van vennieuwingen. Scripte Voorlichtingskunde, Agricultural University, Wageningen.*
- Eponou, T. 1993. *Partners in agricultural technology: Linking research and technology transfer to serve farmers.* ISNAR Research Report No. 1. The Hague: International Service for National Agricultural Research.
- Galjart, B. F. 1971. *Agricultural development and social concept: a critique.* Rural Sociology. Vol. 36(1): 31-42.
- Hossain, M. G. 1995. *Information needs in agricultural technology transfwer and rural development.* In: *Agricultural Information Needs, Mode, Mechanism and Information Flow in SAARC Countries.* SAARC Agricultural Information Centre (SAIC), BARC Complex, Farmgate, Dhaka.
- Hossain, M. G. 1997. *Participatory plant breeding - a way for empowering farming communities in on-farm conservation and innovation.* In: *Plant Genetic Resources - Bangladesh perspectives. Proceedings of a National Workshop on Plant Genetic Resources. 26-29 August, 1997.* BARC, Dhaka. NCPGR/BARC/IPGRI. Pp. 189-195.
- Hossain, M. G. 1999. *Technology transfer systems in Bangladesh.* Invited paper at the Conference of the Agricultural Economists' Association, 15-16 July, 1999, BARC, Dhaka.
- McAllister, J. 1981. *Rural innovators: a struggle for power.* In: *Extension Education and Rural Development.* Vol. 1. Ed. B. R. Crouch and S. Chamala. John Wiley & Sons. Chichester, New York, Brisbane, Toronto. Pp. 135-145.
- Rogers, E. M. 1962. *Diffusion of Innovations.* The Free press, Glencoe, III.
- Rolling, N. 1982. *Alternative approaches in extension.* In: *Progress in Rural Extension and Community Development.* Vol. 1. Ed. G. E. Jones and M. J. Rolls. John Wiley & Sons. Chichester, New York, Brisbane, Toronto. Pp. 97-115.