

## Education and Extension for Multi-Functional Agriculture: Extension Concepts for Sustainable Agricultural Development in Myanmar

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### **Abstract**

*There are widespread concerns about the environmental impact of agricultural technologies and over the long-term sustainability of farming systems in Asia. Although the content of extension programs includes sustainable technologies, extension approaches and methods in the public sector continue to reflect a technology transfer paradigm. More recently, food security, improved nutrition and poverty alleviation have become part of the agenda of international NGOs and United Nations organizations in Myanmar providing extension services. In the frequent situations where mass media and extension materials contain relatively little information to help farmers to decide how to adjust their farming practices in the interests of long-term sustainability, national and donor policies can enhance the sustainability of agriculture by increasing the complementarity between extension provides and encouraging changes in extension approach, extension agent training and mass media treatment of agricultural and environmental issues. The demise of the Selective Concentrative Strategy and the Training and Visit system of agricultural extension in Myanmar has coincided with growing concern in the region over negative environmental effects of some elements of agricultural technology. High potential areas, which have registered impressive productivity gains, experience problems from excessive or poorly drained irrigation, leading to salination, water logging and depletion of groundwater reserves, with added concerns over the consequences of indiscriminate or inappropriate use of agrochemicals. The main purpose of this paper is to describe some important suggestions regarding agricultural extension approaches, extension programs, extension methods, extension agents' training, extension policy and organization for the long-term sustainability of farming systems in Myanmar.*

## **Introduction**

Agricultural extension is the conscious provision of information and communication support to rural users of renewable natural resources. It involves offering advice, helping farmers to analyze problems and identify opportunities, sharing information, supporting group formation and facilitating collective action. Extension is done not only by extension agencies but also by farmers, scientists, commercial companies and mass media organizations (GARFORTH & LAWRENCE, 1997).

The agricultural extension service in Myanmar was started in 1927 by the Department of Agriculture. Traditionally extension has been linked with production objectives. As Myanmar is a military governed country, it has attracted a total of 26 international NGOs, of which three are actively involved with agriculture and forestry extension activities at grass roots level. Both of the UNDP and NGOs provided extension training in participatory methods for their own staff and government extension staff that are working in the project areas. These NGOs and the UNDP have been instrumental in bringing to the extension scene, a greater emphasis on “bottom up” planning and action. Some NGO programs have been recently developed to provide broader understandings of specific target groups in rural areas. The sharing of experiences among these projects has been extremely valuable. The informal networking and joint lobbying resulted in teaming from each other’s experiences, joint papers and workshops (CHO, 2003; CHO & BOLAND, 2003).

## **Purpose and Objectives of the Paper**

The purpose of this paper is to describe some important suggestions for the long-term sustainability of farming systems in Myanmar. The specific objectives of the paper are:

1. exploring the current situation of agricultural extension services and
2. suggesting some changes to extension services that may be needed in order to address sustainability issues.

## **Methods and Data Sources**

This paper is based on the field survey research conducted in Myanmar during January to April 2001. The field survey was done in seven regions: Ayeyarwady, Yangon, Bago, Magway, Mandalay, Sagaing Divisions and southern Shan State of Myanmar. These regions are agro-ecologically different. The research methods included personal interviews with 60 extension agents and distribution of questionnaire to 70 extension agents from the seven selected areas. The researcher has done the informal group discussions with subject matter specialists from the Ministry of Agriculture and Irrigation, the UNDP and local and international NGOs in Myanmar. The current situation of agricultural extension services concerning extension organization, extension approaches, extension methods, extension resources, extension agents’ training, and agricultural knowledge and information system has been explored.

### **Agricultural Extension Approaches to support Sustainable Agriculture**

The practicing extension approaches in Myanmar are the Selective Concentrative Strategy (SCS) approach and the Training and Visit (T&V) approach. Both of these are top-down approaches and the major aim is to transfer the technology. These top-down approaches create a rigid hierarchy, which discourages the feedback of information. Researchers work independently of farmers and extension agents, resulting in a poor understanding of the opportunities and constraints the farmer face. There is a lack of proper extension programs for the needs of the local community as extension programs are being focused on the introduction of new technology to farmers especially for high yielding rice production.

Key features of the SCS and the T&V approaches are:

1. The main aim is to transfer the proven new technology.
2. It performs a single line of command.
3. It makes selection for location, rice variety, extension personnel and management.
4. There is governmental support (credit) and leadership.
5. Village extension managers (10-12) grouped together at a production camp.
6. It encourages both demonstration and competition between rice production areas.
7. Farmers are organized into group of manageable size (100 farmers in each group)
8. They meet at least with contact farmers (10% in each farmer group)
9. They teach and demonstrate to contact farmers how to use new technologies
10. It makes effective linkages between research and extension.

Typical characteristics of the SCS and the T&V approaches are:

1. It is a top-down approach.
2. It is a highly centralized administrative system.
3. Crop production is oriented under the pressure of production target.
4. Farmers hear messages, act on commandments, and adopt package.
5. Main mode of message is from extension workers to farmers.
6. The menu is fixed.
7. It is subjected to great political pressure.
8. The roles of extension agent are as teacher and trainer.

It is possible to establish, with a reasonable degree of consensus, ecological, economic and social criteria to assess whether a technology is likely to contribute to the sustainability of agriculture in a particular area. The more precisely one specifies a technology, however, the more difficult it is to make judgments about its sustainability except within a specific context.

In order to support sustainable agriculture, extension approaches should use extension resources to support the development of independent client organizations; work increasingly to influence and facilitate planning, decisions and action at group and community levels; and incorporate bottom-up and interactive processes for extension planning and technology development.

## **Extension Methods**

Extension agents use the individual extension method, farm and home visits two times per month. The use of group extension methods, such as group meetings, field demonstrations, methods/results demonstrations and farmers' training are very poor because there was a lack of suitable supports and facilities for agents to use such extension methods. Normally, there is no farmers' visits to the extension education office. Most of farmers live too far from the township extension education office. Farmers come to the office only to purchase fertilizers, improved seeds, pesticides and insecticides. At the same time, farmers discuss their field problems with extension managers as well as farmers receive new agricultural information from the township managers.

The Agricultural Extension Division organizes to putting up posters along the main roads where farmers can easily see them, and broadcasting the agricultural information (weather, pest control) through the television and radio in the agricultural section every evening. The agricultural newsletters and pamphlets are distributed to farmers during the seasonal crop production periods. These include improved varieties, crop production technologies, effective microbe utilization, etc. There is only one agricultural show per year organized by the Ministry of Agriculture and Irrigation at the FAO Day (16<sup>th</sup> October). The rural population is invited to a show where farmers' quality products are shown, farm implements are demonstrated, the competition of the best quality farm products and the winning farmers are awarded prizes.

As the extension methods are tools of extension agents, the Agricultural Extension Division should provide the required supports for agents to practice more individual extension methods as well as group extension methods.

## **Extension Agents' Training**

The educational training institutions play a vital role for the agricultural knowledge development in Myanmar. Many of the students that graduate from the Agricultural University and Institutes become extension agents employed by the Myanma Agriculture Service. Until recently, teachers from the Agricultural University and Institutes have no contact with extension agents as well as farmers through training, research or extension activities.

Although the Central Agricultural Research and Training Centre runs a number of short courses for extension agents in a range of technical management training, most of the training is crop production oriented. Training in agricultural extension and agricultural economics is very few and inadequate. Much of the training is in new technical knowledge and one-way communication skills needed for the transfer of technology. Training needs of extension agents are not assessed. Concentrating on technical aspects, it has not provided extension agents with the necessary communication skills and methods that allow dialogue-oriented advisory work. Much of the in-country training is conducted in the classroom with limited opportunity for the practices.

Extension personnel need both to build up a broad understanding of ecological systems and processes relevant to the areas in which they work, and to develop skills in the interpretation of local information and in supporting local decision making by individual farmers and groups. There is an obvious need more learner-centered and participatory

approaches to training, which are essential if extension workers to develop the attitudes and skills necessary for client-centered, participatory extension practice.

Learning objectives should include attitudes and interpersonal skills which will facilitate farmer-to-farmer extension. Training methods help trainees to internalise particular strategies and patterns of learning which they will use in their professional practice. Extension workers who are expected to encourage farmers to adapt technologies to their own farm and local environment should be encouraged to learn about sustainable technologies through direct observation and experimentation. If sustainable agricultural development requires extension workers to engage farmers in dialogue, respect farmers' knowledge and recognise the social and economic dimensions of technology, their own training should incorporate methods which embody these principles.

### **Extension Resources**

The public transport system is very poor. Most of extension agents use bicycle to reach farmers' sites. The numbers of extension agents working in the Agricultural Extension Division are not enough when compared to the large number of farmers. This is because of the very low salary and the lack of incentives for extension agents. Perceptions of extension agents from field survey areas indicated that poor transportation facilities, inadequate extension agents and too many farmers to advise were strong hindering factors in performing extension activities. In addition, extension agents characterized their personal contact with farmers by indicating the following obstacles that they faced. These were problems with transport, too many farmers, too far distance and not enough time. Due to the poor transportation facilities, inadequate extension agents and, the large numbers of farmer extension agents could not reach a majority of farmer.

### **Environmental and Agricultural Policies**

Production objectives still dominate. Where subsidies have been reduced or removed, the driving force has been more rice production throughout the country and increasing productivity rather than to encourage a more environmentally appropriate use of agricultural inputs. The most pressing environmental problems are climate change and uncertainty, decreasing water supplies and deforestation.

In order to increase national food crop production, farmers are forced to grow rice as much as possible (three times per year). There was, however, no suitable market and price assurance for agricultural products. Due to the successive growing of hybrid rice varieties, the majority of farmers faced problems over soil fertility and/or maintaining productivity levels, disease infection, insect infestation, excessive weed growth, etc. As a consequence, crop yields were decreased and farmers lost their investment. Most farmers see the use of chemical fertilizers as an essential requirement to increase or maintain productivity.

A majority of farmers in Myanmar are very poor. Farmers' credit being provided by the Myanma Agriculture Development Bank is very small amount when compared to the increasing production cost, especially labour and inputs. Due to high production costs, lack of farmers' finance and lack of suitable market and price assurance for farm products farmers are reluctant to adopt new technologies and practices.

Extension agents are government employees who are given tasks not only to perform the extension activities but also to carry out the research experiments in their responsible areas. Extension agents thus felt that responsibility for research experiments was also one of the hindering factors to performing extension activities.

### **Agricultural knowledge and information**

Agricultural knowledge and information systems are dominated by government extension and research organizations. Farmers who are resource poor need much more information than others on sustainable agricultural development. There is relatively little information available through the mass media to help farmers decide how to improve the sustainability of their farming practice.

There are three types of agricultural information flow to farmers, such as one part in the daily newspaper (current market price for farm products, weather news), weekly agricultural newsletter and mass media information. Mass media organizations in Myanmar do not actively seek out relevant technical information, or take account of farmers' views and their solutions to local problems and situations. The mass media can be a powerful tool for exchange of views and sharing of information within a rural population, but are seldom used in this way. In both print and broadcast mass media, there is no attempt to involve the users in the design and production of media content, an essential step if information is to become more relevant, useful and accessible to farmers.

### **Agricultural Extension Organization**

Agricultural extension services in Myanmar are centrally controlled, bureaucratically oriented and directed by professional staff. Farmers and lower level extension staff are not perceived as responsible actors in this system but rather as executors of decision taken "at the top". Farmers have often been considered as the main constraint to development rather than the potential initiators of a solution. The organizational framework did not provide for decision-making from below and consequently, left little or no room for participation of all members of the extension system. The role of extension agents is to teach and demonstrate to innovative farmers how to use new technologies. Box 1 suggests how extension organizations, which are moving from production to a wider set of sustainability and environmental objectives, may need to change their extension approach.

#### **Box 1: Changes that may be needed in an extension approach in order to address sustainability issues effectively**

<i>Dimension</i>	<i>Present</i>	<i>Future</i>
Enterprise focus	commodity	whole farm
Clientele	target category	all households
Means of Influence	enforcement	problem solving
Extension objectives	technology transfer	organization
Scale of influence	individual	group community
Direction of information flow	top-down	bottom-up

An enterprise focus on the whole farm and its natural and human resources is more likely to contribute to sustainable livelihoods and production systems than one which concentrates on a single commodity or which deals with crops but leaves livestock, forestry/agro-forestry and fisheries extension to different organizations.

A targeting of extension resources on clientele whose livelihoods are most threatened by environmental degradation – or whose current land use practices pose most threat to sustainability – may be called for. This might typically include those farming on rainfed uplands, female headed households, and the resource poor generally. On the other hand, where environmental problems affect all categories of household in a community or area (for example, in a watershed), targeting by location rather than farm or household characteristics or socio-economic status may be needed.

Sustainable farming and natural resource management is relatively knowledge intensive requiring the application of general ecological principles to a specific situation. Joint problem solving with clients, leading to an enhanced ability to identify and solve problems, will be an appropriate way of influencing their future behaviour.

Extension objectives can range from the effective transfer of technology to the building up of strong rural organizations which can exert influence over future research and policy agendas, and also take and enforce collective decisions over natural resource management. A shift towards the latter will promote more sustainable agricultural development.

Most extension agencies have concentrated on influencing clients' decisions in respect of land and other resources at the individual household scale. Many of the environmental problems which affect small-scale farmers, however, can only be solved through collective decisions and action. Extension personnel may need to spend more time supporting collective decision-making and facilitating follow-up action.

Direction refers to the main flows of planning and technical information between extension agency and clients. The sustainability agenda calls for local participatory planning, and a willingness by extension agencies to learn from farmers' experiences, knowledge and technology.

### **Educational Importance for Sustainable Agricultural Development**

In order to support the sustainable agriculture, extension approaches should use collaborative problem-solving as the dominant mode of influence on clients' behaviour, work increasingly to influence and facilitate planning, decisions and action at group and community levels, and incorporate bottom-up and interactive processes for extension planning and technology development.

Some degree of coordination and cooperation between extension providers, particularly at local level, should be encouraged. This can include agreements between agencies to work in different geographical areas or with different categories of clients, to provide specialists services within each other's programs, and to share information about locally adapted or developed technologies.

The national extension policy, and donor support, should promote changes in extension approaches, which will enhance sustainability rather than merely increase efficiency of contact with clients and the relevance of top-down technology development and information delivery.

Extension programs should encourage local development or adaptation of technologies; address the needs of specific categories of client; support farmers' organizations and farmer-to-farmer extension; and influence collective as well as individual behaviour.

Diversity of extension provision from government agencies (the agricultural University and Institutes, the central agricultural research Institute, the Central Agricultural Research and Training Centre) and NGOs and UNDP, will give clients (farmers) greater choice of sources of information to support the long-term sustainability of their farming.

Extension agent competence can be improved by training, which addresses learning objectives specially related to sustainability, and by introducing management practices which support continued learning and professional development.

Support to training institutions and to the training of extension personnel will be an investment in human capital, which will be available to support sustainable agricultural development, whatever future changes take place in extension policy. Action is needed in relation to learning objectives, training methods, and management practices that will facilitate continued learning and professional development.

Mass media coverage, and the relevance of content to rural audiences, can be improved at relatively low cost. Radio should be used specifically to promote farmer-to-farmer communication.

Extension materials should be designed to offer options and problem solving strategies, facilitate decision-making and technology adaptation, and contain more explicit treatment of sustainability in relation to technical content.

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