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## Technological and Institutional Innovations for Sustainable Rural Development

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### **Toward a Sustainable Development in Agriculture: An Analysis of Training Needs for Potential Extension Agents in Myanmar**

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#### **Abstract**

*Determination of training and development for personnel in any organization is a challenging task. Although the Agricultural University and Institutes provide courses on basic sciences and various aspects of agriculture in their curriculum, only teach agricultural extension subjects during the students' final year of study. Many of the students that graduate from the Agricultural University and Institutes become extension agents employed by Myanma Agriculture Service. The Central Agricultural Research and Training Centre carries out the pre-service training program that provides only for potential extension agents before they are going to work at farmers' fields and a number of in-service training for field extension agents. However, most of training was crop production oriented and training in extension education has been scarce. Much of the training emphasized on new technical knowledge and on one-way communication skills needed for the transfer of technology and there was a lack of training needs analysis. These training institutions have a vital role to play in the sustainable development of agriculture in Myanmar. The purpose of this paper is to explore how the agricultural training program in Myanmar could be improved by analysing the perceptions of experienced extension agents towards the training needs for potential agents who are recent graduates from the agricultural University and Institutes. The questionnaire survey has been done with 70 extension agents. The research findings indicated that the following training topics were perceived to be required for potential extension agents. The importance of needs in order of priority were extension program planning, educational process and human development, research methods and evaluation, agricultural extension philosophy, organization and administration, communication in extension and sociological factors. Agents responded their perceptions based on their experiences in performing extension activities at farmers' fields, knowledge that they learned in University or Institutes and pre-service as well as in-service training. These training topics should be emphasized in the pre-service training program. Many of the social science skills are lacking in the agricultural graduates working as extension agents in the agricultural extension division. To improve performance and increase the motivation and job satisfaction of extension agents, a greater need for continuous training and guidance in respect to extension methods and content is required.*

#### **Introduction**

Myanmar is an agricultural based country and the agriculture sector is the backbone of its economy. The agriculture sector contributes 34% of GDP, 23% of total export earnings, and employs 63% of the labour force. About 75% of the total population reside in rural areas and are principally employed in the agriculture, livestock, and fishery sectors for their livelihood. The Ministry of Agriculture and Irrigation (MOAI) is well set up with 14 departments so as to successfully and systematically develop the sector.

Myanma Agriculture Service (MAS) is one of the departments of MOAI and is composed of 9 divisions. The agricultural extension division is one of the divisions of MAS and absorbs a large portion of total staff member of MAS, having 11081 staff. The agricultural extension service in Myanmar was started in 1927 by the Department of Agriculture.

### **Agricultural Educational Programs and Training Offers in Myanmar**

In the process of developing the agriculture sector, conducting training and offering educational programs of international standard are crucial to the development of human resources. In Myanmar there are 7 agricultural Institutes (SAI) and the Yezin Agricultural University (YAU). The Yezin Agricultural University is composed of nine major departments, namely the Agronomy Department, the Agricultural Botany, the Agricultural Chemistry, the Entomology, the Plant Pathology, the Horticulture department, the Agricultural Economics, the Animal Science and the Agricultural Engineering Department. Four basic departments of Myanmar, English, Physics and Mathematics support these major departments. The Entomology, Agricultural Botany and Agricultural Chemistry Departments offer the basic courses of Zoology, Botany and Chemistry respectively.

Students can receive a higher degree in agriculture such as Bachelor of agricultural science (B.Agr.Sc) and Master of agricultural science (M.Agr.Sc) from YAU. The annual intake for the first year students is 300 and the required period for graduation is 5 years. Courses for the first two years are designed to provide a good foundation in basic sciences and fundamental training in various aspects of agriculture. Courses from the second year to fourth year are designed to offer studies in broad general agriculture maintaining a good balance between the physical, chemical, biological and social sciences in agriculture. In the fifth year, the students are required to proceed in a selected field of interest, which is known as Elective Stream System. Six elective streams are provided such as field crop production, crop science, horticultural crop production, soil and water management, plant protection I (Agricultural entomology) and plant protection II (Plant pathology). Upon successful completion of the fourth year courses, the students are required to apply for the seat in one of these streams. Each student is also assigned to solve a special problem in a selected field of study. Students who have satisfied their graduation requirements are awarded a B.Agr.Sc. Degree.

The agricultural education training at the SAI was started in 1955 in Myanmar. The seven SAI are Pynmana SAI, Thahtone SAI, Myaungmya SAI, Shwebo SAI, Patheingyi SAI, Pwintphyu SAI, and Tharyarwady SAI. The annual intake for the first year students is about 200 for each Institute and a total 1500 student for the seven Institutes. The required period is only three years. Courses for the first year are English, Mathematics, Physics, Agricultural Chemistry, Botany, Agronomy, Horticulture and Animal Husbandry. The two subjects of Plant Protection and Farm Mechanics are added to the Courses for the second year. Both the Agricultural University and Institutes only teach agricultural extension subjects during the students' final year of study.

Courses for the first two years are designed to provide a good foundation in basic sciences and fundamental training in various aspects of agriculture. In the third year courses, the following eight major subjects are designed namely, Agronomy, Agricultural Chemistry, Horticulture, Animal Husbandry, Plant protection, Farm Mechanics, Agricultural Extension and Farm Management and Accounting. Students who have satisfied their Diploma requirements are awarded a Diploma in Agriculture. The top 5% of the students who obtained the Diploma in Agriculture from SAI can join the University for B.Agr.Sc. Degree if they pass the entrance examination. However, only 30 seats per year are available for these diplomas.

In addition to the high education offerings, different types of in-service trainings are being carried out at the Central Agricultural Research and Training Centre (CARTC) and the Central Agricultural Research Institute (CARI). The CARTC provides the following three kinds of training for extension agents.

***Pre-service training:*** This training is provided for new graduates from the agricultural University and agricultural Institutes, for a period of 1 month. The duties and responsibilities of the extension staff and the ideology of agricultural extension activities were emphasized. The curriculum is based mainly upon the theoretical education.

***On-the-job training:*** This training serves to improve the technical skill of extension staff from state, division, district, township, village tract, and village levels. The training period covers 1 to 2 weeks. The

curriculum applies to any varied level of trainees and provides mainly theoretical and laboratory exercise training.

***In-service training:*** This training program consists of four courses, namely subject matter specialists course, specialist comprehensive course, general agriculture and extension course and planning and analysis course. The training period is 1 to 2 months.

The CARI has organized some training courses for the extension agents in the areas of major crop production technology (rice, pulses, sesame, groundnut, and sunflower), soil and water management for different agro-ecological regions, plant protection technology and small farm machinery. CARI has also provided pre-service training for new graduates from University since 1997. The departments of irrigation and agricultural mechanization also offer regular training of related subject matters for their own staff. In addition, Vegetables and Fruits Research and Development Centre, plant protection department, the state and divisional research stations, seed divisions and headquarter of the agricultural extension division offer related trainings for extension agents and agriculturists.

## **Purpose and Objectives**

The paper formed part of a wider research project on training needs of extension agents for implementation of participatory extension approach in Myanmar. The purpose of this paper is to explore how the agricultural training program in Myanmar could be improved by analysing the perceptions of experienced extension agents towards the training needs for potential agents. The specific objectives of the paper are: 1) to describe the agricultural educational program and training offers in Myanmar and 2) to examine the training needs for potential extension agents.

## **Methods and Data Sources**

This paper is based on field research conducted from January to April 2001 in Myanmar. 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 questionnaire survey has been done with 70 extension agents from the seven selected areas. In order to improve the pre-service training program for potential extension agents, the perceptions of experienced agents were investigated. Potential extension agents here meant students who had just graduated at the agricultural University or agricultural Institutes. They have being having pre-service training at CARTC before they are going to work at farmers' fields. After reviewing the present curricula of agricultural training institutions and discussing with a number of extension agents and subject matter specialists from the Myanma Agriculture Service, six specific training areas were selected. These were (1) agricultural extension philosophy, organization and administration, (2) sociological factors, (3) educational process and human development, (4) program planning, (5) communication in extension, and (6) research methods and evaluation. Respondents were asked to express their perceptions towards the importance of needs by ticking one of four possible answers, namely "very much needed", "quite needed", "little needed" and "not at all needed" for each training and assigning the scores of 4, 3, 2 and 1 respectively. In order to characterize the opinions of respondents, weighted mean scores for each of the training areas were computed.

## **Results and Discussion**

Out of the total 70 respondents 59 respondents graduated from the Agricultural University and the remaining 11 respondents, who hold a Diploma in Agriculture, completed their agricultural training at the different agricultural Institutes. About 20 % of the respondents have more than 25 years of field experience in agricultural extension services, 28% have 20-25 years of experience, 24% have 15-20 years, 10% have 10-15 years and the remaining 18% have 4-10 years of work experience in extension services.

### **Agricultural extension philosophy, organization and administration**

The need for training in agricultural extension philosophy, organization and administration viewed by the extension agents are presented in table 1. The nine specific training areas were identified in this study. The training topic "organization of agricultural extension" was indicated as "very much needed" by 69% of the

respondents, as “quite needed” by 23% and “little needed” by the remaining 8%. This topic received the highest mean score of 3.6.

**Table 1: Training needs for potential extension agents in the area of agricultural extension philosophy, organization and administration**

Training topics	Frequency <sup>a</sup>		Mean <sup>b</sup>	SD
	Very much	Quite		
Organization of agricultural extension in Myanmar	48	16	3.60	0.65
Organization of agricultural research in Myanmar	45	18	3.54	0.67
The role and functions of extension agents	44	19	3.53	0.67
Philosophy and objectives of the agricultural extension service	30	30	3.26	0.77
History of extension education in Myanmar	26	34	3.21	0.72
Administration of extension programs	23	27	3.01	0.84
Administrative structure of ministry of agriculture and irrigation	11	41	2.87	0.70
The functions of state/divisional managers	10	42	2.85	0.68
Relationship between the extension service and other agencies	9	31	2.66	0.76

<sup>a</sup>Number of very much and quite needed responses

<sup>b</sup>Scales: 1 = not at all needed; 2 = little needed; 3 = quite needed; 4 = very much needed

The training topic “organization of agricultural research” was indicated as “very much needed” by 64% of the respondents, as “quite needed” by 26% and “little needed” by the remaining 10%. This topic received the second highest mean score of 3.54. Training need in the role and functions of extension agents received the third highest mean score of 3.53.

The data in this table indicated that extension agents felt a considerable need for training in all the topics listed in this study because the lowest mean score of 2.66 was also relatively high. It is obvious that all the training topics identified in this study are perceived to be important for the potential extension agents and these should be included in the pre-service training program.

### Sociological factors

The responses of extension agents to the questions concerning the need to train potential extension agents in sociological areas are shown in table 2. The seven specific training areas were identified in this study. The highest mean recorded was 3.36 and the lowest mean was 2.21, indicating a spread of 1.15. This response shows a substantially high discrepancy in these training topics.

**Table 2: Training needs for potential extension agents in the area of sociological factors**

Training topics	Frequency <sup>a</sup>		Mean <sup>b</sup>	SD
	Very much	Quite		
Working with community leaders in decision-making	38	19	3.36	0.78
The community adoption process	30	25	3.21	0.77
Individual adoption process	27	28	3.17	0.76
Identification of local leadership	15	24	2.68	0.91
Identification of innovators in a local community	15	20	2.64	0.90
Social structure and cultural patterns in rural areas	6	15	2.26	0.79
Interaction of social and technical change	5	15	2.21	0.78

<sup>a</sup>Number of very much and quite needed responses

<sup>b</sup>Scales: 1 = not at all needed; 2 = little needed; 3 = quite needed; 4 = very much needed

The training topic “ working with community leaders in decision-making was indicated as “very much needed” by 54% of the respondents, as “quite needed” by 27% and “little needed” by the remaining 19%. This topic received the highest mean score of 3.36. Training needs in “the community adoption process”

and “individual adoption process” receiving the high mean scores of 3.21 and 3.17 respectively followed this. Perceptions of extension agents indicated little need for training in “identification of local leadership”, “ identification of innovators in a local community”, “social structure and cultural patterns in rural areas” and “ interaction of social and technical change”. These four topics received the mean score of below 3.0.

The results from this study showed that the first three topics are perceived to be more important for the potential agents than any other topics and these should be emphasized in the pre-service training program.

#### Educational process and human development

The analysis of the responses of extension agents on training needs in the area of educational process and human development is presented in table 3. There were seven topics identified in this study, with the mean score ranging from 3.64 to 3.13, and a spread of 0.51 between the highest and the lowest mean scores.

**Table 3: Training needs for potential extension agents in the area of educational process and human development**

Training topics	Frequency <sup>a</sup>		Mean <sup>b</sup>	SD
	Very much	Quite		
Extension teaching methods	45	25	3.64	0.48
Principles of extension	43	27	3.61	0.49
The teaching-learning process	42	28	3.60	0.49
Philosophy of adult education	38	25	3.44	0.67
Factors affecting the behaviour of people	35	25	3.33	0.79
Developing leadership abilities	32	26	3.24	0.84
Changing the behaviour of people through education	27	28	3.13	0.85

<sup>a</sup>Number of very much and quite needed responses

<sup>b</sup>Scales: 1 = not at all needed; 2 = little needed; 3 = quite needed; 4 = very much needed

All respondents answered “very much needed” and “quite needed” for the training in “extension teaching methods”, “principles of extension” and “the teaching-learning process”. These three topics appeared to be of major concern to agents based on very high mean scores of 3.64, 3.61, and 3.60 respectively. These were followed by “philosophy of adult education”, “factors affecting the behaviour of people”, and “developing leadership abilities” in descending order. The lowest mean score recorded was 3.13 for the last topic “changing the behaviour of people through education”.

The results from this study showed that all the training topics identified in this study are perceived to be important for the potential agents and these should be emphasized in the pre-service training program.

#### Program planning

Opinions of the respondents on training needs for potential extension agents in the area of program planning are shown in table 4. The six specific topics were listed in this area.

**Table 4: Training needs for potential extension agents in the area of program planning**

Training topics	Frequency <sup>a</sup>		Mean <sup>b</sup>	SD
	Very much	Quite		
How to analyse the agricultural situations in village, township, district and state/division	44	26	3.63	0.48
How to involve local people in extension development	43	18	3.49	0.72
How to identify needs and determine priority	42	21	3.49	0.72
How to determine goals and prepare work plan	40	23	3.47	0.67
How to develop long-term extension programs	38	25	3.41	0.75
How to use specialists in program planning	35	24	3.30	0.84

<sup>a</sup>Number of very much and quite needed responses

<sup>b</sup>Scales: 1 = not at all needed; 2 = little needed; 3 = quite needed; 4 = very much needed

All respondents put the topic of “how to analyse the agricultural situations in village, township, district and state/ division” as a first priority need for training in the area of program planning. They indicated the two categories of “very much needed” and “quite needed”. In addition, the following two items of “how to involve local people in extension development” and “how to identify needs and determine priority” were considered to be of second priority needs and these received the same mean score of 3.49. These were followed by three topics of “how to determine goals and prepare work plan”, “how to develop long-term extension programs”, and “how to use specialists in program planning” in descending order.

The results from this study indicated that all training topics identified in this study are perceived to be important for the potential extension agents because the topic with the lowest rank had a relatively high mean score of 3.3. The importance attached to these topics might reflect a desire for a more thorough analysis of the local situation and the need for involvement of clientele in identifying their needs and also for participation in the decision making process.

### Communication in extension

The perceptions of the respondents towards the training needs for potential agents in communication in extension are analysed in table 5. The seven specific training topics were listed in this area.

**Table 5: Training needs for potential extension agents in the area of communication**

Training topics	Frequency <sup>a</sup>		Mean <sup>b</sup>	SD
	Very much	Quite		
Methods and process of communication	43	27	3.61	0.49
How to conduct field demonstrations	42	28	3.60	0.49
How to conduct farm & home visits	40	25	3.50	0.63
How to conduct meetings	38	26	3.46	0.65
How to conduct agricultural shows	30	28	3.23	0.80
How to write technical reports and newsletter	28	23	3.06	0.94
How to effectively use radio	0	6	1.79	0.58

<sup>a</sup>Number of very much and quite needed responses

<sup>b</sup>Scales: 1 = not at all needed; 2 = little needed; 3 = quite needed; 4 = very much needed

The importance of the training topics was reflected by mean scores, which ranged from the highest 3.61 to the lowest 1.79. This indicated a difference of 1.82, suggesting a relatively high difference between the mean scores for the various topics. The topic “methods and process of communication” was indicated as “very much needed” by 61% of the respondents and as “quite needed” by 39%. This topic received the highest mean score of 3.61.

The training topic “how to conduct field demonstrations” was indicated as “very much needed” by 60% of the respondents and as “quite needed” by 40%. This topic received the second highest mean score of 3.60. This was followed by the training needs in “how to conduct farm and home visits”, “how to conduct meetings”, “how to conduct agricultural shows” and “how to write technical reports and newsletter” with the mean scores of 3.50, 3.46, 3.23 and 3.06 respectively. The lowest score was recorded for the last topic “how to effectively use radio” and this was indicated as “little needed” by 62% of the respondents and as “not at all needed” by 30%. The data revealed no particular desire for training of potential extension agents in the use of radio in extension.

It would appear that extension agents had the greatest need for training relative to improving personal contacts with farmers through field demonstrations, farm and home visits, meetings and agricultural shows. These training topics should be emphasized in the pre-service training program for potential extension agents.

### The use of research methods and evaluation

Perceptions of the respondents towards the training needs for potential extension agents in the area of research and evaluation are analysed in table 6. There were six specific training topics in this area. The mean scores ranged from the highest of 3.64 to the lowest of 3.44, indicating a spread of only 0.2.

**Table 6: Training needs for potential extension agents in research and evaluation**

Training topics	Frequency <sup>a</sup>		Mean <sup>b</sup>	SD
	Very much	Quite		
The role of research in extension	45	25	3.64	0.48
How to conduct surveys	43	27	3.61	0.49
How to apply research findings in solving farmers' problems	42	28	3.60	0.49
How to use the pilot project in extension work	40	24	3.49	0.65
How to evaluate extension programs	40	23	3.47	0.68
How to effectively use the results of evaluation	38	25	3.44	0.67

<sup>a</sup>Number of very much and quite needed responses

<sup>b</sup>Scales: 1 = not at all needed; 2 = little needed; 3 = quite needed; 4 = very much needed

Training topic “the role of research in extension” was indicated as “very much needed” by 64% of the respondents and as “quite needed” by 36%. This topic received the highest mean score of 3.64. This was followed by training needs in the topics of “how to conduct surveys” and “how to apply research findings in solving farmers’ problems” with the high mean scores of 3.61 and 3.60 respectively. These two were also indicated as “very much needed” and “quite needed” by all respondents. More than 90% of the respondents pointed out training in the topics of “how to use the pilot project”, “how to evaluate extension programs” and “how to effectively use the results of evaluation” as “very much” and “quite” needed for potential extension agents.

A summary of the responses of extension agents on training needs for potential extension agents in the six identified areas are compared by rank in table 7. Rank 1 to 6 means from the first priority need to the sixth priority need for training.

**Table 7: Opinions of respondents on training needs for potential extension agents in six specific areas, compared by rank**

Areas of Training	Number of Respondents					
	Rank1	Rank2	Rank3	Rank4	Rank5	Rank6
Extension program planning	35	25	10			
Educational process and human development	32	26	12			
Research methods and evaluation	3	15	40	12		
Agricultural extension philosophy, organization and administration		4	8	48	10	
Communication in extension				10	38	22
Sociological factors					22	48

**Extension program planning:** The need for training in the area of program planning was rated as the rank 1 by 50% of the respondents, rank 2 by 36% and rank 3 by the remaining 14%. Analysing the agricultural situation in the local areas stands out as the most important topic for which agents have the greatest need for training in program planning (see table 4). Respondents apparently believed that it was important for agents to learn how to analyse problems in the local areas before attempting to find solutions.

**Educational process and human development:** Training need in the area of education process and human development was rated as the rank 1 by 46% of the respondents, rank 2 by 37% and rank 3 by the rest 17%. Training in extension teaching methods, principles of extension and teaching-learning process appeared to be of major concern to agents based on very high mean scores of 3.64, 3.61 and 3.6 respectively (see table 3). These areas appeared to them to have more value for potential extension agents.

**Research methods and evaluation:** The need for training in research and evaluation was rated as the rank 1 by only 4% of the respondents, rank 2 by 22%, rank 3 by 57% and rank 4 by the remaining 17%.

All the respondents felt that training about the role of research in extension, conducting surveys, effective use of research findings, as the greatest importance for training needs of potential agents (see table 6).

**Agricultural extension philosophy, organization and administration:** The training need for potential extension agents in “agricultural extension philosophy, organization and administration” was rated as rank 4 by 69% of the respondents.

**Communication in extension:** This was rated as the rank 5 by 54% of the respondents, rank 4 by 14% and rank 6 by the remaining 17%. The high rating of training needs in the area of communication by extension agents indicates a feeling that the successful performance of the agents in their jobs depends largely on the ability to communicate with farmers.

**Sociological factors:** The need for training in the area of sociological factors was rated as the rank 6 by 69% of the respondents and rank 5 by the remaining 31%.

It was noteworthy that all six areas of training identified in this study were perceived to be important for potential extension agents. Respondents expressed their perceptions based on their experience in performing extension activities at farmers’ fields, knowledge that they learned in University or Institutes and pre-service as well as in-service training.

### **Educational Importance**

Determination of training and development for personnel in any organization is a challenging task. The Agricultural University and Institutes provide courses on basic sciences and various aspects of agriculture in their curriculum. However, they only teach agricultural extension subjects during the students’ final year of study. Many of the students that graduate from the Agricultural University and Institutes become extension agents employed by the Myanmar Agriculture Service. Although the CARTC has carried out a number of in-service training for field extension agents, most of training was crop production oriented and training in extension education has been scarce. Much of the training emphasized on new technical knowledge and on one-way communication skills needed for the transfer of technology and there was a lack of training needs analysis. These training institutions have a vital role to play in the sustainable development of agriculture in Myanmar. To improve performance and increase the motivation and job satisfaction of extension agents, a greater need for continuous training and guidance in respect to extension methods and content is required.

Based on research findings the following training topics are recommended to emphasize in the pre-service training program of the CARTC or CARI. These are training in agricultural extension philosophy, organization and administration, planning extension strategies to meet farmers’ needs, educational process and human resource development, research methods and evaluation in extension, the use of information and communication in extension and sociological factors. Many of these social science skills are lacking in the agricultural graduates working as extension agents in the agricultural extension division.

The information from this study will be used as a basis and guide for developing the training program for newly recruited agricultural scientists, such that their training at the State agricultural Institutes or at the agricultural University will have more relevance to the work they later perform in the government extension services.

### **References**

- CHO, K.M. (2002). Training Needs of Agricultural Extension Agents in Myanmar. Proceedings of the 18<sup>th</sup> annual conference of Association for International Agricultural and Extension Education (AIAEE), May 26-30, 2002. Durban, South Africa, pp. 72-80.
- Myanmar Agriculture Service (2000). Annual report on Myanmar Agriculture Service (MAS), Ministry of Agriculture and Irrigation (MOAI), Yangon, Myanmar.
- ONAZI, O.C. (1973). Comparative Analysis of the Training Needs of Potential Agricultural Extension Workers, and Principal Problems of Extension in the Northern States of Nigeria. PhD Dissertation, Kansas State University.