



# International Journal of Advanced Research & Higher Studies (IJARHS)

## Studies on the Agricultural Extension Services for Growing Changed Climate Adapted Crops of Northwestern Bangladesh

**Swapan Kumar Khan**  
 Additional Director  
 Dept. of Agriculture Extension  
 Faridpur Region, Faridpur, Bangladesh

### ABSTRACT

Facing the adverse effects of climate change is one of the biggest challenges for the country of Bangladesh. As a low lying downstream riparian country (70 percent of land area is 5 m or less above sea level), Bangladesh is one of the country's most vulnerable to extreme climate events and the impact of climate change, from both flooding and sea water intrusion. Climate change is already affecting agricultural production with most alarming adverse effects in Bangladesh. Extreme weather conditions have changed the overall distribution of yearly rainfall, shifted cropping seasons, increased infestation of crops by pests and diseases, made the water-table decline in the Barind tract and some other areas. At the same time, demand for food is rapidly increasing with the population. Enhancing resilience is a major challenge not only for agricultural sustainability but also for the substantial non-farm rural economy. Hence, the development of climate resilient technology and adaptation strategies for food security, economic stability, and livelihood security of the people are crucial.

**Keywords:** *Climate change, extension modality, food security, rural economy*

### INTRODUCTION

Agricultural Extension Service aims to educate the people of farming community in order to improve their quality of life through dissemination of knowledge technologies, techniques, methods, ideas and useful information through extension system. It assists farm people through educational process, in improving farm. Production methods and techniques, increasing production efficiency and income, improving their levels of living and lifting the social and educational standard of rural life. Agricultural extension services, which encompass public and private sectors, NGOs, research and academic institutions and also the farmers, are the main forces in the processes of technology transfer. The information usually flows from researchers to extension agents and from extension agents to farmers in one direction and from farmers to extension agents and then to the researchers, in the other direction. As such, agricultural extension services, which are almost now more than one hundred years old, have become the most real life information system for technology transfer (Qamar, 1999). Technology transfer system has two streams. One flow from farms or farmers (production sites) to the research stations through extension activity and the other from research stations to the farmers through the extension activity (Haga, 1999).

The above concept of extension is most commonly in vogue throughout the developing and developed countries. Especially in the countries where information technology is not yet well

developed the role of extension workers is very vital to implement the programs of extension. Agricultural extension activities in less developed countries mostly centered on the performance of the field extension workers. As a result the governments of these countries emphasize more on human resource development and improvement of the organizational management through policy guidelines and law. The appendix tables 8 to 12 vide appendices 6 to 10 provide some global information about the number of extension organizations methods of extension works being followed and the number of extension workers serving in the public sectors.

The services of an extension worker are very vital and significant. He needs to have basic education in agriculture, needs field experiences in conducting extension activities, needs to acquire latest technical information from the research stations, must have extension program in his front and also must be supported by the government policy and laws. Without these elements an extension worker cannot become successful in performing his job effectively and efficiently. Although overall agricultural extension encompasses the development of crops, livestock fishery environment and forestry, separate policies on fisheries, livestock, as well as environment and forestry have already been formulated by the respective ministries. In this perspective, Ministry of Agriculture has formulated this policy document in order to provide proper guidelines for various development activities relating to crops, which is the largest sector of agriculture. As expected, policies related to crop production and marketing together with minor irrigation, seeds, fertilizers and agricultural credit got prominence in the document. Since crop sector plays the major role in Bangladesh agriculture and gets the top most importance in various agriculture related programmes of the government, this policy document for the development of crop sector is, therefore, titled as the National Agriculture Policy.

In Bangladesh, it is possible to reduce rural poverty and raise the living standard of common people by establishing agriculture as a profitable sector. It is, therefore, necessary to reorganize and develop the agricultural production system into a more dynamic and commercially profitable sector. In this context, the primary goal of the National Agriculture Policy is to modernize and diversify the crop sector, in other words the entire agricultural system, through initiation and implementation of a well organized and well-coordinated development plan.

### **OBJECTIVES OF THE STUDY**

1. To identify the priority dimensions of Agricultural extension in Bangladesh
2. To categorize the Problems of agricultural extension in Bangladesh
3. To develop a guideline for field extension services for the agribusiness man

### **METHODOLOGY**

Direct survey assessment with response explanation

Identity of the respondents

1. Name:
2. Qualification
3. Address
4. Designation

Survey question 1. Which part of agricultural services is less worked in Bangladesh? Give tick mark to any 3.

1. Policies and Laws
2. Centralized administration
3. Uncared grass root level activities
4. Regular in service training
5. Weak research and literature support
6. Inconsistent service rules

Survey question 2. What should be the major current need priority dimensions for agricultural extension in Bangladesh? Give tick mark to any 3.

1. Demonstration
2. Training
3. Production planning
4. Prescription service
5. Technical administration
6. National support services

Survey question 3. Which sector of agricultural extension facing more problems in Bangladesh? Give tick mark to any 3.

1. Block demonstration
2. Project Based Training
3. Information communication
4. Lab services
5. Legal/magistracy service
6. civil service supports

Survey question 4. Which part of extension training now facing technical limitations in Bangladesh? Give tick mark to any 3.

1. Training Curriculum
2. Training evaluation
3. Training materials
4. Training certification
5. Physical facilities
6. Remunerations

Respondents:

Agricultural Graduates: 100

1. In service
2. In business
3. In research
4. In public representation

## RESULTS AND DISCUSSION

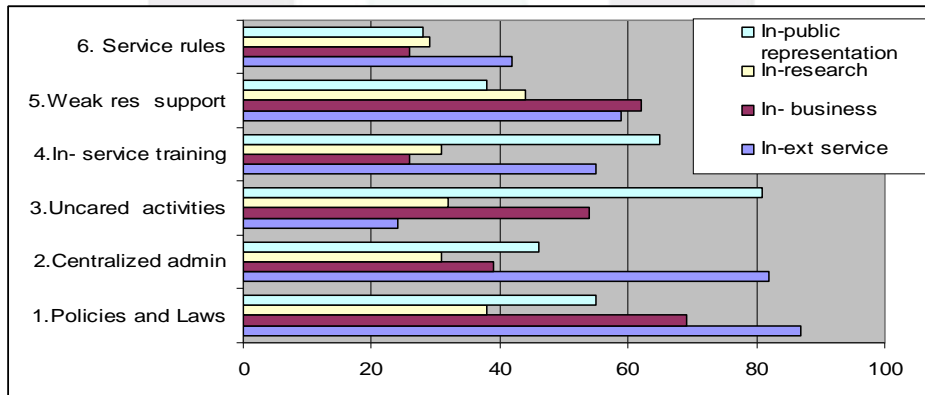
The results obtained from the studies are presented and interpreted here as per objectives and findings of the studies

**Table 1: Agricultural services is less worked (Percent responded in favour)**

Parameters	In-ext service	In-business	In-research	In-public representation	Mean
Policies and Laws	87	69	38	55	62.3
Centralized administration	82	39	31	46	49.5
Uncared root level activities	24	54	32	81	47.75
Regular in- service training	55	26	31	65	44.25
Weak res and literature support	59	62	44	38	50.75
Inconsistent service rules	42	26	29	28	31.25
Mean	58.2	46	34.2	52.2	47.63

The results found on Agricultural services is less worked ( Percent responded in favour) showed that 62.3% gave opinion to (specially the ext service man 87%) strengthen the policies and laws of the services to be delivered to the farmer beneficiaries, followed by increasing research support in terms of improved technology package literature.

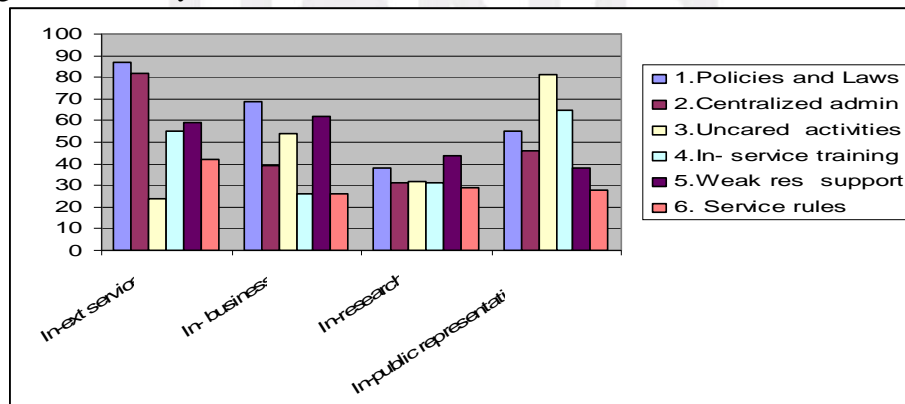
**Figure 1: Agricultural services is less worked (Percent responded in favour)**



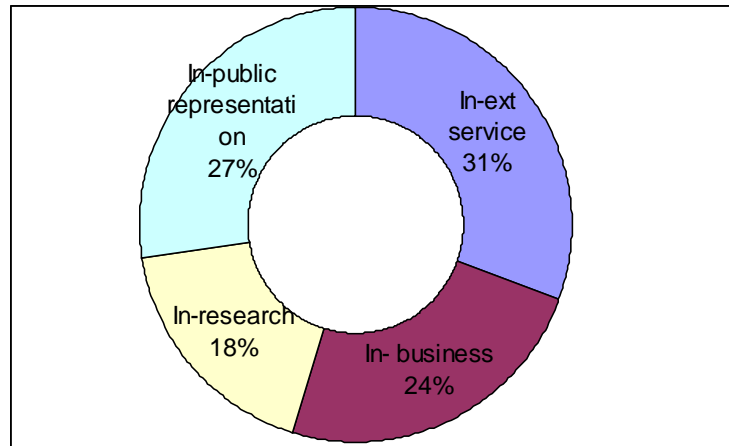
The graph: showed that 62.3% gave opinion to (specially the ext service man 87%) strengthen the policies and laws of the services to be delivered to the farmer beneficiaries, followed by increasing research support in terms of improved technology package literature. The public representatives gave more emphasis on more cared cared root level services.

**Agricultural services are less worked as per category of services:**

The response was very weak from the research corner which indicates less integration in the system.



The % showing response:



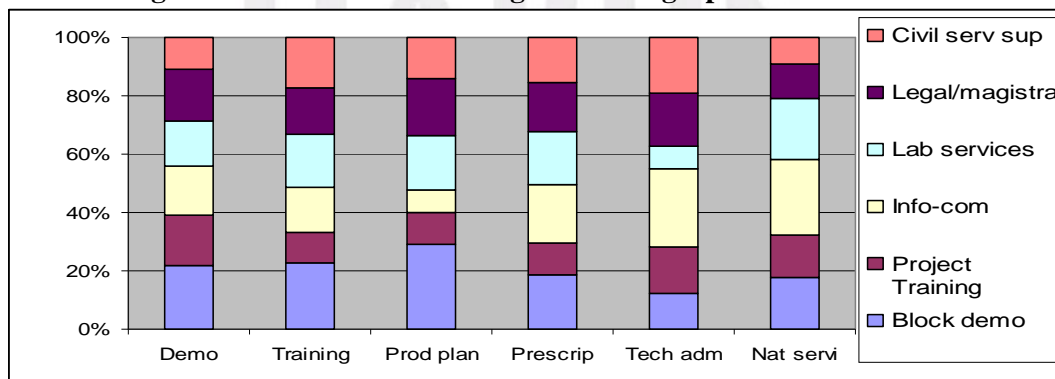
**Major Current Need Priority Dimensions for Agricultural Extension**

**Table 2: Problems of agricultural extension in Bangladesh**

	Demons	Training	Production planning	Prescription service	Tech admin	National service	Mean
Block demo	62	91	87	69	38	55	67.0
Project Based Training	49	42	32	39	48	46	42.7
Information communication	47	61	24	74	82	81	61.5
Lab services	44	74	55	66	24	65	54.7
Legal/magistracy service	50	63	59	62	55	38	54.5
Civil service supports	31	69	42	56	59	28	39
Mean	47.2	66.7	49.8	61.00	51	52.2	54.6

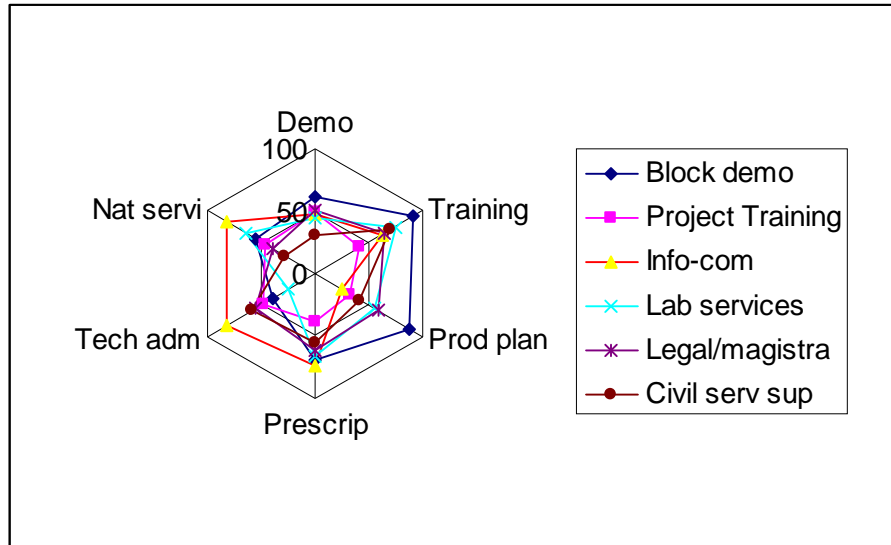
The major problems of agricultural extension in Bangladesh were found to be related to Block demonstration of technologies and the quality of the advisory prescription services followed by proper training materials and information communication.

**Problems of agricultural extension in Bangladesh the graph matrix**



Problems 1. Block demonstration, 2. Info-comm

**Problems of agricultural extension in Bangladesh the graph matrix: concentration matrix of the demos and info-com for training materials and prescription services**

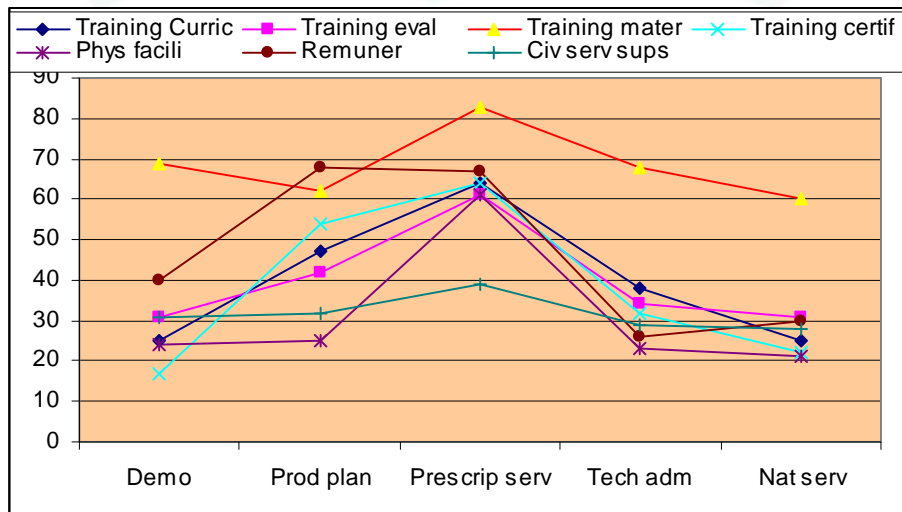


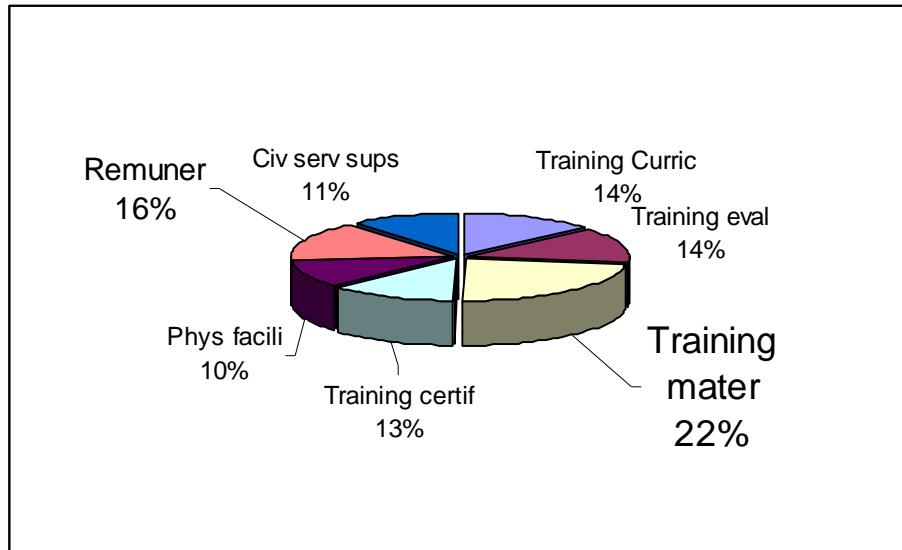
**Table 3: Extension training now facing technical limitation score**

	Demo	Prod plan	Prescrip serv	Tech adm	Nat servi	Mean
Training Curric	25	47	64	38	25	39.8
Training eval	31	42	61	34	31	39.8
Training mater	69	62	83	68	60	68.4
Training certif	17	54	64	32	22	37.8
Phys facili	24	25	61	23	21	30.8
Remuner	40	68	67	26	30	46.2
Civ serv sups	31	32	39	29	28	31.8
Mean	33.9	47.1	62.7	35.7	31.0	42.1

Training materials and prescription services scored highest as the current need but facing maximum problems

**Extension training now facing technical limitation score: In line graph presentation**



**Extension training now facing technical limitation score in pie chart****Women in Agriculture**

Women represent nearly half of the country's human resources. For this, the government believes that more women comprising officials and farmers should enter the agricultural workforce. As women have potentials to contribute to agricultural growth, it is obligatory on the part of the Government to meaningfully involve them in agriculture-related income-generating activities and to develop their human resources.

**Empowerment of Women**

Necessary support will be provided for capacity building of women in promoting household food and nutrition security. The Government will facilitate increased women participation in management decision making and their advancement in agriculture. Efforts will be made to ensure women's equal access to agricultural inputs (e.g. seed, fertilizer, credit, education & training, information etc.). Participation in Production and Marketing the Government will encourage participation of the rural poor women in production of crops particularly in agro-processing and agri-business activities so that they can improve their economic well-being.

Women's participation in agricultural production system will be facilitated through access to agricultural technologies. The Government will take steps to encourage women's participation in various extension programmes like training, farmers' rally and workshop.

In Income Generation the Government will provide credit support to women for agricultural activities such as homestead gardening, post harvest activities, seed production & preservation, nursery, bee-keeping, food processing etc. The government will provide micro-credit support to women for small-scale agro-processing, storage and preservation. Efforts will be made to ensure non-discrimination in wages.

**Budgetary Allocation**

A block allocation in the agricultural budget will be made exclusively for undertaking women related activities and programmes.

**Human Resource Development**

As a predominantly agricultural country, Bangladesh needs to have a vast reservoir of educated, trained and skilled agri-workforce to bridge the gap between the production



capacity of farmers and the consumption requirement of citizens and to ensure their food security. Effective human resource development (HRD) should be based on appropriate human resource, planning and career development. This can be achieved through developing appropriate training and education packages including in-service training and through performance based reward system. Major challenge is to develop an efficient workforce capable enough to cope with the emerging issues of technology and to acquire skills of development entrepreneurship. The government plans to introduce innovative approaches to upgrade the skill of farmers and technological empowerment of women engaged in agriculture. The government therefore places high priority on training as a tool for developing human resources in the field of agriculture.

### **Training Coverage**

Personnel associated with research and development in agriculture will be brought under the umbrella of training. National Agricultural Training Academy (NATA) will offer training including foundation and departmental to officials engaged in agriculture.

### **Facilities and Programme Development**

Agricultural human resource development programmes will be launched for improving standards of short term, medium term and long term training. The government will create and strengthen facilities for training of various functionaries of research and extension system to address demand-led areas in agriculture. Training facilities will be strengthened at a level that will be nationally and globally competitive.

### **Incentives**

Awards will be instituted to recognize and promote excellence in teaching & training, research, extension and crop production and agricultural development activities. Provision for visiting scientists, sabbaticals, national fellows will be introduced to promote excellence in agricultural science, extension and research management. Performance of trainee officials in the departmental training will be counted as one of the major criteria for nomination of higher study and overseas training.

### **Partnership**

The Government will encourage forging strategic partnership with agriculture-centred HRD institutions of both developed and developing countries to enrich knowledge base and to harness technology in the field of agriculture. Harnessing complementarities and synergies through strong linkages among institutions at national level and international level will be constantly pursued.

### **Budgetary Provision**

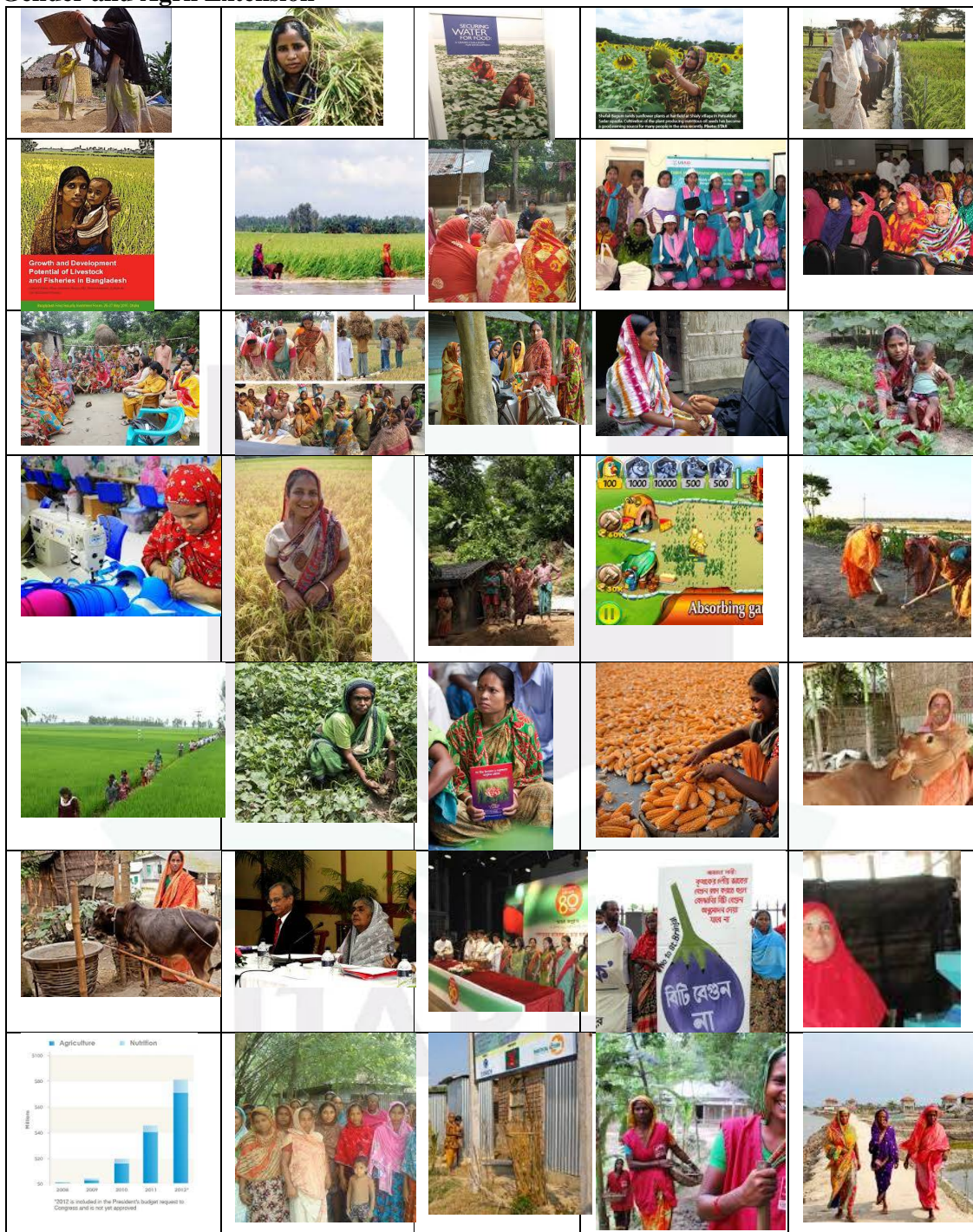
A block allocation will be made exclusively for carrying out HRD and training related activities.

**Dominance of Bengali:** If any confusion arises between English and Bengali version of this Policy, the Bengali version will prevail. The provisions as detailed above have been drawn on the basis of empirical findings of a host of researchers, practitioners and experts. The proper implementation of the National Agriculture Policy will transform the crop production system, and for that matter the overall agriculture into a dynamic sector over time, which is expected to bring about significant positive changes in the economy of the country. It is hoped that farmers, researchers, scientists, agri-business communities, civil servants and politicians will



make their respective contribution to the implementation of the present National Agriculture Policy and through this process the goals of PRSP, MDGs, and SDGs will be fulfilled.

**Gender and Agril Extension**





### SUMMARY

The results found on Agricultural services is less worked (Percent responded in favour) showed that 62.3% gave opinion to (specially the ext service man 87%) strengthen the policies and laws of the services to be delivered to the farmer beneficiaries, followed by increasing research support in terms of improved technology package literature. The graph: showed that 62.3% gave opinion to (specially the ext service man 87%) strengthen the policies and laws of the services to be delivered to the farmer beneficiaries, followed by increasing research support in terms of improved technology package literature. The public representatives gave more emphasis on more cared root level services. The major problems of agricultural extension in Bangladesh were found to be related to Block demonstration of technologies and the quality of the advisory prescription services followed by improper training materials and information communication. Problems 1. Block demonstration, 2. Info-com Training materials and prescription services scored highest as the current need but facing maximum problems.

**Women in Agriculture:** Women represent nearly half of the country's human resources. For this, the government believes that more women comprising officials and farmers should enter the agricultural workforce. As women have potentials to contribute to agricultural growth, it is obligatory on the part of the Government to meaningfully involve them in agriculture-related income-generating activities and to develop their human resources. Necessary support should be provided for capacity building of women in promoting household food and nutrition security. The Government will facilitate increased women participation in management decision making and their advancement in agriculture. Efforts will be made to ensure women equal access to agricultural inputs (e.g. seed, fertilizer, credit, education & training, information etc.). Participation in Production and Marketing the Government will encourage participation of the rural poor women in production of crops particularly in agro-processing and agri-business activities so that they can improve their economic well-being. Womens participation in agricultural production system will be facilitated through access to agricultural technologies. The Government should take steps to encourage women participation in various extension programs like training, farmers' rally and workshop. Income Generation the Government will provide credit support to women for agricultural activities such as homestead gardening, post harvest activities, seed production & preservation, nursery, bee-keeping, food processing etc. The government will provide micro-credit support to women for small-scale agro- processing, storage and preservation. Efforts will be made to ensure non-discrimination in wages.



### **Human Resource Development and Budgetary Allocation**

A block allocation in the agricultural budget should be made exclusively for undertaking women related activities and program. As a predominantly agricultural country, Bangladesh needs to have a vast reservoir of educated, trained and skilled agri-workforce to bridge the gap between the production capacity of farmers and the consumption requirement of citizens and to ensure their food security. Effective human resource development (HRD) should be based on appropriate human resource, planning and career development. This can be achieved through developing appropriate training and education packages including in-service training and through performance based reward system. Major challenge is to develop an efficient workforce capable enough to cope with the emerging issues of technology and to acquire skills of development entrepreneurship. The government plans to introduce innovative approaches to upgrade the skill of farmers and technological empowerment of women engaged in agriculture. The government therefore places high priority on training as a tool for developing human resources in the field of agriculture.

### **Facilities and Program Development and Training Coverage**

Personnel associated with research and development in agriculture should be brought under the umbrella of training. National Agricultural Training Academy (NATA) should offer training including foundation and departmental to officials engaged in agriculture. Agricultural human resource development program should be launched for improving standards of short term, medium term and long term training. The government should create and strengthen facilities for training of various functionaries of research and extension system to address demand-led areas in agriculture. Training facilities should be strengthened at a level that should be nationally and globally competitive. Awards should be instituted to recognize and promote excellence in teaching and training, research, extension and crop production and agricultural development activities. Provision for visiting scientists, sabbaticals, national fellows will be introduced to promote excellence in agricultural science, extension and research management. Performance of trainee officials in the departmental training should be counted as one of the major criteria for nomination of higher study and overseas training. The Government should encourage forging strategic partnership with agriculture-centered HRD institutions of both developed and developing countries to enrich knowledge base and to harness technology in the field of agriculture. Harnessing complementarities and synergies through strong linkages among institutions at national level and international level should be constantly pursued. A block allocation should be made exclusively for carrying out HRD and training related activities.

### **RECOMMENDATIONS**

Finally, the following recommendations may be made from the above research finding and also considering the previous suggestions made by other researchers.

A block allocation in the agricultural budget should be made exclusively for undertaking related activities and program. Effective human resource development (HRD) should be based on appropriate human resource, planning and career development. This can be achieved through developing appropriate training and education packages including in-service training and through performance based reward system. Major challenge is to develop an efficient workforce capable enough to cope with the emerging issues of technology and to acquire skills of development entrepreneurship. The government plans to introduce innovative approaches to upgrade the skill of farmers and technological empowerment of women engaged in agriculture.

Personnel associated with research and development in agriculture should be brought under the umbrella of training. National Agricultural Training Academy (NATA) should offer training including foundation and departmental to officials engaged in agriculture.

Agricultural human resource development program should be launched for improving standards of short term, medium term and long term training. The government should create and strengthen facilities for training of various functionaries of research and extension system to address demand-led areas in agriculture. A block allocation should be made exclusively for carrying out HRD and training related activities.

As women have potentials to contribute to agricultural growth, it is obligatory on the part of the Government to meaningfully involve them in agriculture-related income-generating activities and to develop their human resources. Necessary support should be provided for capacity building of women in promoting household food and nutrition security. The Government will facilitate increased women participation in management decision making and their advancement in agriculture. Efforts should be made to ensure women equal access to agricultural inputs (e.g. seed, fertilizer, credit, education and training, information etc.). Participation in Production and Marketing the Government should encourage participation of the rural poor women in production of crops particularly in agro-processing and agri-business activities so that they can improve their economic well-being. The government should provide micro-credit support to women for small-scale agro-processing, storage and preservation. Efforts should be made to ensure non-discrimination in wages.

## REFERENCES

1. Agricultural Research and Extension Interface in Asia, Asian Productivity Organization, Tokyo.
2. BBS.1993. Bangladesh Bureau of Statistics. Ministry of Planning, GOB.
3. Begum, R. 1998. An economic study of wheat production and marketing in Bangladesh. Diss. Ehime University, Japan.
4. Bijlmakers, H. and Muhammad Ashraf Islam, 2007. Changing the strategies of Farmer Field Schools in Bangladesh. LEISA Magazine, vol. 23 no. 4. <http://ileia.leisa.info/index.php>
5. Bijlmakers, H., 2009. Farmer Field Schools or Climate Field Schools
6. Birkhaeuser, D. and R. E. Evenson. 1991. The economic impact of agricultural extension: A review. *Econ. Deve. & Cul. Chan.* 39(1):607-650.
7. Callens, K. and K. Gallagher, 2003. Incorporating nutrition in Farmer Field Schools. *Food, Nutrition and Agriculture* no. 32. FAO, Rome, Italy.
8. Daily Star.2008. Pest attack affects Aman paddy yield in Netrokona, Patuakhali. Oct. 19. Pp.14.
9. Evenson, R.E and G. Mwabu. 2001. The effect of agricultural extension on farm yields Kenya. *African Deve. Rev.* 13(1):1-23.
10. Farmer Field Schools: Impact of IPM activities in vegetables during the Summer 1998 season in Bangladesh. April 1999. SPPS Report 20.
11. Farmer Field Schools: Impact of IPM activities in vegetables during the Winter 1998/99 season in Bangladesh. June 1999. SPPS Report 26.
12. Gallagher, K., 2003. Fundamental elements of a Farmer Field School. LEISA Magazine, vol. 19 no.1. <http://ileia.leisa.info/index.php>
13. Haq, A. Z. M. 2004. The role of farmers' education and agricultural extension services in Bangladesh. Diss. Tottory University, Japan.

14. Haq, A. Z. M. 2011a. Effect of extension contact on rice yield in Gazipur District of Bangladesh. Proceedings of the 4th EuroMeD Academy of Business Annual Conference, October 20th-21st Elounda, Crete, Greece. Pp. 766-776.
15. Haq, A. Z. M. 2011b. Effect of extension contact on rice productivity in some selected sites of Gazipur District. *Bangladesh J. of Agric. Res.* 36 (4):723-732.
16. Haq, A. Z. M. 2011c. Outcomes and issues of farmers' education on rice productivity in Bangladesh. Proceedings of the annual conference HR at the modern workplace 16- 17 December, SDM institute for management development, Mysore, India (CD version).
17. Haq, A. Z. M., A. Ishida, S.Yokoyama and K.Taniguchi. 2003. Outcomes and issues of agricultural extension services in Bangladesh. *J. of Agric. Ext. Res.* 8(17): 17- 22.
18. Haq, A.Z.M., K. Taniguchi and A.Ishida. 2004. The impact of farmers' education on income in Bangladesh. *J. of the Japanese Soci. of Agric. Tech. Mg.* 11 (1): 13-21.
19. Impact of IPM activities in Rice during T.Aman 1998 season in Bangladesh. Feb 1999. SPPS Report 17.
20. John Pontius, Russell Dilts & Andrew Bartlett, 2000. From Farmer Field Schools to Community IPM: Ten Years of IPM Training in Asia. <http://www.communityipm.org/downloads.html>
21. Mahajan, B. K. 1997. Bio Statistics: 6th ed. Jaypee Brothers, India.
22. Mohanllned Nasir Uddin Hashem, M. A (2004). *Fundamentals of Extension Education*. Li.ma Printing Press, Mymensingh, Bangladesh.
23. Ownes, T., Hoddinott and B. Kinsey. 2003. The impact of agricultural extension on farm production resettlement areas of Zimbabwe. *Econ. Dev. & Cul. Chan.* 51(2): 337- 357.
24. Porimol, P. 2008. Rice yield to leap on less irrigation. Reveals BADC Study. Daily Star, June 22. P. 1.
25. Porimol, P., R. Sarker and A. Islam .2008. New Rice varieties smile at monga hit people. Daily Star, Octo.15. P.14.
26. Qamar Kalim (1999). *Effective information fop Technology k*, Agricultural Research and Extension Interface in Asia, Asian Productivity Organization, Tokyo.
27. Rafiqul,I. 2009. Betel leaf growers in south left in peril. Daily Star, May 11. P. 1.
28. Reynar, R and T.Bruening. 1996. Agricultural extension issues: perception of Bangladesh T&V extension personnel. *J. of Int. Agric. & Ext.* 3(1):53-62.



IJARHS