

**TRAINING NEEDS FOR RURAL WOMEN IN MODERN
AGRICULTURAL ACTIVITIES**

A Thesis

By

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**MASTER OF SCIENCE
IN
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**Department of Agricultural Extension
Hajee Mohammad Danesh Science and Technology University
Dinajpur**

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The author

Training Needs for Rural Women in Modern Agricultural Activities

ABSTRACT

The purpose of this study was to determine and describe the selected characteristics of the rural women, to determine the extent of training needs for rural women in modern agricultural activities, and to explore the relationship between training needs in modern agricultural activities and the selected characteristics of the rural women. Data were collected from a sample of 105 rural women selected from the population of 300 by multistage random sampling procedure from nine villages of the selected three unions under sadar upazila of Rangpur district. A pre-tested and structured interview schedule was used to collect data from the respondents during 10 February to 11 March 2015. Ten selected characteristics of the rural women were the independent variables, and training needs for the rural women in modern agricultural activities was the dependent variable in this study. The dependent variable was determined on two dimensions viz., homestead vegetables cultivation, and dairy and poultry rearing, and subsequently 20 specific activities were included under these two dimensions. The training need index (TNI) for the rural woman in modern agricultural activities was also measured mathematically. In case of **homestead vegetable cultivation** the findings on TNI indicates that the most important activity was ‘measures of disease control’ (TNI=243) and the least essential training need was ‘irrigation and drainage management’ (TNI=15). On the other hand, **dairy and poultry rearing**, the findings revealed that the most important activity was ‘poultry feed management’ (TNI=220) and the least essential training need area was ‘dairy products preservation and marketing’ (TNI=63). However, **overall training needs** it was found that the majority (66.67 percent) of the respondents had medium training need as compared to 18.09 percent having high training need and only 15.24 percent having low training need. According to the computed correlation coefficients (r) among the 10 selected characteristics of the rural women education, daily time use, extension contact and decision making ability had positive significant relationship, and age had negative significant relationship with the training need in modern agricultural activities. The rest characteristics had no significant relationship with their training need.

TABLE OF CONTENTS

Chapter	Contents	Page
	ACKNOWLEDGEMENTS	
	ABSTRACT	
	TABLE OF CONTENTS	
	LIST OF TABLES	
	LIST OF FIGURES	
	LIST OF APPENDICES	
	ABBREVIATIONS USED	
1	INTRODUCTION	
1.1	Background of the study	
1.2	Significance of the Study	
1.3	Statement of the Problem	
1.4	Objectives of the Study	
1.5	Assumption of the Study	
1.6	Scope and Limitation of the Study	
1.7	Definition of Important Terms	
2	REVIEW OF LITERATURE	
2.1	Concept of Training	
2.1.1	Designing training programs	
2.2	Reviews on General Context of Training Needs	
2.3	Training Needs of the Rural Women	
2.4	Relationship of Selected Characteristics of the Rural Women with Training Needs in Modern Agricultural Activities	
2.4.1	Age and training needs	
2.4.2	Education and training needs	
2.4.3	Farm size and training needs	
2.4.4	Daily time use and training needs	
2.4.5	Credit received and training needs	
2.4.6	Annual income and training needs	
2.4.7	Extension contact and training needs	
2.4.8	Decision making abilities and training needs	
2.4.9	Agricultural knowledge and training needs	
2.4.10	Attitude towards technology and training needs	
2.5	Conceptual Framework of the Study	

TABLE OF CONTENTS (Contd.)

Chapter	Contents	Page
3	METHODOLOGY	18
3.1	Methodological Approach and Research Design of the Study	
3.2	Locale of the Study	
3.3	Sampling Procedure	
3.4	Instrument of Data Collection	
3.5	Variables and their Measurement Techniques	
3.5.1	Measurement of independent variables	
	Age	
	Education	
	Farm size	
	Daily time use	
	Credit received	
	Annual income	
	Extension contact	
	Decision making ability	
	Agricultural knowledge	
	Attitude towards technology	
3.5.2	Measurement of dependent variable	
3.6	Hypothesis	
	Research hypothesis	
	Null hypothesis	
3.7	Collection of Data	
3.8	Data Processing and Statistical Analyses	
4	RESULTS AND DISCUSSION	28
4.1	Selected Characteristics of the Rural Women	
4.1.1	Age	
4.1.2	Education	
4.1.3	Farm size	
4.1.4	Daily time use	
4.1.5	Credit received	
4.1.6	Annual income	
4.1.7	Extension contact	
4.1.8	Decision making ability	

TABLE OF CONTENTS (Contd.)

Chapter	Contents	
4.1.9	Agricultural knowledge	
4.1.10	Attitude towards technology	
4.2	Training Needs in Modern Agricultural Activities for the Rural Women	
4.2.1	Training needs in homestead vegetable cultivation for the women	
4.2.2	Training needs in dairy and poultry rearing of the women	
4.2.3	Overall training needs in agricultural activities of the rural women	
4.3	Relationships between Selected Characteristics of the Rural Women and their Training Needs in Modern Agricultural Activities	
4.3.1	Age of the rural women and their training needs	
4.3.2	Education of the rural women and their training needs	
4.3.3	Farm size of the rural women and their training needs	
4.3.4	Daily time use of the rural women and their training needs	
4.3.5	Credit received of the rural women and their training needs	
4.3.6	Annual income of the rural women and their training needs	
4.3.7	Extension contact of the rural women and their training needs	
4.3.8	Decision making ability of the rural women and their training needs	
4.3.9	Agricultural knowledge of the rural women and their training needs	
4.3.10	Attitude towards technology of the rural women and their training needs	
5	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	
5.1	Summary of the Findings	
5.1.1	Selected characteristics of the rural women	
5.1.2	Training needs for the rural women in modern agricultural activities	
5.1.3	Relationships between selected characteristics of the rural women and their training needs in modern agricultural activities	
5.2	Conclusions	
5.3	Recommendations	
5.3.1	Recommendations for policy implications	
5.3.2	Recommendations for further study	
BIBLIOGRAPHY		

LIST OF TABLES

Table No.	Table Titles	Page
3.1	Distribution of population and sample size of rural women	
4.1	Descriptive statistics and percentage distribution of the respondents selected characteristics	
4.2	Extent of training needs of the women in homestead vegetable cultivation (N=105)	
4.3	Extent of training needs of the women in dairy and poultry rearing (N=105)	
4.4	Categories of women according to their training need in agricultural activities	
4.5	Relationships between the dependent and independent variables	

LIST OF FIGURES

Figure No.	Figure Titles	Page
2.1	Conceptual framework of the study	
3.1	Research design of the study	
3.2	Map of Rangpur district (Bangladesh inset)	
3.3	Rangpur sadar upazila showing study area	

LIST OF APPENDICES

Sl. No.	APPENDIX	Page
A	The Interview Schedule	
B	Correlation Matrix of the Dependent and Independent Variables	

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Women contribution in agriculture is high throughout Asia. Bangladesh, Bhutan, Cambodia, China, India, Myanmar, Nepal, Pakistan and Vietnam have particularly high percentages of women employed in the agricultural sector, with estimates ranging between 60 and 98 percent. Among the neighboring countries, only 59 percent of Bangladeshi women, as compared to over 74 percent of Indian, 64 percent Pakistani and 85 percent Nepali women, are employed in agriculture. However, women's contribution to agriculture, which is considered as unpaid family labor, is grossly underestimated (FAO, 2003).

In Bangladesh women constitute nearly one-half of the total population and majority of them live in rural areas. Women play important roles in agriculture, undertaking a wide range of activities relating to food production, processing and marketing; and beyond farming, they are involved in land and water management: most often they are collectors of water, firewood and fodder. They have access to a store of local knowledge on the medicinal use of plants; they have been in the forefront of soil conservation programs; and it is women who perform most of the household labor devoted to animals (Commonwealth, 2005).

Pearson (1979) classified the role of rural women into the following four categories such as i) *Independent producers*, who manage the farms largely by themselves; ii) *Agricultural partners*, who share most aspects of work, responsibilities and decision making with their husbands; iii) *Agricultural helpers*, who only participate in farm at busy times when extra help is needed; and iv) *Farm homemaker*, who contribute to the farm production indirectly by preparing meals and attending those working in the field.

Rural women perform many farm related activities, both within and outside the household, in some part of the country. They constitute a considerable part of the total workforce in agriculture. Although the pattern of division of labor between men and women varies greatly from region to region, women are involved in most of the operations in agriculture including subsidiary enterprises like dairy, poultry, mushroom cultivation, sericulture etc. (Prasad and Chandra, 1991). Traditionally, seed cleaning, seed grading, sowing, planting, transplanting, thinning, harvesting, feeding cattle, and looking after animal and poultry birds are the main job for women. Activities such as processing and storage at home are performed exclusively by rural women. It may, however, be mentioned that regardless of the economic status women of medium to large farm owners usually avoid doing field work. Their activities are

confined within and at best around the homestead. In general, the main role of women in high income group is supervisory (Ray, 2011). In Bangladesh, women are hardly participating in agricultural activities outside home (Hossain and Bayes, 2009). Agricultural activities of rural women were confined to homestead production and post-harvest operations, however, in recent years they are mostly involved in livestock and poultry rearing activities besides crop production activities (Hossain and Jaim, 2011).

The scope of bringing more land under cultivation is very limited in Bangladesh and there is limited scope for bringing more land under cultivation. Furthermore, with the increasing population along with segregation of families, the cultivable land is being decreased with increasing number of homestead. Beside these, 40 percent of our rural people are landless. There are primarily two ways for increasing agricultural production namely, by extension and intensive cultivation. But due to decreasing trend in the net cropped area, it is not possible to apply extension cultivation and thus the way of increasing agricultural production is intensive cultivation. So, there is a crucial need to identify the gap between the present and actual preference of the rural women regarding agricultural production activities. If we know the lack of knowledge and skills of rural women towards agricultural activities we can plan an effective training program for the rural women. Therefore, agricultural extension services need to develop sound plans and procedures for imparting knowledge and skills to the farmers in various aspects of agricultural production.

Effective training of the rural women in modern agricultural technologies will go a long way in achieving food requirement. However, for proper planning and execution of the training programs required for the farmer, it is necessary to have an understanding of the rural women's need for training in different technological aspects of agriculture, such as, homestead vegetable cultivation, dairy and poultry rearing etc. Training need of the rural women in crop production may be influenced by their personal characteristics. An understanding of the relationship of the characteristics of the rural women with their training need will also be helpful to the planners and extension workers in planning and execution of the women farmer's training program. But very little research has been conducted to determine training needs for the rural women's in Bangladesh.

1.2 Significance of the Study

Although Bangladesh is predominantly an agricultural country with population of male and female ratio is 100:103 where 76.47 percent of the total population lives in rural areas (AIS, 2007). About half (48.6 percent) of the population are women who play different roles in the

economic and agricultural activities. But, the agricultural production is still lower than the other countries of the world. Although a good number of technologies are now available, which, if used by the farmers as well as by the rural women, can increase agricultural production to a great extent. It is therefore necessary that training should be arranged for the rural women so that they can understand the importance of improved agricultural practices and the methods of their use. In this connection many NGOs have undertaken training programs for increasing agricultural activities like homestead vegetable cultivation, and dairy and poultry rearing.

The word 'training' is accepted as a synonym for all of the norms of knowledge, skill, and attitudinal development which one needs to keep pace with the acceleration of life involvement and the enlarging concepts of man's capabilities. Training need in modern agricultural activities like homestead vegetable cultivation, and dairy and poultry rearing are necessary to improve the productivity of agriculture and thereby making farming activities a more profitable enterprise (Patel *et al.*, 2015). Now a days, the rural women are involved in agricultural activities beside the men. They work and spend a substantial amount of time in agricultural activities. The rural women are not using the modern technologies as they do not know about the technologies and hence most of them follow traditional methods of agricultural production. If they use modern agricultural technologies, the income from agricultural production will contribute to increase their family income. As a result, if we motivate or train the rural women towards farming activities they will be able to increase production and also their family status. To develop training program, it is necessary to know the rural women, need for training in different technological aspects of farming activities such as soil fertility and fertilizer management, quality seed selection, insect and disease control, disease control, breed selection of dairy, feed management of dairy and poultry, etc. Considering the above facts and findings the investigator became interested to undertake a study to determine the training needs of rural women in agricultural activities. Therefore, this study would be significant for policy planners, government and non-government organizations in order to develop an extension program for better agricultural production.

1.3 Statement of the Problem

In Bangladesh, there is hardly any activity in agriculture except ploughing, where women are not involved. In some of the activities, she is relatively more efficient than man. On the other hand, women's involvement in livestock management is an ancient tradition and dairy farming has been an integrated part of homestead farming system. Although much of work related to

livestock farming is carried out by women. Agriculture is the oldest and biggest occupation of the people of Bangladesh. As women constitute half of the population a country, active participation of them is of crucial importance for the success of agricultural development. But due to inadequate knowledge, skill and opportunity, they are not able to maximize the productivity. Because in field of agriculture, technology is continuously changing, many skills are need for the use of these techniques by the farmers and women farmers in increasing production. Thus, it is necessary to arrange timely training programs to acquire necessary knowledge and skill in different aspects of modern technologies. This is why the investigator has undertaken a problem which relates to the training needs of rural women in agricultural activities in the selected subject matter areas and therefore a study was carried out to ‘Training Needs of Rural Women in Modern Agricultural Activities’. The subject-matter areas that have considered for this study are homestead vegetable cultivation and dairy and poultry management.

1.4 Objectives of the Study

The study was designed to determine the training needs in modern agricultural activities for rural women of Rangpur district, in selected subject-matter areas. This is why a problem entitled ‘training needs in modern agricultural activities of rural women’ was undertaken with the following specific objectives:

1. To determine and describe the selected characteristics of the rural women. The characteristics are: age, education, farm size, daily time use, credit received, annual income, extension contact, decision making ability, agricultural knowledge, and attitude towards technology.
2. To determine the extent of training needs for rural women in modern agricultural activities.
3. To determine the relationship between training needs for rural women in modern agricultural activities and the selected characteristics of the rural women.

1.5 Assumption of the study

An assumption is the supposition that an apparent fact or principle is true in the light of the available evidences. The researcher had the following assumptions in mind while undertaking this study.

1. The respondents are capable of providing proper answer to the questions included in the interview schedule.
2. Views and opinions provided by the respondents included in the sample are the representative population.
3. The responses furnished by the respondents are reliable and valid.
4. The researcher who personally collected data was well adjusted to the social

environment of the study area. Hence, the data collected from the respondents might be free from any bias.

5. The training need score of the rural women were linearly related to their selected characteristics.
6. The findings of the study will have general application to other parts of the country where the physical, geographical, socio-economic and natural conditions do not differ much from the study area, and thus, the findings of the study would be useful for planning and execution of the program of extension service.

1.6 Scope and Limitation of the Study

Considering the time and other necessary resources available to the researcher and to make the study manageable and meaningful, it becomes necessary to impose certain limitations which are mentioned below:

1. The study was confined to nine villages of Rajendrapur, Horidebpur and Chandanpat unions under sadar upazila under Rangpur district.
2. There is no direct method for the measurement of the training needs of the rural women towards agricultural activities.
3. The characteristics of the rural women in the study area were many and varied but only ten characteristics as stated in the objectives were selected for investigation in the study.
4. Although there were many agricultural aspects that could be undertaken in the study but, the training needs of the respondents were measured on the basis of two selected aspects.
5. For information about the study, the researcher depends on the data furnished by the randomly selected rural women during interview with them.

1.7 Definition of Important Terms: Certain key terms related to the investigation are defined below for clarity of understanding.

Training is the process of upgrading knowledge and skills and changing attitude on an individual towards a particular job.

Training need is the assessment of needs for training for training of rural women in relation to a particular subject matter by evaluating their knowledge, skill and attitude in that subject matter.

Training need in agricultural activities refers to one's need for gaining knowledge and skills regarding different aspects of agricultural activities. In this study training need of the rural women was studied in two selected agricultural aspects namely homestead vegetable cultivation and dairy and poultry management.

Statement refers to the opinion of a respondent which reflect her judgment about different aspects either positively or negatively.

Age of a rural woman referred to the period of time spent by him starting from birth to the time of interview.

Education refers to the development of desirable knowledge, skill and attitude of a respondent through the experience of reading, writing and observation of related matters.

Farm size refers to the total area, on which a rural woman carries on farming operations, the area being estimated in terms of full benefit to her family.

Daily time use connects extent of time used by the rural women in a day for different selected activities.

Credit received of a respondent was defines as the degree to which her credit requirement was fulfilled by the amount of credit actually received by her during last year.

Annual income is defined as the total earning of an individual and thee members of her family both from agriculture and other sources.

Extension contact refers to the individual exposure to or contact with information sources and personalities used for technology dissemination among rural women.

Decision making is a process of making up mind by an individual to achieve some desired goal. Decision making is a process of consciously choosing courses of action from available alternatives and integrative them from the purpose of achieving the desired goal. The decision is made on the basis of information. Decision making process is composed of four steps, such as, intelligence, design, choice and review. It is also associated with alternative solutions (Ray, 2011).

Agricultural knowledge is the sum of the respondents' body of information regarding different issues of agriculture, which based on their own experience, training and education.

Attitude towards technology refers to the belief, feeling and action tendencies of the respondents towards modern agricultural activities.

CHAPTER 2

REVIEW OF LITERATURE

This Chapter deals with the review of available literature related to different dimensions of the present study. Various books, journals, reports, MS and PhD thesis were the source of literature review. Massive help was obtained from Internet web site which was the main source of literature of the present study. This Chapter has been presented in several sections which are as follows:

2.1 Concept of Training

Training means to educate a person so as to be fitted, qualified, and proficient in doing some job. Training includes education which means at bringing desirable changes in the behavior of the trainee/learners. This change requires a change in the knowledge, skill, attitude, values, beliefs and understanding; so that he fits in his job and become qualified and proficient in communicating the desirable knowledge to her/his client system. Training is not only the idea of knowledge received, but that of such knowledge digested through application, drill and discipline. It means getting a man to do a job correctly and effectively with the intention that she/he can do or apply what she/he has learnt effectively, in order that he can produce the desired results and contribute to the welfare of the organization. In its wider sense training may be defined as:

- Training is the process of improving the knowledge and skill, and of changing the attitude of an incumbent for doing a specific job.
- An activity which deliberately attempt to improve a person's skill of a task.

The aforesaid views are not acceptable today too many in views of the present state of knowledge and practice of training. A middle course has been followed in defining training by modern authors. A few of such modern concepts of training include the following:

- Training is the formal procedure which a company uses to facilitate employees' learning so that their resultant behavior contributes to the attainment of the company's goals and objectives.
- Training is accepted as synonymous forms of knowledge, skills and attitude development which an individual needs to keep pace with accelerating involvement and enlarging concepts of man's capabilities.

The above definitions reveal certain important characteristics of training as follows:

1. Training develops skills for a specific topic.
2. It is a short term process.
3. It has practical application i.e. used in field level.

4. Its' area is limited.
5. It increases knowledge about specific subject.
6. Training = skill + knowledge + attitude

2.1.1 Designing training programs

There are several factors that must be taken into account in the task of developing a training plan. Regarding the identified training needs, the training developers organize the competences and the learning outcomes in to modules. Each module includes its training objectives, learning outcomes, syllabus and methodologies. It is extremely important that the training objectives, learning outcomes and syllabus are clearly defined and known in advance by learners.

The training methods should be appropriated to the learning outcomes and should be defined according to the targeted people. In the definition of the training methods the training developers must have in mind some principles of how adults learn, such as:

- a) **Principle of readiness** – are the users ready to learn or preparation work is required;
- b) **Principle of association** – build upon existing skills, keep training in context;
- c) **Principle of involvement** – active participation is more effective that just listening;
- d) **Principle of repetition** – aids memory, stresses importance of key points;
- e) **Principle of reinforcement** – positive, enthusiastic feedback from the trainer.
Reward effort and provide constructive feedback.

2.2 Reviews on General Context of Training Needs

In this section, training needs of individuals and other related matters are presented below:

Prajapati, *et al.*, (2015) in their study reported that majority of respondents prefer to receive training on oil engine repairing and micro irrigation system followed by seed production and control measures of pest and diseases.

Singh *et al.*, (2015) in their study reported that identification of different pest and pesticides emerged as the most needed training area followed by diagnostics. Among crop specific training need, vegetable crops ranked first followed by rice. Training in computer and its application in business is another preferred area. Lack of capital, lack of need based training, seasonality in the business of pesticide were some of the constraints identified by the pesticide retailers in south 24 Paraganas.

Tyabo *et al.* (2015) reported that the major livestock management activities undertaken by the respondents were feeding and watering of livestock (89.74 percent), cleaning and maintenance of livestock sheds (82.91 percent) and construction of livestock sheds (67.52 percent). The priority areas of training needs with high mean score were how to identify sick

animals (3.94), how to identify symptoms of common diseases (3.84), how to treat common animal diseases (3.83) and how to select good breeds of livestock (3.76).

Kavithaa and Rajkumar (2014) observed that the extension agencies to develop suitable training modules for the dairy farmers in improved dairy farming practices to improve their milk production and make the dairying a successful enterprise.

Kavithaa and Rajkumar (2014) revealed that with respect to major domain viz., breeding, feeding, health care, management and clean milk production practices, majority of the respondents perceived repeat breeding management, preparation of balanced ration for their animals at the cheaper rate, vaccination and hygienic method of clean milk production as the most important training need areas. The study implies that respondents were interested to receive training on improved dairy farming practices for their betterment and society as well.

Yashoda and Sunitha (2014) observed that about 16 main areas in which rural women needed training were finalized for the study in consultation with village development officer and subject matter specialist in agricultural extension education. From the assessment it is observed that the rural women needed training most and which ranked first was the control system for irrigation, fertilization and microclimate.

Rokonuzzaman (2013) revealed that majority (52 percent) of the tribal people had medium training need compared to 39 percent of them had high training need in case of homestead vegetable production. As regards to their training needs in livestock & poultry rearing, the majority (55 percent) of the tribal people had high training needs compared to 36 percent of them having medium training needs.

Yesmin (2013) reported that the highest portion (56.7 percent) of the respondents had high extent of training needs while 42.2 percent of the respondents had medium and only a negligible portion (1.1 percent) had low extent of training needs on integrated fish farming.

Chawang and Jha (2010) revealed that majority of the farmers had medium level of training needs. Plant protection measures, subject matter relating to loan and intercultural operation were the top most training needs of the farmers and the least training need was identified in the subject related to nursery raising.

Bajpai *et al.* (2007) conducted a study on training need of rice growers and revealed that the major areas of training needs of the rice growers were plant protection measures, seed treatment, fertilizer management and improved varieties of seeds.

Rajput *et al.* (2007) in his study revealed that majority of the BT cotton farmers have high (57.50 per cent) training needs. The farmers were expressed their training needs on features of Bt cotton technology followed by insect scouting, manures and fertilizer, Bt cotton varieties, harvesting and marketing of BT cotton.

Rasel (2004) found that the *adibasi* people training needs on establishment of nursery is an important potential activity for the *adibasis* for increasing their family income leading to better livelihood.

Shaha (2003) revealed that the largest portion (64 percent) of the farmers had high training needs for System of Rice Intensification (SRI) programs, while 36 percent had medium training needs for SRI.

Supekar (2002) mentioned that to enable women to undertake the agricultural programs, it is very essential that specific need based training courses are to be prepared and conducted. These training programs shall include cropping management patterns, agro-processing and preservation, marketing, packaging, seed collection and selection, nursery activities, forestry, appropriate low-cost technology, organic farming etc.

Taley and Taley (2000) observed that about 16 main areas in which rural women needed training were finalized for the study in consultation with village development officer and subject matter specialist in agricultural extension education. From the assessment it is observed that the rural women needed training most and which ranked first was the control system for irrigation, fertilization and microclimate. Second area which needed training suggested by rural women was structure, ventilation and cooling systems.

2.3 Training Needs of the Rural Women

Due to the increasing responsibilities of women for household well-being they are considered as effective vehicles for ensuring household food security. Women also play a central role in determining intra-household food security and nutrition for individual family members. It is necessary to initiate women-focused development programs including involvement at a larger scale of women in ever increasing economic activities through better access to provide resources, inputs and services. Women have less access to extension services and vocational training, credits and technologies.

Patel *et al.*, (2015) in their study observed that areas of training needs expressed by the tribal respondents in the field of agriculture were identification of common pest and diseases and its control, method and time of fertilizer application, treatment of seeds, method of treatment, storage of food grains, preparation of farmyard manure selection of seeds, uprooting of the seedlings, and distance of sowing in sequential order. It was also observed that areas of

training needs expressed by the respondents in the field of animal husbandry were awareness about primary treatment of common diseases, management of milch animals, planning of animal feed, storage and cultivation fodder crops, importance of water for animal, preparation of good curd and ghee, symptoms of animal during heat, information about artificial insemination, care of cross bred cows, methods of milking in sequential order.

Pandya *et al.*, (2014) in their study observed that *the majority of the farm women prefer to receive training on specific areas like profitable farming of field crops (Rank I), family health and hygiene (Rank II) and storage of food grain and pulses (Rank- III).*

Patel *et al.*, (2013) in their study observed that farmers have shows interest in training regarding breeding, feeding, management, fodder production where as they shown less interest in animal health care practices as it is highly technical in nature and require expert advice.

Gupta *et al.*, (2012) in their study revealed that increased contacts with friends and relatives resulted in greater willingness to send female wards for off-campus trainings, whereas contacts with neighbors, friends and relatives discouraged head of family to send their female wards for on-campus (with staying) training program. Similarly those who had greater contacts with friends and relatives were less willing to send their female wards for on-campus training program (without staying) while exposure to radio encouraged them to do so.

Iftikhar *et al.*, (2009) observed that the majority of the women were involved in crop production activities such as cotton picking, wheat harvesting and drying of agriculture produce at the ordering of 1st, 2nd and 3rd respectively. In livestock sector, activities like whey making, milking, milk storage are the top three activities performed by women. The study also depicted an encouraging response against gender bias in fields like education and training. Most of the women selected daily training format for their skill enhancement. Instead of sociological constraints of the area, the dire need of the women is training and education in crop production activities, livestock management, poultry production and drying of fruits and vegetables.

Durgga and Subhadra (2009) in their study found that out of the five major farm operations studied, the farm women needed training the most in housing. The minor operations preferred the most for knowledge need were proper design of cattle shed, selection of breeds, compounding balanced feed using locally available ingredients, vaccination and banking and insurance. As for skill need, construction of scientific low cost cattle shed, selection of breeds, compounding balanced feed using locally available ingredients, symptoms of common diseases and banking and insurance were preferred the most.

Yesmin (2007) reported that the highest portion (92.4 percent) of the rural women had high training need for participating in income generating activities of SUS, while 6.6 percent had medium training needs for income generating activities of SUS.

Supekar (2002) mentioned that to enable women to undertake the agricultural or other income-generating programs, it is very essential that specific need based training courses are to be prepared and conducted. These training programs shall include cropping management, agro-processing and preservation, marketing, packaging, advertisement for entrepreneurship development, seed collection and selection, nursery activities, forestry, appropriate low-cost technology, organic farming etc.

Mondal (2000) conducted a study on rice post harvest activities and their training needs revealed that participating in rice post harvest activities, 53 percent respondents felt medium training needs compared to 29 percent and 18 percent, who felt low and high training needs respectively.

Verma *et al.* (1992) stated that in India, women have a crucial role to play in post harvest technology particularly in areas related to winnowing and storage of grains. However, little attention has been paid to food losses. It is suggested that proper handling and management needs to be taught systematically to rural women. A study of needs of training in Post Harvest Technologies (PHT) for farm women was launched which covered the involvement of women in operations, the effectiveness of the messages on PHT transmitted in terms of knowledge gain and associated factors influencing knowledge acquisition and attitudinal change.

2.4 Relationship of Selected Characteristics of the Rural Women with Training Needs in Modern Agricultural Activities

Very few studies dealing with relationships of personal characteristics and their training needs were available as evidenced from available literature. However, attempts have been made to present the reviews in this section.

2.4.1 Age and training needs

Yashoda and Sunitha (2014) observed that age had significantly negative correlation with training needs.

Rokonuzzaman (2013) found that there was no significant relationship between age and training need of tribal people regarding income generating activities.

Yeasmin (2013) reported that there was non-significant relationship between age of the fish farmers with their extent of training needs.

Chawang and Jha (2010) revealed that age of the Paddy Cultivators in Nagaland had negative significant relationship with the training need.

Rajput *et al.* (2007) revealed significant positive relationship between age and training need on BT cotton technology.

Yesmin (2007) concluded that there was significant but negative relationship between age of rural woman and their extend of training needs.

Ahsan (2004) found non-significant relationship between age of the Sub-assistant Agricultural Officer and their training needs. Similar findings were revealed by Rasel (2004) in his study.

Taley and Taley (2000) observed that age had significantly negative correlation with training needs.

Mondol (2000) concluded that there was no relationship between age and training needs for rice pest harvest activities.

Most of the findings indicate the relationship between age and training need had negative relationship. Some studies indicate no definite relationship between the age of the rural women and their training needs. However, there was a need to investigate the relationship between age of the rural women and their training needs in modern agricultural activities.

2.4.2 Education and training needs

Yashoda and Sunitha (2014) observed that the education had positive and significant correlation with training needs in selected areas.

Rokonuzzaman, (2013) revealed that farmers' education showed negative significant correlation with the training needs.

Yeasmin, (2013) reported that there was significant but positive relationship between year of schooling of the fish farmers had significant positive relationship with their extent of training needs.

Chawang and Jha (2010) revealed that education level of the paddy cultivators in Nagaland had no significant relationship with the training need.

Rajput *et al.* (2007) revealed significant positive relationship between education and training need on BT cotton technology.

Yesmin (2007) observed that there was significant but positive relationship between education of the rural women and their extent of training needs to participate in income generating activities.

Ahsan (2004) revealed that there was significant negative relationship between education of Block Supervisors and their training needs. A similar finding was also found by Shaha (2003) in his study.

Rasel (2004) concluded that there was a positive significant relationship between education of the *adibasi* people and their training needs for their income generating activities.

Taley and Taley (2000) observed that the education had positive and significant correlation with training needs in selected areas.

Most of the studies reviewed above indicate a positive relationship between education of the rural women and their training needs. Some studies indicate negative relationship between education of the respondent and their training needs. However, there was a need to investigate the relationship between the education of the rural women and their training needs in modern agricultural activities.

2.4.3 Farm size and training needs

Yashoda and Sunitha (2014) observed that land holding had positive and significant correlation with training needs in selected areas.

Rokonuzzaman (2013) revealed that farmers' farm size showed negative significant correlation with the training needs.

Yesmin (2007) reported that there was significant but positive relationship between farm size of the rural women and their extent of training needs to participate in income generating activities.

Rasel (2004) observed that there was significant and negative relationship between farm size of the *adibasi* people and their training needs in carrying out income generating activities.

Taley and Taley (2000) observed that the land holding had positive and significant correlation with training needs in selected areas.

Most of the above findings indicate a positive and some indicate negative relationship between farm size of the rural women and their training needs. However, there is a need to investigate the relationship between the farm size of the rural women and their training need in modern agricultural activities.

2.4.4 Daily time use and training needs

Fakir (2008) concluded that there was significant and positive relationship between daily time use of the women and their extent of training needs to participation in income generating activities.

Attempt has been made to search out past studies but there was no related literature to the present topic except the above single one. Therefore, daily time use and training need has to be investigated.

2.4.5 Credit received and training needs

Yeasmin (2013) found non-significant but positive relationship between credit receive and training needs of the contact catfish farmers.

Yesmin (2007) reported that there was significant but positive relationship between credits received of the rural women and their extent of training needs to participate in income generating activities.

Rasel (2004) concluded that there was significant and positive relationship between credits received of the *adibasi* people and their extent of training needs for income generating activities.

An attempt has been made to search out past studies, and the evidences were not enough to conclude anything about the relationships between the concern variables. Thus, there was a need to the relationships between credit received of the rural women and their training needs in modern agricultural activities.

2.4.6 Annual income and training needs

Rokonuzzaman (2013) revealed that farmers' annual income showed negative significant correlation with the training needs.

Yeasmin (2013) reported that there was non-significant relationship between annual income of the fish farmers had significant positive relationship with their extent of training needs.

Rajput *et al.* (2007) revealed significant positive relationship between annual income and training need on BT cotton technology.

Yesmin (2007) reported that there was non-significant but positive relationship between annual family income of the rural women and their extent of training needs to participate in income generating activities.

Rasel (2004) stated that annual income of the *adibasi* people was significant and negatively correlated with their and their training needs in income generating activities.

The findings of different studies stated above indicate that the relationship between annual incomes has not been definitely established. Some studies indicate a positive and some indicate negative relationship between annual income of the rural women and their training needs. However, there is a need to conduct further study to establish the relationship between the annual income and training needs in modern agricultural activities in the context of Bangladesh.

2.4.7 Extension contact and training needs

Rokonuzzaman (2013) concluded that there was no significant relationship between extension media contact and training need of tribal people regarding income generating activities.

Yeasmin (2013) reported that there was significant but positive relationship between communication exposures of the fish farmers had significant positive relationship with their extent of training needs.

Rajput *et al.* (2007) found non-significant relationship between extension contact and training need on BT cotton technology.

Yesmin (2007) reported that there was non-significant but positive relationship between communication exposure of rural women and their extent of training needs to participate in income generating activities.

Rasel (2004) stated that that there was non-significant and positive relationship between communication exposure of the *adibasi* people and their extent of training needs to participate income generating activities.

The studies available regarding relationship between extension contact and training needs revealed mostly the positive association between these two variables. However, there is a further need to investigate the relationship between extension contact of the rural women and their training needs in modern agricultural activities.

2.4.8 Decision making ability and training needs

Sharma *et al.* (2014) in their study observed that 58.33 percent of the respondents were in low category of decision making followed by medium decision making of 22.50 percent and high decision making with 19.17 percent respectively. The study of Goswami *et al.* (2004), Praveena (2005), and Kavita (2006) also found that the more number of farm women in agricultural activities taken low decision making involvement, in this respect the present study is conformity with these findings.

An attempt has been made to search out past studies but there were not enough to conclude anything about the relationships between the concern variables. Thus, decision making ability of the rural women and training need has to be investigated.

2.4.9 Agricultural knowledge and training needs

Rokonuzzaman (2013) revealed that farmers' agricultural knowledge showed negative significant correlation with the training needs.

Yeasmin (2013) reported that there was significant but positive relationship between knowledge on integrated fish farming of the fish farmers had significant positive relationship with their extent of training needs.

Chawang and Jha (2010) revealed that knowledge level of the Paddy Cultivators in Nagaland had no negative significant relationship with their training need.

Renudevi *at el.* (2008) reported that knowledge of experimental group exhibited significant association with training attended. Training attended in control group also showed the same trend.

The findings of different studies stated above indicate that the relationship between agricultural knowledge has not been definitely established. Some studies indicate a positive and some indicate negative relationship between agricultural knowledge of the respondents and their training needs. However, there is a need to investigate the relationship between the agricultural knowledge of the rural women and their training need in agricultural activities.

2.4.10 Attitude towards technology and training needs

Parul (2014) reported that that there was no significant relationship between attitude towards RDRS activities and agricultural training received.

Begum (2014) observed that that there was no significant relationship between attitude towards NGOs and training received, similar results was also found by Sufian (2012).

Islam (2014) reported that there was significant but positive relationship between attitude towards Pollisree and training received.

Noman (2012) in his study observed that training received and attitude towards PAB of the respondents showed negative significant relationship.

An attempt has been made to search out past studies, and the evidences were not enough to conclude anything about the relationships between the concern variables. Thus, there was a need to the relationships between attitude towards technology of the rural women and their training needs in modern agricultural activities.

2.5 Conceptual Framework of the Study

The conceptual framework of Rosenbarg and Hovland (1960) was kept in mind while framing the structural arrangement for the dependent and independent variables. This study was concerned with the training needs for rural women in modern agricultural activities.

Thus, training needs in modern agricultural activities for the rural women was the dependent variable and ten selected characteristics of the rural women were considered as the independent variables. It is not possible to deal with all explanatory variables in a single study. It was therefore, necessary to limit the explanatory variables, which included age, education, farm size, daily time use, credit received, annual income, extension contact, decision making ability, agricultural knowledge, and attitude towards technology. To measure the dependent variable two dimensions namely; 'homestead vegetable cultivation' and 'dairy and poultry raising' were considered. There were 20 selected activities considered in which 10 under 'homestead vegetable cultivation' and the other 10 were in 'dairy and poultry raising'. Training needs is conceptualized as to constitute with the training needs in 10 selected activities in homestead vegetable cultivation namely; i) selection of quality seed and seedling of vegetable, ii) seedbed preparation seed sowing and seedling raising, iii) seedbed preparation, iv) land preparation and seedling transplantation, v) soil and fertilizer management, vi) irrigation and drainage management, vii) insect and disease control, viii) vegetable harvesting, preservation and marketing, ix) identification of beneficiary insect, x) measures of disease control. On the other hand, the 10 selected activities in dairy and poultry raising were i) breed selection and housing of livestock, ii) dairy products preservation and marketing, iii) livestock feed management, iv) beef fattening, v) disease control of dairy, vi) breed selection and housing of poultry, vii) poultry products preservation and marketing, viii) poultry feed management, ix) disease control of poultry, and x) pig rearing. Based on the findings of this study it is necessary to implement training in this regard which is not concerned in this study.

In the light of the above discussion and review of literature the conceptual framework has been developed by the researcher in order to facilitate the conceptualization of the study. The solid one-way arrow indicates the cause-effect relationships which have been investigated and the broken one-way arrow indicate the relationships which have not been investigated in the present research work. However, the conceptual is self explanatory and is presented in Figure 2.1.

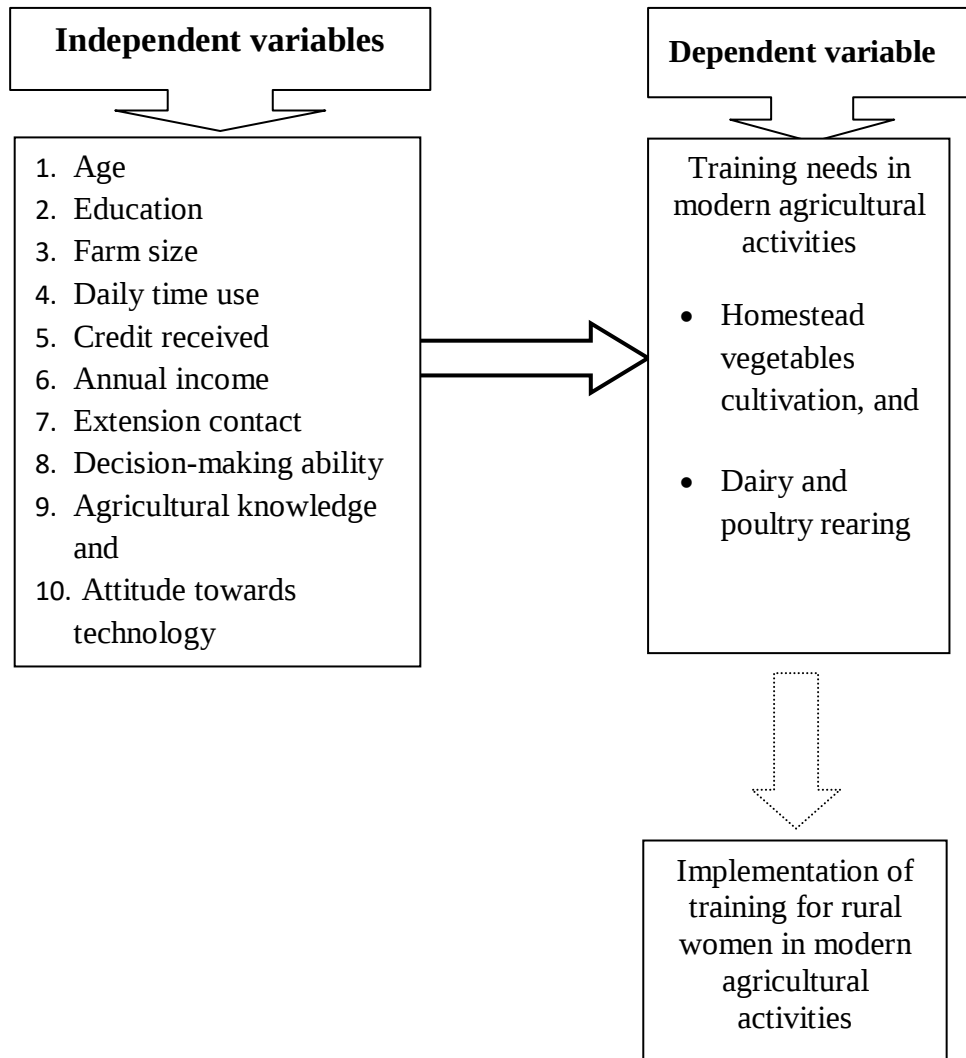


Figure 2.1 Conceptual framework of the study

CHAPTER 3

METHODOLOGY

Methodology deals with the methods and procedures for collection and analysis of data. That is why, methodology is always very important in conducting any scientific investigation. It deserves very careful consideration on the part of the researcher. Appropriate methodology helps the researcher to collect valid and reliable information and to analyze the same (information) to arrive at correct decisions. A chronological description of the methodology followed in conducting this research work has been presented in this Chapter.

3.1 Methodological Approach and Research Design of the Study

Research design means the plan, structure and strategy of investigation conceived so as to obtain answer to research question and control variance (Kerlinger, 1996). Designing the research for the present study was taken in a scientific manner. Firstly, different research themes are collected and analyzed followed by research problem formulation. Reviews were studied to select appropriate variables and preparation of questionnaire. Pretesting of the interview schedule was done before final data collection. At last data were collected, analyzed and report was prepared. An explanatory and cross sectional research design was used in this research (Figure 3.1).

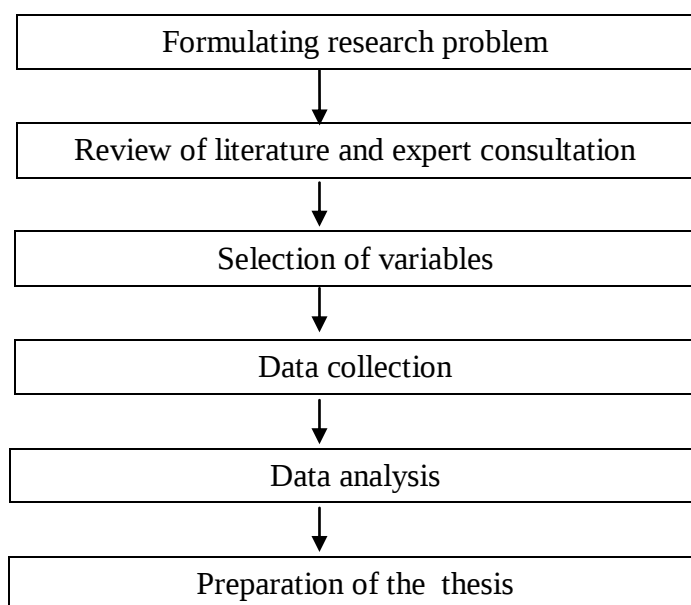


Figure 3.1 Research design of the study

3.2 Locale of the Study

The study was conducted in Sadar Upazila under Rangpur district. There were 11 unions in Rangpur Sadar Upazila out of which three unions namely Rajendrapur, Horidevpur and Chandanpat were selected purposively as the study area. Among the villages of the selected

unions Jogodishpur, Boktiarpur, Radha Krishnopur under Rajendrapur union; Balapara, Moddhya Horidevpur and Fokiran villages under Horeidevpur union and Shalmara, Jolapara and Ishwarpur villages under Chandanpat union were purposively selected due to the reason that women involvement in agricultural activities of these areas was higher than other areas of Rangpur sadar upazila. Rangpur Sadar upazilla located in between 25°39' and 25°50' north latitudes and in between 89°05' and 89°20' east longitudes. It is bounded by [Gangachara](#) upazila on the north, [Mithapukur](#) upazila on the south, [Kaunia](#) and [Pirgachha](#) upazilas on the east, [Taraganj](#) and [Badarganj](#) upazilas on the west. A map of Rangpur district including its upazila as well as Bangladesh (inset) and a map of Rangpur sadar upazila showing the study area (Figure 3.2 and Figure 3.3).

3.3 Sampling Procedure

Multi-stage random sampling procedure was followed in this study. Rangpur district was at first purposively selected. Secondly, Sadar upazila of Razngpur district was also purposively selected due to investigator's familiarity of the area, language and culture, and maximum involvement of the rural women in modern agricultural activities. Three unions of Rangpur sadar upazila namely; Rajendrapur, Horidevpur and Chandanpat were selected by random sampling procedure from 11 unions. These unions consist of 119 villages in which 32 villages are under Rajendrapur union, 41 villages are under Horidevpur union and 46 villages are under Chandanpat union. In total nine villages (there from each union) were selected from these unions by using random sampling (Table 3.1).

Table 3.1 Distribution of population and sample size of rural women

Union	Village	Population	Sample size	Reserve list
1. Rajendrapur	i) Jogodishpur	40	12	01
	ii) Boktiarpur	30	11	01
	iii) Radha Krishnopur	30	12	01
2. Horidevpur	i) Balapara	40	12	01
	ii) Moddhya Horidevpur	30	11	01
	iii) Fokiran	30	12	01
3. Chandanpat	i) Shalmara	40	12	01
	ii) Jolapara	30	11	01
	iii) Ishwarpur	30	12	01
Total		300	105	09

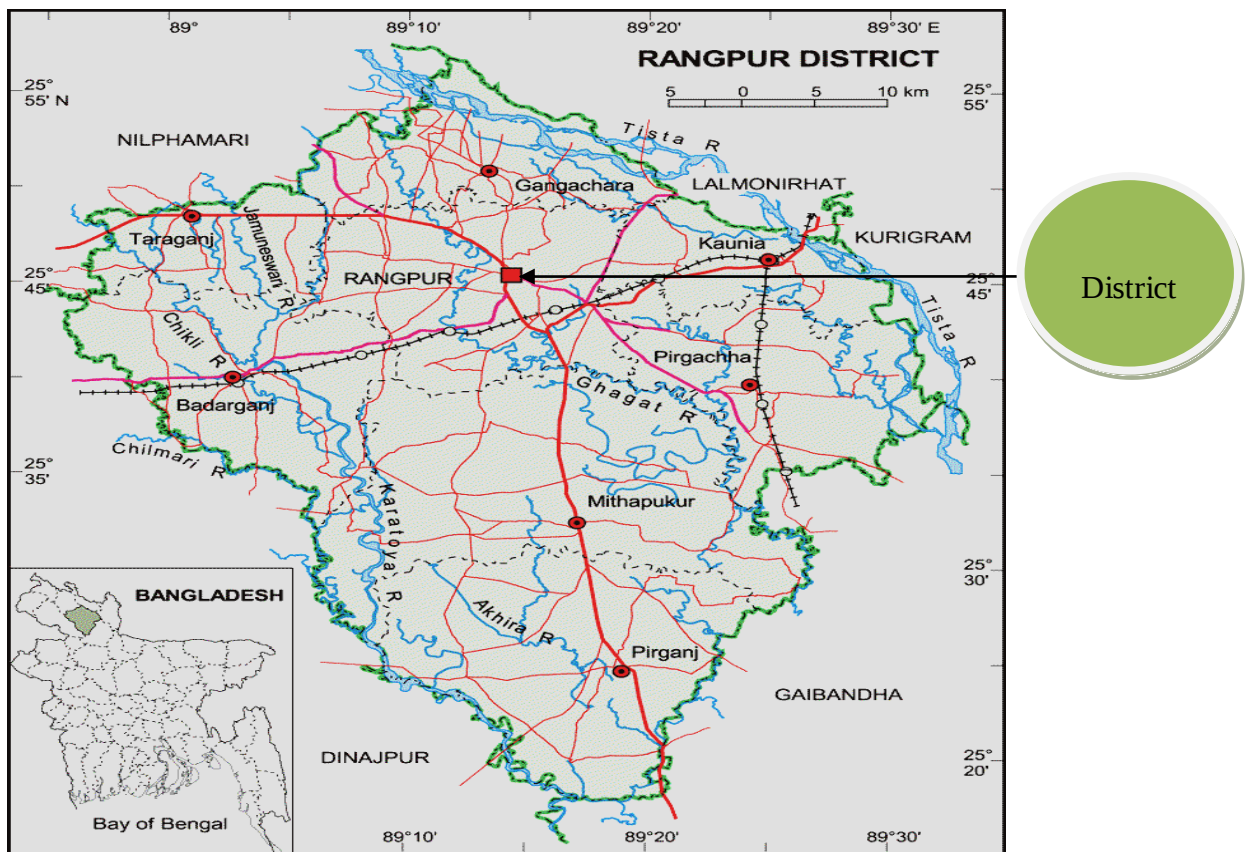


Figure 3.2 Map of Rangpur district (Bangladesh insert

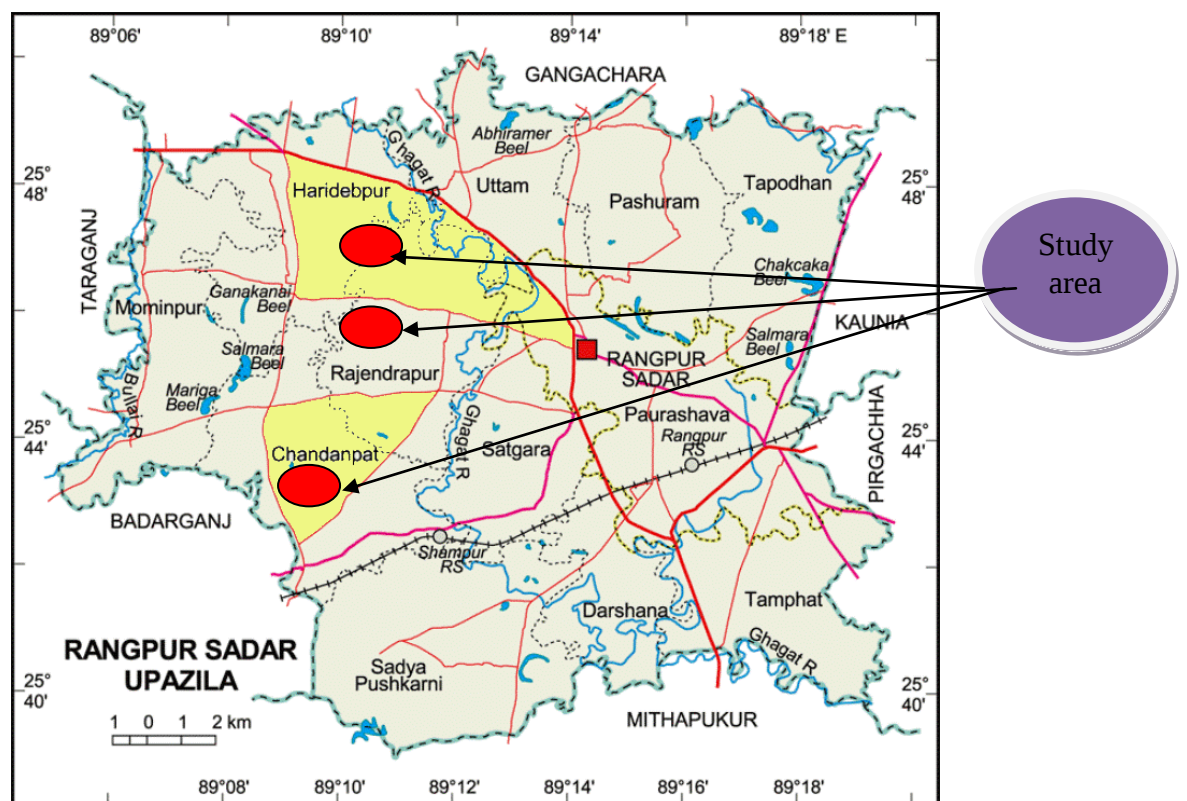


Figure 3.3 Rangpur sadar upazila showing study area

An up-to-date list of women was prepared with the help of RDRS office. Total number of rural women in these nine villages was 300, out of which 105 (about 35 percent) were selected as the sample by using random sampling procedure. A reserve list of nine farmers (about 10 percent) was prepared so that these farmers could be used for interview in case any women included in the original. The detailed plan of selected and distribution of population and sample are shown in Table 3.1.

3.4 Instrument of Data Collection

A structured interview schedule was used for collection of relevant data from the selected rural women engaged in agricultural activities for the study. Closed form questions were included in the schedule. Simple and direct questions were also included to ascertain the opinions of the women regarding a number of aspects. Scales were developed to determine the training needs for the rural women in modern agricultural activities. The draft interview schedule was prepared in harmony with the objectives of the study. The interview schedule was pretested with 10 respondents. Necessary corrections, additions and modification were made in the interview schedule based on the pretest results. The modified and corrected interview schedule was then printed in final form (*Appendix-A*).

3.5 Variables and their Measurement Techniques

3.5.1 Measurement of independent variables

Ten personal characteristics namely; age, education, farm size, daily time use, credit received, annual income, extension contact, decision making ability, agricultural knowledge, and attitude towards technology of the rural women were considered as independent variables. In order to conduct the study in accordance with the objectives, it was necessary to measure the selected independent variables. The procedures followed in measuring the independent variables have been discussed in this section.

Age of the respondents was measured in terms of actual years from her birth to the time of interview. The respondents were asked to mention their age in terms of completed years. One score was given for one completed year of age (*Appendix-A*).

Education was measured as the ability of the respondent to read or write or the formal education received up to a certain standard. A score of zero (0) was given to a respondent who could not read or write, a score of 0.5 was given to the respondent who could sign only and a score of one (1) was give for each year of formal schooling completed by the respondent e.g. one (1) for completed class I, two (2) for class II, and so on.

Farm size was measured by the area of the raised land in which the household of the rural women had its entire dwelling unit including homestead, area under cultivation and others (Fakir, 2008). It was expressed in hectare. The total area of land thus obtained has been considered as farm size of the respondent. It was measured using the following formula:

$$\text{Farm size} = A + B + C$$

Where,

A = Homestead Area

B = Area under cultivation

C = Others (if any)

Daily time use of a respondent was measured by a 4-point rating scale including the extent of use of time in respect of different activities in a day. Each respondent was asked to indicate the extent of time use by checking only one of the responses. The responses were quantified as 'nil'=0, 'partially'=1, 'occasionally'=2, 'sufficiently'=3 (Fakir, 2008). The score obtained by a woman for all the items were added together to determine her time use in different activities. The daily time use score of a woman could vary from 0 to 24 while 0 indicated no time use and 24 indicated sufficient time use (item no. 5, Appendix-A).

Credit receive by the respondent was measured in terms of amount of money received by her as loan from different organizations and persons under their specific terms and conditions. A score of one (1) was given for each thousand Taka (Fakir, 2008).

Annual income was total income earned by the respondent and other members of her family from agricultural and non-agricultural sources. It was measured in 'thousand' taka per year generated from both the sources.

Extension contact of the rural woman was measured by computing scores based on her frequency of communication with 12 different media. These are family members, relatives, local leaders, SAAOs, AEO, NGO workers, NGO officers, union information & service center, cell phone, TV, poster and leaflet. This variable has been presented in item no. 7 of the interview schedule (Appendix-A). The extension contact was determined by using 4-point rating scale namely 'never', 'somewhat', 'often' and 'regularly' and score was assigned as 0, 1, 2 and 3 respectively. The extension contact score of the rural woman could range from 0 to 36, where 0 indicates no extension contact and 36 indicates very high extension contact.

In order to measure **decision making ability** of the respondent 3-point rating scale was used. Fourteen statements on different areas of agricultural and other activities were asked to the rural women. There were three options to response a decision making area, such as 'decision taken alone', 'joint decision with husband', and 'decision taken by husband alone' and the

corresponding score given as 3, 2, and 1 respectively. The decision making ability was computed against each 14 statements and finally added together to get a decision making score. The score ranged from 14 to 42, where 14 indicating no decision or no influence can be made on the decision by a rural woman, while 42 indicated the decision was taken by the wife alone in the family (Islam, 2005).

Agricultural knowledge was measured by computing on agricultural knowledge score based on sixteen questions on different aspects of agriculture. The question carried a full weight of 2 to 3. Full score was given to a respondent for each correct and full answer and '0' was assigned for no answer and partial score were given for partial correct answer (item no.9, Appendix-A). The agricultural knowledge scores of the respondents could range from 0 to 40, where 0 indicating no knowledge and 40 indicating very high agricultural knowledge.

Attitude towards technology was measured through a 5-point Likert scale. Ten statements on various aspects of modern agricultural activities and training were asked to the rural women. The positive and negative statements were arranged randomly in the schedule in order to achieve the real picture of attitude of women. There were five options to response a statement, namely 'strongly agree', 'agree', 'undecided', 'disagree', and 'strongly disagree' with a corresponding score of 5, 4, 3, 2, and 1 respectively for the positive statement and the scoring was reversed for the negative statement. A respondent was asked to indicate her attitude regarding a statement by selecting the appropriate option. The attitude score of a respondent was computed by summing the score for her responses to all the statements. Hence, scores of a respondent could range from 10 to 50; 10 indicating highly unfavorable attitude and 50 highly favorable attitudes towards agricultural activities.

3.5.2 Measurement of dependent variable

Training needs for the rural women in modern agricultural activities was the dependent variable of the present study. To measure the training need of the respondents in modern agricultural activities, two dimensions of agricultural activities viz., homestead vegetables cultivation, and dairy and poultry rearing were considered. The similar methodology was used by Yesmin, (2013).

Twenty specific activities were included under these two dimensions to measure the training needs of the rural women. The respondents were asked to indicate the extent to which she needed training to perform the activities properly along a 4-point rating scale: 'not essential', 'less essential', 'essential' and 'very essential'. These responses were given weights as 0, 1,

2, and 3 respectively. The respondents indicate their perceived importance for each of the activities by putting tick mark against the assigned scales. Training need of an individual on each activity was determined by adding the perceived importance scores and sum of the scores of 20 activities were computed as the training need score of an individual. Training needs of an individual on each activities were determined by adding the scoring in total score column. The scores of the two dimensions formed the total score of the training needs of rural women in modern agricultural activities for each respondent. Thus, the training need of a respondent could range from 0 to 60, where zero (0) indicated no training need at all and 60 indicated, highest level of training need. The training need index on modern agricultural activities was also measured mathematically and expressed in the following ways:

$$\text{Training Need Index (TNI)} = N_{ne} \times 0 + N_{le} \times 1 + N_e \times 2 + N_{ve} \times 3$$

Where,

N_{ne} = Number of respondents with training not essential

N_{le} = Number of respondents with training less essential

N_e = Number of respondents with training essential

N_{ve} = Number of respondents with training very essential

The possible score could range from 0 to 315.

3.6 Hypothesis

A hypothesis is a proposition, which can be put to a test to determine its validity (Goode and Hatt, 1981). According to Kerlinger (1973) a hypothesis is a conjectural statement of the relation between or more variables. In broad sense hypothesis are divided into two categories: (a) Research hypothesis, and (b) Null-hypothesis.

Research hypothesis: Research hypothesis (H_a) states anticipated relationships between concerned variables. Based on review of literature and development of conceptual framework, the research hypothesis was: ‘there are relationships between age, education, farm size, daily time use, credit received, annual income, extension contact, decision making ability, agricultural knowledge, and attitude towards technology of the rural women with their training needs in modern agricultural activities’.

Null hypothesis: Null hypothesis (H_o) states that there is no relationship between the concerned variables. Therefore, the null hypothesis of this study is ‘there are no relationships between each of age, education, farm size, daily time use, credit received, annual income,

extension contact, decision-making ability, agricultural knowledge, and attitude towards technology of the rural women and their training needs in modern agricultural activities’.

3.7 Collection of Data

Data were collected by the researcher himself using structured interview schedule through face-to-face contact. Researcher established desired rapport with the respondents before explaining the purpose of the research and collection of data. If any respondent failed to understand any questions, utmost care was taken to explain it as far as possible. In order to minimize error, the information of the respondents was carefully recorded and fully checked. Collection of data was started on 10 February 2015 and completed 11 March 2015.

3.8 Data Processing and Statistical Analyses

Qualitative data were converted to quantitative one wherever necessary. Data obtained from the respondents were first put to a master sheet, then compiled, tabulated and analyzed in accordance with the objectives of the study. Descriptive statistical methods like range, mean, percent distribution and standard deviation were used in describing the dependent and independent variables. For clarity of understanding, tables and graphs were used in presenting data. For exploring the relationship between the selected characteristics of the rural women with their training needs in modern agricultural activities Pearson’s Product Moment Coefficient of Correlation (r) was used. The analysis of data was performed using Statistical Package for Social Sciences (SPSS) computer program. Throughout the study, at least five percent (0.05) level of probability was used as a basis of rejecting a null hypothesis.

CHAPTER 4

RESULTS AND DISCUSSIONS

Training needs for the rural women in the modern agricultural activities and their profile characteristics have been presented in this Chapter according to the objectives of the study. Results have been discussed in relation to other similar studies whenever applied. The Chapter has been divided into three sections. The first section deals with the description of the characteristics of the rural women. Training need in modern agricultural activities of the

women in the 20 selected activities of training and the overall training needs of the rural women are discussed in the second section. Relationship between the dependent and independent variables have been described in the third section.

4.1 Selected Characteristics of the Rural Women

It was assumed in this study that the training needs for the rural women in modern agricultural of the rural women activities will be reversibly proportionate to their existing status. The researcher investigated the relationship of the training need for the rural women in modern agricultural activities with their selected characteristics namely: age, education, farm size, daily time use, credit received, annual income, extension contact, decision-making ability, agricultural knowledge, and attitude towards technology. These characteristics of the rural women have been presented in Table 4.1.

4.1.1 Age

Age of the rural women ranged from 25 to 47 years, with a mean of 34.88 and standard deviation 5.85. On the basis of their age, the rural women were grouped as ‘young’, ‘middle aged’ and ‘old’ are presented in Table 4.1.

Data contained in Table 4.1 reveals that relatively greater proportion of the rural women (70.48 percent) belongs to middle aged category followed by 25.71 percent had fallen into young category, and only 3.81 percent had old age category. Thus, it can be concluded that most of the rural women (96.19) percent were age between 25 to 50 years. A more or less similar finding was reported by Okwu and Umoru (2009). It is expected that young and middle aged rural women were more active, energetic and enthusiastic. They were the pioneer to adopt new ideas and technologies but old people are difficult to be motivated for adoption of modern agricultural practices.

Table 4.1 Descriptive statistics and percentage distribution of the respondents selected characteristics

Characteristics	Scoring method	Range	Categories	Respondents		Mean	SD
		Observed (Possible)		No.	%		
Age	No. of year	25-47 (Unknown)	Young (25-35)	27	25.71	34.88	5.85
			Middle aged (36-50)	74	70.48		
			Old (>50)	04	03.81		
Education	Year of schooling	0-9 (Unknown)	Illiterate (0)	17	16.19	3.67	2.77
			Can sign only (0.5)	18	17.14		

			Primary (1-5)	48	45.72		
			Secondary (>5)	22	20.95		
Farm size	Decimal	0.12-0.24 (Unknown)	Marginal (0.02-0.2)	93	88.57	0.17	0.0 3
			Small (0.21-1.00)	12	11.43		
Daily time use	Score	12-17 (0-24)	Short (12-13)	36	34.29	13.9 4	1.1 3
			Medium (14-15)	64	60.95		
			Long (>15)	05	04.76		
Credit received	('000' Tk.)	0-15 (Unknown)	No (0)	25	23.81	6.93	4.5 9
			Medium (3-12)	72	68.57		
			High (>12)	08	07.62		
Annual income	('000' Tk.)	7-16 (Unknown)	Low (Up to 8)	32	30.48	9.90	2.1 6
			Medium (9-12)	64	60.95		
			High (>12)	09	8.57		
Extension contact	Score	12-25 (0-36)	Low (≤ 16)	24	22.86	19.4 2	3.4 6
			Medium (17-23)	63	60.00		
			High (>23)	18	17.14		
Decision making ability		17-33 (14-42)	Low ability (≤ 19)	18	17.14	23.6 2	4.3 5
			Medium ability (20-28)	70	66.67		
			High ability (>28)	17	16.19		
Agricultural knowledge	Score	15-26 (0-40)	Poor (up to 18)	30	28.57	20.3 2	2.7 5
			Good (19-23)	60	57.14		
			Excellent (>23)	15	14.29		
Attitude towards technology	Score	29-43 (10-50)	Less favorable (≤ 33)	27	25.71	36.2 7	3.7 2
			Moderately favorable (34-40)	66	62.86		
			Highly favorable (>40)	12	11.43		

4.1.2. Education

Education of the rural women ranged from 0 to 9 years of schooling having mean value of 3.67 and standard deviation of 2.77. On the basis of their educational qualification, the rural women were classified into four categories namely: 'illiterate (0)', 'can sign only (0.5)', 'primary (1-5)', and 'secondary (>5)' (Table 4.1).

Data revealed that 45.72 percent of the rural women had primary level of education as compared to 20.95 percent secondary level, 17.14 percent can sign only, and just 16.19

percent have illiterate. More than four-fifths (83.81 percent) of the respondents were literate, where as the average literacy rate in Bangladesh is 62 percent (BBS 2013). This may be due the reason that the respondents were the member of different NGOs and they were taken initiatives to educate their members. It might help to improve their knowledge on modern agricultural practices. Education helps individuals to become rational, conscious and to get useful information to solve their daily working problems through different sources of information. However, Okwu and Umoru (2009) in their study showed that 35.4 percent of the respondents had no formal education; 40 percent had primary education; 18.5 percent had secondary education and 6.2 percent had tertiary education.

4.1.3. Farm size

Farm size of the respondents varied from 0.12 to 0.24 decimal. The average farm size was 0.17 with a standard deviation of 0.03. Based on farm size, the respondents were classified into two categories as ‘marginal (0.02-0.2)’ and ‘small (0.21-1.00)’ as shown in Table 4.1.

Data indicates that 88.57 percent of the rural women belonged to the marginal farm category and only 11.43 percent had small farm. The result indicates that most of the respondents were in the marginal farm category. It may be due to the reason that the respondents hold a small amount of cultivable land. On the other hand, it is a general trend of Bangladesh that farm size of the people decreased day by day due to land fragmentation through generation to generation. In order to have a reasonable standard of living these farmers must be able to have high yield of crops per hectare. Consequently, the rural women need adequate knowledge and skill in modern scientific farming and also adopt new agricultural technologies.

4.1.4. Daily time use

Daily time use scores of the rural women could range from 0 to 24, while the observed scores being 12 to 17. The average score was 13.94 having a standard deviation of 1.13. According to daily time use scores, the respondents were classified into three categories, such as ‘short (12-13)’, ‘medium (14-15)’ and ‘long (>15)’ (Table 4.1).

Data presented in Table 4.1 shows that the highest portion (60.95 percent) of the respondents was in medium daily time use category, followed by 34.29 percent were in short daily time use category and only 4.76 percent were in long daily time use category. Thus, most of the respondents (95.24 percent) time use had short to medium.

4.1.5. Credit received

Credit received sources of the rural ranged from 0 to 15 thousand taka and average was 6.93 with a standard deviation of 4.59. Based on the credit received, the rural women were

classified into three categories such as 'no (0)', 'medium (3-12)' and 'high (>12)' as shown in Table 4.1.

Data presented in the Table 4.1 indicates that the highest proportion (68.57 percent) of the respondents received medium amount of credit, while about one-fourths (23.81 percent) did not receive any credit, and only 7.62 percent received high amount of credit. However, about three-fourths (76.19 percent) of the rural women received credit from different financial organizations like bank, NGOs, village money lenders, neighbors, friends, youth development department and others. It is assumed that more organizational participation of the rural women might have more scope of getting credit.

4.1.6. Annual income

Annual income of the respondents ranged from 7 to 16 thousand taka with mean value of 9.90 and standard deviation of 2.16. On the basis of annual income, the respondents were classified into three categories i.e. 'low (Up to 8)', 'medium (9-12)', and 'high (>12)' (Table 4.1).

Data revealed that about three-fifths (60.95 percent) of the respondents having medium annual income, compared to 30.48 percent having low income and only 8.57 percent of them had high annual income. The findings indicate that 91.43 percent of the rural women had low to medium family income. The national per-capita annual income is Tk. 30.636 thousand and average family size 5.65 (BBS, 2012). Thus, the national average family income is Tk. 173.09 thousand, but average income of the study area was found Tk. 9.90 thousand. This might be due to the reason that the respondents were economically poor than the others people of Bangladesh.

4.1.7. Extension contact

Computed extension contact score of the rural women ranged from 12 to 25 with an average 19.42 and a standard deviation of 3.46. Table 4.1 contains the distribution of women according to their extension contact as 'low (≤ 16)', 'medium (17-23)', and 'high (>23)' as shown in Table 4.1.

The majority (60.0 percent) of the rural women had medium extension contact, while 22.86 percent of them had low extension contact. The proportion of rural women having high extension contact was 17.14 percent. More or less similar findings were reported by Okwu and Umoru (2009), Yahaya (2001), Rajah (1990), Matarmi (1991), and Osuman (1997).

Extension contact affects to one's contact with different source of knowledge and information. This results in cognitive change of the users with an ultimate change in behavior. The findings of the study indicate that a little more than four-fifths (82.86 percent) of the rural women had low to medium contact with various extension media. This may be due to the literacy and involvement with different NGOs of the rural women.

4.1.8. Decision making ability

Decision-making ability scores of the rural women ranged from 17 to 33, against the possible range of 14 to 42. The mean and standard deviation were 23.62 and 4.35 respectively. Based on decision making ability scores the rural women were classified into three categories viz. 'low ability (≤ 19)', 'medium ability (20-28)' and 'high ability (> 28)' as shown in Table 4.1.

It was evident that exactly two-thirds (66.67 percent) of the rural women had medium decision making ability, while 17.14 percent had low ability and 16.19 percent had high ability in decision making. The findings of the study revealed that more than four-fifths (83.81 percent) of the rural women had low to medium ability in decision making. As the highest proportion of the respondents had medium decision-making ability, these respondents can easily be handled by the extension personnel to disseminate any modern agricultural activities. The decision-making ability of an individual depends on her personality development, which is the outcome of various personality factors like education, extension contact etc. More is the achievement of those factors by an individual, higher would be the personality and the individual is likely to have high decision-making ability.

4.1.9. Agricultural knowledge

Agricultural knowledge score of the rural women ranged from 15 to 26 against the possible range of 0 to 40. The mean value of agricultural knowledge was 20.32 with a standard deviation of 2.75. On the basis of their agricultural knowledge, the rural women were classified into three categories such as 'poor (up to 18)', 'good (19-23)', and 'excellent (> 23)' (Table 4.1).

Data presented in Table 4.3 show that near about three-fifths (57.14 percent) of the respondents had good knowledge, compared to 28.57 percent belonged to poor knowledge

and 14.29 percent had excellent knowledge in different agricultural activities. The findings of the study revealed that more than four-fifths (85.71 percent) of the rural women had poor to good agricultural knowledge. Such findings are quite logical because of the respondents are closely attached with farming activities and these experience increase their agricultural knowledge. Proper training, guidance and increasing facility provided by GOs and NGOs may improve their agricultural knowledge. On the other hand, people especially in rural areas gather knowledge from their ancestor and surrounding environment where they live.

4.1.10. Attitude towards technology

Attitude towards technology score of the rural women ranged from 29 to 43 against the possible range of 10 to 50 with a mean and standard deviation of 36.27 and 3.72 respectively. Based on attitude scores, the respondents were classified into three categories i.e. 'less favorable (≤ 33)', 'moderately favorable (34-40)', and 'highly favorable (>40)' as shown in Table 4.1.

The findings reveal that the majority (62.86 percent) of the rural women had moderately favorable attitude towards **technology** followed by 25.71 percent had less favorable attitude, and only 11.43 percent had highly favorable attitude towards **technology**. Analysis of data indicates more than four-fifths (88.57 percent) of the rural women moderately to less favorable attitude **towards technology**. As the rural women had favorable attitude **towards technology**, they are participate in modern farming as well as other development activities also.

4.2 Training Needs in Modern Agricultural Activities for the Rural Women

Training needs of women in modern agricultural activities refers to one's need for gaining knowledge, changing attitude and developing skills regarding different aspects of successful production of agriculture. In this study, training needs of the rural women was studied based on two agricultural aspects namely homestead vegetable cultivation, and dairy and poultry rearing. There were 20 activities in these two aspects of modern agricultural activities.

4.2.1 Training needs in homestead vegetable cultivation for the women

Training needs of the rural women on different activities in homestead vegetable cultivation may be varied. The respondents were classified into four categories such as 'not essential',

‘less essential’, ‘essential’, and ‘very essential’ on the basis of their nature of opinion regarding training need index (TNI). The TNI were computed which ranged from 15 to 243 against the possible range of 0 to 315. The priority of each of the activity on homestead vegetable cultivation was made on the basis of TNI value (Table 4.2).

The findings on TNI indicates that the most important activities among the 10 subject matter areas was ‘measures of disease control’ of the women received highest score (TNI=243). Successively other two activity ‘insect and disease control’ and ‘identification of beneficiary insect’ were just second and third priority attaining 214 and 204 scores respectively. In that sequence, the rest of the activities are arranged in the descending order. However, the least essential training need are was ‘irrigation and drainage management’ having TNI of 15 and was got last priority with respect to other training need areas in homestead vegetable cultivation (Table 4.2). This means that if respondents get training they may get more benefit from vegetable cultivation. Therefore, training is necessary in homestead vegetable cultivation for the women in the study area.

Table 4.2 Extent of training needs of the women in homestead vegetable cultivation (N=105)

Sl. No.	Activities	Rural women				TNI	$\bar{X}$	P
		NE	LE	E	VE			
1.	Selection of quality seed and seedling of vegetable	02	28	58	17	195	1.86	4
2.	Seedbed preparation, seed sowing and seedling raising	57	40	05	03	59	0.56	8
3.	Seedbed preparation	47	52	06	0	64	0.61	7
4.	Land preparation and seedling transplantation	59	32	08	06	66	0.63	6
5.	Soil and fertilizer management	07	69	20	09	136	1.30	5
6.	Irrigation and drainage management	90	15	0	0	15	0.14	10
7.	Insect and disease control	08	07	63	27	214	2.04	2
8.	Vegetable harvesting, preservation and marketing	56	40	09	0	58	0.55	9
9.	Identification of beneficiary insect	05	12	66	20	204	1.94	3
10.	Measures of disease control	0	06	60	39	243	2.31	1

NE= Not essential, LE= Less essential, E= Essential, VE = Very essential, TNI= Training Need Index, X= Mean, P =Priority

4.2.2 Training needs in dairy and poultry rearing of the women

Training needs of the rural women on different activities in dairy and poultry rearing may also be varied. The respondents were classified into four categories such as ‘not essential’, ‘less essential’, ‘essential’, and ‘very essential’ on the basis of their nature of opinion regarding training need (TNI). The TNI were computed which ranged from 63 to 220 against

the possible range of 0 to 315. The priority of each of the activity on dairy and poultry rearing was made on the basis of TNI value (Table 4.3).

The findings on TNI indicate that the most important activities among the 10 subject matter areas was ‘poultry feed management’. According to the response of the women ‘poultry feed management’ received highest score (TNI=220). Successively other two activities ‘disease control of livestock’ and ‘disease control of poultry’ are just second and third priority attaining 217 and 212 scores respectively. In that sequence, the rest of the activities are arranged in the descending order. However, the least essential training need area was ‘dairy products preservation and marketing’ having TNI of 63 and was got the least priority with respect to other training need areas in dairy and poultry rearing (Table 4.3). This means that if respondents get training they may get more benefit from dairy and poultry sector. Therefore, training on dairy and poultry is also necessary for the women in the study area.

Table 4.3 Extent of training needs of the women in dairy and poultry rearing (N=105)

Sl. No.	Activities	Rural women				TNI	$\bar{X}$	P
		NE	LE	E	VE			
1.	Breed selection and housing of livestock	63	10	27	05	79	0.75	7
2.	Dairy products preservation and marketing	62	28	10	05	63	0.60	10
3.	Livestock feed management	61	21	14	9	76	0.72	9
4.	Beef fattening	05	31	59	10	179	1.70	5
5.	Disease control of dairy	08	07	60	30	217	2.07	2
6.	Breed selection & housing of poultry	05	74	23	03	129	1.23	6
7.	Poultry products preservation and marketing	62	16	20	07	77	0.73	8
8.	Poultry feed management	06	08	61	30	220	2.10	1
9.	Disease control of poultry	0	36	31	38	212	2.02	3
10.	Pig rearing	0	36	51	18	192	1.83	4

NE= Not essential, LE= Less essential, E= Essential, VE = Very essential, TNI= Training index, $\bar{X}$ = Mean, P =Priority

4.2.3 Overall training needs in agricultural activities of the rural women

An overall training needs score of the rural women in modern agricultural activities for each of the respondents by adding their scores in homestead vegetable cultivation, and dairy and poultry rearing scores. The total training needs score of the women ranged from 21 to 35 against the possible range of 0 to 60. The average training need score was 26.54 with a standard deviation of 3.16. The women were classified into three categories namely ‘low (21-23)’, ‘medium (24-29)’, and ‘high (>29)’ training need (Table 4.4).

Table 4.4 Categories of women according to their training need in agricultural activities

Categories	Rural women		Observed (Possible) range	Mean	SD
	Number	Percent			
Low (21 to 23)	16	15.24	21-35 (0-60)	26.54	3.16
Medium (24-29)	70	66.67			
High (>29)	19	18.09			
Total	105	100.00			

Data contained in Table 4.4 indicate that the exactly two-third (66.67 percent) of the respondents had medium training need as compared to 18.09 percent having high training need and only 15.24 percent having low training need. The study revealed that most of the respondents in the study area had medium to high training need. A similar finding was reported by Ahsan, (2004). For increasing agricultural production, the women need to have training regarding different aspects of agriculture. The findings of the study, however, indicate that almost four-fifths (84.76 percent) of the women had medium to high training need in agricultural activities.

4.3 Relationships between Selected Characteristics of the Rural Women and their Training Needs in Modern Agricultural Activities

The purpose of this section is to examine the relationships between the selected characteristics of the rural women and their training needs in modern agricultural activities. The selected characteristics namely age, education, farm size, daily time use, credit received, annual income, extension contact, decision-making ability, agricultural knowledge, and attitude towards technology of the rural women constituted independent variables while training needs was the dependent variable in this study. Pearson's correlation coefficient test (r) was used to explore the relationships of the independent and dependent variables. Research and null hypothesis were stated for testing the relationship between the independent and dependent variables (CF. Chapter 3). One percent (1%) or five percent (5%) level of significant was used as the basis for acceptance or rejection of a hypothesis. The computed correlation values have been presented in Table 4.5 and the correlation matrix appears in the Appendix-B.

4.3.1 Age of the rural women and their training needs

The correlation co-efficient between age of the rural women and their training needs in modern agricultural activities ($r = -0.259^{**}$) was found significant (Table 4.5). Hence, the null hypothesis i.e. 'there is no relationships between age of the rural women with their training

needs in modern agricultural activities’ was rejected. This means that age was negative and significant association with the training needs in modern agricultural activities of the rural women.

The negative and significant association of these variables implied that higher age of the rural women lower is the level of their training in modern agricultural activities. It can be further explained that young aged women need more training need in modern agricultural activities, because they are enthusiastic and new to the farming profession and they also have requisite farming experience. Mahanta, (2014), Yeasmin, (2013), Ahsan, (2004), and Islam, (1997) reported that age of the respondent had no relationship with their training needs in crop cultivation. On the other hand, the correlation matrix presented in Appendix B shows that the age of the rural women also correlated with their education (-.246^{*}) and decision making ability (-.207^{*}); but not correlated with their farm size (-.095), daily time use (-.1650, credit received (.057), annual income (0.105), extension contact (-.096), agricultural knowledge (.186), and attitude towards technology (.069).

Table 4.5 Relationships between the dependent and independent variables

Dependent variable	Independent variables	Computed values of ‘r’ with 103 d.f.
Training needs in modern agricultural activities	Age	-0.259 ^{**}
	Education	0.610 ^{**}
	Farm size	0.136 (NS)
	Daily time use	0.292 ^{**}
	Credit received	0.172 (NS)
	Annual income	-0.085 (NS)
	Extension contact	0.202 [*]
	Decision making ability	0.341 ^{**}
	Agricultural knowledge	0.103 (NS)
	Attitude towards technology	-0.155 (NS)

NS = Not significant, *, significant at 5% level of significant, **, Significant at 1% level of significant

4.3.2 Education of the rural women and their training needs

The correlation co-efficient between education of the rural women and their training needs in modern agricultural activities ($r = 0.610^{**}$) was found significant (Table 4.5). Hence, the null hypothesis i.e. ‘there is no relationships between education of the rural women with their training needs in modern agricultural activities’ was rejected. This means that education was significantly associated in training needs in modern agricultural activities of the rural women. The result indicated that the rural women’s education had positive and significantly influence their training needs in modern agricultural activities. Thus, it could be said that education

could play a significant role of extent of training needs in modern agricultural activities. A similar finding was obtained by Sumon (2014), Gazi (2009), Rajput *et al.* (2007) and Alam (2006). In contrast, the education of the rural women also correlated with their age (-.246*), farm size (.366**), daily time use (.199*), credit received (.219*), decision making ability (.348**), and Agricultural knowledge (.228*); but not correlated with their annual income (-.001), extension contact (.157), and attitude towards technology (-.004) as shown in Appendix B.

4.3.3 Farm size of the rural women and their training needs

The correlation co-efficient between farm size of the rural women and their training needs in modern agricultural activities ($r = 0.136$) was found non-significant (Table 4.5). Hence, the null hypothesis i.e. ‘there is no relationships between farm size of the rural women with their training needs in modern agricultural activities’ could not be rejected. This means that farm size was significantly associated in training needs in modern agricultural activities of the rural women.

The findings imply that the farm size of the rural women had no relationship with their training needs. Hence, it can be assumed that farm size had no impact on the training needs of the rural women in modern agricultural practices. Similar findings were obtained by Alam (2006) and Chawang and Jha (2010). On the contrary, the farm size of the rural women were not correlated with their age (-.095), daily time use (.160), extension contact (.100), decision making ability (.151), agricultural knowledge (.163); but correlated with their education (.366**), credit received (.437**), annual income (.448*), and attitude towards technology (.520**) as shown in Appendix B.

4.3.4 Daily time use of the rural women and their training needs

The correlation co-efficient between daily time use of the rural women and their training needs in modern agricultural activities ($r = .292^{**}$) was found significant (Table 4.5). Hence, the null hypothesis i.e. ‘there is no relationships between daily time use of the rural women with their training needs in modern agricultural activities’ was rejected. This means that daily time use was significantly associated in training needs in modern agricultural activities of the rural women.

The result indicated that the rural women’s daily time use had positive and significantly influence their training needs in modern agricultural activities. Thus, it could be said that daily time use could play a significant role of extent of training needs in modern agricultural activities. On the contrary, the daily time use of the rural women also correlated with their education (.199*), annual income (.307**), and agricultural knowledge (.388**) but not correlated with their age (-.165), farm size (.160), credit received (-.073), extension contact

(.159), decision making ability (-.101) and attitude towards technology (-.024) as shown in Appendix B.

4.3.5 Credit received of the rural women and their training needs

The correlation co-efficient between credit received of the rural women and their training needs in modern agricultural activities ($r = 0.172$) was found non-significant (Table 4.5). Therefore, the null hypothesis i.e. ‘There is no relationships between credits received of the rural women with their training needs in modern agricultural activities’ could not be rejected. This means that credit received was non-significantly associated in training needs in modern agricultural activities of the rural women.

The findings mean that the credit received of the rural women had no relationship with their training needs. Therefore, it can be assumed that credit received had no impact on the training needs of the rural women in modern agricultural practices. A similar finding was obtained by Sumon (2014), Yeasmin (2013), Ferdousi (2010), and Yesmin (2007). On the other hand, the credit received of the rural women were not correlated with their age (.057), daily time use (-.073), decision making ability (.002), and agricultural knowledge (-.026) but correlated with their education (.219^{*}), farm size (.437^{**}), annual income (.290^{**}), extension contact (.432^{**}), and attitude towards technology (.348^{**}) as shown in Appendix B.

4.3.6 Annual income of the rural women and their training needs

The correlation co-efficient between annual income of the rural women and their training needs in modern agricultural activities ($r = -.085$) was found non-significant (Table 4.5). Hence, the null hypothesis i.e. ‘there is no relationships between annual income of the rural women with their training needs in modern agricultural activities’ could not be rejected. This means that farm size was non-significantly associated in training needs in modern agricultural activities of the rural women.

The findings imply that the annual income of the rural women had no relationship with their training needs. Hence, it can be assumed that annual income had no impact on the training needs of the rural women in modern agricultural practices. Similar findings were obtained by Chawang and Jha (2010) and Alam (2006). In contrast, the annual income of the rural women also not correlated with their age (.105), education (-.001), extension contact (.140), decision making ability (-.160), agricultural knowledge (.173), but correlated with their farm size (.448^{**}), daily time use (.307^{**}), credit received (.290^{**}), and attitude towards technology (.517^{**}) as shown in Appendix B.

4.3.7 Extension contact of the rural women and their training needs

The correlation co-efficient between extension contact of the rural women and their training needs in modern agricultural activities ($r = .202^*$) was found significant (Table 4.5). Thus, the null hypothesis i.e. ‘there is no relationships between extension contact of the rural women with their training needs in modern agricultural activities’ was rejected. This means that extension contact was significantly associated in training needs in modern agricultural activities of the rural women.

It is assumed that extension contact increased contacts with these information media, the rural women are likely to gain more knowledge and skills about modern agricultural practices. Thus, it could be said that extension contact of the respondents could play a significant role on extent of training needs. Similar findings were obtained by Sumon (2014), Hossain (2007), Sharmin (2005) and Sarker (2004). On the other hand, the extension contact of the rural women also correlated with their credit received ($r = 0.432^{**}$) but not correlated with their age (-.096), education (.157), farm size (.100), daily time use (.159), annual income (.140), decision making ability (-.125), agricultural knowledge (.0084), and attitude towards technology (-.082) as shown in Appendix B.

4.3.8 Decision making ability of the rural women and their training needs

The correlation co-efficient between decision making ability of the rural women and their training needs in modern agricultural activities ($r = 0.341^{**}$) was found significant (Table 4.5). Therefore, the null hypothesis i.e. ‘there is no relationships between decision making ability of the rural women with their training needs in modern agricultural activities’ was rejected. This means that decision making ability was significantly associated in training needs in modern agricultural activities of the rural women.

The result indicated that the rural women’s decision making ability had positive and significantly influence their training needs in modern agricultural activities. Thus, it could be said that decision making ability could play a significant role of training needs in modern agricultural activities. But the decision making ability of the rural women also correlated with their age (0.207^*), education (0.348^{**}) but not correlated with their farm size (.151), daily time use (-.101), credit received (.002), annual income (-.160), extension contact (-.125), agricultural knowledge (-.002), and attitude towards technology (-.108) as shown in Appendix B.

4.3.9 Agricultural knowledge of the rural women and their training needs

The correlation co-efficient between agricultural knowledge of the rural women and their training needs in modern agricultural activities ($r = 0.103$) was found non-significant (Table 4.5). Therefore, the null hypothesis i.e. ‘there is no relationships between agricultural knowledge of the rural women with their training needs in modern agricultural activities’ could not be rejected. This means that agricultural knowledge was non-significantly associated in training needs in modern agricultural activities of the rural women.

The findings mean that the agricultural knowledge of the rural women had no relationship with their training needs. Therefore, it can be assumed that agricultural knowledge had no impact on the training needs of the rural women in modern agricultural practices. Similar findings were obtained by Chawang and Jha (2010). The agricultural knowledge of the rural women not correlated with their age (.186), farm size (.163), credit received (-.026), annual income (.173), extension contact (.084), and decision making ability (-.002) but correlated with their education (0.228^{*}), daily time use (0.388^{**}), and attitude towards technology (-.252^{**}) as shown in Appendix B.

4.3.10 Attitude towards technology of the rural women and their training needs

The correlation co-efficient between attitude towards technology of the rural women and their training needs in modern agricultural activities ($r = -0.155$) was found non-significant (Table 4.5). Thus, the null hypothesis i.e. ‘there is no relationships between attitudes towards technology of the rural women with their training needs in modern agricultural activities’ could not be rejected. This means that attitude towards technology was non-significantly associated in training of the rural women.

The findings imply that the attitude towards technology of the rural women had no relationship with their training needs. Hence, it can be assumed that attitude towards technology had no impact on the training needs of the rural women in modern agricultural practices. On the other hand, the attitude towards technology of the rural women also not correlated with their age (0.069), education (-.004), daily time use (-.024), extension contact (-.082), and decision making ability (-.108); but correlated with their farm size (.520^{**}), credit received (.348^{**}), annual income (.517^{**}), agricultural knowledge (-.252^{**}) as shown in Appendix B.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Findings

5.1.1 Selected characteristics of the rural women

Age of the rural women ranged from 25 to 47 years, with a mean of 34.88 and standard deviation 5.85. On the basis of their age, the rural women were grouped as ‘young’, ‘middle aged’ and ‘old’. Greater proportion of the rural women (70.48 percent) belong to middle aged category followed by 25.71 percent had fallen into young category, and only 3.81 percent had old age category. **Education** of the rural women ranged from 0 to 9 years of schooling having mean value of 3.67 and standard deviation of 2.77. On the basis of their educational

qualification, the rural women were classified into four categories namely: 'illiterate', 'can sign only', 'primary', and 'secondary'. Result revealed that 45.72 percent of the rural women had primary level of education as compared to 20.95 percent secondary level, 17.14 percent can sign only and just 16.19 percent have illiterate. **Farm size** of the respondents varied from 0.12 to 0.24 decimal. The average farm size is 0.17 with a standard deviation of 0.03. Based on farm size, the respondents were classified into two categories as 'marginal' and 'small'. Result indicates that 88.57 percent of the rural women belonged to the marginal farm category and only 11.43 percent had small farm.

Daily time use scores of the rural women could range from 0 to 24, while the observed scores being 12 to 17. The average score was 13.94 having a standard deviation of 1.13. According to daily time use scores, the respondents were classified into three categories, such as 'short', 'medium' and 'long'. It was found that the highest portion (60.95 percent) of the respondents was in medium daily time use category, followed by 34.29 percent were in short daily time use category and only 4.76 percent were in long daily time use category. **Credit received** sources of the rural ranged from 0 to 15 thousand taka and average was 6.93 with a standard deviation of 4.59. Based on the credit received, the rural women were classified into three categories such as 'no', 'medium' and 'high'. The result indicates that the highest portion (68.57 percent) of the respondents received medium amount of credit, while about one-fourths (23.81 percent) did not receive any credit, and only 7.62 percent received high amount of credit.

Annual income of the respondents ranged from 7 to 16 thousand taka with mean value of 9.90 and standard deviation of 2.16. On the basis of annual income, the respondents were classified into three categories i.e. 'low', 'medium', and 'high'. About three-fifths (60.95 percent) of the respondents having medium annual income, compared to 30.48 percent having low income and only 8.57 percent of them had high annual income. **Extension contact** score of the rural women ranged from 12 to 25 with an average 19.42 and a standard deviation of 3.46. The respondents were classified into three categories i.e. 'low', 'medium', and 'high'. The majority (60.0 percent) of the rural women had medium extension contact, while 22.86 percent of them had low extension contact. The proportion of rural women having high extension contact was 17.14 percent. **Decision-making ability** scores of the rural women ranged from 17 to 33, against the possible range of 14 to 42. The mean and standard deviation were 23.62 and 4.35 respectively. Based on decision making ability

scores the rural women were classified into three categories viz. 'low ability', 'medium ability' and 'high ability'. It was evident that exactly two-thirds (66.67 percent) of the rural women had medium decision making ability, while 17.14 percent had low ability and 16.19 percent had high ability in decision making.

Agricultural knowledge score of the rural women ranged from 15 to 26 against the possible range of 0 to 40. The mean value of agricultural knowledge was 20.32 with a standard deviation of 2.75. Based on agricultural knowledge, the rural women were classified into three categories such as 'poor', 'good', and 'excellent'. It was found that near about three-fifths (57.14 percent) of the respondents had good knowledge, compared to 28.57 percent belonged to poor knowledge and 14.29 percent had excellent knowledge in different agricultural activities. **Attitude towards technology** score of the rural women ranged

from 29 to 43 against the possible range of 10 to 50 with a mean and standard deviation of 36.27 and 3.72 respectively. Based on attitude scores, the respondents were classified into three categories i.e. 'less favorable', 'moderately favorable', and 'highly favorable'. The findings reveal that the majority (62.86 percent) of the rural women had moderately favorable attitude towards **technology** followed by 25.71 percent had less favorable attitude, and only 11.43 percent had highly favorable attitude towards **technology**.

5.1.2 Training needs for the rural women in modern agricultural activities

Training needs for the rural women were studied based on two agricultural aspects namely 'homestead vegetable cultivation', and 'dairy and poultry rearing'. There were 20 activities in these two aspects of modern agricultural activities and were equally distributed among the aspects.

Training needs for the women in homestead vegetable cultivation: The respondents were classified into four categories such as 'not essential', 'less essential', 'essential', and 'very essential' on the basis of their nature of opinion regarding training need index (TNI). The TNI were computed which ranged from 15 to 243 against the possible range of 0 to 315. The priority of each of the activity on homestead vegetable cultivation was made on the basis of TNI value. The findings on TNI indicates that the most important activities among the 10 subject matter areas was 'measures of disease control' of the women received highest score

(TNI=243) and the least essential training need was ‘irrigation and drainage management’ having TNI of 15.

Training needs for the women in dairy and poultry rearing: The respondents were classified into four categories such as ‘not essential’, ‘less essential’, ‘essential’, and ‘very essential’ on the basis of their nature of opinion regarding training need (TNI). The TNI were computed which ranged from 63 to 220 against the possible range of 0 to 315. The findings revealed that the most important activities among the 10 subject matter areas was ‘poultry feed management’ (TNI=220) and the least essential training need area was ‘dairy products preservation and marketing’ having TNI of 63.

Overall training needs for the rural women in agricultural activities: The total training needs score of the women ranged from 21 to 35 against the possible range of 0 to 60. The average training need score was 26.54 with a standard deviation of 3.16. The women were classified into three categories namely ‘low’, ‘medium’, and ‘high’ training need. It was found that the majority (66.67 percent) of the respondents had medium training need as compared to 18.09 percent having high training need and only 15.24 percent having low training need. The study revealed that most of the respondents in the study area had medium to high training need.

5.1.3 Relationships between selected characteristics of the rural women and their training needs in modern agricultural activities

According to the computed correlation coefficients (r) among the 10 selected characteristics of the rural women were education, daily time use, extension contact, and decision making ability had positive significant relationship, at the same time as age had negative significant relationship with the training need; farm size, credit received, annual income, agricultural knowledge, and attitude towards technology had no significant relationship with their training need.

5.2 Conclusions

A conclusion presents the statements based on the major findings of the study, and these statements mostly confirm the objectives of the research in the shortest form. The emphasis in this section should be put on what research questions have been asked or what hypotheses have been examined (Woodford, 1968). Considering the objectives of the study and the above guidelines for writing a conclusion section of a research report the specific conclusion of the present study may be drawn as follows:

1. The result indicated that two-thirds of the rural women had primary to secondary level of education and was positively correlated with their training needs in modern agricultural activities. Thus, it may be concluded that the educated person may be more progressive and innovative in farming activities rather than illiterate persons.
2. The findings indicated that more than four-fifths (84.76 percent) of the rural women had medium to high training need in modern agricultural activities. It was observed in the study area while collecting data that there were available of women involved in agricultural activities. But, majority of them have medium knowledge about modern agricultural activities and thus they have need to improve their farming activities. It is therefore, concluded that the respondents logically felt medium to high training needs in modern agricultural activities.
3. Out of 10 characteristics of the women education, daily time use, extension contact and decision making ability had positive significant relationship with the training need. Therefore, it may be concluded that the above factors may appeared as important in receiving training in modern agricultural activities.

The findings also indicate that farm size, credit received, annual income, agricultural knowledge and attitude towards technology of the women had no significant relationship with their training need. Therefore, it may be concluded that these variables were not important for training needs of the women in modern agricultural activities.

5.3 Recommendations: Based on the findings and conclusions of the study the following recommendations are propose:

5.3.1 Recommendations for policy implications: The researcher upholds the following recommendations for policy implications:

1. The present study was undertaken to have an understanding of training need of the rural women in modern agricultural activities in two aspects namely homestead vegetable cultivation, and dairy and poultry rearing. In total 20 activities covering these two aspects were integrated to determine their training needs. Considering the facts and findings, it is recommended that an effective training should be conducted for the women of Rangpur sadar upazila.
2. The need for training of the women in different aspects of agricultural is urgently necessary for increasing farm production. It is recommended that the Department of

Agricultural Extension, Department of Livestock, and NGOs are need to reorganize regular training programs for the farmers as well as for the rural women.

3. Middle aged women constitute about three-fourths of the study sample as they are the key operator in farming and they can play a very useful role in modern agricultural activities. It is therefore, necessary to involve as many middle aged women as possible while arranging training program.
4. In view of strong positive relationship between education and training needs for rural women in modern agricultural activities, it is recommended that there should be effective program in rural areas for providing enough functional literacy of the rural women.
5. Extension contact of the rural women has shown a positive and significant relationship with their training needs. That means more the extension contact, more was the training needs of the rural women. Therefore, it is recommended that DAE DLO and NGOs should prepare a standard set of modern agricultural activities for the rural women so that they can get the opportunity to be aware of the field problems having a personal contact and communication with the small and marginal farmers especially for the rural women.

5.3.2 Recommendations for further study: A small piece of study cannot provide all information for proper understanding of training needs for the rural women in modern agricultural activities. Therefore, the following suggestions were put forward for further research:

1. The study investigated to determine and describe the selected 10 characteristics of the rural women with training needs in modern agricultural activities. It is therefore recommended that further study should be conducted involving other characteristics of the respondents.
2. Training need was considered in two dimensions. The dimensions are many but all are not considered in this study. Thus, it is recommended for further study to determining training needs with other dimensions.
3. The present study measured the training needs for rural women. Further study may include of male farmers in a more comprehensive manner and the measurement of training need may also be done more scientifically by job analysis, task analysis, and gap analysis.

4. The present study was conducted in three selected unions of sadar upazila under Rangpur district. Similar study may be conducted in different areas of the country.

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APPENDIX-B

Correlation Matrix of the Dependent and Independent Variables

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	Y
X ₁	1										
X ₂	-.246*	1									
X ₃	-.095	.366**	1								
X ₄	-.165	.199*	.160	1							
X ₅	.057	.219*	.437**	-.073	1						
X ₆	.105	-.001	.448**	.307**	.290**	1					
X ₇	-.096	.157	.100	.159	.432**	.140	1				
X ₈	-.207*	.348**	.151	-.101	.002	-.160	-.125	1			
X ₉	.186	.228*	.163	.388**	-.026	.173	.084	-.002	1		
X ₁₀	.069	-.004	.520**	-.024	.348**	.517**	-.082	-.108	-.252**	1	
Y	-.259**	.610**	.136	.292**	.172	-.085	.202*	.341**	.103	-.155	1
*. Correlation is significant at the 0.05 level (2-tailed).											
**. Correlation is significant at the 0.01 level (2-tailed).											

Note:

X₁=Age

X₇=Extension contact

X₂= Education

X₈=Decision making ability

X₃=Farm size

X₉=Agricultural knowledge

X₄=Daily time use

X₁₀=Attitude towards technology

X₅=Credit received

X₆=Annual income

Y= Training needs in modern agricultural activities

APPENDIX A

Department of Agricultural Extension

Hajee Mohammad Danesh Science and Technology University

Dinajpur

An interview schedule for the study entitled

Training Needs for Rural Women in Modern Agricultural Activities

Name of Respondent: Husband's name:

Village. Union.

(Please answer the following questions)

1. Age Years

2. Education: Mention your educational qualification.

a) Cannot read and write

b) Can sign only

c) Read up to class

3. Farm size: Indicate the homestead and other land area under your possession.

a) Homestead decimal

b) Area under cultivation. decimal

c) Others decimal

Total decimal

4. Daily time use: Please mention the extent of time use towards the following activities.

Sl. No.	Types of activity	Extent of time use			
		Nil	Occasionally	Partially	Sufficiently
1.	Food processing & cooking				
2.	Cleaning of homestead				
3.	Cloth washing				
4.	Child care and education				

5.	Homestead vegetable cultivation				
6.	Dairy and poultry rearing				
7.	Making of handicraft				
8.	Other(if any)				

5. Credit received: Did you receive any credit from any sources? Yes .. No. ...

If yes, please mention the sources of credit and the amount of credit received.

Sl. No.	Sources of credit	Amount (Tk.)
1.	NGOs	
2.	Commercial banks	
3.	Village money lenders	
4.	Businessmen	
5.	Neighbors and relatives	
6.	Others	
	Total	

6. Annual income: Please mention annual income in the last year from different sources.

Sl. No.	Source of income	Total production (Local unit)	Price/unit (TK.)	Total income (Tk.)
a) Agricultural sources				
1.	Crops			
2.	Vegetables			
3.	Poultry			
4.	Cattle			
5.	Goat			
6.	Others (if any)			
b) Non agricultural sources				
1.	Small business			
2.	Small business			
3.	Katha sewing			
4.	Others (if any)			
Total income (a+b)				

7. Extension contact: Mention of your extent of contact with the following communication sources in receiving information on modern agricultural activities.

Sl. No.	Communication sources	Extent of contact			
		Never	Somewhat	Often	Regularly
A.	Localite				
1.	Family members (times/week)	0	1-3	4-5	≥ 6
2.	Relatives (times/month)	0	1-3	4-5	≥ 5
3.	Local leaders (times/month)	0	1	2-3	≥ 4

Contd.

Sl. No.	Communication sources	Extent of contact			
		Never	Somewhat	Often	Regularly
B.	Cosmopolite				
1.	SAAOs (times/season)	0	1-2	3-4	≥ 6
2.	AEO (times/year)	0	1	2-3	≥ 4
3.	NGO workers (times/month)	0	1	2-3	≥ 4
4.	NGO officers (times/season)	0	1	2-3	≥ 4
5.	Union information & service center (times/season)	0	1	2	≥ 3
C.	Mass media				
1.	Cell phone (times/week)	0	1-3	4-5	≥ 5
2.	TV (times/week)	0	Do	Do	Do
3.	Poster (times/year)	0	Do	Do	Do
4.	Leaflet (times/year)	0	1	2	≥ 3

8. Decision making ability: Mention the nature of your decision-making ability in the following aspects:

Sl. No.	Decision making areas	Decision taken alone	Joint decision with husband	Decision taken by husband alone
1.	Receiving loans from banks & NGOs			
2.	Land purchase, sell, lease etc.			
3.	Children's education			
4.	Decisions regarding health issue and treatment			
5.	Social obligation, marriage ceremony etc.			
6.	Use of family planning			
7.	Making new house			
8.	Everyday family expenditure			
9.	Land selection for crop cultivation			
10.	Homestead vegetable cultivation			

11.	Selling vegetables			
12.	Poultry and duck rearing			
13.	Dairy management			
14.	Participation of group meeting			

9. Agricultural knowledge: Please provide information about the following questions.

Sl. No.	Questions	Total marks	Marks obtained
1.	What is soil fertility?	3	
2.	Name two crops of green manure fertilizer.	2	
3.	What are the qualities of good seed?	3	
4.	What kind of soil is suitable for vegetable cultivation?	3	
5.	Name two winter vegetables	2	
6.	Name two summer vegetables.	2	
7.	Name two harmful insects of vegetable.	2	
8.	What is the optimum time for planting tomato and cabbage?	3	
9.	Name two diseases of poultry.	2	
10.	What is the balance feed for poultry?	3	
11.	Mention how many eggs are laid per year by a local hen?	3	
12.	Mention two method for hatching eggs	2	
13.	At what age a goat get ready for its first offspring?	3	
14.	Name two diseases of poultry hen.	2	
15.	Mention two harmful diseases of livestock	2	
16.	How can you prevent of foot and mouth disease (FMD) of cattle?	3	
	Total	40	

10. Attitude towards technology: Please mention of your opinion on the following statements.

Sl. No.	Statement	Nature of opinion				
		SA	A	U	D	SD
1. (+)	Vegetable are essential for good health so that we					

	should consume it everyday					
2. (-)	Land preparation for vegetable fields needs minimum tillage so that cost of production is low					

SA= Strongly Agree, A= Agree, U= Undecided, D= Disagree, SD= Strongly Disagree

Contd.

Sl. No.	Statement	Nature of opinion				
		SA	A	U	D	SD
3. (+)	Homestead vegetable cultivation not only meets the daily diet but also a source of income					
4.(-)	Due to lack of storage facilities, I avoid vegetable cultivation					
5.(+)	I am confident that I can successfully continue poultry rearing in coming years					
6. (-)	Many women loss their interest on poultry rearing due to disease infestation					
7. (+)	It is possible to raise duck and poultry in the same pond by applying improve technique					
8. (-)	Through the participation of women in agricultural training program men are neglected					
9. (+)	Through modern agricultural activities, rural women earn money that help them to establish in the society					
10. (-)	Agricultural training have no effect on the socio-economic development of the rural women					

SA= Strongly Agree, A= Agree, U= Undecided, D= Disagree, SD= Strongly Disagree

11. Training Needs for rural women in modern agricultural activities: Mention of your extent of training needs on the following areas of modern agricultural activities.

Sl. No.	Activities	Extent of training needs			Very essential
		Not essential	Less essential	Essential	
A.	Homestead vegetables cultivation				
1.	Selection of quality seed and seedling of vegetable				
2.	Seedbed preparation, seed sowing and seedling raising				
3.	Seedbed preparation				
4.	Land preparation and seedling transplantation				
5.	Soil and fertilizer management				
6.	Irrigation and drainage management				

7.	Insect and disease control				
8.	Vegetable harvesting, preservation and marketing				
9.	Identification of beneficiary insect				
10.	Measures of disease control				

Contd.

Sl. No.	Activities	Extent of training needs			Very essential
		Not essential	Less essential	Essential	
B.	Dairy and poultry rearing				
1.	Breed selection and housing of livestock				
2.	Dairy products preservation and marketing				
3.	Livestock feed management				
4.	Beef fattening				
5.	Disease control of dairy				
6.	Breed selection and housing of poultry				
7.	Poultry products preservation and marketing				
8.	Poultry feed management				
9.	Disease control of poultry				
10.	Pig rearing				

Thanks for your kind cooperation

.....
Signature of interviewer

