# IMPROVING EXTENSION EDUCATION FOR AGRICULTURAL DEVELOPMENT IN ADAMAWA STATE

BY

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AN M. TECH. DISSERTATION SUBMITTED TO THE DEPARTMENT OF VOCATIONAL EDUCATION, FEDERAL UNIVERSITY OF TECHNOLOGY, YOLA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER OF TECHNOLOGY EDUCTION (M. TECH. ED) IN AGRICULTURAL TECHNOLOGY EDUCATION.

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## DECLARATION

I, Penuel T. Medan, a student of Master of Technology Education, Agricultural Technology in the Department of Vocational Education and with Registration Number M.TECH/TE/04/0037 has satisfactorily completed the requirements for the course and research project work for the Master of Technology Education in Agricultural Technology. The work embodied in this research project is original and has not been submitted in part or in full for any other Degree of this or any other university.

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## APPROVAL PAGE

This thesis titled, Improving Extension Education for Agricultural Development in Adamawa State by Penuel Tonmageino Medan (M.TEC/TE/04/0037) meets the regulations governing the award of degree in Masters of Technology in Agricultural Technology Education, Federal University of Technology, Yola and is approved for its contribution to knowledge and literary presentation.

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## DEDICATION

This Thesis is dedicated to my beloved wife, Mrs. Justina Penuel, brother, Mr. Victor J. Afiyo, son, Mr. Boyom Penuel and sister, Mrs. Dangi T. Medan

**ACKNOWLEDGEMENT**

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## ABSTRACT

The farmers especially the illiterate ones lack requisite technical skills and Scientific knowledge to raise the standard of farming and agricultural Production in their Localities due largely to poor extension education. The resultant effects are the scarcity of extension workers, inadequate agricultural inputs, Transport and Credit facilities. This call for the study titled "Improving Extension Education for Agricultural Development in Adamawa State." The Study was guided by 5 research questions and one null Hypothesis and it was a survey research design. The Sample size was 104, respondents, that is, 92 Farmers and 12 Extension workers selected from the 4 Agricultural Zones using stratified Random sampling Technique. The data was collected using a structured questionnaire formulated in five point Likert Type scale such as strongly Agree, Agree, Undecided, Disagree and Strong disagree – with a total of 40 items. The major findings include motorcycle needed for extension works, Degree and Diploma as expected qualifications for Extension workers, understanding language of communication and personal contact with Farmers to discuss new ideas and innovations, forming Cooperative Society, establishing bank branches and Mass Literacy Centers. The implication is that scarcity of farm inputs, qualified extension workers; funds and high illiteracy among farmers affect agricultural development. Therefore, adequate farm inputs, qualified Extension workers, Funds, Transport and Loan facilities should be provided by the government for Agricultural Development in Adamawa State.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study

The contribution of Agriculture to the Economic growth and development of Nigeria can not be over emphasize.

According to Nigeria Educational Research and Development Council (NERDC) (1991) agriculture employs, directly or indirectly, over 70% of the country's population. How ever, agricultural development in Nigeria has not kept pace with global technological development since many farmers especially the subsistence once located at the rural areas are not fully equip with the farming method and techniques. In addition, the provision for agricultural extension services are inadequate. The extension services would normally provide farmers with relevant education to improve their activities.

Education is a valuable asset that society uses as an instrument for achieving economic, social and political development (Kukwui & Kallat, 1998). They maintain that the indispensable role of education and its relevance in progressive development of societies makes it receive the attention of great patriotic and foresighted personalities of societies. Infact, to such personalities, education, however, expensive should be the greatest legacy to be bequeathed to the younger generation. Good (1959) in Kukwui & Kallat (1998) defined education as the process by means of which a person develops ability, attitudes and other forms of behaviours of positive value in the society in which he lives. In other words education can be viewed as any process by which an individual gains knowledge or insight, or develops attitude or

skills which aid him in wise decision, it makes individuals and societies to develop socially, politically, religiously, economically, scientifically and technologically.

NERDC (1991) stated that the term extension was used about 100 years ago to describe the method of spreading knowledge and ideas from the walls of the university for the benefit of the mass of the people outside. The whole idea was to ensure that knowledge has to be spread far and wide; among people in places where they work and live; or through a central extension organization or by extension agents.

Savile (1965) in Abubakar (1995) opined that "the concept is generally accepted that the role of extension is to help people to help themselves through educational means to improve the level of living" He added that "Extension is a service or system which assists farm people, in improving farming methods and techniques, increasing production efficiency and income, bettering their levels of living, and lifting the social and educational standards of rural life". He further stated that, the "aim of all extension work is to teach people living in rural areas how to raise their standard of living, by their own efforts, using their own resources of manpower and materials, with the minimum of assistance from government. By encouraging local leadership and a spirit of self-help, extension develops civic grade and progressive growth of the community.

The above definition includes the whole environment in which a farmer lives and operates as a legitimate field for extension activity. It recognizes that standards are usually different from levels of achievement. It is also not restricted to farm-contact work, but includes extension research, training liaison, and formation of work as integral parts of agricultural extension system. Extension education is seen by Phipps (1972) and Azubike (1983) as an attempt to transfer new knowledge or idea on

out-of-the school basis designed to assist rural people in improving their farming methods, techniques and production efficiency. Ugochukwu, Otegbade, Ifeonu, Okeke and Idris (1999) on the other hand stated that extension education involves the teaching and demonstration of modern skills and innovations to farmers, raising their level of living, changing farmer's attitudes and bringing about a permanent improvement in them. It is basically concerned with the dissemination of useful information on agricultural practices and getting the farmers to apply and adopt such knowledge to improve their farms and homes. They maintained that agricultural extension education is a teaching and learning process in which the farmers are taught better methods of farming in order to raise productivity and their standard of living. Agricultural extension has become a strategy for transforming traditional system of agriculture into progressive and modern one. It is essentially an educational process where farmers are the "students" while the agricultural extension workers are the "teachers". Meanwhile, farmers can be taught how to read and write through mass literacy programmes especially under functional literacy, which combines teaching of literacy and training in some vocational skills (Federal Ministry of Education (FME), 1990).

Extension education is faced with developmental challenges which affect the progress of farmer education and agricultural development. In other words, there are factors limiting the progress of extension education and hence the resultant effect is poor agricultural development. This is the situation in Nigeria and Adamawa State in particular. Some researchers namely Falodun, Omogiafo and Ezeaku (1997) identified scarcity of trained agricultural personnel and extension service officers as a major hindrance to meaningful progress in extension education in Nigeria.

Anyaele (2003) added that the few extension services provided have not reached many of the farmers in the rural areas, especially the subsistence farmers. Besides this, Daramola, Igbokwe, Mosuro and Abdullahi (1999) noted that the extension agents, where they are available are unable to motivate the farmers to adopt new changes because they themselves are poorly motivated. They are gradually loosing interest in the job. Emedo (1999) on the other hand identified the following as limiting factors to the progress of extension service in Nigeria:

a) Staff training and number

b) Inadequacy of service amenities

c) Lack of subject matter specialist

d) Lack of National extension service

e) Lack of credit facilities

f) Lack of adequate evaluation

In another development, Omoniyi (2004) enumerated the problems facing agricultural extension as follows:

1) Scarcity of extension workers

2) Illiteracy among farmers makes it difficult for them to read and interpret information

3) Poor transport facilities makes it difficult for the extension workers to move round into the rural areas.

4) The local farmers are unwilling to change their old methods of agricultural activities for new ones due to fear of agricultural failure.

5) Inadequate agricultural data to effective method of agricultural extension.

Similarly, Iwena (2002) pointed out the fact that extension workers are few or inadequate; local farmers are not cooperating but rather hostile and unaccommodating to extension officers; and local farmers are not always willing to learn about and accept modern methods of farming.

The inadequacy of extension education as brought about by factors limiting its progress, affects agricultural development in Nigeria and Adamawa State in particular. This according to Adeniyi, Udeogalanya, Okeke, Abdullahi and Iheukwumere (1991) the low level of extension education has made it difficult to make farmers adapt new and improved cultural practices. That farmers are generally superstitious and depend on custom and tradition of their ancestors in raising crops and livestock. They concluded that the use of fertilizers, insecticides herbicides and farm mechanization is strange to them and consequently agricultural production has been purely subsistence.

In subsistence agriculture, there is no surplus food to cater for the growing population of Nigeria including Adamawa State. This is because in subsistence agriculture, the farmer is concerned mainly with the provision of food and basic needs for his family without any intention of producing surplus crops for export (Emedo, 1999). One of the problems that is usually associated with subsistence agriculture include illiteracy of the farmer. According to Iwena (2002) the farm labour used for subsistence agriculture have little or no formal education, resulting in their inability to read instructions to adopt modern farming techniques. He further maintained that:

(a) Majority of subsistence farmers are illiterates, that is, they cannot read and write.

(b) They do not know how to apply modern farm inputs like fertilizers and chemicals.

(c) They find it difficult to accept new innovations in agriculture which will boast their efficiency and productivity

Anyanwuocha (1993) emphasized that the high level of illiteracy among the farming population is a major factor hindering agricultural development. According to him, the farmers are unable to read agricultural literature published by the Ministry of Agriculture, the River Basin Development Authorities or other bodies concerned with the development of agriculture. Such pamphlets which contain information on application of various fertilizers, planting materials and timing of planting, cultural practices, and handling techniques and improved storage practice are not utilize by them. The farmers therefore remain ignorant about the new techniques which brings about higher yield per man per hectare.

In view of the fact that modern agricultural technology and practices come in packages which require a certain level of literacy, many Nigerian farmers are not able to fully take advantage or appreciate them. Thus, the agricultural services provided by the government and other development agencies become underutilized or ignored.

The foregoing makes it clear that agricultural development cannot take place effectively without the farmers being educated through proper agricultural extension. In view of this, there is the need to evolve meaningful strategies to overcome the limiting factors of agricultural extension education in Adamawa State.

## 1.2 Statement of the Problem

The agricultural development in Adamawa State is hindered by lack of adequate extension education among farmers especially the local or illiterate ones. Emedo (1999) stated that Agricultural extension education is basically an adult education programme that brings information to farmers concerning new development, which can be applied to increase agricultural production and improve

on post harvest activities. It covers important aspect of agriculture such as fertilizers, improved breed of livestock, improved crop varieties, animal feeds, pesticides, herbicides, fungicides and farm mechanization. It also educate farmers on specific farming techniques such as the most ideal land preparation, time of planting and harvesting; crop spacing; methods and rate of application of herbicides, pesticides and other agro chemicals; crop rotation, basic soil and water conservation principles like erosion control measures, drainage, irrigation and many more.

The farmers, especially the illiterate ones, lack requisite technical skills and scientific knowledge to raise the standard of farming and agricultural production in their localities due largely to poor extension education (Falodun et al, 1997) According to Ugochikwu et al (1999) the acquisition of scientific knowledge and technical skills by farmers is necessary to stimulate agricultural production, but poor extension education has affected its citizenry. They noted that the resultant effects are the short supply of agricultural manpower, low level of application of modern scientific knowledge, skills and ability which culminates in poor agricultural development. Thus, agriculture in Nigeria and Adamawa state in particular is still characterized by traditional practices and stagnation in productive capacity. This calls for a study that will improve extension education toward agricultural development in Adamawa State and the country at large.

## 1.3 Purpose of the Study

The main purpose of this study was to look into the need to improve extension education for agricultural development in Adamawa State. Specifically, the study will:

1. Determine the level of educational qualification expected of extension workers to foster agricultural development in Adamawa State.

2. Determine the means of transportation needed by extension workers to reach the contact farmers at the rural areas in Adamawa State.
3. Determine ways of improving farmers' level of involvement in agricultural extension programmes.
4. Determine ways of raising literacy level of farmers.
5. Examine sources of loan facilities available to farmers.

## 1.4 Research Questions

This study will provide answers to the following questions.

1. What is the level of educational qualification expected of extension workers to foster agricultural development in Adamawa State?
2. What are the means of transportation needed by agricultural extension workers to reach farmers at the rural areas in Adamawa State?
3. What are the ways of improving farmers' level of involvement in agricultural extension programmes?
4. What are the ways of raising literacy level of farmers?
5. What are the sources of loan facilities available to farmers?

## 1.5 Hypothesis

A Null hypothesis which stated that there will be no significant difference between the mean responses of farmers and agricultural extension workers on ways of improving extension education towards agricultural development in Adamawa State was formulated and tested at 0.05 level of significance.

## 1.6 Significance of the Study

The findings of this study will serve as a guide to the Ministry of Agriculture (MOA), Agricultural Development Programme (ADP) and other stakeholders/agencies of Agriculture for appropriate, Meaningful and relevant

planning and implementation of Agricultural policies. Meanwhile planning and implementation of Extension programmes will be in conformity with the felt need of both the farmers and Extension workers since it was done on the basis of information provided by them. In addition, the findings if executed accordingly will increase the agricultural productivity of farmers, Extension workers and the society at large.

## 1.7 Delimitation of the Study

This study is delimited to finding strategies for improving extension education towards agricultural development in Adamawa State. It will not cover other aspects of agricultural extension like sanitation, health and home management.

# CHAPTER TWO

# LITERATURE REVIEW

The related literature will be reviewed under the following sub-headings:

2.1 Theoretical Framework for the Study

2.2 Qualification of Agricultural Extension Workers

2.3 Means of Transportation for Agricultural Extension Workers

2.4 Farmers' Involvement in Agricultural Extension Work

2.5 Literacy Level of Traditional Farmers

2.6 Farmers Accessibility to Credit Facilities

2.7 Review of Related Empirical Studies

2.8 Summary of Literature Reviewed.

## 2.1 Theoretical Framework

***This study was based on Frederick Herzberg's theory of factors. Herzberg, a popular administrative scientist undertook a study of job attitude as the basis for motivation to work in the 1950's. His samples comprised accountant and Engineers whom he interviewed on the factors that made them developed positive or negative feelings about their job environments.***

***He came out with dual factors which he termed the hygiene and motivator factors. Hygiene factors include such things as working conditions, Organization policies, Supervision and control, employee wages, security, protection, status, interpersonal relations and other lower order needs as are classified by Manslow. Motivator factors include recognition need, professional advancement, achievement, Responsibility and other component of self actualization.***

***Herzberg thus opines that although hygiene factors are acceptable by staff and their presence in an organization create job satisfaction, they are not enough***

***motivators for productivity. They are lower order needs that sharpen the higher order expectation of employees, while staff recognition, achievement on the job professional growth and advancement, appointment to posts of responsibility and they ability to stand up to professional challenges do positively motivate them to greater productivity.***

This study is aimed at improving extension education for agricultural development through the identification of factors hindering or influencing the progress of extension education for agricultural development in Adamawa State. This is in line with Frederick Herzberg's Theory of factors in which he interviewed Accountant and Engineers on the factors that made them developed positive or negative feelings about their job environments. The same thing applied in this study where farmers and extension workers were interviewed using a structured questionnaire to reveal the conditions, circumstances and influences surrounding and effecting the progress of Extension Education for Agricultural Development. Ugochukwu et al (1999) supported that the acquisition of scientific knowledge and technical skills by farmers is necessary to stimulate agricultural production, but poor Extension Education has affected them. They noted that the resultant effects are the scarcity of qualified extension workers, Agricultural Inputs, High Illiteracy among farmers especially the subsistence farmers, Transport and credit facilities. Thus agriculture is still characterized by traditional practices and stagnation in productive capacity. They concluded that farmers can be motivated to participate in agricultural extension programmes if adequate agricultural inputs and extension service were provided to farmers. Nnadi and Falodun (1992) on the hand stressed the need to equipped the extension workers with good means of transportation and dispatched right into the rural areas where majority of the subsistence farmers are located.

Daramola et al (1999) noted that extension agents where they are available are unable to motivate the farmers to adopt new changes because they themselves are poorly motivated. Therefore, adequate provision of agricultural inputs and the enhancement of extension services as well as the condition of service of the extension workers will motivate them to greater productivity.

## 2.2 Qualification of an Agricultural Extension Worker

The principal responsibility of extension worker is education. The extension worker must be vast and sound in his field. He must be organized and conduct method demonstration and result demonstration or trainings. Adeniji et al. (1991) stated that in agriculture the scope extension is quite broad. It involves not only the determination of useful knowledge and techniques, but also the training of rural people to use that knowledge and techniques for their own benefits. In view of this, a person to serve as an extension worker needs to attain a certain level of educational qualification in agriculture for effective and efficient performance. They disclosed that the government of Nigeria, encourages the teaching of agriculture in schools and teacher training colleges. Schools of agriculture and farm institutes were established where field workers of the ministries of agriculture are trained. He added that scholarships were awarded for both undergraduate and postgraduate students in universities to study agriculture. These students, after the completion of their courses, will be responsible for directing the field workers as well as undertaking research projects. That in Nigeria, the government encourages the teaching of agricultural science in primary schools, secondary schools, teacher training colleges, and the universities.

Schools of agriculture have also been established to train young secondary school leavers as agricultural assistants and superintendents thus forming a group of

extension agents whose responsibilities lie in carrying research findings to farmers in rural areas. According to them, the government also award scholarship to undergraduates and postgraduates to study agriculture in the universities and on the completion of their studies, they are deployed to various administrative posts to direct the field workers and to undertake research projects.

Anyanwu, Anyanwu and Anyanwu (1998) noted that the quality of agricultural extension staff is not adequate. Only few of them are specialists and the field officers do not have good basic education higher than the school certificate to enable them to cope with the amount of work encountered in the field. They revealed that not so much specialization may be needed but the well educated specialist should be versatile and have indepth or broad based education in the agricultural sectors.

Daramola et al. (1999) also disclosed that agricultural extension work takes place through a well-trained network of agricultural officers known as extension agents. According to them, extension workers receive their training from schools of agriculture and farm centres. The training usually lasts for one or two years. One year is certificate course while two years is diploma course by qualification. This is what Kaul and Egbo (1985) mean in their statement above where they referred to the general strategy for development relies on the intensive utilization of well-trained individuals in agriculture, particularly at the “intermediate” level. Daramola et al contained that the training of a field extension officer should provide him with sufficient knowledge and skill to demonstrate the following agricultural practices:

(a) Crop and animal husbandry

(b) Farm machinery and maintenance; and

(d) Farm records and marketing of farm products

Ugochukwu et al (1999) pointed out that polytechnics and universities students formed the labour units in all the farms (government or private) during their long vacation periods. Iwena (2002) suggested that adequate and qualified extension officers should be employed to teach peasant farmers new innovations and techniques in agriculture. He sited examples of agencies involved in agricultural extension programmes as:

**Ministry of Agriculture:** Extension workers are found doing their work of training farmers in various ministries, both at the Federal and state levels.

**Schools of Agriculture:** Departments of extension agriculture also exist in various schools of agriculture where extension agents and other agricultural personnel are trained.

**University of Agriculture:** There also exist in the universities and universities of agriculture, extension departments where extension workers and other allied extension programmes are run for the benefit of the farmers.

**Agricultural Development Programme (ADP):** This programme was set up in 1975. It was co-financed by the World Bank, Federal and State Governments. The aims among others, were to train extension workers so that they can disseminate new ideas and innovations developed within the ADP to rural farmers.

## 2.3 Means of Transportation for Agricultural Extension Workers

The need to acquire suitable modes of transportation for effective agricultural extension work cannot be over emphasized. This will enable the extension workers to have a wider coverage or reach farmers in their respective locations for the purpose of educating them on improved technologies. This according to Akinsanmi (1988) different types of transportation are needed for different purposes, hence there are

footpaths, feeder roads, highways, railways and airways. In view of this Obaweya and Jingudo (1988) pinpointed the following modes of transportation in Nigeria.

1. **Head Porterage:** There has always been the need to move people and goods from one place to the other. In the olden days and even now people have walked from one point to the other often carrying their load on the head, shoulders or back. In many of our towns and villages we find men and women carrying their goods from the farm and to and from the market. This is called head porterage. In head porterage. People use footpaths, tracks and motor roads. The advantage of head porterage is that small quantities of goods can be moved over short distances very cheaply. It is however tedious but it is very appropriate for the poor.
2. **Road Transport:** The push bicycle, motorcycle, cart and truck are vehicles used in road transportation. In many parts of Nigeria the push bicycle and motorcycle are very common means of transport. Two passengers can use a cycle. It can also be used to carry 200 – 500 kilograms of luggage. Push bicycles and motorcycle are very suitable for carrying farm products from farms not reached by motor roads. Bicycles/motorcycles can move on bush paths and can pass over narrow bridges made of planks or tree trunks.
3. **Rail Transport:** Railways are much more efficient than road transport. Trains run on rails with steel wheels. A train has very many coaches joined together and pulled by an engine. This is why they can carry hundreds of passengers at a time.
4. **Water Transport:** Water transport is an old method of transportation. Long ago small canoes were used in rivers, lakes, canals and on seas and oceans. Later on, motor boats were build. Motor boats do not require paddles to make

them move on water. Now ships and ocean liners have been built. Ships run on powerful engines. There are now nuclear powered ships.

5. **Air Transport:** Air transport is the most recent of modern means of transport. Air transport is fast. It links the countries of the world together in a matter of hours. Aircraft use the airport in taking off and landing.

Similarly, Ahmed, Archibong, Onasanya, Ogunniyi and Moses (1989) viewed the different mode of transportation as follows:

**Railway System:** Trains are used in this system. Their many coaches, or wagons, are able to carry, or pull heavy loads. They can carryout these tasks well because their iron wheels move easily along the steel tracks of the railways, and because they do not compete for the tracks with any other forms of transport.

**Water Transport:** Water transportation has been important to world community for centuries. In fact, many communities living near lakes, in delta areas mainly on water inland waterways, depend mainly on water for transporting the goods they produce to markets. Canoes and engine boats and ships were used for water transportation.

**Transport by Road:** Road transport involves all forms of vehicles which use the roads such as bicycles, motorcycles, cars, buses, coaches, lorries and trailers. These are familiar means of transport to all of us. All forms of vehicle travel more efficiently on good road surface. Road transport often works alongside other means of transport. For example, goods and even passengers arriving by ship or by aeroplane are most likely to reach their final destination by some means of road transport. To make road transport faster, many countries are building expressways.

**Transport by Air:** The aeroplane is probably man's greatest invention so far. The first aeroplane was flown successfully in the U.S.A in 1903. Aircraft have been changing and developing ever since. People started to travel by air regularly, in large passenger aeroplanes, in the 1940's. Today it is possible to travel by air to most parts of the world.

In addition, Nzeribe (2000) described transportation as being the movement of people, animals, goods and the services that are beneficial to life from one place to another. He classified transportation system into old and modern. Old transportation system include head-porterage, use of animals like camels, donkeys, horses, mules and the use of elephants in places like India. Others include the use of canoes and logs of woods. While modern transportation system is concerned with road, railway, water and air transportation systems. Bentley and Ziegler (2003) on the other hand disclosed that nice craftsmen worked from the early days of agricultural society to devise efficient means of transportation. They made use of boats and Mesopotamian style wheeled vehicles for local transport, and they relied on donkey caravans for transport between the Nile valley and ports on the red sea. This is to say that choice of means of transportation depends on the suitability as being determined by the condition of an area.

Commenting on the transport modal characteristics, Faulks (1990) pointed out that different forms of transport have different characteristics. If a satisfactory system is to be achieved at minimum overall cost, one theory is that wasteful duplication should be eliminated and the best features of each mode fully exploited. If this system concept prevailed, road, rail inland-waterways, sea and air could not be accepted in isolation. Each becomes part of a system and

hence complimentary to each other. In these circumstances, the modes used would be the one most suitable for the particular job, as maximum economy can be obtained only if the different modes are utilized for the purpose of which they are most appropriate. However, he opined that the great advantage of the road over other forms is its physical ability of being able to provide a door-to-door service. With exceptions such as the railway private siding and waterside premises, it is the only means that can give this service, hence travel by any other method invariably requires conveyance by road at the extremities of the journey. Apart, therefore, from its value as means of trunk movement, the road is, by and large essential for feeder purposes for rail, water and air. Because of the speed and vehicle size limitations naturally imposed on road transportation as a result of the way being shared by all users, the road is most suitable for short term and medium distance traffic. He concluded that it cannot compete in terms of maximum speeds with rail or air but it is the road on which it is practicable for individuals to own and drive their own personal conveyance the private car, the exceptional convenience of which has a very considerable public appeal.

Adeniji et al (1991) noted that lack of efficient transport system affects agricultural production and development. The existing farmlands are located in areas which are inaccessible. The few existing roads in these areas are generally poor and badly maintained. In addition, these roads are usable only during the dry season. This implies that not all modes of transport are most appropriate for use in these remote areas. Thus, extension agents find it difficult if not impossible to penetrate those areas due to lack of suitable transport mode. Based on this, Daramola et al (1999) encourage transportation

by water, that is, the use of canoes, engine boats, so that agricultural extension agents can reach other farmland areas. And agricultural produce from such areas can be transported to other areas and sold at good prices.

## 2.4 Farmers Involvement in Agricultural Extension Work

Agricultural extension programmes are organized in respect of the farmers. For an extension programme to be successfully adopted a farmer must be taught how to carry out the innovation and be persuaded to try it so that he can appreciate the advantages and be convinced of the desirability of adopting it. In addition, all extension programmes must be based on the need of the farmers. Adeniji et al. (1991) supported that farmers can be encouraged to participate in an agricultural extension programme if the extension workers do their work by visiting the farmers in their homes, and setting up demonstration plots in conspicuous places for people to see and adopt. Extension agents also encourage the establishment of Young Farmers Club (YFC)in the schools and colleges by giving them both financial and material help. Through these services, the government hopes to improve and increase agricultural productivity and to encourage farmers participation in agricultural programmes.

Nnadi and Falodun (1992) on the other hand states that the problem of peasant resistance to modern farming techniques can be minimized or completely overcome by the provision of a large network of extension services. According to them extension workers should be equipped with a good means of transportation and dispatched right into the rural areas where the peasants are. The extension agents should be trained to interact with the local farmers in the local language, in order to eliminate their suspicions and win their confidence. In this way, farmers can participate in agricultural programmes where modern farming techniques can be passed to the rural peasant whose productivity will then increase.

Anyanwuocha (1993) contributed that campaigns carried out by the government or its agencies (which encourage people to grow more food and cash crops) help to boost agricultural production. He cited example with Operation Feed the Nation (OFN) Green Revolution, and Operation Back to Land as some of the programmes used for agricultural campaigns.

Anyanwu, Anyanwu and Anyanwu (1998) opined that effective communication is very important in encouraging farmers to participate in agricultural extension programmes. They recommended the following channels of communication used by extension agents:

1. Face to face contact by the extension agents
2. Demonstration method
3. Personal contact with other farmers
4. Mass media.

According to them, face to face contact by the extension agents is known to be a very effective way of selling innovations to farmers. The farmers desire the extension agent to talk to them, to demonstrate to them and exchange views with them. The contact brings them to opinion leaders who influence a lot of traditional farmers. They continued that method demonstration involves setting a piece of plot in the farm to show the farmers the innovations needed in agricultural practices. This gives the farmers an opportunity to see for themselves the new idea or object put into practice. It also enables the farmers observe and make comparisons. On the issue of personal contact, they pointed out that through such contact, the farmers exchange of ideas and encouragement to practice new ideas are got. Such personal contact may take place during agricultural shows and farmers' organizations. Mass media include

radio, television, newspapers, leaflets and posters. This creates a lot of awareness in the farmers towards participation in agricultural extension programmes.

Ugochukwu et al (1999) suggested that from inputs like fertilizer, pesticide, tractors should be made available in adequate quantities and supplied at the right time to farmers. In another development they disclosed that farm settlement scheme was set up in 1960s by the then Western and Eastern Nigeria Government. It was aimed at awakening the interest of farmers especially the young school leavers in agriculture and reducing the rural-urban migration. They further maintained that the young settlers were recruited into the scheme and given a land holding of 9.0 acres for cash crops and 2.5 acres for food crops and were trained. This was aimed at attracting and retraining farmers, particularly young school leavers into the scheme.

Daramola et al (1999) described programme as a projection of what is to be done in future and a plan is the organization of goals and the means of attaining them. They maintained that in programme planning the social and cultural values and the needs for the people must be taken into consideration. This implies that farmer's participation in agricultural extension programmes cannot be effective if the needs of the farmers are overlooked. A programme that is being characterized by such shortcomings cannot create impact on the farmers. This is because programme, according to Bellingham (2007) is an organized set of activities designed to produce a particular result or set of results that will have an impact upon a problem or need.

Okeke (2005) on the other hand pointed out that agricultural extension programmes can be encouraged if farmers are educated in the modern method of agriculture through sending agricultural extension officers to various locations where they can come in contact with farmers with a view to teaching them the various modern techniques of improving agricultural yields. Although in accepting the new

methods of production, he emphasized that, it is necessary to make them see the need for such innovations, if possible through establishment of demonstration farms within the reach of farmers. He added that provision of storage and credit facilities encourage farmer's participation in agricultural production. Effective storage facilities should be provided to farmers for the preservation of harvested farm produces. Storage devices including silos, underground storage spaces and modern stores should be built.

## 2.5 Literacy Level of Farmers

The level of agricultural education and extension is very low. Most Nigerian farmers are illiterates who can neither read nor write. This has made it difficult to convince farmers to adopt new and improved cultural practices (Adeniji et al, 1991). They maintained that the use of fertilizers, insecticides, herbicides and farm mechanization is strange to them and consequently agricultural production has been purely subsistence. They suggested the provision of general agricultural education that is farmers' education for all and training of more agents who will carry the result of research findings on improved methods of crop and animal production to the local farmers.

NERDC (1991) noted that many of the Nigeria farmers especially the traditional ones can neither read nor write. In view of the fact that modern agricultural technology and practices come in packages which require a certain level of literacy. The council added that many Nigerian farmers are not able to fully take advantage or appreciate new agricultural ideas and practices and utilize modern inputs. Thus, the agricultural services provided by the government and other development agencies become underutilized or ignored. In view of this, the council suggested that it is important to mount literacy programmes side by side with extension programmes to

enable farmers take full advantage of new farming techniques and innovations. This will go a long way in raising their output and living conditions.

The education of farmers according to Anyanwuocha (1993) would go a long way to eradicate illiteracy and the conservatism, which are major obstacles to agricultural development. He was suggesting that the government should encourage adult education classes where farmers are taught how to read and write. He added that the mass media and agricultural extension workers could be used to educate the farmers. They can be taught the modern techniques of farming, when and how to plant certain crops, how to apply fertilizers, insecticides, herbicides and fungicides. According to Adamawa State Agricultural Development Programme (AADP) (1993) the primary responsibility of extension workers is education. A substantial number of proven education methods or techniques exist from which the extension worker may choose to set learning situations and to maximize the transfer of information and skills to young and adult learners. The most important strategies that extension worker can adopt are through:

1. Demonstration: These includes:
    (a) On-farm demonstration (SPAT): Small Plot Adoption Teaching)
    (b) Off-farm demonstrations (e.g. Storage)
2. Field days (i.e. both vegetable and harvest)
3. On-farm or field and home visit
4. Farmers education

    The management should also strive to promote extension work through:

    (i) Provision of adequate education to the extension agent (training)
    (ii) Timely and adequate provision of extension inputs and materials.
    (iii) Timely payment of FNT allowance

(iv) Timely posting

(v) Adequate supervision

(vi) Publicity and film shows

(vii) Displays

On-farm demonstration (establishment of SPAT) covering cultural practices and farm inputs. These include:

- Land clearing and preparation
- Good seeds
- Sowing – spacing – thinning - weeding
- Fertilizer application
- Pest and disease control
- Harvesting

Falodun et al (1997) revealed the literacy level of most Nigerian farmers that the farmers, especially the illiterate ones lack requisite technical knowledge and modern skills to raise the standard of farming and agricultural production. There ability to adapt to new methods and techniques remains very much limited. This coupled with scarcity of trained agricultural personnel and extension service officers, has heightened the whole problem of Nigerian agriculture. As a result of the above problems that stands in the way of increased and profitable agricultural production:

(a) The farmers are unable to increase their average income in real terms.

(b) The farmers are unable to raise their standard of living

Anyanwu, Anyanwu and Anyanwu (1998) also noted that low standard of education or low literacy level and inadequate extension services has some connection with conservatism. Educated farmers do not tend to be conservative. Enlightened people tend to be guided in their decision by reason. Generally, there is inadequate

knowledge of the modern trends in agriculture in Nigeria. According to them, government is making serious efforts in educating the people through:

(a) Increasing research stations

(b) Encouraging extension services to ensure that the result of researches is made available to farmers.

(c) Establishment of demonstration farms at strategic places to help educate rural farmers.

(d) Establishing adult education centres through government agencies like the Ministry of Education to increase level of literacy.

Similarly, Erebor (1998) noted that most of the farmers in the developing countries including Nigeria are not educated enough in the technicalities relating to agricultural production, hence they are:

(1) Dogmatic and adamant to changes

(2) Very superstitious in their beliefs

(3) Very suspicious of any new innovation

(4) Unscientific in mind and in thinking

(5) Not willing to accept technological changes

(6) Very uncooperative, hostile and unaccommodating

(7) Unwilling to even learn how to use and apply fertilizers, insecticides and new farm tools.

All these bring about low agricultural productivity. He suggested the following remedial measures:

(a) Farmers should be trained by the extension agents on the most recent agricultural technology.

(b) Organization of mass literacy programmes

(c) Organization of workshops and seminars for farmers to update their knowledge.

Ugochukwu (1999) is also of the view that the acquisition of modern scientific knowledge and skills is necessary to stimulate agricultural production. But the most unfortunate thing according to him is that Nigeria is deficient in the provision of agricultural education to its citizenry. The resultant effects are the short supply of agricultural manpower (especially – extension agents), lack of modern scientific knowledge, skills, ability and will to achieve change among the country's farmers. Thus agriculture in Nigeria is characterized by traditionalism and consequent stagnation in its production capacity. Daramola (1999) was also in support of the fact that many farmers in Nigeria are illiterates and hence they cannot benefit from modern techniques of farming. The extension agents where they are available are unable to motivate the farmers to adopt new changes because they themselves are poorly motivated thus they lose adequate interest in their jobs. To transform farming from the traditional level to commercial level, the use of fertilizers, herbicides, insecticides and agricultural machinery must be encouraged by extension agents. To solve this problem, they suggested the following solutions:

(i) Adult education centres must be established for the local farmers to learn how to read and write.

(ii) Establishment of demonstration farms at strategic location for the traditional farmers so that they can benefit from the modern techniques of farming.

(iii) Agricultural extension agents should be made available and sent to various locations where they can come in contact with the local

farmers with a view to teaching them the various modern techniques of improving agricultural yields.

(iv) The extension agents must be well educated to extend the new techniques of farming to farmers.

Iwena (2002) on the other hand put forward the following suggestions to solving problem of agricultural development caused by the low literacy level of farmers. These include:

1. Problem of mass literacy programme by the government.
2. Provision of training to rural farmers on the modern system of farming.
3. Provision of adequate and qualified extension officers to teach peasant farmers new innovations and techniques in agriculture.

Generally speaking, the low literacy level of traditional farmers in Nigeria and Adamawa State in particular cannot be over emphasized, and hence the need to eliminate those factors militating against the progress of farmers' education in the country.

## 2.6 Farmers Sources of Loan Facilities

Majority of farmers in Nigeria are generally poor and do not have enough money to buy modern farm inputs such as fertilizers, pesticides, improved seeds, livestock, herbicides and agricultural machinery. In view of this, farmers are forced to seek financial help (Adeniji et al, 1991). According to him agricultural loans may be required for medium and long term investment in agricultural production. Such loans may be obtained from government, cooperative banks, agricultural loan banks, and from private produce buying agents. Although Nnadi and Falodun (1992) confirmed that with the spread of educational facilities, many farmers today are becoming enlightened. Some now seek to improve their farming by taking loans from credit

institutions. But the most unfortunate thing is what they discovered, that these credit facilities are still not easily available, because of the insistence, by the lenders on collateral security, which farmers are often unable to provide.

Anyanwuocha (1993) suggested possible solution to the existing problems of credit facilities faced by farmers by saying that farmer's accessibility to loan facilities could be made possible through encouraging the commercial banks to establish branches in rural areas, and agricultural banks should be set up. Banks should be encouraged to relax their collateral security requirements in giving loans to people who wish to use them for agricultural development. The government could guarantee such loans given to farmers for agricultural purposes. He disclosed that the Nigerian Agricultural Development Bank (with headquarters in Kaduna) was established to provide loans to farmers. Cooperative and commercial banks are encouraged to liberalize their loan policy to farmers. In addition, the loans are also given to farmers through loans board and various ministries of agriculture. The loans help them to purchase the necessary inputs for agricultural expansion. He continued that there is also the agricultural credit guarantee scheme in which loans to farmers are guaranteed. In another development he stresses that cooperative farming enables farmers to pool their resources and to have more capital for acquiring the necessary farming inputs. They would be in better position to offer enough collateral security for obtaining loans from banks.

Upton (1997) in his own contribution to farmers' accessibility to loan facilities, revealed that credit agencies are frequently classified into two groups, that is, formal and informal. The formal institutions include banks and cooperative credit unions. While informal agencies may be further sub-divided into two groups. On the one hand, family members, kinsmen and farmers' credit Associations (such as esusu

club in Nigeria) lend money or assets at little or no interest. On the other hand village traders, and money lenders sometimes charge very high interest rates. None the less, informal source according to him, even of the later kind have certain advantages over formal institutions. These include:

1. They are convenient, available locally, require no documentation and can provide credit quickly.
2. The informal money lender has local knowledge to help in appraising household credit needs and worthiness.
3. There is little risk of default because the lender is generally well placed to apply pressure on the borrower to ensure payment.
4. Administrative costs are low.
5 With some types of informal credit such as the caretaking of livestock and the pledging of tree crops, the risk of borrowing are shared between the two parties involved.

Erebor (1998) on the other hand noted that most agricultural activities in the developing countries including Nigeria are subsistence in nature. And the reasons are not far from inadequate finance, hence the farmers:

1. Are very poor
2. Cannot secure the necessary collateral loans.
3. Cannot access to enough credit facilities.
4. Cannot pay the high interest rates on loans either from financial institutions or money lenders.
5. Cannot procure the most sophisticated machines.
6. Cannot employ agricultural specialist whose salaries and wages are far above what the farmers can afford.

He therefore put forward the following possible solutions or remedial measures:

(a) Farmers should form cooperative societies to grant loans and subsidies to members.

(b) Banks should be more liberal in some of the terms for the granting of loans.

(c) Loans should also be monitored by banks, so as to prevent diversion into unproductive sectors.

By this, Daramola et al (1999) was right to have emphasized that finance is a serious problem to framers and hence they continue to produce at subsistence level. This is because loans are not readily available in the commercial banks because the farmers lack collateral security and often misuse the loan. According to them, these problems can be solved if the following measures are taken:

1. Organize new credit programmes of agricultural finance institution.
2. Encourage farmers to form or join cooperative societies, this will enable them to obtain loan from government established Agricultural and Cooperative Banks.
3. Supervision of farm operations to ensure that loan is not diverted to other areas. Iwena (2002) supported that most subsistence farmers are poor and do not have the finance to make the purchase of:
    a) Land and agricultural tools and machinery
    b) Improved seeds, fertilizers and other chemicals
    c) Livestock, livestock feeds and drugs
    d) Materials for construction of farmstead or house
    e) Also, farmers have no access to loan or credit facilities to expand their farm.

f) Farmers do not have the required collateral security to enable them to secure loans from banks.

g) Farmers who get loans, at times divert such loans to other purposes, such as chieftaincy and marriage ceremonies.

In view of the above limiting factors of farmers' accessibility to loan facilities, Iwena suggested the following possible solutions:

1. Agricultural banks like Nigeria Agricultural Cooperative Bank (NACB) should make loans available to farmers.
2. Farmers should form cooperative societies for easy procurement of loan from commercial Banks.
3. Banks should reduce their high interest rate to encourage borrowing.
4. Collateral security should be in form of guarantee rather than in material forms like land and buildings.

Anyaele (2003) made his own contribution with emphasis on the fact that credit facilities like loans, seeds, insecticides and pesticides do not go to the real farmers but to emergency ones who are businessmen who use the loans for their business and resell the seeds. Based on this, he suggested that farmers:

a) Should be given soft loans, with less emphasis on collateral securities;

b) Should form cooperative societies, through this, they will contribute money in order to purchase or hire modern farm machines that will work on rotational basis on their farms.

Okeke (2005) also noted that many of the farmers are very poor. They have no money to purchase good agricultural implements. Worse still they have no means of obtaining loans from the commercial banks since they have no securities. He

considered this as a serious problem. The commercial banks are not usually ready to help. They fear that the farmers may not be able to repay the loans and therefore insist on meaningful securities before they can grand loans to the farmers. The farmers sometimes when they succeed in obtaining the loans, used to turn the money into different purposes. He therefore opined that government should provide agricultural machines on hire basis and at reduced cost so that farmers will be able to make use of them. Also government should, through the Agricultural Development Banks liberalize the granting of loans to farmers at reduced interest rates and with little or no securities, provided it is satisfied that the farmers is hardworking and would be able to repay the loan from the sale of his farm products. In addition, he emphasized that the loans be granted to genuine farmers. This is because it is common experience in this country that politicians divert the agricultural loans to ghost farmers of their choice simply because of their personal political reasons and not for any reasons associated with increase in agricultural production. Loans should be used to the purpose for which they were meant.

## 2.7 Review of Related Empirical Works

Laogun (1985) conducted his research on perception of Farmer' Training Needs: A case study of Isoya Development Project in Oyo State. A panel of 12 specialists consisting of five livestock production specialists, three plant breeders, one poultry production specialist and three extension agents were used to identify the competencies and skills needed for training beginner farmers. The study was carried out in 15 villages randomly selected in the Isoya Rural Development Project Area of the university of Ife. The sample consisted of 152 randomly selected farmers who had participated in the programme of Isoya project. In each village every household was included in the sample but within each household only the head of the unit was

interviewed. The questionnaire consists of three parts, identifying the areas of training needs for farmers in crop production, livestock production and poultry production.

The training needs of farmers in livestock, poultry and crop production as perceived by farmers themselves were measured with use of a five point rating scale. The findings indicate that the three categories of respondents perceived "as great needs" all the training items in crop production. For example fertilizer application, use of improved implements, chemical weed control, high yielding variety of crops, plant protection measures. In livestock production the farmers' and the trainers response means ranged from 3.77 to the highest response means of 4.90. This suggests that farmers' training show more concern for training in animal disease prevention and training in livestock building and equipment. There was no difference between the mean scores of the farmers and agricultural extension agents who were actually involved in the training for animal production. This may be due to the fact that most farmers and trainers have farm backgrounds. And may be the frequent visits of the extension officers to the farmers might be a factor. Another factor possibly contributing to the lack of significant difference was the fact that the extension officers and farmers work closely together. Therefore agricultural extension workers who are out to work always with farmers should have no predictable conflicts relative to specific areas of training needs for farmers.

Students of agriculture who have not had serious contact with the farmers were found to deviate a little bit in the mean scores with the farmers. This factor may be explained by the fact that this group of student respondents had less background concerning the explanations of their job and areas of training needs of farmers generally.

Adekanye (1985) on the other hand dwelled on "The Nigerian Rural Women: some considerations for development". The paper focused on the possibility of integrating women into rural development in Nigeria through further education. A theoretical background was provided for the paper through review of five models of agricultural development: - the conservation, urban industrial impact, diffusion, induced, and high-pay-off input models. Of particular relevance to the objectives of this paper is the high-pay-off input models of agricultural development which among other things, gives a key position to education or investment in human capital.

According to him agriculture is still the dominant sector of the Nigerian economy, in terms of the proportion of the people employed in it. However, Nigeria's agriculture is still traditional in technology and stagnant output. A way of solving this problem is increased and modernized education of women (and men). Educating them further would therefore increase their employment potentials, thereby increasing the national product and incomes of Nigeria. The elements of such an education-employment-and incomes strategy for rural women (and men) in Nigeria include an increase in basic vocational, technical and professional education for women, the establishment of extension education, and functional literacy programmes for adults. Adult education could be basic or be on-the-job training. Extension programmes are particularly suitable for transmitting research results or improved farm practices, improved seeds to farmers (male and female). In particular planners for agricultural development need to realize that since women participate in some farm activities, they should be incorporated into, and not excluded from extension services, as is now the case.

Ikejimba and Alabi (1992) carried out a study on impact of workgroup on Agricultural Technology Adoption. In all, 350 farmers were randomly selected among

70 workgroups recognized in four towns in Lavun Local Government Area of Niger State. These towns were randomly selected, too, from the list of the towns in the study area where there are proliferation of workgroups. Data collection involved fortnightly visits to the farm households and field. Farmers were interviewed on the type of new farm practices adopted, hour and times of visits of village extension agents as well as the socio-economic characteristics of the farmers using structured questionnaires. The Agricultural extension officers of Niger State Agricultural Development Project (ADP) in the study area were interviewed on the causes of low adoption rate by farmers in the area.

The study based on descriptive analysis of the data. The explanations given for the adoption of various agricultural technologies in the study area were based on discussions held by the authors with the work group farmers during the fieldwork. However, sources of information were measured using parameters such as “very often” being scored 4,

“often” = 3, “occasionally” = 2 “seldom” = 1 and “never” = 0.

The following farming constraints were identified:

(i) Labour shortage during peak period of farming activities

(ii) Weak contact with the village extension agents.

(iii) Lack of credit facilities

(iv) Non-availability of high yielding varieties of seeds and

(v) Poor processing methods

The workgroups have been able to offset labour constraints through their communal efforts, and the village extension agents can now reach the individual farmers through the workgroups. The workgroups were able to carryout bulk purchase

of fertilizers, pesticides and high yielding varieties of production by about 28% during 1989 cropping season.

Finally, the study recommends that:

- Farmers should be encouraged to form workgroups
- Members of workgroups should be made contact farmers by village extension agents.
- The workgroups should be encouraged to form cooperative societies.

Auta, Ariyo and Akpoko (1992) also carried out study on "socio-spatial variations in the adoption of agricultural innovations in selected villages in Funtua and Jema'a Local Government Areas.

Four innovations were selected for the study based on the fact that they were representatives of the range of inputs generally considered vital to the development of crop production. These include chemical, fertilizers, improved maize seed varieties, tractor hiring services, and ox-drawn plough. Twelve villages were randomly selected for the study. The investigation was done through an interview schedule conducted between November, 1990 and January, 1991 by four agricultural extension agents who had had several years of field experience. Training was provided to ensure consistent interpretation of the questions. The interview schedule focused on age, literacy level and household size and how these could have affected adoption of the innovations under investigation. Only the head of household living in a randomly selected household was interviewed. In all, a total of 320 household farmers were interviewed. Data analysis was by the use of simple statistical tools as percentages and chi-square analysis.

The findings of this study showed that 29% of the respondents could not read in any of the languages, 39% could read and comprehend in Hausa, 28% in Arabic,

while 9% could read and comprehend simple English. The data were subjected to chi-square test, the result of which could not show a significant difference between literates and non-literate farmers in their adoption behaviour. Further analysis is surprisingly showed that the illiterates (63%) were more likely to adopt innovations than the literate farmers. This is surprising because several studies have indicated the importance of literacy in adoption of new practices (Clark and Akinbode, 1968, Basu, 1969, Alata, 1984, Mijindadi & Njoku, 1985). They argued that education's contribution to innovativeness can be looked at in terms of the opportunities that become open to the literate farmer in the form of posters, bulletins and magazines.

The contrasting findings in this study may be due to the fact that farmers in the study areas did not make use of written sources of information. Rather information on the selected innovations were acquired through extension agents, the radio, friends, neighbours and ward-heads. The negative association found between literacy and adoption in this study tends to suggest that other sources of information may be more important than the written words in inducing a favourable attitude towards innovation adoption.

Similarly, Alata, Arokoyo and Omata (1992) based their study on the impact of Training and Visit (T & V) system of extension on adoption of farm innovations and farm output in Kaduna State of Nigeria. Primary data were collected through structured interviews with randomly selected study villages namely Maigana, Igabi and Giwa. A random selection of 30 farmers from each of the villages was made. This gave a total sample of 90 farmers or 16% of the sample frame all of whom were interviewed. The impact of the T & V system on farmer's adoption of farm innovations and gross farm output was analyzed using percentages and factors associated with the impact of the T & V system were computer analyzed using peason

correlation and step-wise regression computer programme in SPSS$^{x}$ user's guide (1983).

The impact of the T & V extension management system was introduced and adopted by ADPs since 1986. The study showed that before 1985, only one of the thirty-two selected farm innovations was adopted by over 50% of the farmers whereas by 1990, 20 of the innovations were adopted by over 50 percent of the farmers. There was therefore a considerable increase in the rate of adoption of farm innovations. Also gross farm outputs for sorghum, maize, cowpea and groundnuts increased by between 9% and 15% for all categories of farmers with increased production output of over 200kg of each crop in 1990 compared with what obtained in 1985.

These impressive increase in the farmers adoption of farm innovations and their gross farm output were largely attributable to farmers as a result of impact of the T & V system of extension. Extension contact was positively and significantly related to adoption of farm innovations and gross farm output. It showed the highest change of 18% on adoption of innovations as well as relatively high prediction value of about 8% on gross farm output, compared with the other factors studied.

Asiabaka (1992) on the other hand focused on "An Assessment of Training Needs and Job Performance of Women Agricultural Extension Personnel in Imo State, Nigeria" Data for this study was collected over a period of six months in 1990 from all women agricultural extension agents in the six agricultural zones of the state. All the Extension Agents (EAs) were included in this study because they are very few. The researcher visited the zonal offices of the Imo State Agricultural Development Project (ADP) through whom the female extension offices were identified. Two sets of questionnaire were used in data collection. The extension agents completed one set of questionnaire while the Women Block Extension

Supervisors (BESs) appraised the job performance of the agents on a scale of 1 – 9. A rating of one indicated very poor, five indicates average, while nine (9) indicates very high performance. Responses from all the 88 EAs were used in data analysis.

Data analysis shows that most of the women had less than five years experience as extension workers. Their highest level of education was Diploma in Agriculture. The women identified ten major problems facing them. The most pressing problem was transport, lack of adequate equipment, finance, poor roads and very few number of women in the profession. Findings also indicate that the women perceived their training needs to be in areas of food processing, preservation and utilization, general agriculture, home economics and extension teaching method. The supervisors rated the job performance of the women extension personnel as above average. The study concluded that though these women were performing above average, more is needed to be done to improve their overall performance and training.

In another development, Mirchaulum (1999) focused on "African Farming Systems" The Yungur people of Adamawa State. The researcher used two research tools in this exercise. The first is the questionnaire form where 150 forms distributed and 125 responses received covering 35 different settlements. Both sexes were covered among those who responded. The second method that yielded valuable information was interviewing prominent personalities from among Yungur people.

The findings of the study revealed that farmers wish to point out that they do not get the inputs as and when due. Where they exist, their costs could be prohibitive to some of them, especially where middle men buy at the government subsidized rate and sell on open markets at exorbitant prices. More often than not farmers are hard pressed to know where to get inputs. Again more often than not, the inputs come too late for meaningful use. All these problems tend to make the farmers question the

adoption of new techniques. He suggested that availability and costs of the inputs and their timing ought to be closely monitored by government in order to build the trust required for sustaining an innovation.

On loan front, he stated that government had had a go at this and had been disappointed by many farmers who had defaulted. Government was forced to seek legal redress at courts of law in order to recover these loans. Again some of the farmers were in the habit of diverting the loans for other more pressing social problems. Nonetheless, this does not mean that there were no honest ones amongst them, it simply calls for closer monitoring, enlightenment and supervision.

The researcher recommended that:

- Government to assist with inputs, makes them available and affordable.
- Government should assist farmers financially by advancing loans.
- Government should train farmers and assist with more extension workers.
- Understanding the culture of the farmers under study is very important in understanding their farm practices.

Ani (1999) was concerned with the "Analysis of the performance of rural farmers in the Fadama User Association (FUA) programme in the northern zone of Bauchi state. The target population in the study were rural farmers. Random sampling techniques were used to select 75 rural farmers who served as respondents to this study. The instrument used for data collection were in form of interview schedules (questionnaires) which were validated by agricultural extension experts. Statistical tool used in the data analysis were frequency distribution, percentages and multiple regression.

The study findings revealed the problems affecting farmers in using FUA programme facilities. These include:

- Problem of operating some machines
- Problem of maintenance of equipment
- Late arrival of inputs
- Inadequate working materials
- High interest rate on loan
- Poor education from extension agents.

The researcher call for the services of experts in the areas where farmers faced problems to really give them enough advice and training in the use of these facilities. However, the study revealed that farmers on the average were efficiently making use of the facilities provided by the programme. The researcher further suggested the following:

- More experts including extension agents should be employed to educate the farmers on how to maximally and efficiently use the facilities provided by the programme.
- Inputs such as fertilizers, herbicides and seeds should be supplied in time because agricultural production is highly time dependent.

"Economics of Rice Production in Yola North and Yola South Local Government Area of Adamawa State" was a study carried out by (Adebayo & Onu, 1999). The study examined or focused on the socio-cultural and economic characteristics of the farmers, the relationship between rice output and the various inputs used by farmers, as well as the problems militating against production in the areas. Primary data were basically used with the aid of structured questionnaires administered to 120 rice farmers. From the study it was found that 20% of the respondents had no formal education. Lack of access to bank loan and hence the source of capital include personal savings as the major source, followed by loan from "Adashe" and loan from

friends and other sources not specified. There was also inadequate supply and high cost of farm inputs especially during the year of study. Also inadequate tractor hiring services. The researcher concluded that the quantity of seed planted, quantity of fertilizer used, the farm size in hectares and transportation cost were found to affect the output of rice farmers significantly. These variables are also found to influence the output positively.

Olopade and Taiwo (2006) focused on "Analysis of factors affecting Aquaculture Development in Ogun State". The research survey was conducted in the four agricultural zones of Ogun State namely, Abeokuta, Ijebu-Ode, Ikene and Ilaro. Two extension blocks each from the zone were selected using simple random sampling techniques. From each block selected, a list of fish farmers was made available through the help of village extension agents covering each of the blocks. Simple random sampling was used to select eight fish farmers each from the block. A total of 64 questionnaires were administered randomly on respondents in the study area to collect relevant and needed information from the fish farmers. The appropriate information in the questionnaire were coded and analyzed using table and percentage distribution.

The findings revealed that the high literacy rate among farmers affects their level of innovation adoption and eventually increases their production. The most pressing problems include high cost of feed, the capital required to construct more ponds and procuring other inputs, and shortage of fund as set back to aquaculture development. Also, difficult access to capital and related problems such as collateral security, high interest rates, the perception that investment in aquaculture are highly risky and lack of knowledge on the part of potential borrowers on how to apply for

loans are recognized as major constraints to the development of commercial aquaculture.

## 2.8 Summary of Literature Reviewed

Extension education is basically concerned with the dissemination of useful information on agricultural practices and getting the farmers to apply and adopt such knowledge to improve their farms and homes. For one to become extension workers he should attain a certain level of educational qualification. Meanwhile transport and credit facilities should be provided to extension workers and farmers respectively as incentives. In addition, timely and adequate provision of farm input, like fertilizers, improved seeds, chemicals and tractors stimulate agricultural production.

This study was based on Frederick Herzberg's theory of factors in the 1950's where he interviewed both Accountants and Engineers on the factors affecting their jobs environment. These factors include working conditions, achievement on the job, supervision, professional growth and development which motivate workers to greater productivity. The respondents were required to express their opinion on the influence of these factors on their job environments.

Therefore, Hezberg's theory of factors is adopted for this study which is also concerned with the gathering of information from both farmers and extension workers on the current state of extension education in Adamawa State. Thus, the transformation of traditional system of application into progressive and modern one can be achieved if the conditions, circumstances and influences surrounding and effecting the development of extension, education are drastically improved. These include effective overhauling of extension services: additional qualified extension workers to educate/train farmers, availability of farm inputs and credit facilities to farmers, and transport facilities to extension workers for increase productivity.

# CHAPTER THREE

# METHODOLOGY

This chapter is presented under the following sub-headings: Research Design, Area of the Study, Population of the Study, Sample of the Study, Sampling technique, Instrument for data collection, Validation of the Instrument, Reliability of the instrument, method of data collection and method of data analysis.

## 3.1 Research Design

The design for the study was a survey research design. Yalams and Ndomi (2000) stated that survey research design is the gathering of information about a large number of people or objects by studying the representative sample of the entire group. The survey research design is chosen here because of the advantages it offers in terms of accessing data from population too large or too widely dispersed to be observed directly (Babbie, 1986).

The relevance of survey research design therefore is formulated to gather the opinion of registered subsistence farmers and agricultural extension workers in order to form workable strategies for improving extension education towards agricultural development in Adamawa State.

## 3.2 Area of the Study

The area of the study is Adamawa State of Nigeria. Adamawa State is located at the North Eastern part of Nigeria and lies between latitude $7^0$ and $11^0$N of the equator and between longitude $11^0$ and $14^0$ E of the Greenwich Meridian. It is divided into four agricultural zones based on the soils, climate and vegetation (Adebayo & Tukur, 1999). The zones include:

1. **South West Zone:** which has Ganye, Toungo, Jada and Mayo-Belwa local Governments.

2. **Central Zone:** Has Yola North, Yola South, Girei, Fufore, and Song Local Governments.
3. **North West Zone:** Has Numan, Demsa, Lamurde, Guyuk and Shelleng Local Governments.
4. **North East Zone:** Has Gombi, Hong, Maiha, Mubi North, Mubi South, Michika and Madagali Local Governments.

## 3.3 Population of the Study

The target population for this study was comprised of all the registered farmers and the agricultural extension workers in the four Agricultural Zones in Adamawa State as shown in the table below.

**Table 1:**

**Zonal Registered Farmers and Agricultural Extension Workers in Adamawa State.**

| S/NO | ZONE | REGISTERED FARMERS | EXTENSION WORKERS | % FARMER | % EXTENSION WORKERS |
|---|---|---|---|---|---|
| 1 | South West | 430 | 104 | 19% | 36% |
| 2 | Central | 540 | 70 | 24% | 24% |
| 3 | North West | 500 | 52 | 22% | 18% |
| 4 | North East | 790 | 64 | 35% | 22% |
| **Total** | **4** | **2,260** | **290** | **100%** | **100%** |

The grand total of the target population for this study was 2,550 (Two Thousand, Five Hundred and Fifty). **Source**: AADP Head office, Yola.

## 3.4 Sample and Sampling Technique

The sample size for this study was 104 respondents. The 104 respondents comprises 92 registered farmers and 12 extension workers randomly selected from the 4 identified agricultural zones in Adamawa State.

Stratified random sampling technique was chosen for this study. The choice of this sampling technique is in agreement with the statement of Akogun (2000) that it is a method of selection which ensures that every segment (stratum) of the population is identified and its proportion of the population determined. He stated the formula as:

$$\frac{\text{Sub-group population x required sample size}}{\text{total population}}$$

By this, stratified sampling ensures that all subgroups are represented in proportion to their size within the population. Having decided the number of registered farmers, and Agricultural Extension workers that will be in the sample, the actual selection of the respondents to the questionnaire was based on random sampling by balloting.

## 3.5 Instrument for Data Collection

A structured questionnaire was designed by the researcher based on information from the literature reviewed and was used to elicit information from the respondents on improving extension education towards agricultural development in Adamawa State. The instrument was made up of five (5) sections designed to address the research questions. The instrument had a total number of 40 (forty) items structured or formulated in a five point Likert type scale or response option – as: Strongly Agree (5), Agree (4), Undecided (3) Disagree (2) and Strongly Disagree (1).

## 3.6 Validation of the Instrument

Validation of the instrument was ensured from three sources. First, proper care was taken to ensure that the questionnaire items are based upon the ways for improving extension education towards agricultural development that are derived from current literature. Second, the instrument was given to a panel of three judges who are experts in research, in vocational education department, Federal University of Technology, Yola, with several years of field work and teaching experience. The experts validated the instrument on the basis of content validity and face validity.

Modification and rectification was made to the instrument based on the recommendation of the panel of judges. Finally, the instrument was pilot tested, and found reliable for data collection and analysis.

## 3.7 Reliability of the Research Instrument

Jen (2004) stated that research instrument cannot be objectively determined, but rather it most be computed from some data. In view of this, reliability of the instrument for this study relied on test-retest method using the sample of 20 farmers and 10 extension workers making a total of 30 respondents outside those used for the study. The following steps were considered in the application of test-retest method.

1) A structured questionnaire was prepared for filling by the agricultural extension workers and interview for farmers.
2) The questionnaire was administered to the extension workers while interview was conducted for the farmers.
3) An intervening time period of two weeks was allowed.
4) The same questionnaire was administered to the same group of farmers and extension workers.
5) Two sets of scores arising from the questionnaire were obtained.
6) Correlation of the two set of scores obtained using Spearman Rank Order Correlation was made.
7) At this point, the correlation co-efficient which is the 'r' co-efficient of reliability or stability was obtained by the use of the formula:

$$r_s \text{ (or P)} = 1 - \frac{6\sum D^2}{N(N^2-1)}$$

## 3.8 Method of Data Collection

The questionnaires were self-administered and collected after being filled by the respondents. This approach was chosen because it is thought that the method

would result in higher response rates and quick return of questionnaires than could be achieved if the questionnaires were mailed to individual farmers/extension workers.

## 3.9 Method of Data Analysis

The data collected in this study were analyzed by the use of statistical tools, mean and standard deviation to answer the research questions. While Z-test was used to test the hypotheses at 0.05 level of significance. The choice of Z-test is justified by its ability to be used in computing difference in means in large samples (Uzoagulu, 1998).

# CHAPTER FOUR

## RESULT AND DISCUSSION

The data collected for this study were statistically analysed and presented in this chapter. Mean and standard deviation tables were used in presentation-based on the research questions and hypothesis that guided the study.

4.1 **Research Question 1**: What is the level of educational qualification expected of extension workers to foster agricultural development?

**Table 2:** Mean Responses of Farmers and Extension Workers on the level of educational qualification expected of Extension Workers to foster Agricultural Development.

| SN | ITEM | FARMERS | | | | | | | | EXTENSION WORKERS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5 | 4 | 3 | 2 | 1 | X | SD | REM | 5 | 4 | 3 | 2 | 1 | X | SD | REM |
| 1 | Primary School | - | 15 | 35 | 10 | 32 | 2.358 | 1.124 | DA | - | 1 | 7 | - | 4 | 2.166 | 1.242 | DA |
| 2 | Post Primary School | - | 18 | 34 | 16 | 24 | 2.5 | 1.084 | DA | - | 3 | 5 | - | 4 | 2.583 | 1.240 | DA |
| 3 | Farm Institute/Farm Centres | 40 | 39 | 9 | 4 | - | 4.25 | 0.807 | A | 5 | 7 | - | - | - | 4.416 | 0.515 | A |
| 4 | Ministry of Agriculture | 43 | 31 | 14 | 4 | - | 4.228 | 0.866 | A | 3 | 5 | 4 | - | - | 3.916 | 0.275 | A |
| 5 | Agricultural Development Programmes (ADP) | 69 | 10 | 11 | 2 | - | 4.586 | 0.786 | A | 9 | 3 | - | - | - | 4.75 | 0.452 | A |
| 6 | Schools and Colleges of Agriculture where Department of Agric Extension exist | 85 | 7 | - | - | - | 4.924 | 0.267 | A | 10 | 2 | - | - | - | 4.833 | 0.389 | A |
| 7 | Universities where Department of Agricultural Extension exist | 89 | 3 | - | - | - | 4.967 | 0.178 | A | 11 | 1 | - | - | - | 4.916 | 0.288 | A |

In table 2, both farmers and extension workers agreed with items 3,4,5,6 and 7 such as Farm centres, Ministries of Agriculture, schools/colleges and universities where department of Extension Agriculture exist respectively. They are accepted as agencies/schools of training where qualified Agricultural Extension workers should

be obtained to foster agricultural development. However, items 1 and 2 such as primary and post primary schools respectively were rejected based on their inadequacy.

4.2 **Research Questions 2:**

What are the means of transportation needed by Agricultural Extension Workers to reach the contact farmers in the rural areas in Adamawa State?

**Table 3: Mean Responses of Farmers and Agricultural Extension Workers on means of transportation needed for Extension work.**

| SN | ITEM | FARMERS | | | | | | | | EXTENSION WORKERS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **5** | **4** | **3** | **2** | **1** | **X** | **SD** | **REM** | **5** | **4** | **3** | **2** | **1** | **X** | **SD** | **REM** |
| 1 | Bicycle is a means of transportation needed by extension workers to reach the contact farmers at the rural areas | 1 | 3 | 11 | 29 | 48 | 1.695 | 0.886 | DA | - | 1 | 2 | 4 | 5 | 1.916 | 1.007 | DA |
| 2 | Motorcycle is means of transportation needed by extension workers to reach the contact farmers at the rural areas | 78 | 10 | 2 | 1 | 1 | 4.771 | 0.648 | A | 7 | 5 | - | - | - | 4.416 | 0.515 | A |
| 3 | Car is means of transportation needed by extension workers to reach the contact farmers at the rural areas | 45 | 20 | 27 | - | - | 4.195 | 0.867 | A | 4 | 3 | 5 | - | - | 3.916 | 0.900 | A |
| 4 | Engine boat is means of transportation needed by extension workers to reach the contact farmers at the rural areas | 12 | 36 | 28 | 2 | 14 | 3.326 | 1.205 | DA | 3 | 2 | 6 | 1 | - | 3.583 | 0.996 | DA |
| 5 | Canoe is a means of transportation needed by extension workers to reach the contact farmers at the rural areas | 5 | 41 | 28 | 3 | 15 | 3.195 | 1.151 | DA | - | 3 | 6 | 2 | 1 | 2.916 | 0.900 | DA |
| 6 | Horse is a means of transportation needed by extension workers to reach the contact farmers at the rural areas | - | 20 | 38 | 9 | 25 | 2.576 | 1.112 | DA | - | - | 5 | 1 | 6 | 1.916 | 0.996 | DA |
| 7 | Donkey is a means of transportation needed by extension workers to reach the contact farmers at the rural areas | - | 33 | 30 | 4 | 25 | 2.771 | 1.205 | DA | - | 3 | 1 | - | 8 | 1.916 | 1.379 | DA |

Table 3 shows that items 2 and 3 that is motorcycle and car respectively were accepted by both farmers and extension workers as means of transportation needed by extension workers to reach the contact farmers at the rural areas. However, engine boat which falls under items 4 was rejected by the farmers and accepted by the extension workers. Meanwhile items 1, 5, 6 and 7 are bicycle, canoe, horse and donkey respectively were not accepted by both respondents.

4.3 **Research Question 3:** What are the ways of improving farmers' level of involvement in Agricultural Extension Programmes?

**Table 4:** Mean Responses of Farmers and Extension Workers on ways of improving Farmers level; of involvement in Agricultural Programmes.

| SN | ITEM | FARMERS | | | | | | | | EXTENSION WORKERS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **5** | **4** | **3** | **2** | **1** | **X** | **SD** | **REM** | **5** | **4** | **3** | **2** | **1** | **X** | **SD** | **REM** |
| 1 | Personal contact with the farmers to discuss new ideas and techniques of farming | 84 | 8 | - | - | - | 4.913 | 0.283 | Agreed | 12 | - | - | - | - | 5.0 | 0 | A |
| 2 | Using radio and television to create awareness and interest in new ideas and techniques among farmers | 54 | 37 | 1 | - | - | 4.576 | 0.519 | Agreed | 4 | 8 | - | - | - | 4.333 | 0.492 | A |
| 3 | Using newspapers, bulletins, posters, pamphlets and handbills to create awareness in new ideas and techniques among farmers | 10 | 27 | 23 | 18 | 14 | 3.011 | 1.243 | DA | 2 | 3 | 2 | 4 | 1 | 3.085 | 1.311 | DA |
| 4 | Considering farmers' tradition, custom, culture and needs while carrying out extension programmes | 50 | 28 | 4 | 4 | 6 | 4.217 | 1.146 | Agreed | 6 | 5 | - | 1 | - | 4.333 | 0.887 | A |
| 5 | Adequate and timely supply of Agricultural inputs such as fertilizers, improved seeds and tractors | 56 | 32 | 4 | - | - | 4.565 | 0.579 | Agreed | 6 | 5 | - | 1 | - | 4.333 | 0.887 | A |
| 6 | Communication with farmers in their language of understanding | 89 | 3 | - | - | - | 4.967 | 0.187 | Agreed | 10 | 2 | - | - | - | 4.833 | 0.389 | Agreed |
| 7 | Subsidizing agricultural inputs such as fertilizers, improved seeds and tractor cost of operation | 39 | 44 | 9 | - | - | 4.326 | 1.131 | Agreed | 6 | 6 | - | - | - | 4.5 | 0.522 | Agreed |
| 8 | Carrying out agricultural campaigns to farmers on agricultural extension programmes | 38 | 44 | 9 | 1 | - | 4.293 | 0.688 | Agreed | 6 | 5 | - | 1 | - | 4.333 | 0.887 | Agreed |
| 9 | Employing Training and Visit (T&V) system of extension on agricultural innovations adoption | 53 | 37 | 2 | - | - | 4.554 | 0.542 | Agreed | 9 | 3 | - | - | - | 4.75 | 0.452 | Agreed |
| 10 | Using farmers work groups to contact the entire farmers | 47 | 40 | 5 | - | - | 4.456 | 0.601 | Agreed | 8 | 4 | - | - | - | 4.666 | 0.492 | Agreed |
| 11 | Establishing demonstration plots "SPAT" on farmers farms | 80 | 12 | - | - | - | 4.869 | 0.339 | Agreed | 9 | 3 | - | - | - | 4.75 | 0.452 | Agreed |
| 12 | Having access to loan facilities by the farmers | 74 | 16 | 2 | - | - | 4.783 | 0.465 | Agreed | 8 | 4 | - | - | - | 4.666 | 0.492 | Agreed |

In table 4, both the farmers and extension workers agreed with all items which are concerned with the ways of improving farmers' level of involvement in Agricultural Extension Programmes except item 3 which dwells on using newspapers, bulletin, posters, pamphlets and handbills to create awareness in new ideas and techniques among farmers.

4.4 **Research Question 4:** What are the ways of raising literacy level of farmers?

**Table 5:** Mean Responses of Farmers and Extension Workers on ways of Raising Farmer's level of literacy:

| SN | ITEM | FARMERS | | | | | | | | EXTENSION WORKERS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **5** | **4** | **3** | **2** | **1** | **X** | **SD** | **REM** | **5** | **4** | **3** | **2** | **1** | **X** | **SD** | **REM** |
| 1 | Organization of mass literacy programme at strategic locations or centres for contact farmers | 83 | 7 | 2 | - | - | 4.880 | 0.387 | Agreed | 11 | 1 | - | - | - | 4.916 | 0.288 | Agreed |
| 2 | Employing adequate and qualified agricultural extension workers to train farmers | 83 | 8 | 1 | - | - | 4.891 | 0.346 | Agreed | 10 | 2 | - | - | - | 4.833 | 0.389 | Agreed |
| 3 | Mounting literacy programmes side by side with extension programmes to educate farmers | 40 | 25 | 17 | 10 | - | 4.032 | 1.031 | Agreed | 6 | 6 | - | - | - | 4.5 | 0.522 | Agreed |
| 4 | Organizing workshops and seminars to update farmers knowledge of agricultural extension programmes | 55 | 32 | 5 | - | - | 4.543 | 0.601 | Agreed | 5 | 5 | 1 | 1 | - | 4.166 | 0.937 | Agreed |
| 5 | Adequate use of mass media to transfer new knowledge and ideas to farmers | 26 | 57 | 8 | 1 | - | 4.174 | 0.622 | Agreed | 3 | 3 | 2 | 2 | 2 | 3.25 | 1.484 | DA |
| 6 | Adequate supervision of farmers' activities by the agricultural extension Agents/workers | 80 | 11 | 1 | - | - | 4.826 | 0.381 | Agreed | 8 | 4 | - | - | - | 4.666 | 0.492 | Agreed |
| 7 | Adequate motivation of extension workers with FNT allowance, transport facilities and extension equipment by the government. | 84 | 5 | 3 | - | - | 4.880 | 0.415 | Agreed | 11 | 1 | - | - | - | 4.916 | 0.288 | Agreed |

Going by table 5, both the farmers and extension workers agreed with items 1,2,3,4,6 and 7 which correspond with organization of mass literacy programmes, employment of adequate and qualified extension workers, mounting literacy programmes side by side with extension programmes, organizing workshops and seminars, adequate supervision of farmers activities and adequate motivation of extension workers respectively to raise farmers level of literacy. However, items 5 – adequate use of mass media to transfer new ideas and knowledge to farmers was agreed and disagreed by farmers and extension workers respectively.

4.5 **Research Question 5:** How can loan facilities be made available to farmers?

**Table 6: Mean responses of farmers and extension workers on ways of making loan facilities available to farmers.**

| SN | ITEM | FARMERS | | | | | | | | EXTENSION WORKERS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **5** | **4** | **3** | **2** | **1** | **X** | **SD** | **REM** | **5** | **4** | **3** | **2** | **1** | **X** | **SD** | **REM** |
| 1 | Establishing branches of commercial/agric banks in the rural areas to make loans available to farmers | 85 | 5 | 2 | - | - | 4.902 | 0.365 | Agreed | 9 | 3 | - | - | - | 4.75 | 0.452 | Agreed |
| 2 | Forming farmers cooperative societies | 82 | 10 | - | - | - | 4.924 | 0.315 | Agreed | 11 | 1 | - | - | - | 4.916 | 0.288 | Agreed |
| 3 | Reducing high interest on loans by the banks | 58 | 29 | 5 | - | - | 4.576 | 0.597 | Agreed | 7 | 3 | 1 | 1 | - | 4.333 | 0.984 | Agreed |
| 4 | Simplifying the granting of loans to farmers with little or no collateral security | 28 | 46 | 18 | - | - | 4.108 | 0.702 | Agreed | 8 | 3 | 1 | - | - | 4.583 | 0.668 | Agreed |
| 5 | Granting loans to farmers in form of guarantee rather than in material form | 12 | 60 | 17 | 2 | 1 | 3.869 | 0.698 | Agreed | 6 | 6 | - | - | - | 4.5 | 0.522 | Agreed |
| 6 | Monitoring and supervising farmers against diverting loan to other purpose | 79 | 11 | 2 | - | - | 4.837 | 0.427 | Agreed | 8 | 4 | - | - | - | 4.666 | 0.492 | Agreed |
| 7 | Educating farmers on the procedures for obtaining loan from the banks | 76 | 16 | - | - | - | 4.826 | 0.381 | Agreed | 9 | 3 | - | - | - | 4.75 | 0.452 | Agreed |

In table 6, both the respondents agreed with all the 7 items on ways of making loan facilities available to farmers. These include establishing banks in rural areas, forming farmers cooperative societies, granting loans with little or no collateral security, granting loans in form of guarantee, monitoring and supervision of farmers against loan diversion, and educating farmers on procedures for obtaining loans.

**Table 7: Zonal Means Responses of Farmers and Extension Workers on improving Extension Education towards Agricultural Development**

| | Ways of Improving Extension Programmes | CENTRAL ZONE | | | | | S/WEST ZONE | | | | | N/WEST ZONE | | | | | N/EAST ZONE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F | | EW | | | F | | EW | | | F | | EW | | | F | | EW | | |
| | | X | SD | X | SD | Rem | X | SD | X | SD | Rem | X | SD | X | SD | Rem | X | SD | X | SD | Rem |
| 1 | Mean responses on level of educational qualification expected of extension workers | 3.720 | 1.546 | 3.952 | 1.999 | Both Agreed | 4.503 | 0.775 | 4.190 | 0.740 | Both Agreed | 3.298 | 1.409 | 3.476 | 1.662 | Both Disagreed | 4.391 | 0.823 | 4.190 | 0.928 | Both Agreed |
| 2 | Mean responses on means of transportation needed by extension workers for extension work | 2.969 | 1.353 | 3.095 | 1.091 | Both Disagreed | 3.733 | 1.099 | 3.333 | 1.316 | Agreed/Disagreed | 2.56 | 1.643 | 2.762 | 1.73 | Both Disagreed | 2.515 | 1.113 | 3.62 | 1.203 | Both Agreed |
| 3 | Mean responses on ways of improving farmers level of involvement in extension programmes | 4.706 | 0.456 | 4.5 | 0.507 | Both Agreed | 4.341 | 0.865 | 4.5 | 0.560 | Both Agreed | 4.543 | 0.837 | 4.944 | 0.232 | Both Agreed | 4.279 | 1.024 | 4.472 | 0.736 | Both Agreed |
| 4 | Mean responses on ways of raising literacy level of farmers | 4.515 | 0.547 | 4.666 | 0.005 | Both Agreed | 4.453 | 0.901 | 4.381 | 0.720 | Both Agreed | 4.646 | 0.665 | 5.0 | 0 | Both Agreed | 4.422 | 0.997 | 4.381 | 0.865 | Both Agreed |
| 5 | Mean responses on ways of making loan facilities available to farmers. | 4.608 | 0.489 | 4.333 | 0.730 | Both Agreed | 4.602 | 0.574 | 4.143 | 0.964 | Both Agreed | 4.46 | 0.837 | 4.905 | 0.436 | Both Agreed | 4.627 | 0.631 | 4.428 | 1.428 | Both Agreed |

KEY: F = Farmers, E.W = Extension Workers

In table 7, both farmers and extension workers in Central Zone agreed with many of the sub-items under items 1, 3, 4 and 5 such as level of educational qualification, means of transportation needed, improving farmers level of involvement in extension programmes, ways of improving farmers level of literacy and making loan facilities available to farmers respectively. However, farmer and extension workers disagreed with more of the means of transportation needed for extension work. South West Zone agreed with all except on transportation means where Farmers and Extension workers Agreed and Disagreed respectively with many of

them. North West Zone agreed with items 3, 4 and 5 and disagreed with many of the levels of qualification and means of transportation needed under items 1 and 2. But north East Zone agreed with more of all the ways of improving extension programmes under items 1, 2, 3, 4 and 5 outlined in table 6.

4.6 **HO:** There is no significant difference between the mean responses of farmers and extension workers on ways of improving extension education towards agricultural development.

**Table 8:** Z-test of difference between the mean responses of farmers and extension workers on ways of improving extension education towards Agricultural Development:

| Respondents | X | Standard Deviation | n | df | Standard Error | Z-cal | Z-table | Decision |
|---|---|---|---|---|---|---|---|---|
| Farmers | 4.204 | 1.117 | 92 | | | | | |
| Extension Workers | 4.148 | 1.158 | 12 | 102 | 0.354 | 0.158 | 1.645 | Accepted |

Table 8 indicates that Z-calculated, 0.158 is less than Z-table, 1.645 and hence the null hypothesis which states that there is no significant difference between the mean responses of farmers and extension workers on ways of improving extension education towards agricultural development is accepted.

4.7 **Determination of the Reliability Coefficient of the Research Instrument.**

**Figure 1:** Two sets of scores produced by a group of respondents at two weeks interval on ways of improving Agricultural Development.

First Score: 167, 170, 169, 170, 159, 166, 166, 168, 146, 165, 158, 172,
182, 178, 162, 163, 169, 162, 174, 180, 163, 178, 150, 172
165, 169, 169, 168, 169, 160.

Second Score: 164, 167, 166, 166, 157, 165, 166, 167, 142, 160, 158, 160
168, 177, 162, 160, 169, 161, 173, 167, 161, 169, 150

171, 164, 169, 168, 168, 169, 160.

- The sum of the difference in scores/ranks squared = $\sum d^2 = 699$
- The number of respondents = N = 30
- The formula of Spearman Rank – Order Correlation Coefficient = $r = 1 - \frac{6\sum d^2}{N(N^2-1)}$
- By substitution = $r = 1 - \frac{6 \times 699}{30(30^2 - )} = 1 - \frac{4194}{26970} = 1 - 0.155506117 = 0.844$

## 4.8 Major Findings

The major findings of this study on expected qualification of an agricultural extension worker to foster agricultural development in Adamawa State revealed that farmers and extension workers agreed with the degree certificates at X = 4.967 and 4.916 respectively, Diploma certificate at X = 4.924 and 4.833 respectively, ADP Training certificate at X= 4.586 and X = 4.75 respectively and farm centers training certificates at X = 4.25 and X = 4.416 respectively.

Farmers and extension workers agreement with the major findings on means of transportation needed for extension work include Motorcycle at X = 4.771 and X = 4.416 respectively, Car at X = 4.195 and X = 3.916 respectively and engine boat at X = 3.583 by the extension workers.

Major ways of improving farmers level of involvement in agricultural extension Programme as well as the mean rate of farmers and extension workers agreement with them are:- Communication with farmers in their language of understanding at X= 4.967 and X = 4.833 respectively. Personal contact with farmers to discuss new ideas and techniques of farming at X = 4.913 and 5.0 respectively. Establishing demonstration plots on farmers farms at X = 4.869 and X = 4.75 respectively. Having access to loan facilities at X = 4.783 for farmers and X = 4.666 respectively. Adequate and timely supply of agricultural inputs at X = 4.565 and x = 4.333 respectively. Using Radio and Television

to disseminate information on agricultural practices at X = 4.567 and X= 4.333 respectively. Employing T & V system of extension on agricultural innovations adoption at X= 4.554 and X= 4.75 respectively and considering farmers culture and needs while carrying out extension programmes at X= 4.217 and X= 4.333 respectively.

Major ways of raising literacy level of farmers as agreed by both farmers and extension workers include employment of qualified extension workers at X = 4.891 and X = 4.833 respectively, organization of Mass literacy programmes at X= 4.88 and X = 4.916 respectively. Adequate supervision of framers by the extension workers at X= 4.826 and X= 4.666 respectively and adequate motivation of extension workers at X= 4.88 and X= 4.916 respectively.

Major ways of making loan facilities available to farmers and the mean agreement of both farmers and extension workers include Forming farmers cooperative society at X= 4.924 and X= 4.916 respectively. Establishing branches of Commercial Banks at Rural Areas at X= 4.902 and X = 4.75 respectively. Educating farmers on the procedures for obtaining loans from the banks at X= 4.826 and X= 4.75 respectively and the monitoring and supervision of farmers against diverting loans to other purposes at X= 4.837 and X= 4.666 respectively.

## 4.9 Discussion of Findings

The mean responses of farmers and extension workers on expected qualification of an agricultural extension worker to foster agricultural development revealed that Degree certificate was agreed upon at rate of X = 4.967 and 4.916 respectively, Diploma Certificate at X = 4.924 and X = 4.833 respectively, ADP Training Certificate at X = 4.586 and X = 4.75 respectively and farm centres Certificate at X = 4.25 and 4.416 respectively. This agreement is in line with that of Iwena (2002) that agencies of training involved in agriculture include Ministries of

Agriculture, farm institutes, schools of agriculture, Agriculture development Programmes and Universities of Agriculture. These bodies or agencies have extension service units that can teach and train extension workers on the job to improve their daily service so that they will be able to transfer these innovations to the rural farmers. Farmers and Extension workers in their response agreed that these agencies can produce adequate, qualified and competent extension workers that can foster agricultural development. This is also viewed by Kaul and Egbo (1985) that the general strategy for development relies on the intensive utilization of well-trained individuals in agriculture.

The views of farmers and extension workers on means of transportation needed for extension work include motorcycle and car at X=4.771/4.416 and X=4.195/X=3.916 respectively. Extension workers in their response agreed with engine boat with X=3.583. The agreement of farmers and extension workers with one means of transportation or the other largely depends on its suitability as stated by Bentley and Ziegler (2003) that choice of means of transportation depends on the suitability as being determined by the condition of an area. In view of this Faulks (1990) specifically stated that the great advantage of road transport over other forms is its physical ability of being able to provide door-to-door service. In addition Obaweya and Jungudo (1988) stated that that motorcycles can move on bush paths and can pass over narrow bridges made of planks or tree-trunks. Meanwhile Daramola et al (1999) encourage transportation by water, that is, the use of engine boats, so that Agricultural Extension Agents can reach other farmland areas that could not be reached by road transport especially during the rainy season. This could be the reason for the choice of engine boat by the extension workers.

The mean responses of farmers and extension workers on ways of improving farmers level of involvement in extension programmes agreed with communication with farmers in their language of understanding with X=4.967/4.833. This agreement is in line with the view of Nnadi and Falodun (1992) that the extension agents should be trained to interact with the local farmers in their local language, in order to eliminate their suspicions and win their confidence. Communication is a matter of understanding. Posting of an extension worker to a particular area should be characterized by his understanding of the local language of that area for successful and fruitful performance. Farmers and extension workers on the other hand viewed personal contact with the farmers to discuss new ideas and farming techniques as another way of improving farmers' level of involvement in extension programmes. Their mean agreement is 4.913 for farmers while that of extension workers is 5.0 meaning that all the extension workers agreed with personal contact. This is in similarity with the view of Aanyanwu, Anyanwu and Anyanwu (1998) that face to face contact by the extension agents is known to be a very effective way of selling innovations to farmers. The farmers desire the extension agent to talk to them, to demonstrate to them and exchange views with them. This contact brings them to opinion leaders who influence a lot of contact farmers to actively participate in agricultural extension programmes.

Similarly, farmers and extension workers agreed with the establishment of demonstration plots on farmer' farms as another way of improving farmers level of involvement in extension programmes. Their mean agreement is 4.869 and 4.75 respectively. This is in line with the suggestion of Adeniji et al (1991) that demonstration plots should be set on the farmers farms to show them the innovations needed in agricultural practices. This gives the farmers an opportunity to see for

themselves the new idea or object put into practice. It also enables the farmers observe and make comparisons. On-farm demonstration is the important strategy that extension worker can adopt while carrying out extension programmes. (AADP, 1993). Having access to loan facilities was agreed upon by the respondents as way of improving farmers level of involvement in agricultural extension programmes. Their mean agreement was rated at X=4.783 for farmers while extension workers have x=4.666. Adeniji (1991) revealed that farmers' involvement in agricultural production is limited by their inability to have enough money to buy modern farm inputs such as fertilizers, chemicals, improved seeds and tractors. He maintained that farmers are forced to seek loan facilities to stimulate agricultural production. Therefore, provision of loan facilities encourages farmers' participation in agricultural production.

Using radio and television to create awareness and interest in new ideas and techniques among farmers, was viewed by farmers and extension workers as a way of improving farmers participation in agricultural extension programmes. Their mean response is X=4.567 and 4.333 respectively. This agreement can be connected to the findings of Auta, Ariyo and Akpoko (1992) who carried out study on "Socio-spatial variations in the adoption of agricultural innovations. The findings revealed that illiterates were more likely to adopt innovations than the literate farmers, if information on the selected innovations were acquired through radio, television, extension agents, friends, neighbours and ward-heads. The negative association found between literacy and adoption in the study tends to suggest that other sources of information may be more important than the written words in inducing a favourable attitude towards innovation adoption. Several studies have indicated the importance of literacy in adoption of new practices or innovations, but Clark and Akinbode (1968), Basu (1969), Alata (1984), Mijindadi and Njoku (1985) agreed that education's

contribution to innovativeness can be looked at in terms of the opportunities that become open to the literate farmers in the form of newspapers, posters, bulletins, handbills and magazines. This could be the reason for rejecting the use of written sources of information by both the farmers and extension workers in this study.

Another way of improving farmers' level of involvement in extension programmes as agreed by both the respondents is the adequate and timely supply of agricultural inputs like fertilizers, chemicals, improved seeds and tractors.

Their mean responses was X=4.565 and X=4.333 for farmers and extension workers respectively. This agreement corresponds with the view of Ugochukwu et al (1999) that farm inputs like fertilizers, chemical, improved seeds and tractors should be made available in adequate quantities and supplied at the right time to farmers. By this, farmers are able to actively participate in extension programmes and increase their productive capacity.

Employment of Training and Visit (T&V) system of extension on agricultural innovations adoption was agreed upon by both farmers and extension workers with the X=4.554 and X4.75 respectively. This is similar to the suggestion of Adeniji et al (1991) that farmers can be encouraged to participate in an agricultural programme if the extension workers do their work by visiting the farmers in their homes and farms. The impact of Training and Visit system of extension on adoption of farm innovations and farm output was a study carried out by (Alata, Arokoyo & Omata 1992). The findings of the study revealed that there was a considerable increase in the rate of adoption of farm innovations and farm outputs largely attributable to farmers as a result of impact of the T&V system of extension. Training and Visit is impressive, interactive, educative and progressive as far as agricultural extension programmes are concerned.

Farmers and extension workers viewed considering farmers tradition, custom, culture and needs while carrying out extension programmes as influential. Their mean responses were X=4.217 and X=4.333 respectively. In view of this Daramola et al (1999) opined that in programme planning, the social cultural values and needs of the people must be taken into consideration if their participation is required. A programme that is characterized by such shortcomings cannot create impact on the beneficiaries. For example a programme that involved the rearing of pigs may not by valued by Muslim brothers. It has been recommended by Mirchaulum (1999) in his study titled "African Farming Systems: The Yungur people" that understanding the culture of the farmers under study is very important in understanding their farm practices.

In another development farmers and extension workers agreed with the employment of adequate and qualified extension workers to teach the farmers. Their mean responses was X=4.891, farmers and X=4.833 for extension workers. By this, the literacy level of farmers can be raised. Ani (1999) in his study titled "The Analysis of the Performance of Rural Famers in the Fadama User Association (FUA) programme in the Northern Zone of Bauchi state, discovered that the farmers have low educational background in handling most of the equipment and facilities provided. In this regard he recommended the employment of more experts including extension agents to educate farmers on how to maximally and effectively use the facilities provided by the programme. Besides this, AADP (1993) disclosed that the primary responsibility of extension workers is education. The extension worker may choose to set learning situations and maximize the transfer of information and skills to farmers. Iwena (2002) suggested that extension agents must be well educated to extend the new techniques of farming to farmers.

Farmers and extension workers also agreed with the organization of mass literacy programmes to eradicate illiteracy among farmers with X=4.88 and X=4.916 respectively. NERDC (1991) noted that many Nigerian farmers especially the traditional ones can neither read nor write – in view of the fact that modern agricultural technology and practices come in packages which require a certain level of literacy. In addition, Anyanwuocha (1993) maintained that illiteracy is a major obstacle to agricultural development. This is what prompted Erebor (1998) to suggest that mass literacy programmes should be organized at strategic locations for the local farmers to learn how to read and write for maximum productivity.

Adequate supervision of farmers by the extension workers was agreed upon by the farmers and extension workers with X=4.826, and X=4.666 respectively as suitable way of raising literacy level of framers. This agreement is in line with the views of Daramola et al (1999) that agricultural extension agents should be made available and sent to various locations to train farmers and to supervise them as well. Erebor (1998) on the other hand stated that the extension agents can also supervise and evaluate agricultural extension programmes for improvement. Infact, supervision enables both the farmers and extension workers to interact and identified problematic areas that require remedial measure towards production efficiency.

Farmers and extension workers viewed adequate motivation of extension workers as a major way of raising literacy level of farmers. Farmers showed mean response of 4.880 and that of extension workers was 4.916. this agreement corresponds with the statement of Daramola et al (1999) that the extension agents where they are available are unable to motivate the farmers to adopt new changes because they themselves are poorly motivated and hence they are gradually loosing interest in the job. This is what provoked AADP (1993) to recommend the promotion

of extension work through timely payment of FNT allowance and provision of transport facilities for regular visitation. No matter the level of commitment into developing agricultural extension programmes, if the motivation of extension workers is neglected, the entire programme will be characterized by pitfalls and shortcomings that would affect farmers performance and productivity.

Farmers and extension workers agreed that formation of farmers cooperative societies is one of the major ways of making loan available to farmers. Their mean responses were rated with X=4.924 for farmers while that of extension workers was X=4.916. The agreement of Anyanwucha (1993) with the formation of cooperative societies was based on the fact that the farmers would pool their resources and to have more capital for acquiring the necessary farming inputs and would also in better position to offer enough collateral security for obtaining loans from banks. This could be the backing reason for farmers' choice of this item.

Establishment of branches of commercial/agricultural banks at the rural areas to make loans available to farmers is considered by both farmers and extension workers as another way of making loan available. Their mean responses were rated with X=4.902 – farmers and X=4.75 – extension workers. In view of this Anyanwuocha (1993) accepted that farmers' accessibility to loan facilities could be made possible through the establishment of branches of commercial and agricultural banks in rural areas. These loan facilities if granted to farmers accordingly would in no small way increase their productive capacity. In another development, educating farmers on the procedures for obtaining loans from the banks was agreed upon by the farmers and extension workers with X=4.826 and X=4.75 respectively. The findings of Olopade and Taiwo (2006) in their study titled "Analysis of Factors Affecting Aquaculture Development in Ogun State, revealed that lack of knowledge on the part

of potential borrowers on how to apply for loans militated against the development of the aquaculture since farmers accessibility to loan facilities proved abortive. Farmers should therefore be educated on the procedures for obtaining loans from the banks. Any improvement in tropical agriculture must involve farmer education.

The mean responses of farmers and extension workers on monitoring and supervising farmers against diverting loans to other purposes indicated agreement at the rate of X=4.837 and 4.666 respectively. This is also in agreement with the view of Okeke (2005) that farmers sometimes when they succeeded in obtaining the loans, used to turn the money into different purposes. He added that it is common experience in this country that politicians divert the agricultural loans to ghost farmers of their choice simply because of their personal political reasons and not for any reason associated with increase agricultural production. This has already been stated by Iwena (2002) that farmers who get loans at times divert such loans to other purposes like chieftaincy and marriage ceremonies. This is what prompted Erebor (1998) to opined that loans should be monitored by banks to prevent diversion into unproductive sectors as agreed by the respondents.

It was hypothesized that there is no significant difference between the mean responses of farmers and agricultural extension workers on ways of improving extension education towards agricultural development. The findings of this study revealed that significant difference does not exist between the two respondents as being hypothesized. This findings is in line with that of Laogun (1985) in his study titled “Perception of Farmers Training Needs: A case study of Isoya Development Project in Oyo State”. His findings revealed that there was no difference between the mean scores of the farmers and agricultural extension agents who were actually involved in the training for animal production. He disclosed that the non existence of

difference may be due to the fact that most farmers and trainers have farm backgrounds. Another factor possibly contributing to the lack of significant difference was the fact that the extension officers and farmers work closely together. Therefore, agricultural extension workers who are out to work always with farmers should have no predictable conflicts relative to specific ways of improving agricultural development.

The reliability coefficient of the research instrument was high (0.844) and the internal consistencies of the sub-items were moderate. The findings revealed changes in the behavior of the same respondents in filling the same questionnaire that was administered at an interval of two weeks. Some little changes observed in filling the questionnaire resulted from the deviation from strongly agree to agree as vice versa or from strongly disagree to disagree as vice versa. Meanwhile undecided served as pendulum to some extent. This had been the cause of getting the difference that was computed and arrived at the figure (0.844) that made the instrument reliable and dependable. The observed difference in the two sets of scores produced by the same respondents might have been brought about by the situational factors that affect ones consistency in opinion about one item or the other.

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

In this chapter, Restatement of the problem, summary of procedures, summary of major findings, conclusions, implications of the findings, recommendations, suggestions for further study and limitation of the study are presented.

## 5.1 Restatement of the Problem

The agricultural development in Adamawa State is hindered by lack of adequate extension education among farmers especially the local or illiterate ones. Emedo (1999) stated that agricultural extension education is basically an adult education programme that brings information to farmers concerning new development, which can be applied to increase agricultural production and improve on post-harvest activities.

The farmers, especially the illiterate ones, lack requisite technical skills and scientific knowledge to raise the standard of farming and agricultural production in their location due largely to poor extension education (Falodun, Omogiafo & Ezeaku, 1997). This is what prompted Ugochukwu et at (1999) to opined that the acquisition of scientific knowledge and technical skills by farmers is necessary to stimulate agricultural production, but poor extension education has affected them. They noted that the resultant effects are the short supply of agricultural manpower, low level of application of modern scientific knowledge, skill and ability which culminates into poor agricultural development. Thus, agriculture in Nigeria and Adamawa State in particular is still characterized by traditional practices and hence stagnation in productive capacity. This calls for a study that will improve extension education towards agricultural development in Adamawa State.

## 5.2 Summary of Procedures

A structured questionnaire was designed by the researcher based on information from the literature reviewed and was used to elicit information from the respondents on improving extension education towards agricultural development. The instrument was made up of 5 sections designed to address the research questions and 40 items were formulated in a 5 points likert type scale. The instrument was validated by 3 judges in terms of face and content validation.

The reliability of the instrument was determined using test-retest method of determining internal consistency. The formular of Spearman Rank-Order Correlation was applied which yielded reliability coefficient of 0.844 after being pilot tested with the sample of 30 respondents outside those used for the study. The sample population used for the study was 104 respondents, that is, 92 farmers and 12 agricultural extension agents randomly drawn from the four agricultural zones in Adamawa State. Stratified random sampling technique was used for the study. The actual selection of the respondents was based on random sampling by balloting.

The questionnaire was self-administered and collected after being filled by the respondents. Farmers relied on interview schedule in filling the questionnaire. The data collected were analyzed and answered using such statistical tools as mean and standard deviation while critical ratio – Z – test was employed to test the hypothesis at 0.05 level of significance.

## 5.3 Summary of Major Findings

The major findings in this study were:

1. The reliability coefficient of the instrument was as high as 0.844 and the internal consistencies of the sub-items were moderate.

2. There was no significant difference between the mean responses of farmers: X=4.204 and extension: X=4.148 workers on ways of improving extension education towards agricultural development in Adamawa State.
3. Agencies for producing qualified extension workers:
    i. Degree Certificate in Agriculture
    ii. Diploma Certificate in Agriculture
    iii. ADP Training Certificate
    iv. Farm Centers training Certificate
4. Ways of improving farmers' level of involvement in agricultural extension programmes:
    i. Communication with farmers in their language of understanding.
    ii. Personal contact with farmers to discuss new ideas and farming techniques.
    iii. Establishing demonstration plots on farmer's farms.
    iv. Farmers to have access to loan facilities.
    v. Adequate and timely supply of farm inputs
    vi. Using radio and television to discuss new agricultural practices.
    vii. Employing T&V system of extension service on innovations adoption.
    viii. Considering farmers' culture and needs while carrying out agricultural campaigns.
5. Ways of raising literacy level of farmers include:
    i. Employing adequate and qualified extension workers
    ii. Organizing mass literacy programmes for farmers
    iii. Adequate supervision of farmers' activities by the extension workers.
    iv. Adequate motivation of extension workers

6. Ways of making loan facilities available to farmers:
   i. Forming farmers cooperative societies
   ii. Establishing branches of agricultural banks in the rural areas.
   iii. Educating farmers on the procedures for obtaining loan from the banks.
   vi. Monitoring farmers against diversion of loans to other purposes.

## 5.4 Conclusions

Based on the findings of this study the following conclusions were reached:

1. The number and qualification of the agricultural extension workers were inadequate.
2. The few extension workers, encountered difficulties in reaching the contact farmers due largely to inadequate transport facilities. This factor limits the adequacy of supervision and personal contact with the farmers.
3. Majority of the farmers have low scientific knowledge and educational background to handle farm machinery and apply agricultural inputs like fertilizers and chemicals appropriately.
4. The adequate and timely supply of agricultural inputs especially fertilizers and tractors were grossly inadequate.
5. Inadequate farmers' accessibility to loan facilities due to lack of collateral security, unavailability of banks at the rural areas and lack of farmers' knowledge of procedures for obtaining loans from the banks as well as loan diversion to other purposes.

## 5.5 Implications of the Findings

Based on the analysis and findings of this study, the following implications emerged:

1. The inadequacy of farm inputs and funds affect farmers' level of involvement in agricultural extension programmes and their productivity. Meanwhile farmers' adequate finance and agricultural inputs increase farmers' active participation in extension programmes and their productive capacity.
2. Lack of obtaining extension workers from the qualified agencies of training would affect the teaching and demonstration of modern skills and innovations to farmers. It seems logical therefore to infer that without adequate training of extension agents, the implementation of agricultural extension programmes among the contact farmers will not be successful in achieving the desired objectives.
3. Inadequate motivation of extension workers with transport facilities and other logistics affects their performance as well as farmers education. The extension workers cannot motivate farmers if they themselves are poorly motivated.
4. Illiteracy among farmers affects their cooperation understanding and performance in agricultural extension programmes. Without mass eradication of illiteracy among the farmers, their conservative attitude and stagnation in productive capacity can hardly be overcome.

## 5.6 Recommendations

The following recommendations have been made based on the findings and conclusions made in this study:

1. Adequate and qualified extension workers should be employed to foster agricultural development. This is because the ratio of 1 extension worker to farmers is 1:800 and the total number of extension workers in Adamawa State as

at the time of this study is 290. And this number can effectively carter for only 232000 farmers in Adamawa State where the population is over 3,000,000.

2. Government should motivate the agricultural extension workers with adequate transport facilities and other logistics for optimum performance and productivity.
3. There should be adequate and timely supply of agricultural inputs like tractors and fertilizers for timely cultivation and increase in the productivity level of the farmers.
4. Loan facilities should be made available to farmers to increase their level of productivity and involvement in agricultural extension programmes.
5. Branches of commercial/agricultural banks should be established in the rural areas whereas farmers should be educated on the procedures for obtaining loans from the banks.
6. Mass literacy programmes should be organized at strategic locations for farmers to learn how to read and write.

## 5.7 Suggestions for further Study

The findings of this study necessitate further research as suggested below:

1. Analysis of factors affecting Agricultural Extension Education in Adamawa State.
2. Strategies for increasing the productivity level of farmers in Adamawa State.
3. A perception of farmers' training needs in Agricultural Extension Programme in Adamawa State.

## 5.8 Limitations of the Study

The limitations during the execution of this study were:

1. During the interview with the farmers, the researcher encountered difficulties on interpretation and explanation of some questionnaire items to the farmers' understanding.

2. The respondents were not very free with the researcher as many of them thought that the interview will not yield positive result to them going by their previous experiences in terms of failure to proffer solution to their problems after being interviewed.

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**FEDERAL UNIVERSITY OF TECHNOLOGY, YOLA**

**DEPARTMENT OF VOCATIONAL EDUCATION**
**AGRICULTURAL TECHNOLOGY**

Questionnaire on Improving Extension Education towards Agricultural Development in Adamawa State.

Dear Respondent,

**REQUEST FOR YOUR RESPONSE TO THIS QUESTIONNAIRE.**

Your maximum cooperation is highly requested in filling this questionnaire, please. Your responses or information will be kept confidentially and used for academic purpose only.

I would be grateful if my request is granted accordingly.

Thanks for your anticipated cooperation.

Yours faithfully,

**PENUEL T. MEDAN**

***Instruction on how to fill this questionnaire:***

1. Tick the box that bears your true identity, please.

A. Farmer ☐

B. Extension worker ☐

2. Indicate your Local Government Area/Location:……..……
3. Note that you have the option of indicating by ticking a box depending on whether you Strongly Agree (SA), Agree (A), Undecided (U) Disagree (D) or Strongly Disagree (SD) with the statement.

**SECTION "A"**

| | **Expected Qualification of Agricultural Extension workers to foster agricultural development.** | **Strongly Agree** | **Agree** | **Undecided** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|---|---|
| **S/N** | **ITEMS** | | | | | |
| 1 | Primary school certificate | | | | | |
| 2 | Post Primary School Certificate | | | | | |
| 3 | Farm Centers Training Certificate | | | | | |
| 4 | Ministries of Agriculture Training Certificate | | | | | |
| 5 | ADP Training Certificate | | | | | |
| 6 | Diploma Certificate in Agriculture | | | | | |
| 7 | Degree Certificate in Agriculture | | | | | |

**SECTION "B"**

| | **Means of transportation needed by extension workers to reach contact farmers at the rural areas in Adamawa State.** | | | | | |
|---|---|---|---|---|---|---|
| | **ITEMS** | | | | | |
| 1 | Bicycle | | | | | |
| 2 | Motorcycle | | | | | |
| 3 | Car | | | | | |
| 4 | Engine boat | | | | | |
| 5 | Canoe | | | | | |
| 6 | Horse | | | | | |
| 7 | Donkey s | | | | | |

**SECTION "C"**

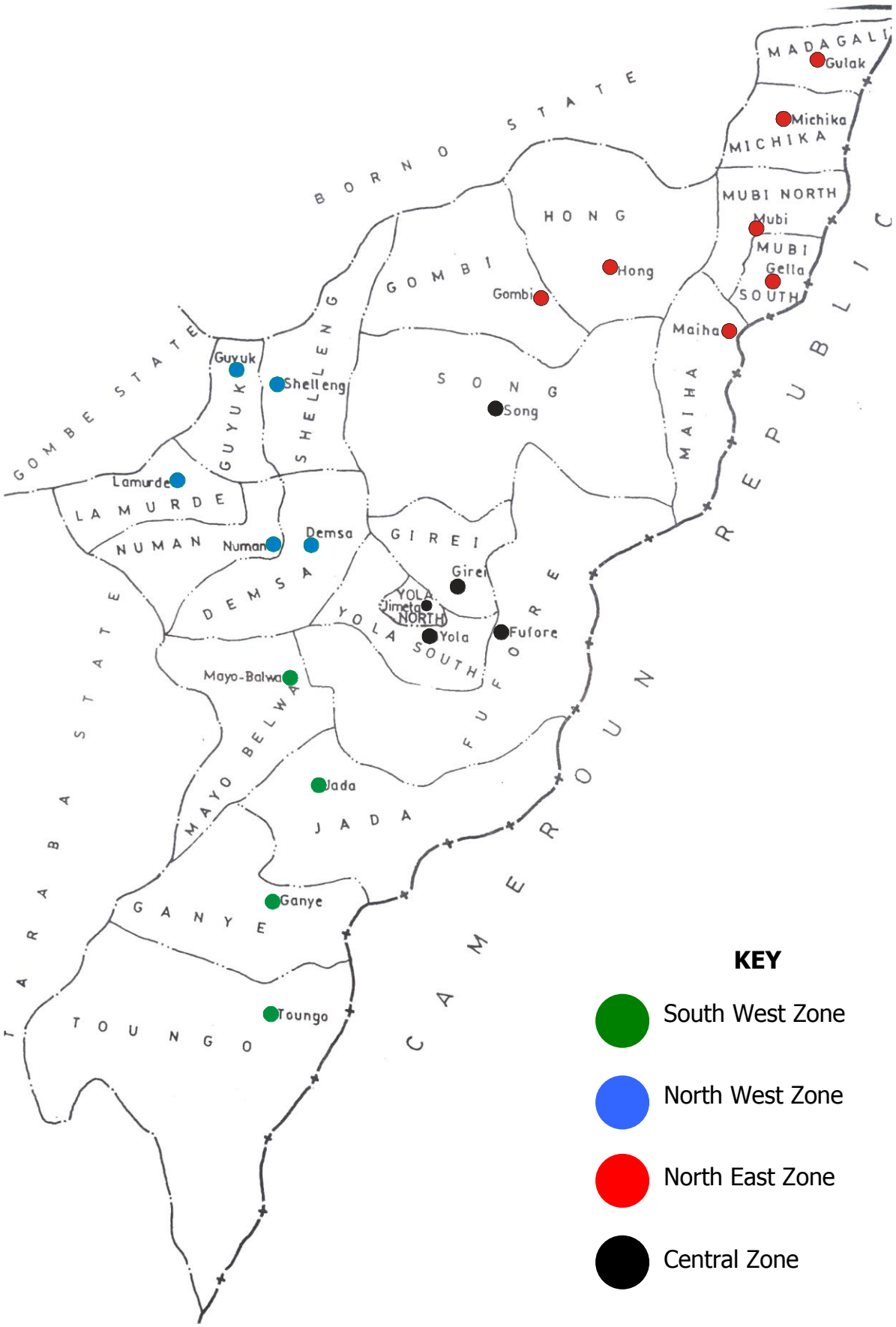
| | **Farmers level of involvement in agricultural extension programmes can be improved through:** | **Strongly Agree** | **Agree** | **Undecided** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|---|---|
| **S/N** | **ITEMS** | | | | | |
| 1 | Personal contact with the farmers to discus new ideas and techniques | | | | | |
| 2 | Using radio and television to create awareness and interest in new ideas and techniques among farmers | | | | | |
| 3 | Using newspapers, bulletin, posters, pamphlets and handbills to create awareness in news ideas and techniques among farmers | | | | | |
| 4 | Considering farmers' tradition, custom, culture and needs while carrying out extension programmes | | | | | |
| 5 | Adequate and timely supply of agricultural inputs such as fertilizers, improved seeds and tractors | | | | | |
| 6 | Communication with farmers in their language of understanding | | | | | |
| 7 | Subsidizing agric inputs such as livestock feeds, fertilizers, improve seeds and tractor cost of labour | | | | | |
| 8 | Carrying out agricultural campaigns to farmers on agricultural extension programmes | | | | | |
| 9 | Employing Training and Visit (T&V) system of extension on agricultural innovation adoption | | | | | |
| 10 | Using farmers work/organized groups to contact the entire farmers | | | | | |
| 11 | Establishing demonstration plots or Small Plot Adoption Teaching (SPAT) on farmers farms | | | | | |
| 12 | Having access to loan facilities by the farmers | | | | | |

**SECTION "D"**

| | **Farmers level of literacy can be raised through:** | **Strongly Agree** | **Agree** | **Undecided** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|---|---|
| **S/N** | **ITEMS** | | | | | |
| 1 | Organization of mass literacy programmes at strategic locations or centres for traditional farmers | | | | | |
| 2 | Employing adequate and qualified agricultural extension workers/agents to train farmers | | | | | |
| 3 | Mounting literacy programmes side by side with extension programme to educate the farmers | | | | | |
| 4 | Organizing workshops and seminars to update farmers knowledge of agricultural extension programmes | | | | | |
| 5 | Adequate use of mass media to transfer new knowledge and ideas to farmers | | | | | |
| 6 | Adequate supervision of farmers activities by the agricultural extension agent | | | | | |
| 7 | Adequate motivation of extension agents with FNT allowance, transport facilities, extension equipment by the government | | | | | |

**SECTION "E"**

| | **Loan facilities can be made available to farmers through:** | **Strongly Agree** | **Agree** | **Undecided** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|---|---|
| **S/N** | **ITEMS** | | | | | |
| 1 | Establishing branches of commercial/agricultural banks in rural areas to make loans available to farmers | | | | | |
| 2 | Forming farmers cooperative societies | | | | | |
| 3 | Reducing high interest rate on loans by the Banks | | | | | |
| 4 | Simplifying the granting of loans to farmers with little or no collateral security | | | | | |
| 5 | Granting loans to farmers in form of guarantee rather than in material form | | | | | |
| 6 | Monitoring and supervision of farmers against diverting loans to other purposes | | | | | |
| 7 | Educating farmers on the procedure for obtaining loan from the Bank | | | | | |




**Agricultural Zones in Adamawa State**