THE EFFECT OF THE IN-SERVICE TRAINING OF THE FIELD EXTENSION OFFICERS ON THE QUALITY OF THEIR PERFORMANCE AS PERCEIVED BY FARMERS IN KHARTOUM STATE

By

Nesreen Salah Mohamed Ahmed

B.Sc. (Honours) in Agricultural Extension and Rural Development
Sudan University of Science & Technology (2003)

A thesis Submitted in Partial Fulfillment for the Degree of Master in Agricultural Extension and Rural Development

Supervised By

Professor Ali Mohayad Bannaga

Department of Agricultural Extension and Rural Development

Faculty of Agriculture
University of Khartoum

March 2006
DEDICATION

To my father and mother for their continued help and encouragement
Acknowledgment

I would like to express my sincere thanks to my supervisor professor Ali Mohayad Bannaga for his tireless guidance/ helpful supervision and continuos support.

Thanks are due to the field extension officers in Khartoum State for their cooperation during the field survey

My deep appreciation is due to my family, for their care, encouragement and continuos support

Finally candidly, I would never forget to thank who ever gave me any kind of assistance to accomplish this thesis
CONTENTS

Dedication I
Acknowledgment II
List of Tables VIII
English Abstract XI
Arabic Abstract XV

Chapter One: INTRODUCTION

1-1 Background Statement
1

1-2 The problem
2

1-3 Statement of research problem
3

1-4 Objectives
4

1-5 Organization of the study 4

Chapter Two: LITERATURE REVIEW

2-1 Agricultural extension defined 6

2-2 The developmental concept of 7
Agricultural extension

2-3 Khartoum State Agricultural 8
Extension

2-4 Research-Extension-Farmers-Linkages 11

2-5 Farmers and agricultural extension 12
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-6 Training definition</td>
<td>13</td>
</tr>
<tr>
<td>2-7 The importance of training</td>
<td>13</td>
</tr>
<tr>
<td>2-8 Types of training</td>
<td>13</td>
</tr>
<tr>
<td>2-9 The trainee characteristics</td>
<td>15</td>
</tr>
<tr>
<td>2-10 The training process</td>
<td>16</td>
</tr>
<tr>
<td>2-10-1 Phases in the training process</td>
<td>16</td>
</tr>
<tr>
<td>2-11 The curriculum development process</td>
<td>17</td>
</tr>
<tr>
<td>2-11-1 Determining training needs</td>
<td>18</td>
</tr>
<tr>
<td>2-11-2 Training methods and techniques</td>
<td>19</td>
</tr>
<tr>
<td>2-11-3 Training support materials</td>
<td>23</td>
</tr>
<tr>
<td>2-12 Field extension officers</td>
<td>25</td>
</tr>
<tr>
<td>2-13 Training of field extension officers</td>
<td>25</td>
</tr>
<tr>
<td>in Sudan</td>
<td></td>
</tr>
<tr>
<td>2-14 In-service training of field extension officers</td>
<td>26</td>
</tr>
<tr>
<td>in Khartoum State</td>
<td></td>
</tr>
<tr>
<td>2-15 Using of training module in in-service training of the field extension officers</td>
<td>29</td>
</tr>
</tbody>
</table>

**Chapter Three**: Research Methodology

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-1 Area of the study</td>
<td>33</td>
</tr>
<tr>
<td>3-1-1 Selected agricultural extension centers</td>
<td>34</td>
</tr>
<tr>
<td>3-2 Research population</td>
<td>34</td>
</tr>
</tbody>
</table>

IV
3-3 Data collection methods
3-4 Sampling procedure
3-5 Method of data analysis

Chapter Four: RESULTS AND DISCUSSION

4-1 Social Background of field extension officers
4-1-1 Field extension officers’ age
4-1-2 Field extension officers’ sex
4-1-3 Field extension officers, years of experience
4-1-4 Field extension officers’ marital status
4-1-5 Field extension officers’ level of education
4-2 Number of in-service training courses attended by field extension officers
4-3 Field of training received by field extension officers
4-4 Satisfaction of trainees’ needs
4-5 Training methods used in in-service training courses
4-6 Number of training methods used in the in-service training courses
4-7 Focus of in-service training courses
4-8 Things missed in the training content
4-9 Extension methods used by the field extension officers
4-10 The effect of the in-service training of the field extension officers on the level of participation of farmers in extension activities

4-11 Farmers’ perception of the improvement of the extension services after field extension officers’ in-service training

4-12 Weakness in in-service training courses

4-13 Socio Economic Background of farmers

4-13-1 Farmers’ age

4-13-2 Farmers’ sex

4-13-3 Farmers’ marital status

4-13-4 Farmers’ educational level

4-13-5 Farmers’ period of work in agriculture

4-13-6 Farmers’ farm size

4-13-7 Farmers’ type of farm ownership

4-14 The source of agricultural information

4-15 The number of farm visits performed by the field extension officers

4-16 Communicating the farmers’ problems to field extension officers

4-17 The quality of language used by field extension officers
4-18 The quality of performance of the field extension officers as perceived by farmers

4-19 The technical information introduced by field extension officers

4-20 The difference between performance of field extension officers as perceived by farmers

4-21 Main reasons for differences in performance of the field extension officers

Chapter Five: SUMMARY OF RESULTS AND RECOMMENDATIONS

5-1 Summary of results

5-2 Recommendations

REFERENCES

APPENDIX

Appendix(1) Questionnaire of field Extension officers

Appendix(2) Questionnaire of farmers

VII
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table(2-1): In-service training programme of the Directorate</td>
<td>28</td>
</tr>
<tr>
<td>of Technology Transfer and Extension for the year 2002</td>
<td></td>
</tr>
<tr>
<td>Table(2-2): In-service training programme of the Directorate</td>
<td>28</td>
</tr>
<tr>
<td>of Technology Transfer and Extension for the year 2003</td>
<td></td>
</tr>
<tr>
<td>Table(2-3): In-service training programme of the Directorate</td>
<td>29</td>
</tr>
<tr>
<td>of Technology Transfer and Extension for the year 2004</td>
<td></td>
</tr>
<tr>
<td>Table(2-4): Construction elements of training module</td>
<td>32</td>
</tr>
<tr>
<td>Table(4-1): Frequency distribution and percentages of</td>
<td>38</td>
</tr>
<tr>
<td>field extension officers by age</td>
<td></td>
</tr>
<tr>
<td>Table(4-2): Frequency distribution and percentages of</td>
<td>39</td>
</tr>
<tr>
<td>field extension officers by sex</td>
<td></td>
</tr>
<tr>
<td>Table(4-3): Frequency distribution and percentages of</td>
<td>40</td>
</tr>
<tr>
<td>field extension officers by years of experience</td>
<td></td>
</tr>
<tr>
<td>officers by years of experience</td>
<td></td>
</tr>
<tr>
<td>Table(4-4): Frequency distribution and percentages of</td>
<td>40</td>
</tr>
<tr>
<td>field extension officers by marital status</td>
<td></td>
</tr>
<tr>
<td>Table(4-5): Frequency distribution and percentages of</td>
<td>41</td>
</tr>
<tr>
<td>field extension officers by level of education</td>
<td></td>
</tr>
<tr>
<td>Table(4-6): Frequency distribution and percentages of</td>
<td>42</td>
</tr>
<tr>
<td>field extension officers by in-service training courses attended</td>
<td></td>
</tr>
<tr>
<td>Table(4-7): Frequency distribution and percentages of</td>
<td>43</td>
</tr>
<tr>
<td>field extension officers by the field of training received</td>
<td></td>
</tr>
</tbody>
</table>
Table (4-8): Frequency distribution and percentages of field extension officers by satisfaction of training courses to trainees’ needs

Table (4-9): Frequency distribution and percentages of field extension officers by training methods used in the in-service training courses.

Table (4-10): Frequency distribution and percentages of field extension officers by number of training methods used in the in-service training courses

Table (4-11): Frequency distribution and percentages of field extension officers by focus of in-service training courses

Table (4-12): Frequency distribution and percentages of field extension officers by things missed in the training content

Table (4-13): Frequency distribution and percentages of field extension officers by extension methods they used

Table (4-14): Frequency distribution and percentages of field extension officers by level of participation of farmers on extension activities they performed after attended in-service training

Table (4-15): Frequency distribution and percentages of field extension officers by effect of in-service training on farmers’ perception of extension services received after in-service training.

Table (4-16): Frequency distribution and percentages of field extension officers by weaknesses in the in-service training courses

Table (4-17): Frequency distribution and percentages of farmers by age
Table (4-18): Frequency distribution and percentages of farmers by sex  
Table (4-19): Frequency distribution and percentages of farmers by marital status  
Table (4-20): Frequency distribution and percentages of farmers by educational level  
Table (4-21): Frequency distribution and percentages of farmers by period of work in agriculture  
Table (4-22): Frequency distribution and percentages of farmers by farm size  
Table (4-23): Frequency distribution and percentages of farmers by type of farm ownership  
Table (4-24): Frequency distribution and percentages of farmers by their source of agricultural information  
Table (4-25): Frequency distribution and percentages of farmers by the number of farm visits by field extension officers  
Table (4-26): Frequency distribution and percentages of farmers by frequency of communicating the problems they face to the field extension officers.  
Table (4-27): Frequency distribution and percentages of farmers by their opinion on the quality of language used by field extension officers to deliver information  
Table (4-28): Frequency distribution and percentages of farmers by their perception of the quality of performance of field extension officers
Table (4-29): Frequency distribution and percentages of farmers by whether their information they receive increase their knowledge

Table (4-30): Frequency distribution and percentages of farmers by their perception of differences in the performances of the field extension officers

Table (4-31): Frequency distribution and percentages of farmers by main reasons for differences in performance of field extension officers
Abstract

This study was conducted to investigate the effect of the in-service training of field extension officers on the quality of their performance on the job as perceived by the farmers in Khartoum State.

To attain the objectives of the study both primary and secondary data were collected and used. Two questionnaires were used to collect the primary data for the study. One questionnaire was designed for field extension officers to assess the in-service training they received and the other, questionnaire was designed for farmers including questions to judge the effect of the in-service training of field extension officers on the quality of their performance. The secondary data was collected from reports, previous theses and other documents related to the study.

The research population in this study includes all field extension officers because their number is small (14) and a random sample of farmers (100) from 7 agricultural extension centers in Khartoum State.

Frequency distribution and percentages are used to analyze and interpret the data.

The main results obtained from the data analysis indicates the following:

1- The performance of the field extension officers improved after attending the in-service training and this encourages the farmers to participate more in the extension activities.

2- Training of field extension officers had a high positive effect on farmers’ acceptance of the extension services they receive from field extension officers.
3-There was a weakness in the training in extension methods used to train the field extension officers.

4-Little attention was given to meet and satisfy the trainees’ needs.

5-The weaknesses in the training courses was the result of the lack of a mechanism for evaluation of the trainees performance, neglected of the practical part and focused on the theoretical part, repetition of the training content. The duration of training time didn’t allow the trainees to cover the training content and there was shortage in the training support materials.

6-Most farmers communicated their problems to the field extension officers, encouraged by the good performance of the field extension officers.

7-The farmers’ perceptions of the quality of the performance of the field extension officers were good.

8-Most of the farmers felt the technical information introduced by the field extension officers leads rarely to increase their knowledge.

The above result means the farmers technical information needs should be assessed and used in designing the in-service training of the field extension officers.

9-Most of the farmers found differences in the performance of the field extension officers and thought the main reason for the differences in the performance is the weakness in training of some of them.
Based on the above results the following recommendations are directed to the State General Directorate of Transfer of Technology and Extension:

1- Conduct regular in-service training to reduce differences in the performance among the field extension officers.

2- Study training needs of the field extension officers before conducting in-service training.

3- Attention must be given to the quality of in-service training courses and not only on the quantity.

4- Strong attention must be given to training in the extension methods.

5- Farmers technology information needs should be assessed and used in the designing the in-service training of the field extension officers.

6- There should be a balance between training content and the time allowed for conducting the training course.

7- The training courses should focus on both the practical and theoretical aspects.

8- Provision of training support materials should be insured.

9- A mechanism for evaluation of trainees’ performance should be used.
لتحقيق الأهداف التالية:

1- وجة صميم الزراعة للمشردين أثناء التدريب:

- تطبيق التنفيذ والدعم المتبادل بين الزراعة والمشردين

2- وجة الأدائه الإرشادي على مستوى الزراعة المعنية من جهة ويعمل على مستوى الزراعة الفردية من جهة أخرى.

3- وجة المقدمة الإرشادي على مستوى الطريقة التي يتم فيها التدريب.

4- وجة الأدائه المرتبط بالدورات التشريحي بشكل عام، والتشخيص الشخصي بشكل عام.

5- وجة الأدائه المرتبط بالتحقيق المستمر للوجود، والمساهمة في مستوى الزراعة المعنية من جهة واحد، والمساهمة في مستوى الزراعة الفردية من جهة أخرى.

6- وجة الدعم الإرشادي على مستوى الزراعة الفردية من جهة واحد، والمساهمة في مستوى الزراعة المعنية من جهة أخرى.

7- وجة الدعم الإرشادي على مستوى الزراعة الفردية من جهة واحد، والمساهمة في مستوى الزراعة المعنية من جهة أخرى.
بـאמצעية حـمـلـة، بـنـاءً عـلى اـلـقـدـمـة، بـتأـمـل، بـขาด الكـونـة، بـإرادة، بـانـذـكـر، بـإمـكـان، بـكوـف، بـغـيـب، بـلاقات، بـمـشرـد، بـنـبـأ، بـنـتـص، بـوـكر، بـزـيد، بـقـد، بـفـك، بـقـسم، بـدـخ، بـطلق، بـفـضـر، بـفـضـس، بـفـضـش، بـفـضـش. 

- قـرـن: 

1. كـلاً يـنـبـأ، كـلاً يـنـبـأ، كـلاً يـنـبـأ، كـلاً يـنـبـأ. 

2. كـلاً يـنـبـأ، كـلاً يـنـبـأ، كـلاً يـنـبـأ. 

3. كـلاً يـنـبـأ، كـلاً يـنـبـأ، كـلاً يـنـبـأ. 

4. كـلاً يـنـبـأ، كـلاً يـنـبـأ، كـلاً يـنـبـأ. 

5. كـلاً يـنـبـأ، كـلاً يـنـبـأ. 

6. كـلاً يـنـبـأ، كـلاً يـنـبـأ، كـلاً يـنـبـأ. 

7. كـلاً يـنـبـأ، كـلاً يـنـبـأ، كـلاً يـنـبـأ. 

8. كـلاً يـنـبـأ، كـلاً يـنـبـأ، كـلاً يـنـبـأ. 

9. كـلاً يـنـبـأ، كـلاً يـنـبـأ، كـلاً يـنـبـأ.
CHAPTER ONE
INTRODUCTION

1-1 Background Statement: -

Agriculture is considered the basic sector in the national economy of Sudan. Thus trained and skilled agricultural human resources are prerequisites for successful agricultural development. (FAO, 1994).

Strong emphasis has been put on training field extension officers to promote the development of the agricultural sector. Field extension officers help farmers to increase the productivity of their farms and increase their production to improve their living standards. They have many roles as advisers, technicians and links operating between agricultural research institutions and the farm families.

Field extension officers are not concerned with plants and animals only but with people, because the development ultimately is for people. No undertaking is likely to succeeded unless attention is paid to working through people. The great responsibility for achieving these roles rests on the shoulders of field extension officers. (Adams, 1982)
Many governments as result, place high priority on the training of field extension officers to be kept up-to date with changes in the technology and agricultural practices (FAO, 1988). Training which emphasises participation and involvement is essential to qualify the extension staff to learn how to help the farmers.

1-2 The problem: -

One of the extension problems in developing countries is that field extension officers are lacking in practical ability as result of their poor training (Adams, 1982). Therefore the need for trained field extension officers became more and more important as an ever-growing number of farmers in developing countries have to master skills in order to generate income and improve their standards of living.

In Sudan there are many problems and obstacles facing field extension officers one of them is the inadequate training (Ali, 1985 and EzeAldeen, 1985). The lack of well qualified field extension officers represents a major problem in Sudan. The farmers are characterized by low level of education and knowledge and as a result the unqualified field extension officers cannot effect adequate change in their knowledge, skills and behavior. Unless he/she is trained very well he/she cannot deal with farmers to help them to identify and analyze their production problems and to become aware of the opportunities for improvement.
1-3 Statement of research problem: -

In 1990s, one of the aims of the Department of Extension in Khartoum State was to train and up-grade field extension officers who were felt to be weak. There was necessity to train them to enable them to play their role in agricultural development. It was a priority at that specific point in time when a major reorganization of the Department took place. This logical because the extension services received a strong support through the promotion of the extension administration into a General Administration in the Ministry of Agriculture composed of three technical administrations namely the agricultural extension, training and agricultural information administrations respectively. Since that date considerable training is expected to have been arranged for the field extension officers. (Mohamed, 1997)

Training of field extension officers includes two types of training namely: the pre- service training which is given in the universities, agricultural secondary schools and high institutes. The other is the in-service training for which the Department of Extension is responsible to qualify and raise the abilities of its staff to improve their performance on the job. (Mohamed, 1997)
This study was carried out to assess the in-service training of the field extension officers in Khartoum State after the reorganization and how it affected the quality of the performance of the field extension officers as perceived by the farmers.

1-4 Objectives: -

- To identify the effect of the in-service training of field extension officers on the quality of their performance on the job as perceived by the farmers.
- To identify the farmers’ perceptions of the extension services received.
- To shed light on shortcomings in in-service training courses with view of improving future in-service training courses.

1-5 Organization of the study: -

This study was divided among 5 Chapters. Chapter one, introduced the background statement, the problem, statement of research problem and objectives of the study.

Chapter Two included agricultural extension defined, the developmental concept of agricultural extension, Khartoum State Agricultural Extension, Research-Extension-Farmers Linkages, Farmers and agricultural extension, Training definition, The importance of training ,Types of training ,The trainee characteristics, The training process ,The curriculum development process,
Field extension officers, Training of field extension officers in Sudan, In-service training of the field extension officers in Khartoum State and Using of training module in the in-service training of the field extension officers.

Chapter Three included description of the area of the study, the research population, methods of data collection, sampling procedure and method of data analysis.

Chapter Four included data analysis, presentation, and discussion of the results obtained from the data analysis.

Chapter Five included Summary of results and Recommendations
CHAPTER TWO
LITERATURE REVIEW

2-1 Agricultural extension defined: -

Extension is an on-going process of getting useful information to people (the communication dimension) and then in assisting those people to acquire the necessary, skills and attitudes to utalize it effectively. This information or technology is (the educational dimension). Generally the goal of extension process is to enable people to use these skills, knowledge and information to improve their quality of life. (Bannaga, 2004)

The term, agricultural extension, narrows the focus and defines the areas to which the extension process is applied. Maunder (1973.p.3) Writing in the first edition of the Extension Reference Manual (1983) defines agricultural extension as (Service or system which assists farm people, through educational procedures, 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). (Swanson and Claar, 1984)
Advice and assistance extended farmers to help them improve their methods of production and marketing is called agricultural extension. However, agricultural extension should not be seen only in the context of increasing agricultural output. Extension is part of the effort to achieve balanced social and economic development of rural areas. This is necessary in order to maintain the increase in productive capacity (Adams, 1982)

2-2 The developmental concept of agricultural extension:

The achievement of the now widely accepted goals of agricultural and rural development as mandated by the World Conference on Agrarian Reform and Rural Development (WCARRD), demands the adoption of a broad definition of extension. While it is essential to promote the transfer of technology to a large and medium scale farms, this is not the only task of extension. Meeting the obligations of governments to broaden the production base and include the participation of all their people requires that extension also serves the poorly educated rural majority. (Hammadach and Ryon, 1989)

Assistance to this group must be provided so as to raise the levels of understanding and increase the capacity to apply improved technology, now and in the future, in order to achieve sustained improvements in productivity and living conditions. The educational function of human resource development for agricultural and rural progress is the essence of extension.
2-3 Khartoum State Agricultural Extension: -

The first agricultural extension unit was established in 1961 at Shambat Agricultural Institute buildings, it was located therefore nineteen years and was moved to its present location in Khartoum north only in 1980. In the earlier years there were four units in Khartoum State namely: (Ahmed, 2003)

1- Shambat Agricultural Extension unit: -

To cover the area from Khartoum North to Elkhojalab.

2- Jaili agricultural extension unit: -

To cover the northern parts of the eastern bank of the River Nile in Khartoum State.

3- Ailafon agricultural extension unit: -

To cover the northern part of the eastern bank of the Blue Nile.

4- Islang agricultural extension unit: -

To cover the western bank of the River Nile.

The number of agricultural extension units was increased to reach eleven units as indicated below: -

1- six units in the east banks of the River Nile and the Blue Nile

These, from north to south, include Wadel basal, Wad Ramli, Jaili, Hilat Kuku, Ailafon and Elmahas Kotrang units.

2- three units in the western bank of River Nile and the White Nile.

These from north to south include Islang, Elfitehab and Elgamoeia units.
3- two units in the area between the Blue Nile and White Nile, namely: Soba west and Elshajara units.

According to Directorate of Transfer of Technology and Extension (2004) later- on the number of agricultural extension units was increased to reach today fourteen agricultural extension centers as indicated below:
2- five centers in Omdurman namely: Elshehinab, Islang, Kararee, Elfitehab and Elgamoeia.
3- one center in Khartoum namely: Fteeh Alagaleen.

According to Mohamed (1997) when the federal system of government was adopted in the Sudan in 1991, the Agricultural Extension Administration was up-graded to be the General Administration for Extension and Training.

After the adoption of the federal system of government, the former communication channel between the National Extension Administration and the Local Government the Agricultural Extension Directorate was dissolved and the reporting of the Extension Staff was changed to be directly to the Agricultural Services Administration or to the Director of the Ministry of Agriculture in case of Khartoum State.
In the year 1995 the new Khartoum State Minister of Agriculture, Animal Resources and Irrigation declared the transfer of the supervision of ministry employees to the Local Government authority. Most of the employees were transferred without any terms of reference or even in some cases, without allocation of an office space and other requirements. Some local authorities, which had no agricultural activities, refused to receive them.

The Ministry of Agriculture, Animal Resources and Irrigation resumed to pay the employees salaries because the local authority refused to pay them. The situation of Extension Administration deteriorate when the ministry directed the extension employees to perform non extension tasks like renewing the agricultural land licenses, collecting taxes and selling pesticides. (Ahmed ,2003).
The extension message must be devised tested and vivified locally before it is extended to the farmers. Field extension officers will need back up from specialists, who should be encouraged to diagnose the farmers’ needs and to return to the research station with questions and feed-back whenever necessary. Only by cooperation of the extension and research staff will it be possible to adapt innovations to the needs of the local farmers (Adams, 1982).

According to Mohamed (1997), the relationship between research and extension in Sudan doesn’t go beyond the attendance of the field extension officers in the meetings and seminars conducted in the agricultural research stations in addition to participation in field days and exchange of printed materials with agricultural research.

To create an effective relationship between research and, extension and farmers under the Sudanese conditions, such relationship must be establish through functional and structional linkages. Currently, and through it’s long history, the two vital and related services, research and extension, have operated in Sudan, through individual initiatives of their officers when and if one party feels the need to contact the other about a specific problem.(Bannaga, 1990). An effort should be devoted to create such linkages to enable each service to operate efficiently for mutual benefits.

2-5 Farmers and agricultural extension:
In many parts of the developing world, hundreds of millions of farmers are not yet being reached by the agricultural extension services. Representing the largest segment of farming population, are small scale, subsistence and resource poor men and women farmers whose farm production is lower than the national average and production levels achieved in experimental stations and farm trials. Because of the low levels of education, their farming practices and technologies are inefficient and their production and productivity is consequently low. In order to remedy these problems, ways and means have to be found to improve farmers’ capabilities and their use of new technologies.

An FAO survey of national extension services carried out during the 1980s showed that although there were approximately 600,000 field extension officer in the world their number was much too low to enable them to reach each and assist individual farmers. The ration between field extension officers and farmers varied considerably between regions. (Contado, 1989).

In many countries where the number of trained field extension officers cannot be increase significantly, the participatory approach of extension is utilized to mobilize existing farmers and other community based organizations, and, where these don’t exist, it is normal to encourage informal groupings of men, women and young potential farmers. The multimedia approach to extension, which includes promising means of achieving a cost-effective service for assistance is used.
2-6 Training definition: -

Trainers and educators define the (training process) in different ways. They all agree that (the human being is the main target of training) and the improvement in the performance of any institution will not be realized unless the people working in it have developed their knowledge and skills, and made changes in their conducts, thinking and performance.

The following comprehensive definition of training was reached by a team of experts (training is a planned process, which assist trainees to acquire satisfactory efficiencies in their current and future jobs, through the development and change of their habits and conducts, and up-grading of their skills and knowledge).(FAO,1994)

2-7 The importance of training: -

The importance of training lies in the fact that it should lead to achieve the following changes in the trainees: -(FAO,1994)

1-Up-grade their knowledge to acquire more understanding for the needs of their jobs and the environment around them.
2-Increase their capabilities for problem solving and decision making.
3-Acquire the skills necessary for the management of their jobs.
4-Strengthen their links with institutions they are working in, which will give them incentives to work better toward its development

2-8 Types of training: -

There are many types of training, whether technical or administrative:

*Pre-service training: -

It is the training offered to qualify a person in a certain field for a certain job, before he or she is recruited for it. It is duration ranges from 6to 11 month
*Induction training: -
It aims at training a person, after he/she is recruited for a certain Job but before he/she starts working. It is duration ranges from 6 to 12 week.

*In-service training: -
This kind of training includes many types: -
1-upgrading training: -
Which includes formal training sessions in certain subjects for 2 to 6 weeks.
2-daily on-the-job training: -
Where the trainee acquires, the new skills from his immediate supervisors.
3- specialized training: -
Which includes training on the specified subject and its duration ranges from 1to3 weeks

*Academic training: -
It aims at obtaining a training certificate or diploma in a certain field. Its duration extends over a long period (number of years) and is usually granted by formal academic institutions.

*Transfer or up-grading training: -
It is usually given to those who are transferred to other departments, which require new knowledge about the new job or to those who are up-graded to higher posts and require knowledge about certain new responsibilities. The duration depends on the needs of the new responsibilities. (Bannaga,2002)
2-9 The trainee characteristics: -

According to Robert and Clark (1991) the trainee characteristics are: -

1-Personal characteristics: -

The nature of trainees will influence the training objectives and instructional methods and materials. Essential information includes: -

Age, sex, number of trainees, origin and health.

2-Education and experience: -

Differences among trainees in education and experience will influence scheduling, context, vocabulary and subjectmatter contents.

Helpful information includes: -

Level of education, special skills present and past employment, job responsibilities and language ability.

3-Motivation: -

Motivation is difficult to determine but it is important in helping to develop appropriate methodology. It determines the eagerness of the trainees to learn and their reasons for attending training.

4-Interest: -

Knowing trainees’ interest is important because it enables you, to choose the training methodology and influence what to expect of the trainees’ terminal performance. Some important information to know includes career objectives and specific areas of interest.

5-Attitudes and prejudices: -

Essential information related to attitudes and prejudices include
ethnic background, traditional values, conservativeness and attitudes towards work, authority figures, and training. Such information influences the kinds of examples you can effectively use, and provides clues to trainees’ motivation.

2-10 The training process: -

The systems approach to training is a results-oriented process designed to ensure that training is both relevant and effective.

Understanding and using the systems approach to training is especially helpful for individuals who, as part of their jobs, train on occasional basis. It provides framework in which to operate and set general of directions to follow to develop good training products. In addition, the systems approach provides you with a process to use regardless of the specific training topic. This (road map) assists in conducting training activities. (Wentling, 1993)

2-10-1 Phases in the training process: -

In the broadest terms, there are three phases in the training process:

1-Planning: -

Determining what you want to achieve and how you will achieve it. This phase is essentially the curriculum development process, and it includes a series of steps that, if followed, will help to ensure consistent and effective training efforts. The major thrust of this is to assist in curriculum development.

2-Implementation: -

Doing what is necessary to achieve your goals and objectives. Implementation is the process of putting training programmes into operation. The planning phase leads to curriculum development
Training should be conducted according to the content you have identified and the procedures outlined.

**3-Evaluation:**

Checking to see if you have succeeded in achieving your objectives and, where necessary, making changes to improve the results of the training activity in the future.

Evaluation and feedback should normally occur at each step in curriculum development and throughout the implementation phases.

In addition, you should conduct formal evaluation at the conclusion of the training activity, using the tests and other learning assessment procedures to determine the level of training effectiveness. What you learn from the evaluation should be used to identify additional training needs and to make changes that will improve the training when it is conducted again.

**2-11 The curriculum development process:**

The curriculum development process includes the nine steps of the planning phase of the training process. This guide focuses on the steps provided to serve as guidelines for training which includes the following steps:

(Wentling, 1993)

**Step (1):**

Determine training needs.

**Step (2):**

Specify the training objectives
Step (3): -
Use the developed training objectives you have as the starting point for selecting the subject matter to be included in the training activity

Step (4): -
Select the training methods and techniques

Step (5): -
Identify the resources you will need to conduct the training

Step (6): -
Pull together the training objectives, training content, training methods, and training resources and put a plan to be used in conducting the training.

Step (7): -
Develop training support materials.

Step (8): -
Develop tests for measuring trainees learning.

Step (9): -
Revise training curriculum

2-11-1 Determining training needs: -
The entire process of deciding on (what) to include in training is called determining training needs. This process is divided into three major steps: - (Wentling, 1993).

1-Needs identification
2- Needs analysis, and
3-Trainees’ skill assessment and gap analysis
Needs identification:

Needs identification can be used to decide whether to design a training course or not (general needs analysis). Needs identification can also be used to identify specific topics or course elements for training.

In either case, needs identification is designed to help in determining if there is a need for training.

Needs analysis: -

The needs analysis process involves breaking down the training problem or need into its basic parts so that the training content can be identified and understood. The needs analysis process can be divided into two distinct procedural phases: these include: -

A- Job analysis (task identification), and

B- Task analysis.

Trainee skill assessment and gap analysis: -

The skill assessment process is accomplished through an analysis of the potential trainee in relation to tasks outlined in the task analysis. This must involve the stating of each task and then using the professional adjustment of individuals in determining the extent to which the trainees already have the skills.

2-11-2 Training methods and techniques: -

The use of a variety of training methods and techniques not only increases but also the programme effectiveness. It also encourages active participation by the audience. A training method is a strategy or tactic used to deliver the content so that the trainees will achieve the objectives.
In using specific training methods, the trainer may also employ a variety of techniques to enhance the effectiveness of the learning process. (Wentling, 1993)

The selection and use of appropriate training methods and techniques in the training process serves two important purposes:

1. They provide and ensure means for the trainee to learn the identified specific training content.
2. They help keep the trainee interested and involved in the training so that learning is enhanced.

There is a variety of training methods available to trainers. The eight most commonly used methods are:

1. Lecture/instructor presentation.
2. Group discussion
3. Reading.
4. Demonstration
5. Exercises
6. Case study
7. Role playing
8. Field visits/study tours
Selecting training methods: -

Major factors: -

Many things influence the selection or development of instructional procedures. However, there are five general factors to be taken in to consideration when selecting methods for training. These factors are:- (Wentling,1993).

1-The training objective: -
-What are the proposed training outcomes?
-What do the trainees expected to know or be able to do as a result of training?
-Does one method ensures reaching the objectives better than other methods?

2- The content: -
Depending on the subject matter to be covered, you opt for theoretically or Practically.

3- The trainers: -
Are the trainers competent enough to use the various communication tools? level of experience, training in instructional methods and formal education may be indicators of trainer’s competence.

4- The trainees: -
Does the methods take into account group size, experience level, and other special characteristics of the trainees?

5- The practical requirements: -
Is the method feasible with regards to physical environment, time (both preparation and actual training time), materials and cost limitations
Training for understanding: -

If trainees are to understand, they should be furnished with information using: -

* Printed materials
* Lecture\instructor presentations
* Diagrams
* Audio tapes and video tapes
* Case studies
* Demonstration

To help trainees understand something, it is necessary to use training methods that allow to review key points, use relevant and realistic examples, and restate new ideas in different ways using familiar words analogies.

Training for skill development: -

If trainees are to be able to do something new as a result of training, they can helped by using: -

* Demonstration
* Role playing
* Video tapes
* Structured exercise

To help trainees learn to do something new, it is necessary to use training methods that allow to arrange for practice using the new skill furnish positive and negative models and provide feed back as reinforcement
Training for changing attitudes or values: -

If trainees are to change attitudes and values, they should be assist to inquire and observe the old versus the new using:

* Demonstrations
* Field visits
* Role playing
* Case studies
* Films and video tapes
* Structured games and exercises
* Self analysis and instruments

To help trainees change their attitudes and values, it is necessary to use training methods that help them clarify old versus new attitudes and values, arrange opportunities. To experiment with new values, and provide reinforcing links to solidify change over time.

2-11-3 Training support materials: -

Training support materials can vary greatly from simple trainer constructed aids to complex, commercially produced materials. Trainers should be aware of both and should use what best meets their needs. The case however, in many extension training situations, is that commercially available materials that meet the specific training need are not available. (Wentling, 1993) Therefore, the trainer should be aware of the process of developing training support materials. The trainer should be aware of the criteria that should be used to judge training support materials to ensure high quality.
Training support materials can be classified into two broad categories. These categories include:

1. Printed materials, and
2. Audio-visual materials.

**Developing training support materials:**

The development of training support materials is a complex process. Each type of material has its own characteristics and procedure for development. The process outlined may be applied to other materials. (Wentling, 1993) There are 8 steps in the process:

**Step (1):**
Establish the purpose for developing the materials

**Step (2):**
Identify the target audience

**Step (3):**
Determine the type of material needed

**Step (4):**
Identify the training objectives that will be supported by the materials

**Step (5):**
Prepare an outline of the content

**Step (6):**
Organize the material to facilitate usage and learning.

**Step (7):**
Make the material effective

**Step (8):**
Pretest prototype training materials
2-12 Field extension officers: -

People working in extension programmes may be referred to as (extension officers, extension agents, extension workers) depending on the country, organization and the status of individuals (Vanden Ban and Howkins, 1988).

The term (extension officers) implies that the extension person is government employee. The term (extension worker) implies a person of low status in some societies. The term (extension agent) may create problems because many extension agents do more jobs than just give advice. Some supervise regulations or eradicate pests and diseases while other sell inputs such as fertilizer and seeds.

We used the term field extension officers in this study because the three terms (officer, worker and agent) are used interchangeably in Sudan without problem as the term implies the same meaning. (Oket, 1994)

2-13 Training of field extension officers in Sudan: -

Most of the training activities are conducted in the extension units and the headquarters of the Extension Administration in Khartoum. Active training increased in the 1960s-1970s a the result of the effort to establish training centers in Tozi for training on agricultural equipment and Zalenge center for training agricultural field extension officers and local leaders. These centers however, did not continue to work for a long time and their activities stopped after few years. (Mohamed, 1997)
The training of the field extension officers in Sudan includes two types of training namely: the pre-service training in the agricultural education institutions (universities, high institutes and agricultural secondary schools). The other type of training is the in-service training for which the specialized Extension Administrations is responsible.

   The training of field extension officers includes short courses and long courses depending on the following: -
   1- Training that aim to qualify the new workers to adjust to their new institutions.
   2- In-service training to enable the trainees to do their work efficiently.
   3- Training to provide extension cadre with new ideas, methods and techniques to renew their practices.
   4- Training for new development jobs to prepare the field extension officers to meet their new responsibilities.

The trainers responsible for training of field extension officers are researchers, subject-matter-specialists, extension specialists and experts.

   There is a need for training field extension officers at the village level because the local field extension officers have ability to influence the knowledge and skills of farmers and convince them to adopt and apply what they have gained

   2-14 In-service training of field extension officers in Khartoum State: -

   The responsible unit for in-service training of the field extension officers in Khartoum State is the Administration of Training in the State Directorate of Transfer of Technology and Extension.
In-service training given to field extension officers after their responsibilities were identified in the job. According to the Directorate of Transfer of Technology and Extension (2004) the objectives of the in-service training are:

1. To renew the knowledge and skills of the field extension officers about an agricultural extension.
2. State problems that face the extension work and find solutions to these problems.
3. Raise their abilities to implement different extension programmes.

The Administration of Training in the State conducts in-service training courses in cooperation with others such as agricultural research, Field supervision Administration and colleges of agriculture.

Most of the in-service training courses conducted inside the country include short and long courses. Sometimes in-service training courses are conduct outside the country.

The main problem that faces the in-service training is the shortage in funds given to conduct the in-service training courses. (State Directorate of Transfer of Technology and Extension, 2004)
### Table 2-1

**In-service training programme of the State General Directorate of Technology Transfer and Extension for year 2002**

<table>
<thead>
<tr>
<th>Type of training</th>
<th>Field of training</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short course</td>
<td>Agricultural engineering</td>
<td>15 day</td>
</tr>
<tr>
<td>Short course</td>
<td>Control of weeds</td>
<td>3 days</td>
</tr>
<tr>
<td>Short course</td>
<td>Integrated pest management</td>
<td>3 days</td>
</tr>
</tbody>
</table>

Source: Directorate of Transfer of Technology and Extension

### Table 2-2

**In-service training programme of the State General Directorate of Technology Transfer and Extension for year 2003**

<table>
<thead>
<tr>
<th>Type of training</th>
<th>Field of training</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short course</td>
<td>Improvement and developing date palm tree</td>
<td>Training day</td>
</tr>
<tr>
<td>Short course</td>
<td>Integrated pest management</td>
<td>7 days</td>
</tr>
<tr>
<td>Short course</td>
<td>Using of fertilizer</td>
<td>3 days</td>
</tr>
<tr>
<td>Short course</td>
<td>Developing the cultivation of banana</td>
<td>3 days</td>
</tr>
</tbody>
</table>

Table 2-3

In-service training programme of the State Directorate of Technology Transfer and Extension for the year 2004

<table>
<thead>
<tr>
<th>Type of training</th>
<th>Field of training</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long course</td>
<td>Improvement and developing date palm tree</td>
<td>3-6 month</td>
</tr>
<tr>
<td>Long course</td>
<td>Improvement of goats</td>
<td>3-6 month</td>
</tr>
<tr>
<td>Long course</td>
<td>Modern irrigation systems</td>
<td>3-6 month</td>
</tr>
<tr>
<td>Long course</td>
<td>Developing management</td>
<td>3-6 month</td>
</tr>
</tbody>
</table>


2-15 Using of training module in in-service training of the field extension officers:

Training units are considered effective methods for planning in-service training of the field extension officers.

Training module are used to avoid the criticism found in the traditional training methods. Training module increase emphasis an the training content and the method of training in the training process. Training module include a lot of activities, which help field extension officers to gain benefit from their training.(Abdel Whab,2001)
**Definition of training module: -**

The training module is an integrated training plan, which revolve around a certain subject and includes behavioral objectives of the in-service training (Abdel Whab, 2001).

**Characteristics of the training module: -**

1- emphasis on integration of knowledge

2- existence of certain subject that connect with problems and trainees’ needs.

3- gave attention to the differences of abilities and experiences of field extension officers

4-planning and prior preparation and this is found in the stages of preparation to training module

5- mutual work between the field extension officers and trainer because the objectives of training don’t stand on earning the field extension officers facts but go to include the achievement of skills and this is by encouragement the field extension officers to work in one team.

6- positive participation from the side of the field extension officers because training module depend on the field extension officers and the problems that they feel and this mean that the field extension officers feel the training has great value to them. And they began to collect data and information that lead to answer questions, so they earn learning that the training module includes.

7- Variations in training methods, training means, activities and mechanism of evaluation.
Construction of training module: -

According to Abdel Wahab (2001) Construction of training module includes the following: -

1- Introduction of training module:
Include the description of nature and content of the training module and this helps field extension officers (trainees) to understand what the training module includes and it is importance to them

2- Objectives of training module: -
Include knowledge and skills that connect with the training content. Objectives of training module must be clear, applicable and suitable to the time allowed to training and this help to achieve the objectives of training module.

3- Selecting training content: -
Prefer to put the objectives and beside each one of them put the training content that express about each one of them and organize the training content in away that help the trainer to plan experiences.

4- Activities of training module: -
These include the activities, which enable the field extension officers to earn new knowledge.

5- Evaluation of training module: -
Evaluation must be continuos during training module and the trainer must identify what is achievement from the objectives of the training module.
Mechanism of evaluation of the training:

A-observation that enables to collect information about what trainees earned (knowledge, skills and attitudes).

B-Feed back of the field extension officers about training module.

C- Questions that measure the abilities of the field extension officers to think

6-List of resources and tools: that field extension officers need during the activities

7-List of references: -

Training module must include a list of references and books that will be used during the training module

**Table 2-4**

**Construction elements of training module**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Content</th>
<th>Learning aspects</th>
<th>Methods and means</th>
<th>Activities</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Trainer</td>
</tr>
</tbody>
</table>

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter includes description of the area of the study, the research population, methods of data collection, Sampling procedure and method of data collection.

3-1 Area of the study: -

Khartoum State was selected as the area of the study because as indicated in chapter one it reorganized Department of Extension started an intensive in-service training programme to train field extension officers to enable them to play their role in agricultural development. The selection is justified by the necessity to assess the positive and or negative impact of the in-service training of staff.

In Khartoum State there are fourteen agricultural extension centers (see Map3-1) of which three centers cover the northern part of the western bank of the River Nile at Elshehinab, Islang, Kararee. Two centers cover the southern part of the western bank of the White Nile at Elgemoia and Elftihab. On the northern part of the eastern bank of the River Nile, five centers cover the area from north to south at Wad Ramli, Wawesee, Jaili, Elsagai and Elfake Hashem.

Three centers cover the Eastern bank of the Blue Nile at Elselate, Ailafon and Elmahs Kotrang. One extension centers at Fteeh Alagleen cover the Eastern bank of the White Nile.

All these agricultural extension centers are covered by fourteen male and female field extension officers in Khartoum State.
Although the number of the field extension officers is fourteen and the agricultural extension centers are fourteen, the distribution however is not one field extension officer for each center. There are two field extension officers in Ailafon and two in Kararee. The field extension officer in Jali covers Wawsee and one in Elfake Hashem covers Elsagai center because all the later four centers are smaller centers.

3-1-1 Selected agricultural extension centers: -

From these centers mentioned above the study covered 7 centers and the farmers were taken from them randomly. These centers were: -

1- Kararee
2- Islang
3- Elftihab
4- Wad Ramli
5- Elsagai
6- Ailafon
7- Fteeh Alagaleen.

3-2 Research population: -

Research population in this study includes all (14) field extension officers and a sample of farmers in Khartoum State (100). All field extension officers are covered by the study because their number is small.

3-3 Data collection methods: -

1-The primary data: -

The primary data for the study was collected through questionnaires. Two questionnaires were used in the study. One questionnaire was designed for the field extension officers to assess the in-service training
Map 3-1

Locations of the agricultural extension centers in Khartoum State

source: Directorate of Technology Transfer and Extension: 2004
they received and other the questionnaire was designed for farmers to reveal their perception of the effect of the in-service training of the field extension officers on the quality of their performance

2- Secondary data: -

Secondary data was collected from textbook reports, theses and other documents related to the study

3-4 Sampling procedure: -

In Khartoum State there were fourteen agricultural extension centers located in three different areas.

In Omdurman area (3) agricultural extension centers were found in the north and (2 centers) in the south.

Islang and Kararee were chosen to represent the northern part of Omdurman whereas Elftihab was chosen to represent the southern part of Omdurman.

In Khartoum North the (5) agricultural extension centers were found in the north and (3 centers) in the east. Wadramli and Elsagai were chosen to represent the northern part of the Khartoum North whereas Ailafon was chosen to represent the eastern part.

In Khartoum there was only one center of agricultural extension in Fteeh Alagleen, which was selected.

For selection the farmers the random sampling procedure has been used. The selection of these centers based on the total numbers of the farmers in each center.
From selected agricultural extension centers, the names of all farmers have been used as a sampling frame.

According to the scientific statistical approach the results obtained from the sample could be generalized for the whole population.

3-5 Method of data analysis: -

Frequency distribution and percentages are used to analyze and interpret the data to draw recommendations.
CHAPTER FOUR
RESULTS AND DISCUSSION

This chapter deals with data analysis, presentation, and discussion of the results obtained from the data analysis collected by field survey carried out during April 2005.

4-1 Social Background of Field Extension Officers: -

The social variables considered include: -

age, sex, years of experience, marital status and level of education

4-1-1 Field extension officers' age:

Table (4-1) indicates that the majority of field extension officers 57.1% were between 41-50 years old, 35.7% of them were between 31-40 years old and 7.1% were less than 31 years old. This result indicates that the majority of field extension officers are mature and capable to hold responsibility.

Table (4-1)

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 31</td>
<td>1</td>
<td>7.1</td>
</tr>
<tr>
<td>31-40</td>
<td>5</td>
<td>35.7</td>
</tr>
<tr>
<td>41-50</td>
<td>8</td>
<td>57.1</td>
</tr>
<tr>
<td>51-60</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>More than 60</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-1-2 Field extension officers' sex: -
Table (4-2) indicates that the majority of field extension officers 92.9% were males whereas only 7.1% of them were females. This indicates that there is a severe shortage in the number of females in extension staff.

Table (4-2)

Frequency distribution and percentages of field extension officers by sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>13</td>
<td>92.9</td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>7.1</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-1-3 Years of experience of field extension officers

Table (4-3) indicates that the majority of field extension officers 35.7% have experience between 21-25 years, 28.6% have experience between 1-5 years, 21.4% have experience more than 25 years and 14.3% have experience between 16-20 years. This result indicates that the majority of field extension officers have long work experience in the extensions service.

Table (4-3)

Frequency distribution and percentages of field extension officers by years of Experience
### Table (4-4)

**Frequency distribution and percentages of field extension officers by marital status**

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>12</td>
<td>85.7</td>
</tr>
<tr>
<td>Single</td>
<td>2</td>
<td>14.3</td>
</tr>
<tr>
<td>Divorced</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Widowed</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-1-4 Field extension officers’ marital status: -

Table (4-4) indicates that the majority of field extension officers 85.7% were married whereas only 14.3% of them were single. There were no widowed or divorced among them and this make them more settled.

4-1-5 Field extension officers’ level of education: -
Table (4-5) indicates that the majority of field extension officers 42.9% have completed university, 21.4% of them have completed higher secondary school and agricultural institution at an equal percent and 14.3% of them have postgraduate training.

**Table (4-5)**

**Frequency distribution and percentages of field extension officers by level of education**

<table>
<thead>
<tr>
<th>Level of education</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher secondary</td>
<td>3</td>
<td>21.4</td>
</tr>
<tr>
<td>Agricultural institution</td>
<td>3</td>
<td>21.4</td>
</tr>
<tr>
<td>University</td>
<td>6</td>
<td>42.9</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>2</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: field survey 2005

**4-2- Number of in-service training courses attended by field extension officers: -**

Table (4-6) indicates that the majority of field extension officers 42.9% attended 11-15 training courses, 28.6% of them attended between 6-10 training courses and 14.3% attended between 1-5 and more than 15 training courses at the same percentage. This result indicates that some attention is given to training as indicated on the number of training courses attended by field extension officers.
Table (4-6)

Frequency distribution and percentages of field extension officers by in-service training courses attended.

<table>
<thead>
<tr>
<th>Number of training courses</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>2</td>
<td>14.3</td>
</tr>
<tr>
<td>6-10</td>
<td>4</td>
<td>28.6</td>
</tr>
<tr>
<td>11-15</td>
<td>6</td>
<td>42.9</td>
</tr>
<tr>
<td>More than 15</td>
<td>2</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-3- Field of training received by field extension officer: -

Table (4-7) indicates that the majority of field extension officers 92.9% received training in pesticides, 57.1% of field extension officers received training in fertilizer and production of vegetable and fruit at equal proportion, 50% of them received training in agricultural engineering and 42.9% of field extension officers received training in extension methods and integrated pest management at an equal percentage. This result indicates that there is strong attention given to training in pesticides whereas there is weakness attention in training in extension methods to train field extension officers.
Frequency distribution and percentages of field extension officers by the field of training received

<table>
<thead>
<tr>
<th>Field of training</th>
<th>frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training in extension methods</td>
<td>6</td>
<td>42.9</td>
</tr>
<tr>
<td>Training in fertilizer</td>
<td>8</td>
<td>57.1</td>
</tr>
<tr>
<td>Training in agricultural engineering</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>Training in integrated pest management</td>
<td>6</td>
<td>42.9</td>
</tr>
<tr>
<td>Training in pesticides</td>
<td>13</td>
<td>92.9</td>
</tr>
<tr>
<td>Training in production of vegetables and fruit</td>
<td>8</td>
<td>57.1</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-4- Satisfaction of trainees’ needs: -

Table (4-8) indicates that the majority of field extension officers 71.4% thought that training courses satisfy their needs sometimes and 28.6% of them thought training courses satisfy their needs always. This result indicates that the satisfaction of trainees’ needs is very important and leads to the success of training courses also this result indicates that there is little attention given to satisfy the trainees' needs because most of them mentioned that training courses satisfy their needs sometimes.
Frequency distribution and percentages of field extension officers by satisfaction of training courses to trainees' needs

<table>
<thead>
<tr>
<th>Did training courses satisfy your needs</th>
<th>frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>4</td>
<td>28.6</td>
</tr>
<tr>
<td>Sometimes</td>
<td>10</td>
<td>71.4</td>
</tr>
<tr>
<td>Rarely</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Did not satisfy my needs</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-5- Use of training methods in the in-service training courses: -

Table (4-9) indicates that the majority of field extension officers 50% mentioned that training methods were used always in training, 35.7% of them mentioned that training methods were used sometimes in training and 14.3% of them mentioned that training methods were rarely used in training. This result indicates that the training methods were always used in training and this help to deliver the training content to achieve the objective of training.
Table (4-9)

Frequency distribution and percentages of field extension officers by the training methods used in the in-service training courses

<table>
<thead>
<tr>
<th>Training methods used in the in-service training</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>Sometimes</td>
<td>5</td>
<td>35.7</td>
</tr>
<tr>
<td>Rarely</td>
<td>2</td>
<td>14.3</td>
</tr>
<tr>
<td>No training methods used in the training</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-6- Number of training methods used in the in-service training courses:

Table (4-10) indicates that all field extension officers 100% mentioned that more than one training method was used in their training. This result indicates that the use of the variety of training methods increase interest of trainees and also programme effectiveness.

Table (4-10)
Frequency distribution and percentages of the field extension officers by number of training methods used in the training

<table>
<thead>
<tr>
<th>The number of training methods</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than one training method</td>
<td>14</td>
<td>100</td>
</tr>
<tr>
<td>Only one training method</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-7 Focus of in-service training courses: -

Table (4-11) indicates that the majority of field extension officers 78.6% mentioned that the in-service training courses focused on the theoretical part 7.1% mentioned that the in-service training course focused on practical part and 14.3% mentioned that the in-service training courses focused on the theoretical and practical parts. This result indicates that the in-service training courses lack the practical part and focus on theory. This weakness because training should balance theory with practical
<table>
<thead>
<tr>
<th>Focus of training courses</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical part</td>
<td>11</td>
<td>78.6</td>
</tr>
<tr>
<td>Practical part</td>
<td>1</td>
<td>7.1</td>
</tr>
<tr>
<td>Theoretical and practical part</td>
<td>2</td>
<td>14.3</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-8 Things missed in the training content:

Table (4-12) indicates that the majority of field extension officers 92.9% mentioned that they missed applicability in the training content and 7.1% mentioned the training content are not attractive.

This result indicates that the training content, in order to be effective must be applicable to enable the trainees to benefit from it.
<table>
<thead>
<tr>
<th>Things missed in the training content</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractiveness</td>
<td>1</td>
<td>7.1</td>
</tr>
<tr>
<td>Applicability</td>
<td>13</td>
<td>92.9</td>
</tr>
<tr>
<td>Lack to the data and references</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

**4-9 Extension methods used by the field extension officers**

Table (4-13) indicates that all field extension officers 100% used farm visits, 85.7% used field demonstration, 57.1% used field days and farmers’ field schools equally, 50% used home visits and 28.6% used lectures. This result indicates that the field extension officers used a range of extension methods but all of them use farm visit.
Frequency distribution and percentages of the field extension officers by extension methods they used.

<table>
<thead>
<tr>
<th>Extension methods used by field extension officers</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm visits</td>
<td>14</td>
<td>100</td>
</tr>
<tr>
<td>Home visits</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>Field demonstration</td>
<td>12</td>
<td>85.7</td>
</tr>
<tr>
<td>Field days</td>
<td>8</td>
<td>57.1</td>
</tr>
<tr>
<td>Lectures</td>
<td>4</td>
<td>28.6</td>
</tr>
<tr>
<td>Farmers’ fieldschools</td>
<td>8</td>
<td>57.1</td>
</tr>
</tbody>
</table>

Source: field Survey 2005

4-10 The effect of the in-service training of the field extension officers on the level of participation of farmers in the extension activities: -.

Table (4-14) indicates that the majority of field extension officers 57.1% mentioned that the farmers participate more in the extension activities after the field extension officers attend in-service training and 42.9% of them mentioned that the farmers participate sometimes in the extension activities after the field extension officers receive the in-service training. This result indicates that the performance of field extension officers improves after the in-service training and this encourages the farmers to participate more in the extension activities.
Frequency distribution and percentages of field extension officers by level of participation of farmers in the extension activities they performed after they attended in-service training

<table>
<thead>
<tr>
<th>Participation of farmers in extension activities</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>8</td>
<td>57.1</td>
</tr>
<tr>
<td>Some times</td>
<td>6</td>
<td>42.9</td>
</tr>
<tr>
<td>Rarely</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Did not participate</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-11 Farmers’ perception of the improvement of the extension services received after the field extension officers received in-service training: -

Table (4-15) indicates that the majority of the field extension officers 78.6% mentioned that their in-service training had always affected the farmers’ perception of improvement of the extension services whereas 21.4% of them mentioned that the effect is sometimes . This result indicates that in-service training has great positive effect on the farmers’ perception of the extension services they received. This reflects that the in-service training improves the performance of the field extension officers and has positive effects on farmers’ perception
Frequency distribution and percentages of field extension officers by effect of in-service training on farmers' perception of extension services

<table>
<thead>
<tr>
<th>Effect of in-service training on farmers' perception</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always positive</td>
<td>11</td>
<td>78.6</td>
</tr>
<tr>
<td>Some times</td>
<td>3</td>
<td>21.4</td>
</tr>
<tr>
<td>Rarely</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Did not affect</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-12 Weakness in the in-service Training Courses: -

Table (4-16) indicates that the majority of field extension officer 85.7% think that there are no standards of evaluation of the trainees' performance, 78.6% mentioned that the in-service training courses neglect the practical part, 71.4% mentioned that there is no balance between the training content and the time used for training, 57.1% mentioned repetition of the training content in more than one training course, 42.9% mentioned the shortage in training support materials. This result indicates that most of the field extension officers think the shortcomings in the training courses are the lack of mechanism for evaluation of trainees' performance. Existence of standards of evaluation trainees’ performance helps the trainees to avoid drawback in
the performance and this leads to the improvement of the quality of their performance. Neglect of the practical part in training, decreases its effectiveness. If the time allowed for training did not cover the training content the trainees will not get benefit from training. Also repetition of the training content will make trainees feel bored. Shortage in training support materials, will decrease the training effectiveness because the training support materials assist the trainer to accomplish the specific training objectives.
Frequency distribution and percentages of the field extension officers by the weaknesses in the in-service training courses.

<table>
<thead>
<tr>
<th>Weaknesses in the training courses</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training courses focus on the theoretical part and neglect the practical part</td>
<td>11</td>
<td>78.6</td>
</tr>
<tr>
<td>There is no balance between the training content and the time of the training course</td>
<td>10</td>
<td>71.4</td>
</tr>
<tr>
<td>Repetition of the training content in more than one training course</td>
<td>8</td>
<td>57.1</td>
</tr>
<tr>
<td>Shortage in training support materials</td>
<td>6</td>
<td>42.9</td>
</tr>
<tr>
<td>There are no standards of evaluation of the trainees' performance</td>
<td>12</td>
<td>85.7</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-13 Socio Economic Background of Farmers: -

Socio economic variables include: -
age, sex, marital status, educational level, period of work in agriculture, farm size and type of farm ownership.

4-13-1 Farmers' age: -

Table (4-17) indicates that the majority of farmers 25% were between 51-60 years old, 21% were between 31-40 years old, 20% were between 41-50 years old and 17% of them were less than 31 years old and more than 60 years old at an equal percent.

Table (4-17)

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 31</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>31-40</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>41-50</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>51-60</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>More than 60</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-13-2 Farmers' sex: -

Table (4-18) indicates that the majority of farmers 96% were males and 4% of them were females. This result also reflects the males dominance in farming.
Table (4-18)

Frequency distribution and percentages of farmers by sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>96</td>
<td>96</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

**4-13-3 Farmers’ marital status:**

Table (4-19) indicates that the majority of farmers 85% were married and only 15% were single, which is an indication of social settlement.

Table (4-19)

Frequency distribution and percentages of farmers by marital status

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>Single</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Divorced</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Widowed</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

**4-13-4 Farmers’ educational level:**

Table (4-20) indicates that the majority of farmers 37% were illiterate, 22% have completed Khalwa, 20% have completed primary schools, 10%
have completed equal levels in intermediate and higher secondary schools and only 1% have completed university education. This result indicates that the farmers are characterized by high illiteracy rate in addition to their low level of education. As a result, there is need for well qualified and trained field extension officers to assist the farmers to increase their knowledge and acquire the skills necessary for their work.

Table (4-20)

**Frequency distribution and percentages of farmers by educational level**

<table>
<thead>
<tr>
<th>Educational level</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>Khalwa</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Primary</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Intermediate</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Higher Secondary</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>University</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Post Graduate</td>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-13-5 Farmers’ period of work in agriculture:

Table (4-21) indicates that the majority of farmers 32% have worked in agriculture more than 30 years, 27% have worked between 11 – 20 years, 23% have worked between 1 – 10 years 17% have worked between 21 – 30
years and 1% have worked for less than one year. This result indicates that the farmers have long experience in agriculture

**Table (4-21)**

**Frequency distribution and percentages of farmers by the period of work in agriculture**

<table>
<thead>
<tr>
<th>Period of work</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than one year</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1 – 10 years</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>11 – 20 years</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>21 – 30 years</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>More than 30 years</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: field survey 2005

**4-13-6 Farmers’ farm size:**

Table (4-22) indicates that the majority of farmers 70% have farm sizes between 1 – 5 feddan, 19% of them have farms sizes between 6 – 10 feddan, 7% of the farmers have farms sizes less than one feddan and 2% of the farmers have farms sizes between 11 – 15 feddan and more than 15 feddan respectively.

**Table (4-22)**

**Frequency distribution and percentages of farmers by farm size.**

<table>
<thead>
<tr>
<th>Farm size</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of farm ownership</td>
<td>Frequency</td>
<td>Percent(%)</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Own farm</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>Share farm</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Rented Farm</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Cooperative farm</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-13-7 Farmers’ type of farm ownership:

Table (4-23) indicates that the majority of farmers 34% own their farms, 30% of them share their farms with other partners, 20% have rented farms and 16% of the farmers have farms belonging to the cooperative.

Table (4-23)

Frequency distribution and percentages of farmers by type of farm ownership.

4-14 The source of agricultural information:

Table (4-24) indicates the majority of farmers 35% get information about agriculture from the field extension officers, 43% of them get
information from others (their fathers and own experience), 10% get information from the radio, 5% get information from neighbors, 4% get information from inputs companies, 2% get information from newspapers and 1% only get information from television. This result indicates the farmers need well trained field extension officers to enable them to increase their knowledge, skills and change their attitudes.

Table (4-24)

Frequency distribution and percentages of farmers by their source of agricultural information.

<table>
<thead>
<tr>
<th>Source of agricultural information</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field extension officer</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Radio</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Television</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Newspapers</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Neighbors</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Inputs companies</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Others</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field survey 2005

4-15 The number of farm visits performed by field extension officer:
Table (4-25) indicates that all farmers 100% received farm visits by the field extension officers in their farms.

**Table (4-25)**

<table>
<thead>
<tr>
<th>Field extension officers visit to farm</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey2005

**4-16 Communicating the farmers’ problems to field extension officers:**

Table (4-26) indicates that the majority of farmers 38% communicate always their problems to field extension officers, 29% don’t communicate, 20% communicate sometimes and 13% communicate rarely their problems to field extension officers which indicates that the performance of the field extension officers encourages the farmers to communicate their problems.
Frequency distribution and percentages of farmers by the frequency of communicating the problems they face to the field extension officers.

<table>
<thead>
<tr>
<th>Frequency of communicating</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Sometimes</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Rarely</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Don’t communicates</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-17 The quality of language used by field extension officers:

Table (4-27) indicates that the majority of farmers 79% felt that the quality of language used by the field extension officers, is excellent and 21% of them found the quality of language very good. This result indicates that the quality of the language of the field extension officers, is affected positively by the in-service training they received. Also this indicates that they used simple language to deliver their messages.
Frequency distribution and percentages of farmers by their opinion on the quality of language used by the field extension officers to deliver information.

<table>
<thead>
<tr>
<th>Quality of language used by the field extension officers</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>Very good</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Good</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Poor</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-18 The quality of performance of the field extension officers as perceived by farmers:

Table (4-28) indicates that the majority of farmers 44% perception of the quality of performance of field extension officers was good, 42% of farmers’ perception of performance was very good, 9% perception was excellent and 5% perceive the performance as poor. This result indicates that the performance of field extension officers is positively affected by in-service training they received.
Frequency distribution and percentages of farmers by their perception of the quality of performance of the field extension officers.

<table>
<thead>
<tr>
<th>Farmers’ perception</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Very good</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>Good</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>Poor</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-19 The technical information introduced by field extension officers:

Table (4-29) indicates that the majority of farmers 41% mentioned that the information introduced by field extension officers rarely increase their knowledge, 24% of them felt the information didn’t increase their knowledge, 19% said that the information they receive always leads to increase their knowledge and 16% of them mentioned that the information leads sometimes to increase their knowledge. This result reflects that most of farmers feel that the technical information introduced by the field extension officers rarely leads to increase their knowledge this result means the farmers technical information needs should be assessed and used in the in-service training of the field extension officers.
Frequency distribution and percentages of farmers by whether the technical information they receive increased their knowledge.

<table>
<thead>
<tr>
<th>Technology Information leads to increase in knowledge</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Sometimes</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Rarely</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>Didn’t increase knowledge</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-20 The differences between performance of the field extension officers as perceived by the farmers:

Table (4-30) indicates that the majority of the farmers 78% found differences in the performance of field extension officers and only 22% didn’t find any differences in the performance of the field extension officers.
Frequency distribution and percentages of the farmers by their perception of the differences in the performances of the field extension officers.

<table>
<thead>
<tr>
<th>Whether there are differences in the performance</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>78</td>
<td>78</td>
</tr>
<tr>
<td>No</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey 2005

4-21 Main reasons for the differences in performance of the field extension officers: -

Table (4-31) indicates that the majority of the farmers 38% attributed the main reasons for the differences in the performance to be the weakness in training, 28% found the main reason causing differences in performance is the weakness in experience, 10% of them thought the main reason for the difference in performance to be the young age and 2% mentioned sex as the cause of differences in performance. This result indicates that most of the farmers thought the main reason for the differences in the performance of the field extension officers is the weakness in training. Therefore, the difference in the performance of the field extension officers is the weakness in their training. As a result, the field extension officers need more in-service training to improve the quality of their performance on the job.
### Table (4-31)

Frequency distribution and percentages of the farmers by main reasons for the differences in performance of the field extension officers

<table>
<thead>
<tr>
<th>Reasons for the differences</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weakness in training</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Weakness in experience</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Sex of field extension officers (male-female)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Young age of the field extension officers</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>78</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: field survey 2005
CHAPTER FIVE

Summary of Results and Recommendations

5-1 Summary of results: -

The results obtained from the data analysis show the assessment of the in-service training received by the field extension officers and its effect on the quality of their performance as perceived by the farmers. The results reflected the following: -

- Various training methods were used in training course such as lectures, groups discussion, field visits, skill development training and demonstrations.
- The performance of field extension officers improved after attending the in-service training and this encourages the farmers to participate more in extension activities.
- Training of the extension officers has a high positive effect on farmers’ acceptable of the extension services they receive from the field extension officers.
- There was a weakness in the training in extension methods offered to train field extension officers.
- Little attention was given to meet and satisfy the trainees needs
- Some of the training content lack to applicability.
- The weakness in the training courses was the result of a mechanism for the evaluation of trainees performance, neglected of the practical
part and focused on the theoretical part, repetition of the training content, the duration of training didn’t cover the training content and shortage in the training support materials.

• Most farmers depended on their fathers, relatives and friends as sources of information. This means the farmers need well trained field extension officers to enable them to increase their knowledge, skills and change their attitudes.

• Most farmers communicated their problems to the field extension officers, encouraged by the good performance of the field extension officers.

• The quality of language used by the field extension officers to deliver information was excellent according to the judgement of 79% of farmers.

• The farmers’ perceptions of the quality of performance of field extension officers were good.

• Most of the farmers felt the technical information introduced by the field extension officers lead rarely to increase their knowledge.

The above result means the farmers technical information needs should be assessed and used in designing the in-service training of the field extension officers.
Most of the farmers found differences in the performance of the field extension officers and thought the main reasons for differences in the performances is the weakness in training of some of them.

5-2 Recommendations: -

Based on the results reported above the State General Directorate of Transfer of Technology and Extension should carry out the following recommendations:

2- Conduct regular in-service training to reduce differences in the performance among the field extension officers.

3- Study training needs of the field extension officers before conducting in-service training.

4- Attention must be given to the quality of in-service training courses and not only quantity.

5- Strong attention must be given to training in the extension methods.

6- Farmers technical information needs should be assessed and used in designing the in-service training of the field extension officers.

7- There should be a balance between training content and the time allowed for conducting the training courses.

8- Training courses should focus on both the practical and theoretical aspects.

9- Provision of training support materials should be insured.

10- A mechanism for evaluation of trainees’performance should be used.
REFERENCES


2- Adams, M.E-(1982). Agricultural Extension in Developing Countries

3- Ahmed, Mokhtar (2003). M.Sc Thesis, Department of Agricultural Extension and Rural Development, Faculty of Agriculture, University of Khartoum-Sudan


6- Bannaga, A.M.(2002). Types of Training .National Training Courses on Capacity Building and Skills in the Agricultural Sector- AOAD

7- Bannaga, A.M.(2004). M.Sc Lectures Notes ,Department of Agricultural Extension and Rural Development, Faculty of Agriculture, University of Khartoum
8- Directorate of Transfer of Technology and Extension (2004). Training Courses and Budget Report- Khartoum State,


14- Oket, Prime (1994). M.Sc Thesis, Department of Agricultural Extension and Rural Development, Faculty of Agriculture, University of Khartoum- Sudan


18-Wentling, Tim (1993). Planning for Effective Training-Rome
Appendix (1)

Questionnaire to study (The effect of the in-service training of the field extension officers on the quality of their performance as perceived by farmers)

(Field extension officers)

1- Name: …………………………………………………………………………………

2- Duty station: ………………………………………………………………………

3- Sex: female ☐, male ☐

4- Years of experience: 1-5 ☐, 6-10 ☐, 11-15 ☐

16-20 ☐, 21-25 ☐ more than 25 years ☐

5- Age: 20-30 ☐, 31-40 ☐, 41-50 ☐

-60 ☐, more than 60 years ☐

6- Marital status: married ☐, single ☐, divorced ☐, widowed ☐
7- Level of education:
- higher secondary
- agricultural institute
- university
- post graduate
- other, Specify

8- Did you attend in-service training courses?
- Yes
- No

9- If yes how many training courses did you attend?
- Course

10- What are the field of training did you receive and duration of the training?

<table>
<thead>
<tr>
<th>Field of training</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11- Did the training courses satisfy your needs?
   Always ☐, Some times ☐ Rarely ☐ Didn’t satisfy ☐

12- If don’t satisfy your needs what are the reasons do you think?
   A-.................................................................
   B-.................................................................
   C-.................................................................
   D-.................................................................

13- are the training methods used in the in-service training courses you attend?
   Always ☐, Some times ☐, Rarely ☐ Didn't use ☐

14- If the training methods were used (always, some times, rarely in the training course) how many?
   More than one training method was used ☐
   Only one training method was used ☐

15- Training courses focus on:
   Theoretical part, ☐ practical part ☐ Both( ☐
   Theoretical and practical) ☐

16- what is the Thing missed in training content do you think?
   Attractiveness ☐ Applicability ☐
   Lack to data and references ☐
17- How many farmers under your supervision?

…………………………………………………………………

18- What are the extension methods you used after attend in-service training courses?

<table>
<thead>
<tr>
<th>Extension methods</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19- What is your opinion about the farmers in terms of participation in extension activities after you received training course?

Participate more  □, participate some times  □

Rarely participate □, didn’t participate □
20- If they did not participate what are the reasons do you think?
A- ...........................................................
B- ...........................................................
C- ...........................................................
D- ...........................................................

21- Do you think the in-service training of the field extension officers affect the farmers’ perception of the extension services received?
Always  ☐ Some times  ☐
Rarely  ☐ Don’t affect  ☐

22- What are the weaknesses in the in-service training courses?
A- ...........................................................
B- ...........................................................
C- ...........................................................
D- ...........................................................
Appendix (2)

Questionnaire to study (The effect of the in-service training of the field extension officers on the quality of their performance as perceived by farmers)

1- Name:............................................................
2- Age:............................................................

3- Sex: male ☐, female ☐

4- Marital status: married ☐, single ☐
    Divorced ☐, widowed ☐

5- Educational level: illiterate ☐, Khalwa ☐, primary ☐
    Higher Secondary ☐, intermediate ☐
    University ☐, post graduate ☐

6- Period of work in agriculture:
    ........................................................................

7- Farm size:
    ........................................................................
8-Type of farm ownership: own farm ✔️ share farm ✔️
Rented farm ✔️ cooperative ✔️ other ✔️
Specify ........................................

9-What are the crops cultivated?

<table>
<thead>
<tr>
<th>Crop</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10- what is the your source of information about agriculture?
Field extension officer ✔️ Radio ✔️ Television ✔️
News paper ✔️ Neighbors ✔️ Input companies ✔️
Others ,
Specify ........................................
11- How many times during the season the field extension officers visited you in your farm?

..............................................................
..............................................................

12- Do the farm visits suit your time?

Yes ☐ No ☐

13- If no, what is the time suitable for you?

..............................................................
..............................................................

14- Do you communicate the problems you faces in your farm to the field extension officers?

Always ☐ some times ☐ Rarely ☐

Don’t communicates ☐

15- If you don’t communicate the problems face by you to the field extension officer what are the reasons?

A- ..............................................................

B- ..............................................................

C- ..............................................................

D- ..............................................................
16- What is your perception about the quality of the language used by the field extension to deliver information?

Excellent [ ] , very good [ ] , good [ ]

Poor [ ]

17- Did the field extension officers train you in your area?

Yes [ ] , No [ ]

18- What is your perception of the quality of performance of the field extension officers?

Excellent [ ] , Very good [ ] , Good [ ]

Poor [ ]

19- Do you think the information introduced by the field extension officer increased your knowledge?

Always [ ] , some times [ ]

Rarely [ ] , Didn’t increase knowledge [ ]
20- Do you think there are differences in the performance of the field extension officers?

Yes [ ] , No [ ]

21- If yes, what are the main reasons for the differences in the performance of the field extension officer?

Weakness in training [ ] , weakness in experience [ ]

Sex of the field extension officers (male- female) [ ]

Age of the field extension officers [ ]