**UNIVERSITY OF CAPE COAST**

# EFFECTS OF RADIO PEACE-COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH PROGRAMME OF AGRICULTURAL INFORMATION DISSEMINATION ON FARMERS IN CENTRAL REGION OF GHANA

**BY**

**BENJAMIN YAO FOLITSE**

Thesis submitted to the Department of Agricultural Economics and Extension, School of Agriculture, University of Cape Coast in partial fulfilment of the requirements for award of Master of Philosophy Degree in Agricultural Extension

**JUNE 2014**

Digitized by UCC, Library

**UNIVERSITY OF CAPE COAST**

# EFFECTS OF RADIO PEACE-COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH PROGRAMME OF AGRICULTURAL INFORMATION DISSEMINATION ON FARMERS IN CENTRAL REGION OF GHANA

**BY**

**BENJAMIN YAO FOLITSE**

Thesis submitted to the Department of Agricultural Economics and Extension, School of Agriculture, University of Cape Coast in partial fulfilment of the requirements for award of Master of Philosophy Degree in Agricultural Extension

**JUNE 2014**



Digitized by UCC, Library

## DECLARATION

**Candidate's Declaration**

*I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere*

Candidate's Signature: …….Date……..

Name: Benjamin Yao Folitse

**Supervisors' Declaration**

*We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.*

Principal Supervisor's Signature…….Date……

Name: Dr. Festus Annor-Frempong

Co-supervisor's Signature……Date…….

Name: Mr. Nathan Adu Gyimah



Digitized by UCC, Library

## ABSTRACT

The study examined the effects of Radio Peace-Council for Scientific and Industrial Research Programme of Agricultural Information Dissemination on Farmers in Central Region of Ghana meant to address the low adoption of appropriate technologies and ineffective institutional frameworks to provide information on proven agricultural technologies. Descriptive correlation survey design and multistage sampling technique were used to select 396 farmers within broadcasting range of Radio Peace in five districts and municipalities in the Central Region of Ghana. An interview schedule was used to collect data which was analyzed using appropriate statistical tools such as frequencies, percentages, Chi-square, dependent T-test, analysis of variance (ANOVA), post hoc multiple comparison and logistic regression. The study revealed that whilst educational background, marital status, ethnicity, and household size of farmers affect the listening of Radio Peace-Council for Scientific and Industrial Research programme, sex and age did not. Farmers used various types of agricultural information disseminated through Radio Peace-Council for Scientific and Industrial Research programme which have affected their livelihoods significantly. The use of information disseminated through the programme depended mainly on age, household size and farming experience of farmers. The study recommends among others the need for management to reschedule the airing of programme, acquisition of more radio by farmers, more collaboration between the Ministry of Food and Agriculture and Council for Scientific and Industrial Research to replicate the programme in the various districts and municipalities in Ghana.




Digitized by UCC, Library

## ACKNOWLEDGEMENTS

I wish to express my heartfelt appreciation to all my lecturers in the Department of Agricultural Economics and Extension for providing the knowledge and skills that enabled me to write this thesis.

I owe tons of appreciation to my supervisors, Dr. Festus Annor-Frempong and Mr. Nathan Adu Gyimah, for direction, advice and critical examination of the thesis. Mr. Emmanuel Mensah of the University of Cape Coast Practice School and Mrs. Juliana Adzobu of the University of Cape Coast Library deserve mention for providing aspects of literature.

I wish to thank Mr. Isaac Kofi Golokumah and Mr. Augustine Amani Kwarteng, my course mates for linking me with current sources of information on the topics discussed in the thesis. My special thanks go to Dr. Maxwell Asumeng of the Department of Psychology, University of Ghana, Dr. Albert Obeng-Mensah of the Department of Agricultural Economics and Extension, University of Cape Coast and Dr. John K. Tuffour of Canada for encouraging me to pursue an MPhil degree in Agricultural Extension.

I am also grateful to my wife, Evelyn and the family for their co-operation and prayers. Finally, I wish to thank my employers, CSIR and especially the Director of Institute for Scientific and Technological Information Dr. Joel Sam, for granting the study leave with pay to pursue an MPhil programme and also the International Food and Policy Research Institute for providing the funds with which this research was carried out. To all respondents and research assistants, I say thank you very much.



Digitized by UCC, Library

## DEDICATION

Dedicated to my late parents, Francis and Betty Folitse; my lovely wife Evelyn Folitse and children; Victor, Darlingtina and Patrick Folitse.



Digitized by UCC, Library

## TABLE OF CONTENTS





Digitized by UCC, Library

Digitized by UCC, Library

Digitized by UCC, Library

Digitized by UCC, Library

.

## LIST OF TABLES



Digitized by UCC, Library

Digitized by UCC, Library

Digitized by UCC, Library

**LIST OF FIGURES**



Digitized by UCC, Library

Figure



## LIST OF ACRONYMS



Digitized by UCC, Library

| | |
|---|---|
| ACP | African, Caribbean and Pacific |
| AICs | Agricultural information Centres |
| BINARI | Biotechnology and Nuclear Agricultural Research Institute |
| CSIR | Council for Scientific and Industrial Research |
| CTA | Technical Centre for Tropical Agriculture and Rural Cooperation |
| DAES | Directorate of Agricultural Extension Services |
| DANIDA | Danish International Development Association |
| EDF | European Development Fund |
| EU | European Union |
| FM | Frequency Modulation |
| GAEC | Ghana Atomic Energy Commission |
| GAINS | Ghana Agricultural Information Network System |
| GDP | Gross Domestic Product |
| ICT | Information Communication Technology |
| IICD | International Institute for Communication and Development |
| INSTI | Institute for Scientific and Technological Information |
| IPDC | International Programme on Development and Communication |
| MOFA | Ministry of Food and Agriculture |
| SRL | Sustainable Rural Livelihoods |
| QAS | Question and Answer Service |
| T&V | Training and Visit |



Digitized by UCC, Library

UNESCO United Nations, Education, Scientific and Cultural Organization



Digitized by UCC, Library

# CHAPTER ONE

# INTRODUCTION

## Background to the Study

Governments have found it necessary to develop the agricultural sector because it plays significant roles in the socio-economic development of Ghana. A report on the state of Ghanaian economy (ISSER, 2010) revealed that, despite the growth of industries, oil and commerce, the agricultural sector remained the major source of employment and foreign exchange earner and continued to provide food to the population and supplied raw materials to various industries. According to Food and Agriculture Organization (FAO, 2010) agricultural development depends on generation and dissemination of new commodities and methods of production. In Nigeria, various agencies such as the research institutes, agricultural universities/colleges and non-governmental organizations generate improved farm practices and technologies (Daudu, Chado & Igbashal 2009). The service delivery sector led by change agents of the public and private extension organizations promote the rapid adoption and utilization of improved farming technologies to farmers to bring about agricultural development (Agbamu, 2006).

A major challenge in the technology generation sector is fact that the many technologies generated do not reach the intended beneficiaries. Farmers in rural



Digitized by UCC, Library

areas are faced with many problems due to inadequate access to information on improved agricultural practices. FAO (2004) bemoaned this fact when it indicated that the quantum of agricultural technology information available in the Ghanaian systems developed by research institutes, and faculties of agriculture in universities that are yet to reach farmers is quite enormous. The solution therefore lied with effective dissemination of information about the innovations developed. The research institutes are expected to receive feedback on the technologies so as to improve them.

The service delivery has had its own challenges as well. The extension staff-to-farmer ratio estimated at 1:1500 is inadequate to reach all farmers in the country; not to recount the inadequate logistics required for extension delivery in Ghana (Bonye, Kpieta & Seidu, 2012). The efficiency of technologies generated and disseminated has been found to depend on effective communication (Ekoja, 2003). Demiryurek, (2010) emphasized that, apart from inputs, the development of agricultural technologies requires timely and systematic transmission of useful and relevant agricultural information (messages) through relatively well educated technology dissemination (extension) from formal technology generation system (research) through various communication media (channels) to the intended audience.

The Council for Scientific and Industrial Research (CSIR) in collaboration with the Technical Centre for Agricultural and Rural Cooperation (CTA) introduced the Question and Answer Service (QAS) on Radio Peace (a community radio in Winneba) in 2003. The main aim of the radio programme is to enhance



Digitized by UCC, Library

the generation and dissemination of agricultural technologies and information to benefit extension workers, farmers and fishermen in the Central Region of Ghana. The programme lasts for one hour and allows stakeholders to interact with the farmers and fishermen through phone-ins and follow–up by extension agents to the field. The topics discussed are determined through stakeholder meetings in the communities. Some of the topics discussed on the radio are crop farming, fish farming, animal farming, soil fertility improvement practices and post harvesting techniques (Ghana-QAS, 2010).

**Statement of the Problem**

The effective and efficient provision of information on improved farm practices to farmers to improve farm productivity have been found to be one of the ways of contributing to agricultural development. The Government of Ghana through the Ministry of Agriculture has designed structures and implemented several extension programmes geared towards efficient and effective agricultural information dissemination with a view to improving agricultural production for accelerated rural development in the country. The inadequate transport for extension agents to maintain close and regular contact with farmers is a major setback in agricultural technology transfer (Abbey-Mensah, 2000).

This situation also contributes to the weak linkages between research, extension agents and farmers (Osei & Entsua-Mensah, 2003). The liberalization of the air waves in Ghana has seen several Radio and Community Radio Stations springing up in the various communities. Some radio stations are being used as effective channels to disseminate agricultural information. The Council for



Digitized by UCC, Library

Scientific and Industrial Research (CSIR) and Radio Peace introduced the programme in the Central Region of Ghana to disseminate agricultural information to extension workers, farmers and fishermen in the region to improve agricultural productivity. This is because radio transmission is quick and reaches to a wider population. As the farmers receive useful information from the radio, gradually they bring changes in their farming methods by applying new techniques (Ekoja, 2003).

Research undertaken on the effect of community radio on agricultural and rural development activities revealed that radio agricultural programmes that allow discussions and phone-ins to answer questions on issues play very important role in creating awareness on new agricultural research findings among farmers. Radio spreads agricultural technologies to the farmers at a faster rate than personal contacts (Ilboudo, 2000; Hambly & Kassam, 2002; DCFRN, 2004).

According to Umar, Umar & Khalique (2012), radio communication is useful in dissemination of agricultural messages to a large number of people at low cost. Moreover, it brings about widespread awareness and sustains interests of the farmers.

Since the inception of and Radio Peace-Council for Scientific and Industrial Research programme to farmers in the Central Region of Ghana, no formal studies have been done to find out the effects of the technologies disseminated to the farmers. The question is what categories of farmers listen to the programmes? Does the socio-economic background of farmers affect their listening of the programme? Has the Radio Peace-Council for Scientific and



Digitized by UCC, Library

Industrial Research programme improved the livelihood of farmers in the catchment area of broadcasting? Which socio-demographic backgrounds of farmers determine the use of information disseminated through the programme? What are the challenges associated with using Radio Peace-Council for Scientific and Industrial Research programme in the dissemination of agricultural information?

**Objectives of the Study**

The general objective of the study is to assess the effects of Radio Peace-Council for Scientific and Industrial Research Programme on the dissemination of agricultural information to farmers in the Central Region of Ghana.

The specific objectives are to:

1. Determine if the socio-demographic background of farmers influence the extent to which farmers listen to Radio Peace-Council for Scientific and Industrial Research programme.
2. Examine the effect of Radio Peace-Council for Scientific and Industrial Research programme on the livelihood of farmers in the catchment area of broadcasting.
3. Identify the extent to which socio-demographic characteristics of farmers influence the use of information disseminated through the Radio programme.



Digitized by UCC, Library

4. Establish the challenges associated with the dissemination of agricultural information using the Radio Peace-Council for Scientific and Industrial Research programme in study area.

**Hypotheses of the Study**

The following hypothesis were tested at 0.05 alpha level

1. **$H_0$**: There is no significant difference between the sex of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.

   **$H_1$**: There is significant difference between the sex of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme

2. **$H_0$**: There is no significant difference between the age of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.

   **$H_1$**: There is significant difference between the age of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.

3. **$H_0$**: There is no significant difference between the educational level of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.

   **$H_1$**: There is significant difference between the educational level of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.



Digitized by UCC, Library

4. **$H_0$**: There is no significant difference between the marital status of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.

   **$H_1$**: There is significant difference between the marital status of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.

5. **$H_0$**: There is no significant difference between the ethnicity of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.

   **$H_1$**: There is significant difference between the ethnicity of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.

6. **$H_0$**: There is no significant difference between the household size of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.

   **$H_1$**: There is significant difference between the household size of farmers and the extent to which they listen to Radio Peace-Council for Scientific and Industrial Research programme.

**Justification of the Study**

The study is to establish the effects of Radio Peace-Council for Scientific and Industrial Research Programme of Agricultural Information Dissemination on Farmers in Central Region of Ghana. The results of the study would be relevant



Digitized by UCC, Library

on several fronts. Firstly, the findings of the study will add to the scanty body of knowledge in the area of community radio usage in the dissemination of agricultural information. The study will also inform agricultural policy makers, the Directorate of Agricultural Extension Services (DAES) under the Ministry of Food and Agriculture (MOFA**)** to improve information dissemination mechanisms to farmers using radio stations which are rapidly increasing all over Ghana .

The results will also be useful to management of Radio Peace to improve upon the programme. CSIR, on the other hand will consider replicating the programme in other regions of Ghana to enhance agricultural production. Furthermore, agricultural extension agents could adapt findings in the use of radio as a channel for disseminating agricultural information to farmers.

**Limitations of the Study**

A wider coverage was not possible due to limited time and resources at the time of the study. The study was limited to selected group of farmers in five out of the ten districts and municipality in the transmission range of Radio Peace (88.9 MHz. FM) in the Central Region.

There was difficulty in establishing the population of farmers who listen to the radio station since there was no such data in the region. The study therefore sampled 396 (198 farmers who listen and 198 who do not) respondents to establish the effect of radio on dissemination of agricultural information. The sampling process was although logical, but it could not be error free. The farmers



Digitized by UCC, Library

selected depended on the list of registered farmers collected from MOFA offices in each of the districts and municipalities.

Some farmers who might have listened to the radio and not been registered by MOFA were not considered since it was difficult to identify them. Constraints of time and available material resources could not make it possible to establish the true representation of farmers who listened to the radio programme.

**Delimitation of the Study**

Fifty percent of Municipalities, Districts and farming communities (obtained from MOFA offices) in the transmission range of Radio Peace (88.9 MHz. FM) was used in the study. The study also focused on the list of technologies identified by farmers, extension agents and CSIR at the stakeholder consultative meetings. Many other information and technologies discussed during the phone-in section were not included in the study.

**Definition of Terms**

The key terms as used in the study are defined below

Farmers : All categories of adults living, reared livestock, grow crop within the transmission range of Radio Peace on 88.9 MHz. FM.

Fishing : catching aquatic animals

Agricultural information: New ideas, methods and/or techniques in crop, fish, animal farming, soil fertility and post harvesting handling



Digitized by UCC, Library

disseminated through the CSIR/radio peace to improve the livelihood of farmers.

Radio : An electronic audio-medium for broadcasting programmes at 88.9 Megahertz Frequency Modulation.

Effect : The extent to which the Radio Peace-CSIR programme has changed livelihood outcomes (natural, human, physical, financial and social) of farmers.

Livelihood : The extent to which Radio Peace-CSIR programme has assisted farmers to secure basic necessities -food, water, shelter and clothing- of life

Socio-demographic characteristics: This refers to age, sex, marital status, education level, farm size, size of household, farming experience and sources of credit.

Challenge : An issue that makes it difficult for farmers to receive agricultural information disseminate through CSIR-Radio peace programme.

**Organisation of the Rest of the Study**

The study has been organised into five chapters as follows:

Chapter one is the introductory chapter. It provides an over view or background to the study. It also includes the problem statement, purpose of study, research objectives, hypotheses of the study, justification of the study, limitations of the study, Delimitation of the Study, definition of terms and organisation of the rest of the study.



Digitized by UCC, Library

Chapter two deals with the literature review. It includes an in-depth review on the concept of development of community media-Radio Peace in Ghana, agricultural information needs of farmers, the role of agricultural information in developing agriculture, the use of radio in disseminating agricultural information demographic characteristics of farmers, farmers' use of agricultural information, factors influencing the use of agricultural information by farmers, effect of agricultural information on farmers' livelihood, challenges of accessing agricultural information by farmers, why farmers do not listen to Radio Peace-CSIR programmes and conceptual framework.

Chapter three focuses on the research methodology and the procedures that were adopted collecting and analyzing data and chapter four comprises of presentation and analyses of data. It includes discussions of the findings that emerged from the data analyses in relation to the literature review in relation to the conceptual frame work.

Chapter five deals with the summary of the findings, conclusions and recommendations based on the findings of the study, as well as suggestions for further research.



Digitized by UCC, Library

# CHAPTER TWO

# LITERATURE REVIEW

## Introduction

This chapter deals with the review of related literature on the effects of radio on dissemination of agricultural information. Aspects reviewed include;

1. Development of Community Media-Radio Peace in Ghana
2. Agricultural Information Needs of Farmers
3. The Role of Agricultural Information in Developing Agriculture.
4. The Use of Radio in Disseminating Agricultural Information.
5. Demographic Characteristics of Farmers.
6. Farmers' Use of Agricultural Information.
7. Factors Influencing the Use of Agricultural Information by Farmers.
8. Effect of Agricultural Information on Farmers' Livelihood.
9. Challenges of Accessing Agricultural Information by Farmers.
10. Why Farmers do not listen to Radio Peace/ CSIR Programmes.
11. Conceptual Framework.

## Development of Community Media–Radio Peace in Ghana

Community-based media ensure media pluralism, diversity of content, and representation of a society's' different groups and interests. Community media



Digitized by UCC, Library

encourage open dialogue and transparency of administration at local level and offer a voice to the voiceless. They are established on the concepts of public access, sharing experiences and information. Radio is by far the most favoured community medium in developing countries. Given its accessibility and cost-effectiveness, community radio represents a democratic and participatory medium. It is easy to operate and it lies within the capacities of many local communities which are not often a subject of mainstream media and information channels. Radio Peace Frequency Modulation (FM) is an example of a project supported by International Programme on Development and Communication (IPDC) in Ghana that have successfully used community media for development purposes.

Officially authorized in August 1996 the station, Radio Peace 88.9 MH-Z FM, was registered in April 1997. Test transmission began on the 1st of July 1999 and broadcasting started on the 1st of September 1999. UNESCO/IPDC granted the project fifty thousand dollars ($50,000.00) in 1998. The money was for training and adapting whatever facilities adopted for broadcast purposes, e.g. providing studio acoustics, furniture, equipment, stationery and portable recorders.

The second benefactor was Danish International Development Association (DANIDA), who provided essential equipment to the tune of eighty thousand pounds (£80,000.00). As the only operative and pioneer Community Radio station in the Central Region, Radio Peace covers more than three-quarters of the region.



Digitized by UCC, Library

With an effective radius of about 70 km, it serves three linguistic areas, Mfantse, Effutu and Awutu. (Isaiah Oppong, personal communication, March 19, 2013)

The station employs a regular number of twenty volunteer workers, recruited essentially from the target districts. These are complemented with a further twenty volunteer artistes who service the different programmes. The vision of Radio Peace is to address the hydra headed bane of the catchment area by pushing back the frontiers of superstition, ignorance and illiteracy, insanitary conditions and disease, poverty and hunger; by giving voice to the voiceless and empowering the vulnerable especially women and children.

The purposeful development oriented programmes are carefully put together to enhance functional education, information and edifying entertainments. Emphasis is placed on good food and nutrition, good fishing and farming practices as well as food security, good governance and democratic practices, conflict resolution and management. Already, Radio Peace has significantly strengthened the pillars of broadcasting and enhanced the media landscape of Ghana, particularly in the Central Region. Radio Peace has acquired the status of Centre of Excellence for Community Radio Broadcasting and for Broadcast Teaching, Learning and Research in Ghana. (Isaiah Oppong, personal communication, March 19, 2013).

**Agricultural Information Needs of Farmers**

Agriculture and for that matter agricultural information has been necessary for human life (Malhan & Rao, 2007). Access to agricultural information is very



Digitized by UCC, Library

necessary for increasing agricultural output (Mgbada, 2006). Inadequate supply of agricultural information to farmers is the key factor responsible for unpleasant situation of farmers (Aina, 2006). Aina (1995) has recognized that agricultural information is an essential resource for the development of agricultural production.

Similarly, De Leeuw, McDermott and Lebbie (1995) argued that adequate and relevant information are important element intended for optimizing decision process in functioning of agricultural enterprises. Information is needed to make decisions in technical, marketing, social and legal issues in agriculture (Adesope, Asiabaka, & Agumagu, 2007). Bala and Sharma (2008) added that to compete in the global market today, our farmers should have access to the latest information on new techniques and innovations of farming, new methods of cultivation, new crops, seeds, pesticides, water and nutrient management, marketing of the product, government policies regarding agriculture, export potential of their crops and the information about the allied activities like mushroom cultivation, fish farming, apiculture, poultry, dairy, and weather information on local and regional levels.

Farmers' contributions to agriculture, right from creation cannot be overemphasized and they actually constitute the bulk of the world's food producers. However, despite rural farmers' active involvements in agriculture, they do not have access to scientific and technological information. Therefore, for consistent growth in agricultural production, it is very important to equip rural



Digitized by UCC, Library

farmers with relevant and timely information to improve their production techniques and increase their income (Salilaja & Reddy 2003).

**The Role of Agricultural Information in Developing Agriculture**

Information plays a key role in agricultural development and production and their effective communication will help facilitate mutual understanding among farmers, agricultural scientist and extension workers (Agboola, 2000). According to Kaye (1995) good information improves decision-making, enhances efficiency and provides a competitive edge. Knowledge and information are basic ingredients for increased agricultural production and productivity.

Information is a critical resource in the operation and management of the agricultural enterprise (Opara, 2008). Abbas Lodhi, Bashir, and Mahmood (2008) argued that lack of information adapted to local needs and lack of technical knowledge at farm level are the important factors responsible for this low yield. Information is considered as one of the most important resources in agricultural and rural development that assists the farmers to take decisions and appropriate actions for further development related to farming (Harris, Browne, Barrett & Cadoret, 2001; Morrow, Nielsen & Wettasinha, 2002; Stefano, Hendriks, Stilwell, & Morris, 2005).



Digitized by UCC, Library

**The Use of Radio in Disseminating Agricultural Information**

For dissemination of agricultural information various methods/media are being employed by the extension wing involving both interpersonal and impersonal contacts (Muhammad, 2005). Various extension methods are useful in different situations and the selection of the most appropriate method is the key function of the extension agent (Nisha, 2006). Among various extension methods, use of radio is useful in creating awareness and stimulates interest, along with large coverage of the audience (Okunade, 2007). Furthermore, in this era of information revolution, the use of radio seems inevitable to accomplish the task of agricultural information dissemination on account of coverage and speed.

Radio being source of information and entertainment can play a vital role to transform attitude and interest. Among the media, radio has its own distinctive place in information dissemination. Radio can play a vital role to inform farmers in the situation of urgency and emergency. Farmers can be informed quickly and swiftly about diseases and pest control, flood, and changing weather (Muhammad, 2005). Farmers can also get appropriate pieces of advice from experts through this medium to cope with emerging problems. In this way the farmers can better plan their farming activities in a more systematic way.

Among the mass media means of communication, radio is found to be the most important means of communicating agricultural information to rural farmers. Kuponiyi (2000) stated that, radio is one of the broadcast media which the rural populations are very familiar with and which almost all experts identify to be the most appropriate for rural emancipation programmes. This is because radio



Digitized by UCC, Library

transcends local areas and has immediate effect on farmers. Furthermore, radio is favoured as a medium of communication in rural communities because of the advantages ascribed to it, inform of transcending the barrier of illiteracy and demanding less intellectual exertion than the print media massages (Folarin, 1990).

Radio has been used to broadcast much useful agricultural content. According to Okwu, Kuku and Aba (2012), discussions related to agricultural problems and solutions have been broadcasted in Zambia. Radio has been used to broadcast in multiple languages in many areas; for example, in Nigeria English and several local languages, such as Hausa, Igbo and Yoruba, were used in broadcasting (14) radio programs along with three television programs (Ekoja, 2004). Using radio to report produce prices in local languages is another example of successful radio use in Bolivia (IICD, 2006). Radio beats distances, and thus has immediate effect. It has been identified as the only medium of mass communication the rural population is very familiar with (Kuponiyi, 2000).

FAO (2001) acknowledged radio as the most important communication medium for communicating with the rural populations of the developing countries. Adequate and relevant information from any means of communication is one of the key requirements for increased productivity, increased income and therefore leads to poverty reduction among the food producers (Amin, Adhikary, Ahmed & Kashem 2013). The use of Information Communication Technologies-ICTs (Radio) can enhance, enlarge and contribute to efficient sharing of agricultural information. However, the relevancy of the



Digitized by UCC, Library

information, the medium through which the information passed and the language used is central to how ICTs can be used as tools to meet the needs of the communities/farmers. As reported by Hambly (2002), radio is relevant to any strategy that involves rural development in Africa. Rural radio provides an opportunity to reach farmers irrespective of their literacy level and cultural diversities.

Furthermore, radio is favoured as a medium of communication in rural communities because of the advantages ascribed to it in form of (i) transcending the barriers of illiteracy, and (ii) demanding less intellectual exertion than the print media messages (Folarin, 1990).

**Demographic Characteristics of Farmers and agricultural information**

Studies on socio-demographic characteristics of farmers have shown that there exists a close association between farmers' socio-demographic characteristics and the use of agricultural information (Odoemenem and Obinne, 2010). The main socio-demographic characteristics that this study focused on are sex, age, education, marital status, languages spoken, household size, farming experience, farm size, secondary occupations, major agricultural enterprises, membership of farmer groups, sources of information, sources of credit, type of labour in the communities, and assets owned by farmers.



Digitized by UCC, Library

Sex of Farmers and use of agricultural information

Nelson (1981) stated that it is wrong to assume that an effective development programme for males will automatically translate into an effective programme for women as well. This implies that men and women have different needs and desires. Gamble and Gamble (2002) asserted that men and women perceive different realities, have different expectations set for them, and that while women are typified as emotional, men are classified as rational. Dankwa (2002) conducted a survey in Ashanti Region and reported that out of 160 farmers interviewed, 135 (84.4%) were males and 25 (15.6%) females. Kumi (2003) also found out that males are more into agriculture while females are into processing and petty trading in the Kwaebibrerem District in the Eastern Region.

Female farmers have inadequate access to extension services as compared to their male counterparts due to their engagement in both on and off farm that make them have less time to enjoy the offered extension services (Obinne, 1995). Similarly, Protz (1997) conceived that due to the multiple roles of females in the rural household tasks, they do not fully benefit from extension services, especially, when the time of delivery (of extension service) conflicts with their other household responsibilities. FAO (1998) also posited that females in the rural areas are loaded with domestic tasks and family obligations and controlled by social restraints such that they are constrained time-wise to be away from home to attend to extension training programmes.

Sex issues in agricultural production and the use of agricultural information have been investigated for a long time. Most of such studies show



Digitized by UCC, Library

mixed evidence regarding the different roles male and females play in technology adoption. Doss and Morris (2001) in their study on factors influencing improved maize technology adoption in Ghana, and Overfield and Fleming (2001) studying coffee production in Papua New Guinea show insignificant effects of sex use of agricultural information.

Age of Farmers and use of agricultural information

Age is an important factor that influences the use of agricultural information because it is said to be a primary latent characteristic in decision making. However, there is contention on the direction of the effect of age on use of agricultural information. Age was found to positively influence use of information on sorghum production in Burkina Faso (Adesiina & Baidu-Forson, 1995), IPM on peanuts in Georgia (McNamara, Wetzstein, & Douce, 1991), and chemical control of rice stink bug in Texas (Harperl, Rister, Mjelde, Drees & Way, 1990).

In another study, age was found to be negatively correlated with use of agricultural information, or not significant in farmers' decision making. Thus, studies on use of land conservation practices in Niger (Baidu-Forson, 1999), rice in Guinea (Adesiina & Baidu-Forson, 1995), fertilizer in Malawi (Green & Ng'ong'ola, 1993), Integrated Pest Management sweep nets in Texas (Harper et al, 1990), Hybrid Cocoa in Ghana (Boahene, Snijders, & Folmer, 1999), age was either not significant or was negatively related to use.



Digitized by UCC, Library

However, Fariha (2011) was of the view that age is one of the socio-demographic characteristics affecting decisions and actions made in agriculture by farmers, because people's thoughts, behaviours and needs are primarily related to their ages. Age of an individual known is known to have direct bearing upon his attitude towards observing and tackling the ideas or the things that happen to come in to the sphere of his experience (Rehman, 2010). Similarly, Dankwa, (2002) also concluded a similar study that age of farmers in the farming communities in Ghana determine their use of agricultural information.

Educational Level of Farmers and use of agricultural information

Education is the main and vital weapon for bringing about desirable change in the behaviour of an individual (Khan, 2005). It is an important aspect that plays a vital role in developing positive attitude among the respondents regarding an innovation. Therefore, it is believed that the higher the level of education of the farmers, the better the output in terms of changed behavior (Rehman, 2010).

Lack of awareness about agricultural technology by farmers can be attributed to their high level of illiteracy which in turn plays a part to the low level of adoption by the farmers of agricultural production technology (Ozowa, 1995). According to Adams (1982), formal education has potentials for making up some of deficiency in man as it enhances understanding and communication in agriculture.



Digitized by UCC, Library

The ability of farmers to read or write may contribute to their information seeking behavior (Ogunlade, 2007). Educated farmers are more likely to utilize printed material and they may be more receptive to new technology than uneducated ones (Hassan, 1991). Education level has been determined by the number of years completed by a respondent in an educational institute.

In a related studies, Obinne (1991) concluded that education among the respondents make them more responsive to adoption of many agricultural extension programmes and policies. Studies have revealed that education influences the use of information on modern agriculture (Ndahitsa, 2008). The reason being that an educated person is more likely to adopt modern practices easily and hence could be a better producer as education will contribute significantly to decision making of a farmer. Education enables the individual farmers to know how to seek for and apply information on improved farm practices. This is because as the individual gains the ability to read, he is able to extend the scope of his experience through the print media. An illiterate farmer is generally apathetic, and lacks choice, and according to Opara (2010) lack of choice is due largely to lack of knowledge which can be epistemological, technical or prudential.

A number of studies that sought to establish the effect of education on use of agricultural information in most cases relate it to years of formal schooling (Sadati, Hosain, Khalil, Yaser & Asakere 2010; Feder & Slade, 1984). Generally, education is thought to create a favourable mental attitude for the acceptance of new practices, especially information-intensive and



Digitized by UCC, Library

management-intensive practices (Waller, Hoy, Henderson, Stinner & Welty 1998; Caswell, Fuglie, Ingram, Jans & Kascak 2001). According to Rogers (1983) and Ehler and Bottrell (2000), technology complexity has a negative effect on adoption and this could only be dealt with through education.

Marital Status and use of agricultural information

Marriage serves as a means of generating family labour and since women and children are able to participate in crop production, processing and marketing, farming practices and use of technologies are related to marital status. Okunade (2006) agrees that majority of land development scheme participants in Kwara state of Nigeria receive assistance from their wives and children to operate their farms. Similarly, Opara (2010) also concluded in a study that marital status was significantly associated with agricultural information use as married farmers are likely to be under pressure to produce more, not only for family consumption but also for sale to cater for other needs of the family. Thus, desire to produce more could lead to agricultural information use.

Ethnicity and use of agricultural information

Ethnicity has several contextual understandings based on the orientation of individuals and groups. It could encompass the aspects of relationship between individuals who perceive themselves as culturally distinctive from other groups; a group of people with common interests and collective identities; and an ethnic solidarity expressed in linguistic and kin terms (Esman, 2004). Ethnicity



Digitized by UCC, Library

influences agricultural information source selection among farmers living together in underserved communities. Ethnicity is the key to a person's self-identity. It enables the person to express emotions, share feelings, tell stories, and convey complex messages and knowledge (Imberti, 2007).

Household Size of Farmers and use of agricultural information

The family size is an important socio-demographic characteristic because it often determines how much family labour will be put into use on the farm and also determines the extent to which a household is able to respond to innovative change. The variable is expected to influence technology adoption positively.

Aryeetey (2004) reported that average household size in the rural forest in Ghana was 6.9 and 7.51 in the rural Savannah area. According to Asante-Mensah (1988), the majority (60%) of the farmers have medium-size households with 7-15 members. Just over 20 percent had small households. Respondents with large or very large households made up the remaining 8 percent. Household size is the total number of individual (wives, children or grandchildren and extended family members) that live with and feed from the household. The adoption index may be either household size depending on age structure and available farm labour among members. Adesina and Baidun-Forson (1995) revealed that farmers use agricultural information because they have more mouths to feed while the family serves as labour source for agricultural production.



Digitized by UCC, Library

Years of Experience of Farmers and use of agricultural information

Years of experience of farmers means the number of years a farmer has spent in farm enterprise. Longer farming experience implies accumulated farming knowledge and skill, which contributes to utilization of agricultural technologies (Tadesse, 2008). Lewis (1997) argues that innovation adoption process about latest agricultural knowledge and techniques was positively and significantly related to farming experience.

Dankwa (2000) found out in his study that the majority (80.7%) of the farmers had worked between 10 and 40 years with an average experience of 23 years. The considerable amount of experience may foster adoption of agricultural technologies if socio-economic problems are addressed. The farming experience of farmers to a large extent affects their managerial know-how as well as the use of various extension methods (Ani, 2006).

Many studies supported this argument. A study in Ghana on factors influencing adoption of recommended cocoa production practices by Asante and Seepersad (1992) indicated a positive relationship of experience in cocoa farming with adoption of recommended cocoa production practices, and Geta, Dadi and Adugna (2005) reported positive relationship of farming experience in sweet potato production with adoption of sweet potato varieties.

Farm Size and use of agricultural information

Farm size may influence farmers' decisions about acquiring the information pertinent to agricultural technology (Chaudary, 2006). Thus different



Digitized by UCC, Library

factors determine the use of different agricultural information and technologies. Much empirical use literature focuses on farm size as the first and probably the most important determinant (Morris, 2001; and Daku, 2002). This is because farm size can affect and in turn be affected by the other factors influencing use of agricultural information. The effect of farm size on use of agricultural information could be positive, negative or neutral. For instance, Kasenge (1998) found farm size to be positively related to use of agricultural information. On the other hand, Yaron, Dinar and Voet (1992); and Harper, Rister, Mjelde, Drees, and Way (1990) found negative relationship between use of agricultural information and farm size.

Interestingly, Akudugu, Guo and Dadzie (2012) found that the relationship between farm size and use of agricultural information is a neutral one. With small farm sizes, it has been argued that large fixed costs become a constraint to agricultural information use (Abara & Singh, 1993), especially if the technology requires a substantial amount of initial set-up cost. In this regard, Feder and Slade (1985) noted that only larger farms will adopt these kinds of information.

Furthermore Akudugu, Guo and Dadzie (2012) argued that with some agricultural information, the speed of use is different for small and large scale farmers in Ghana and this is critical for policy makers and implementers in their pursuance of modernization of agriculture. In Kenya, for example, a study conducted by Gabre-Madhin and Haggblade (2001) found that large commercial farmers use agricultural information on new high-yielding maize varieties more rapidly than smallholders. On the other hand, Olayide (1992)



Digitized by UCC, Library

concluded in a study that there are more subsistence farmers in Nigerian because these farmers do not use modern agricultural information.

Secondary Occupations of Farmers

In most traditional African communities, farming is the dominant occupation. According to Udo (1978), in West Africa, about 60% of the population is engaged in agriculture. According to this survey, the dominant occupation in the Ghana is farming. About 66.52% of the population has farming as the primary occupation, which in many cases is combined with other secondary occupations.

As Start and Craig (2001) noted, most rural people combine occupations or what they referred to as livelihood or occupational diversity as a coping strategy. The rural people who are normally self-employed would like to engage in multiple activities as a means of security. In Ghana, there is a clear evidence of occupational diversification where almost all the respondents are engaged in more than one occupation (Ayivor & Ekpe, 2013). Thus, for all the major primary activities mentioned, most respondents were noted to be engaged in one particular occupation as a primary activity while others may be mentioned as secondary occupation.

**Major Agricultural Enterprises of Farmers**

There are a number of major agricultural enterprises in which farmers generally take varying degree of interest. The proportion of getting information



Digitized by UCC, Library

about these areas by the farmers may depend heavily upon their level of interest in a particular farming area. Similarly they may have varying level of information need with respect to different farming areas (Fariha, 2011)

Fasina (2013) showed in a study that majority of respondents were highly involved in crop production (80%) while 20% were involved in poultry production. Fasina (2013) concluded that more farmers were involved in crop production than live-stock production probably due to its short gestation period that ensures quicker returns. In addition, crop farming on the other hand needs small amount of capital and also creates self-employment (Abubakar, Ango & Buhari, 2009) while livestock production could be more capital intensive and technically oriented than food crop production, hence the preference for crop production by most farmers.

Edeoghon and Ajayi (2009) who studied agricultural enterprises owned by women farmers in Ikpoba-Okha Local Government, Edo State, Nigeria, found out also the majority (98.3%) of the farmers were engaged in crop production enterprise while 55% were engaged in animal production. They also concluded that farmers in the study area perceived production to be the most profitable enterprise followed by animal production. Respondents also perceived these enterprises to have assisted them in taking care of their children school fees and improve their nutritional status thereby improving their standard of living.



Digitized by UCC, Library

**Membership of Farmer Association**

One of the most promising means of disseminating agricultural information in the extension environment is through social groups of farmers. Farmer associations are used in communities worldwide, especially in rural areas, as safety nets to cope with risks and for mutual assistance. Participation in associations is expected to stimulate information exchange (Katungi, 2006). Associations are valuable as a form of collective action to farmers, providing resources such as credit, labour and information. Associations allow farmers to obtain new technologies, benefit from economies of scale, enter into stable relationships with suppliers, and set rules for natural resource management (Place, Kariuki, Wangila, Kristjanson, Makauki, & Ndubi, 2002)

Farmer associations have played an important role both in the community and in extension, and now appear to be taking on an even larger role. It is known that farmers transfer knowledge and information to each other more than extension agents (Arbab & Prager, 1991). Ostrom (1990) asserted that collective action occurs when more than one individual is required to contribute to an effort in order to achieve an outcome. Farmers associations have also been found to support fellow members in the use of agricultural information in their farming activities (Phiri, Franzel, Mafongoya, Jere, Katanga, & Phiri 2004). Farmers have some comparative advantages over what are seen as the more conventional extension agents. Because they have similar circumstances, usually speak the same mother tongue and have comparable educational backgrounds, farmers can communicate well with and are trusted by fellow farmers. Farmer associations are



Digitized by UCC, Library

able to reach more people in a more timely fashion than regular extension agents (Nyakuni, 2001).

Farmer associations can be facilitated to network with other associations, forming strong farmers' associations and giving farmers a voice with which to educate other farmers and to demand services. Farmers in many African countries have a long tradition of performing certain agricultural productive activities as a group rather as individuals (Onumah, Davis, Kleih, & Proctoret 2007). As was noted previously, in Ghana there have long existed informal labour grouping and customary arrangements that provided reciprocal labour exchange for farm work (Salifu & Funk, 2012). Along with advantages, farmers or community-based mechanisms of any kind have some obvious disadvantages as extension players. They do not have the power or authority to institute or regulate policy as governments do. They may lack capacity, resources and the infrastructure that government or private organizations have.

A person's affiliation and involvement in social activities or the involvement of a person in any formal or informal organization are likely to expose the individual to different forms of knowledge. Individuals who actively get involved in various social activities are likely to have a better informed as it has been established that group participation stimulates information exchange (Habtemariam, 2004).



Digitized by UCC, Library

**Sources of Information of Farmers**

Information is one of the most important resources in rural development (Stefano, Hendriks, Stilwell & Morris. 2005) that assists the farmers to take decision and appropriate action for further development related to farming and marketing. Today, in the age of information and technology, the dissemination of information becomes much easier and nevertheless more complex, and it must be disseminated to the farmers in a manner through the use of a method which is appropriate and best supports its recipient (Cartmell, Orr, & Kelemen, 2004)

Studies such as those of Chatman (1983) and Aboyade (1987) have shown that a wide range of sources of agricultural information is available to farmers. Because of this, choice of appropriate medium is crucial in agricultural information delivery. This is because the desire to use or not to use a particular information channel is affected by the channel's disposition and information demand characteristics (Lee, 1996). Information channel disposition, according to Lee (1996), refers to the users preferred means and styles of obtaining the needed information whereas information demand characteristics refer to the quality pattern those users expect in the needed information. A source of information must be credible, reliable and above all, familiar to the user before he would use it. This is particularly so where there are alternative sources.

However, Djojomartono and Pertini (1998) noted that no single medium is best. The selected medium, they argue, must be adapted to the message, target audience and social economic environment. Nevertheless, it is always best to use a combination of channels. Munyua (2000) notes that traditional media of



Digitized by UCC, Library

agricultural information delivery to farmers have been used very successfully in developing countries and that rural radio in particular has played a major role in delivering agricultural messages. Munyua (2000) further notes that print, video, television, films, slides, pictures, drama, dance, folklore, group discussions, meetings, exhibitions, and demonstrations have also been used to speed up the flow of information among farmers. Furthermore, Djojomartono and Pertini (1998) note that radio and television are more appropriate for one-way communication, reaching a lot of people quickly with fairly simple ideas. Munyua (2000), on the other hand, stated that the two media have been mono logic and have not allowed much interaction with the users.

Again, Djojomartono and Pertini (1998) were of the view that interpersonal communication, including extension agents, group meetings, community organization, and demonstrations are the ways to teach and develop credibility, but that sometimes their effectiveness is hindered by some limiting factors such as time, space, human resources and budget. Venkatesan (1995) noted that the use of mass media are particularly effective in making farmers aware of new technologies and thereafter they can always approach the extension agent, whose job it is to deliver repackaged agricultural information from subject matter specialists to farmers for application in their farming operations. Ozawa (1995) identified poor reception quality and inadequate area coverage and inappropriate broadcast time as some of the drawbacks of radio.

Ozawa (1995) argues that even though Nigerian farmers rank the extension agent highest as a source of providing credible agricultural information



Digitized by UCC, Library

and advice, the extension personnel are ill-equipped for extension and an extension communication job. Rogers (1995) in a similar study reported that localized sources of information such as neighbours and friends constitute a major source of information for farmers. Similarly, Daudu, Chado and Igbashal (2009), concluded in a study on agricultural information sources utilized by farmers in Benue State, Nigeria, that 29.17% of the respondents' source their information from Radio Benue while 37.5% source their information from friends and most of the farmers (40.83%) depended on extension agents for agricultural information. Agricultural information transfer, sourcing and usage thrive better in places where farmers are highly educated (FAO, 1993; Zijp, 1994).

On the other hand, Ogunbameru (2001) identified sources of agricultural information to farmers to include extension workers, fellow farmers, and neighbours and mediated information sources. The primary objectives of the informants are to create awareness by diffusing among potential adopters useful and practical agricultural information on the innovations and encourage its application. Ekong, (2003) also affirmed that such technical information are very useful during the trial stage of adoption process and are capable of leading to adoption of agricultural innovations.

**Sources of Credit**

Credit use is expected to assist farmers purchase necessary inputs for crop production. Many sources of credit give the farmer more chances of securing improved inputs. It also provides farmers with additional source of investment in



Digitized by UCC, Library

new ideas and therefore is expected to be positively related to technology adoption (Tiamiyu, Akintola & Rahji, 2009). Many reasons have been advanced for the declining agricultural productivity in Nigeria and Ghana will not be exempted. One of the factors attributed to the declining productivity of the sector is farmers' limited access to credit facilities (Nwaru, 2010; Manyong *et al*., 2005).

According to Etonihu, Rahman and Usman (2013), acquisition and utilization of credit for agricultural purposes promote productivity and consequently improved food security status of a community. Increase productivity depends on the use of agricultural information and technical efficiency of improved farming technologies (Obwona, 2002).

In an effort to increase the use of agricultural information rate among farmers, their purchasing power to acquire modern agricultural technologies should be improved. Similarly, Nwaru, Onyenweaku, and Nwosu (2006) observed that credit facilitates the use of agricultural information leading to increased farm productivity and income, encourages capital formation and improves marketing efficiency. According to Nwaru, *et al.* (2006), there are two major sources of agricultural credit (that is, formal and informal sources). In the formal credit, institutions provide intermediation between depositors and lenders charge relatively low rates of interest that usually are government subsidized. In informal credit markets money is lent by private individuals. The informal sources of credit to smallholder farmers as identified in the study area were farmers own savings, sale of assets, friends, family members while the formal sources of credit were rural banks and commercial banks.



Digitized by UCC, Library

Credit availability to the farmer will lead to adoption of modern technology. Farmers access to credit facilities is supported to be an accelerator of agricultural development through a wide spread break away from traditional technology and by fostering the generalized adoption of developed and improved technology (Bolarinwa and Fakoya, 2011). Flores (2004) corroborating this assertion "stated that institutional credit if made available to farmers could ameliorate some of the farmers problems such as small farm size, low output, low income and low social –economic status.

Furthermore, access to funds including credit is expected to increase the probability of agricultural information use. For instance, it has been reported that most small scale farmers in the country are unable to afford basic production technologies such as fertilizers and other agrochemicals resulting in low crop yields due to poverty and limited access to credit (Ministry of Food and Agriculture 2010).

**Type of Labour in the Communities**

Labour is expressed as adult male man-day and it is the summation of family labour and hired labour (Oluyole & Lawal 2010). Family and hired labour plays an important role in agricultural production, especially in developing economies where capital is less significant (Dawson 1984). According to Amin (2011), farm labour is a major source of employment opportunity for the rural labour force in South Africa. Labour is an important input entering the production process and hence the pattern and intensity of its use has



Digitized by UCC, Library

generated a lot of interest not only from the viewpoint of cost minimization but also from the viewpoint of increasing productivity and employment.

It is generally recognized that a rapid generation of employment opportunities holds the key to a viable solution of the poverty problem in many developing countries. Declining farm labour supply is compounded by the fact that the agricultural sector, with a few exceptions, has the worst poverty conditions (Ruben and van der Berg 2001). Similarly, Gebremedhin and Switon (2001) indicated that shortage in farm labour supply results in low farm productivity which eventually culminates in poverty among rural farming communities. This situation has been considered a major problem especially in developing economies.

In Nigeria human labour is the main source of labour available to small-holder farmers (Akanni and Dada, 2012) as small-holder farmers contribute over 85% of domestic agricultural output in Nigeria. In the same way, Okuneye (2000) noted that hired labour contributes 88% of the total labour-use on farms thus emphasizing its importance in agricultural activities. Generally, the availability of labour has been found to have effect on planting precision, better weed control, timely harvesting and crop processing (Oluyole & Sanusi, 2009). Gocowski and Oduwole (2003), reported that labour is a major constraint in peasant production especially during planting, weeding and harvesting.



Digitized by UCC, Library

**Farmers' use of Agricultural Information**

Information is defined as data that have been put into a meaningful and useful context which is disseminated to a recipient who uses it to make decisions (Mtega, 2012). Information can also be described as power which individuals in every society should have easy access to. Kantumaya (1992) observed that quality information rested solidly on three pillars which were accuracy, timeliness and relevance. Accuracy implies that information is free from bias; timeliness means that recipients can get information when they need it; while relevance implies whether the piece of information specifically answers the users question of what, why, when, who and how? Furthermore, Aina (1990) defined agricultural information as all published or unpublished knowledge in all aspects of agriculture. He classified agricultural information into four categories namely technical information, commercial information, socio-cultural information and legal information.

An individual either consciously or unconsciously engages in seeking information in order to fund appropriate information which can fill the information gap thereby regaining physiological and psychological balance. Aboyade (1987) reported that farmers needed basic information because most of them were either peasant or medium scale farmers who do not deal with intricate agricultural activities. Basic agricultural information include source of fertilizer, implement, agricultural inputs, land ownership, crop processing, storage and marketing of farm produce. In most countries, an agricultural information service



Digitized by UCC, Library

operates not only on the premise that it has a body of knowledge and practices to disseminate, but also that farmers are willing recipients.

However, farmers are rarely considered to be information seekers. Although, farmers are often blamed for not adopting modern practices, the fault is usually due to the provision of inappropriate information (Michael, 1982). The importance of agriculture cannot be overemphasized as it touches the lives of a large percentage of the world populace. Therefore, any resource that will improve agriculture will directly affect the lives of the majority of the populace. As the world becomes complex and with the attendant alarming increase in population, the world's demand for agricultural produce is on the increase. Information has been identified as one of the resources required for the improvement of agricultural production. It is therefore important that for an average farmer to function in a developing society, he needs information. Constant information is needed on government policy nation's economy, marketing of produce, credit facilities and opportunities. All these information when acquired and effectively used by the farmers will help to increase agricultural productivity and bring about increase in income, high standard of living and increase in the nation's economy.

Research has indicated that effective performance of agricultural production has been constrained by non-effective use of agricultural information by farmers (Mtega, 2012). Though there are improved packages of agricultural information on production, they are not being adequately used by the rural farmer. This has led to a gradual and appreciable decrease in agricultural production which has greatly affected productivity and income level of farmers. This might



Digitized by UCC, Library

be partly due to unavailability and inaccessibility of the information on agricultural production techniques to the farmers.

**Factors Influencing the Use of Agricultural Information by Farmers**

Information exposure is most likely to be an important factor influencing their adoption behaviour as greater exposure is likely to enhance awareness about the latest recommendations and lead farmers putting these recommended information practice in a precise manner (Muhammad & Gerforth, 1995). For a successful and sustainable adoption of technology, farmers need to be adequately informed and trained by extension agents on regular and continuous basis. This is necessary to save farmers from being miss-informed. Oladosu (2004) pointed out that the use of agricultural information and utilization of aggregate technology is largely dependent on the effectiveness and relevance of information dissemination and the ability of extension agents to persuade the farmer.

Fasina (2013) confirmed that agricultural information which is perceived to be economically compatible with farmers' values and resources are often readily used. Yemisi and Aisha (2009) stated that capital is a very important factor of production as its availability could determine the extent of production capacity, thus, could influence the disposition of the farmers to new ideas or innovations (adoption behaviour). A large scale farmer would be expected to use agricultural information better than the small scale farmer, not only because he possesses better or higher financial capacity but also because he would desire to keep his level of production if not able to increase it (Kalusopa, 2005).



Digitized by UCC, Library

Availability of credit facilities is very crucial to the use of agricultural information on improved and new ideas in agriculture. Okoye (1988) further reported that traditional method of farming predominates in most localities resulting from a personal low input-low output relationship.

According to Ani, Ogunbamerun and Undiandeye (2008), several factors influence the use of agricultural information. These include: the needs of the farmers, age, level of education, household size, farm size, years' of experience in farming, formal education, awareness and income. Kuponiyi (2000) revealed that the ability of farmers to adopt new farm practices depend on their financial positions, nearness to extension personnel as well as nearness to other farmers.

**The Effect of Agricultural Information on Farmers' Livelihoods**

Information is important for farmers to maintain livelihoods and to gain a competitive edge in a rapidly changing economic and production environment where traditional farming methods might be ineffective to meet new demands (Morton & Matthewman, 1996). Agricultural information is crucial to increasing agricultural productivity and reducing poverty, while sustaining the agro-ecosystems that support livelihoods**.** Indeed, agriculture is central to the livelihood of most people that live in rural areas whose population accounts for more than half of the world's population. Agricultural information has an effect on agricultural production in a number of ways: firstly it can help out the farmers to make informed decisions about land, labour, capital, management, and livestock and secondly agricultural production can possibly be improved through useful,



Digitized by UCC, Library

relevant, and reliable information (Demiryurek, Erdem, Ceyhan, Atasever & Mayıs, 2008). Nakabugu (2001) reported that information related to improved farming techniques and marketing was not used by farmers either because the information received was not clear to them or it did not reach to them therefore affecting farmers livelihoods and food security.

The Sustainable Rural Livelihoods (SRL) framework is the most recent development approach to the analysis of links between livelihoods and natural resource use which has been extensively discussed in recent years. Its central idea is that sustainability of livelihood strategies of individuals or households depends on access to, use and development of different types of assets (Woodhouse, Howlett, Bond & Rigby, 2000). The rationale of this framework according to Woodhouse, Howlett, Bond and Rigby (2000) is to present a simple, quick and easily understood appraisal of the status of access, endowment and/or utilization of the different capitals based on local understanding and perceptions of stakeholders in the system.

The framework is based on the five capitals of the sustainable livelihoods framework and describes the low and high status in access use and/or endowment of the five capitals as defined in locally understood terms and perceptions. The five basic types of capital that comprise assets for livelihoods described by Scoones (1998) are natural, physical, financial, human and social.

Natural capital consists of land, water and biological resources such as trees, pasture and wildlife.



Digitized by UCC, Library

Physical capital is that created by economic production. It includes infrastructure such as roads, irrigation works, electricity supply and reticulated water and also producer goods such as machinery. Indicators include:

Human capital is constituted by the quantity and quality of labour available. At household level therefore, it is determined by household size, education, skills and health of household members

Financial capital consists of stocks of money or other saving in liquid form. In this sense it not only include financial assets such as pension rights but also includes easily-disposed assets such as livestock which in other senses may be considered as natural capital.

Social capital includes any assets such as rights or claims that are derived from membership of a group. This includes the ability to call on friends or for help in times of need, support from trade or professional associations (e.g. farmers' associations) and political claims on chiefs or politicians to provide assistance.

In a nutshell, according to Bond, Kapondamgaga and Ragubendra (2003), the Sustainable Rural Livelihood Framework has become well-known as an influential model for the conceptualization of rural people's livelihoods and has been adopted by many programmes and projects.

**Challenges of Accessing Agricultural Information in the Rural Areas**

Various factors are known to hinder information accessibility in rural areas in Ghana. According to Ellen (2003), these factors include: societal,



Digitized by UCC, Library

institutional, psychological and intellectual ones. Societal factors are responsible for blocking the availability of the resources necessary for satisfying the information needs within society, whereas Institutional barriers are due to the unwillingness of the information providers to share information.

Physical barriers to information accessibility are caused by poor information infrastructure or poor communication facilities (Adera, 2010). Information and communication infrastructure is considered as an indispensable condition for widespread socio-economic development in this age of globalization and information age. On the other hand, psychological barriers are due to the failure of individuals to perceive their information needs or the failure to obtain needed information from appropriate providers.

Education enhances one's ability to receive, decode and understand information and that information processing and interpretation are important for performing many jobs and improving on farmer's livelihoods. Gamble and Gamble (2002) observed that farmers' level of education, to some extent, determines the type of tasks they can undertake in any programme, and therefore the type and level of participation. Dutta (2009) was of the view that, lack of education remains one of the primary obstacles to meeting information needs of the working poor. Dutta (2009) pointed out that farmers in Africa are largely illiterate, so printed materials cannot be used as a vehicle for disseminating agricultural information. The use of print media, that is leaflets and newsletters, as message carriers are of limited use for reaching illiterate farmers. Citing the example of fisher folk in Nigeria, Dutta (2009) points out that because they are



Digitized by UCC, Library

illiterate they often get information that is outdated, unreliable and inaccurate through informal networks, and this puts them at a disadvantage professionally as well as financially. Relevant agricultural information publications in Africa are scarce due to inadequate financial resources. In addition, the quantity and quality of publications still pose a problem as relevant information cannot be accessed in a timely manner by users.

Another hindrance to information access by farmers is the format and language in which the information is available. In addition, most of the agricultural information is written in English which cannot be understood by most farmers in Africa, and as pointed out by (Momodu, 2002), a large number of African farmers are illiterate and so they cannot read or write in any language as information which is written in English is not useful to farmers. Extension agents are also from different cultural backgrounds and therefore rely on translators and intermediaries who are capable of distorting information. In supporting the same idea, Rwazo, (2007) points out those farmers in developing countries like Ghana are unable to acquire up-to-date information due to language barriers. The information provided needs to be simple, and in a language which can be understood by many farmers. Therefore farmers use what is easiest to get and what is close to hand and not what is actually the best or most appropriate

Adewuyi (2008) reported that technological problems by African authors notwithstanding, research on communicative competence and academic discourse has for long exposed the linguistic problems that African scholars face in writing scholarly articles in the English language. It was also pointed out that those



Digitized by UCC, Library

writing academic papers in a language other than the mother tongue may face problems. Communication competencies underpin the success of an academic research communication. He argued that writers/scholars must be competent in all the components of communicative linguistic competence, socio-linguistic, strategic, and discourse analysis in order to produce well-formed utterances and sentences.

The agricultural extension system is one of the major vehicles for diffusing agriculture-related technologies and therefore has an important role to play in ensuring sustainable agricultural development and farm household livelihood security (Rwazo, 2007). The inadequate number of agricultural extension agents is a barrier to agricultural information access by farmers (Bonye, Kpieta & Seidu, 2012). Aina (2006) noted that because of the low numbers of agricultural extension agents, farmers hardly obtain new information. Yet, extension has the mandate to increase food security, reduce poverty, and improve the livelihoods of farmers, fishermen, processors, and traders in the municipalities and districts across Ghana (MOFA, 2002).

Bilonkwamanagara (2008) points out that, agricultural extension agents do not reach every farmer and few farmers receive agricultural extension services. Hence there is limited flow of information about the latest agricultural technologies and both men and women are equally denied access to extension services in villages where there are no extension agents. Agricultural extension agents are also found to have unmet information needs. In particular they lack



Digitized by UCC, Library

proper links with research centres, outside their parent bodies, and have nowhere to store information (Mchombu, 1993).

Another barrier to information access is gender-related attitudes and practices (Materu-Behtsa, 2004). Food and Agricultural Organization (1998) points out that omen cannot attend meetings as a result of their increased workload. Ozawa (1995) has the same views that, the dual domestic and production roles take up rural women's whole day and so they are too exhausted to listen to the radio and that prevents them from participating in extension services. Having little opportunity to go to school, women are dependent on word of-mouth or local radio information and have little say in what the information is about (Walker, 2002). Women's access to agricultural information is based mainly on their everyday interactions with the communities of which they are a part and the groups of individuals with whom they regularly come into contact (Achia, 2002). Durutan (1999) noted that, although there is a growing awareness of the need to reach women farmers, agricultural extension services are generally geared to male farmers. Aina (2006) adds that, even when extension agents visit farmers, they usually focus their activities on the male farmers, hardly reaching out to the women, who constitute a substantial proportion of farmers in Africa.

Furthermore, Mbwana (1994) points out that, although farmers in Tanzania have access to a number of information channels, information flow which greatly helps agricultural development is faced by many barriers, such as insufficient production and distribution of mass media, the content of information and low level of education. Ochieng (1999) noted that access to timely and



Digitized by UCC, Library

appropriate information is the missing link to women's effective contribution to the agricultural sector. Furthermore, Ikoja-Odongo (2008); Nath (2001); World Conference for Women (1995) point out that small-scale farming in Africa depends mainly on millions of small-scale women farmers, yet these women find it difficult to access the information they need for increasing production and marketing, due to handicaps such as illiteracy, distance from information centres, cultural inhibitions and domestic responsibilities. Moreover, Naidoo, London, Burdorf, Naidoo, and Kromhout (2008) point out that, women in South Africa have serious lack of knowledge about the pesticides with which they come into contact. This lack of knowledge may be attributed to the absence of formal training on pesticides application, which has been shown to be the case in rural communities elsewhere.

Similarly, Small-Scale Sugar Cane Growers in Kilombero lack formal training in the application of inputs such as pesticides. Information only becomes useful if it is relevant, timely and appropriate and thus the choice of channel through which information is transmitted must be perceived as appropriate and affordable by users (Ochieng, 1999).

Another obstacle in accessing agricultural information is the lack of agricultural libraries in the farmers' vicinity (Aina & Dulle, 1999). For that reason, farmers are hindered for using agricultural libraries as a source of information because of the distance between the source and the information user. This means that, even if someone knows about the existence of information, it



Digitized by UCC, Library

may be difficult to obtain it. This is attributed to the distance from places where information can be obtained and this is true for rural farmers in Africa.

Barriers to accessing information can also be linked to the poor attendance at meetings and the inability to ask others and to not listening to the radio. Another barrier in accessing agricultural information in rural settings in Africa is related culture and religion taboos. Matovelo (2008) posted that depending on the type of community men and women may therefore have different information needs, and different ability to access and use it. In communities where culture and religious taboos prevail, there may be a barrier preventing women from acquiring information and so in most cases, women lag behind as a disadvantaged group (Ozawa, 1995).

**Why Farmers do not Listen to Radio Agricultural Programmes**

Regular transmission of radio programmes related to agriculture gives valuable information about new farming methods. Radio transmission is quick and reaches to a wider population. As the farmers receive useful information from the radio, gradually they bring change in farming method applying new techniques (Ekoja, 2003). It has been observed that not all farmers listen to radio agricultural programmes. Zoheir, Hassan, and Bahaman (2012) noted that 54.4% of farmers did not listen to radio agricultural programmes because of its non-visible demonstration of the programme while 23.3% of the farmers could not be able to buy transistor batteries always for their radio sets, 13.3% were of the view



Digitized by UCC, Library

that radio agricultural programmes are not educative. 8.9% of the farmers had no interest completely in listening to radio agricultural programmes. The findings of the study imply that visible demonstration of the agricultural programme to the farmers of the study area is the main determining factor limiting listening to radio agricultural programmes among the remaining farmers. This is because the farmers need to see with their naked eyes how a particular agricultural programme is being demonstrated step by step.

Similar studies also shows that majority of farmers did not possess radio sets, with the reason being that they could not afford them, while others said they do not have the patience to listen to radio agricultural programmes, few farmers stated that they did not see the need to have radio sets (Emenyeonu 1987). Furthermore, Agwu, Ekwueme and Anyanwu (2008) also reported that the majority of the farmers (92.6%) in a similar study indicated that they did not listen to radio farmer programmes.

This could be as a result of lack of awareness of the programme or that the programme is aired when the respondents were in the farm. This finding suggests the need for stakeholders in agriculture in the various communities where the studies were carried out to create more awareness of the programme and possibly reschedule the time of the programme to the time it will be convenient to the farmers.



Digitized by UCC, Library

**Conceptual Framework**

The conceptual framework of the study was based on the relationship between radio and agricultural information dissemination. The study was guided by the proposed conceptual framework which shows how Radio Peace-CSIR programme information services to farmers and its effect on their livelihoods. The usage of agricultural information services depends on the usefulness of the services provided.

It associates various farmer demographic characteristics such sex, age, education, marital status, household size, farming experience, farm size among others as variables necessary for the usage of agricultural information disseminated through Radio Peace-CSIR programme. The farmers in an attempt to find solution to their farming problems discussed this with the Radio Peace staff and extension agents.

The solution to the problems of these farmers' is addressed using agricultural extension agents, agricultural experts, and research scientists from the thirteen CSIR, institutes in Ghana. . Through Radio Peace-CSIR interaction radio programmes and feedback from farmers. Thus, this conceptual framework guided the current study in examining the effect of Radio Peace-CSIR programme on farmers livelihoods through the use of agricultural information disseminated via the programme.



Digitized by UCC, Library

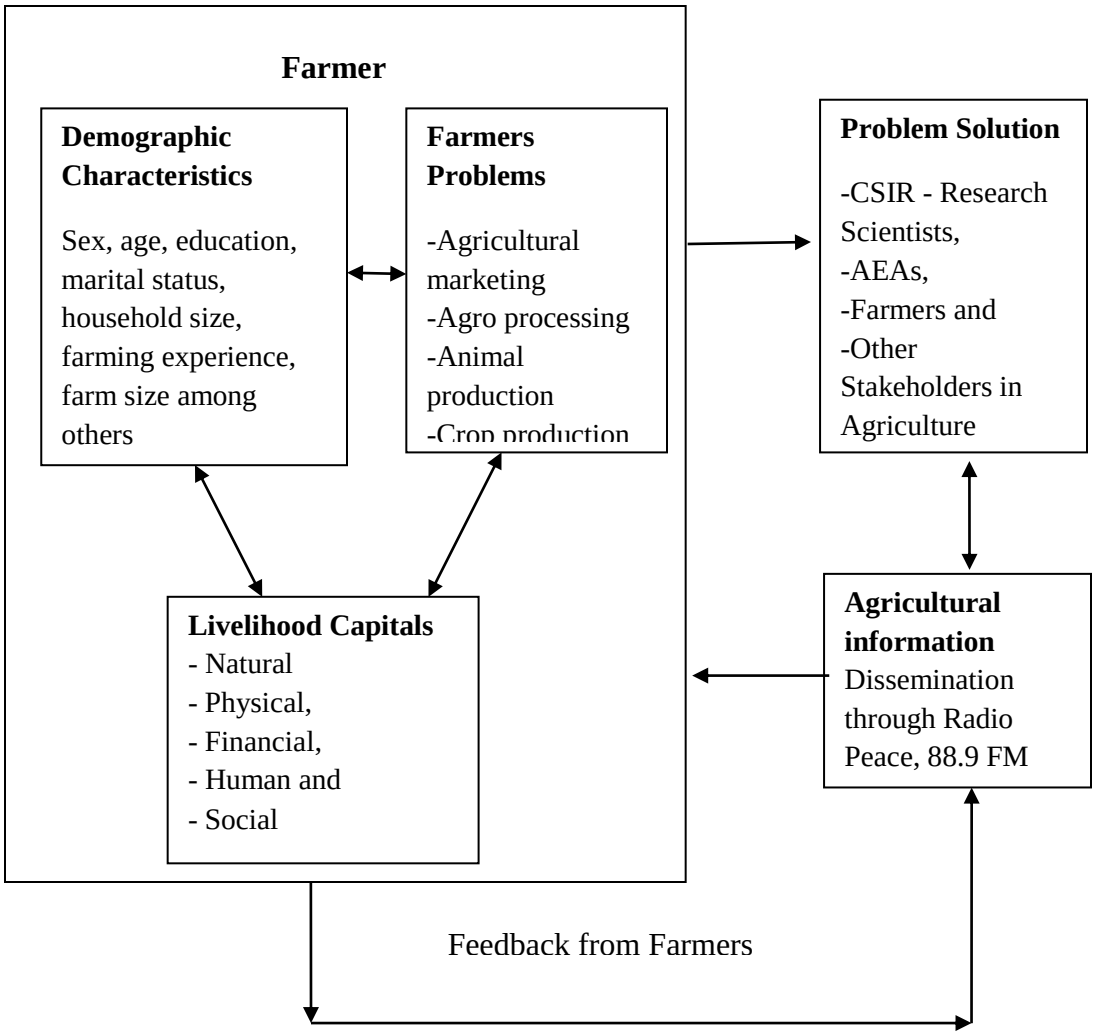


**Figure1: Agricultural Information dissemination to farmers by Radio Peace CSIR programme.** (Author's construct, 2013)



Digitized by UCC, Library

# CHAPTER THREE

# METHODOLOGY

## Introduction

This chapter discusses the research design, the study population, the sample procedure and sampling size and the research instruments that were used to collect data for the study. The data processing and analysis procedures used as well as the rationale for choosing those procedures were also discussed in this chapter.

## Research Design

A survey design comprising an interview schedule was used to collect data for the study. The survey design allowed the researcher to systematically ask many respondents the same questions about the situation or a programme or project (Neuman, 2003). According to Otuka, Azare and Bamidele (2004), as a descriptive method, survey design describes and interprets what exists. Moreover, it focuses on conditions or relationships, opinions, processes, effects, evidence or trends that are developing an issue or a programme. Survey research deals with the present event. Furthermore, survey design often considers past events as they relate to current conditions. Osuala (2005) noted that survey research studies use both large and small populations, select study samples from



Digitized by UCC, Library

the population to discover the relative incidence, distribution and interrelations of variables. The objective of this research fall into these objectives hence the choice of the design.

**Study Area**

The Central Region occupies an area of 9,826 square kilometres or 4.1 percent of Ghana's land area, making it the third smallest in area after Greater Accra and Upper East regions. Central Region is located on the coordinates; $5^0$ 30' N-$1^0$ $00^0$ W. It shares common boundaries with Western region on the west, Ashanti and Eastern regions on the north, and Greater Accra Region on the east. On the south is the 168-kilometre length Atlantic Ocean (Gulf of Guinea) coastline. The region can be broadly divided into two: the coast, which consists of undulating plains with isolated hills and occasional cliffs characterized by sandy beaches and marsh in certain areas and the hinterland, where the land rises between 250 metres and 300 metres above sea level.

The Region lies within the dry equatorial zone and moist semi-equatorial zone. Annual rainfall ranges from 1,000mm along the coast to about 2000mm in the interior. The wettest months are May-June and September-October while the drier periods occur in December- February and a brief period in August. Mean monthly temperature ranges from 240C in the coolest month (August) to about 300C in the hottest months (March-April).

Agriculture and related work (this includes animal husbandry, forestry, fishing and hunting) is the predominant occupation in all the municipalities and districts. Over 50 percent of the economically active populations are engaged in



Digitized by UCC, Library

agriculture and its related activities, with the rest engaged in production, transport, equipment operation or in the government sector.



Digitized by UCC, Library

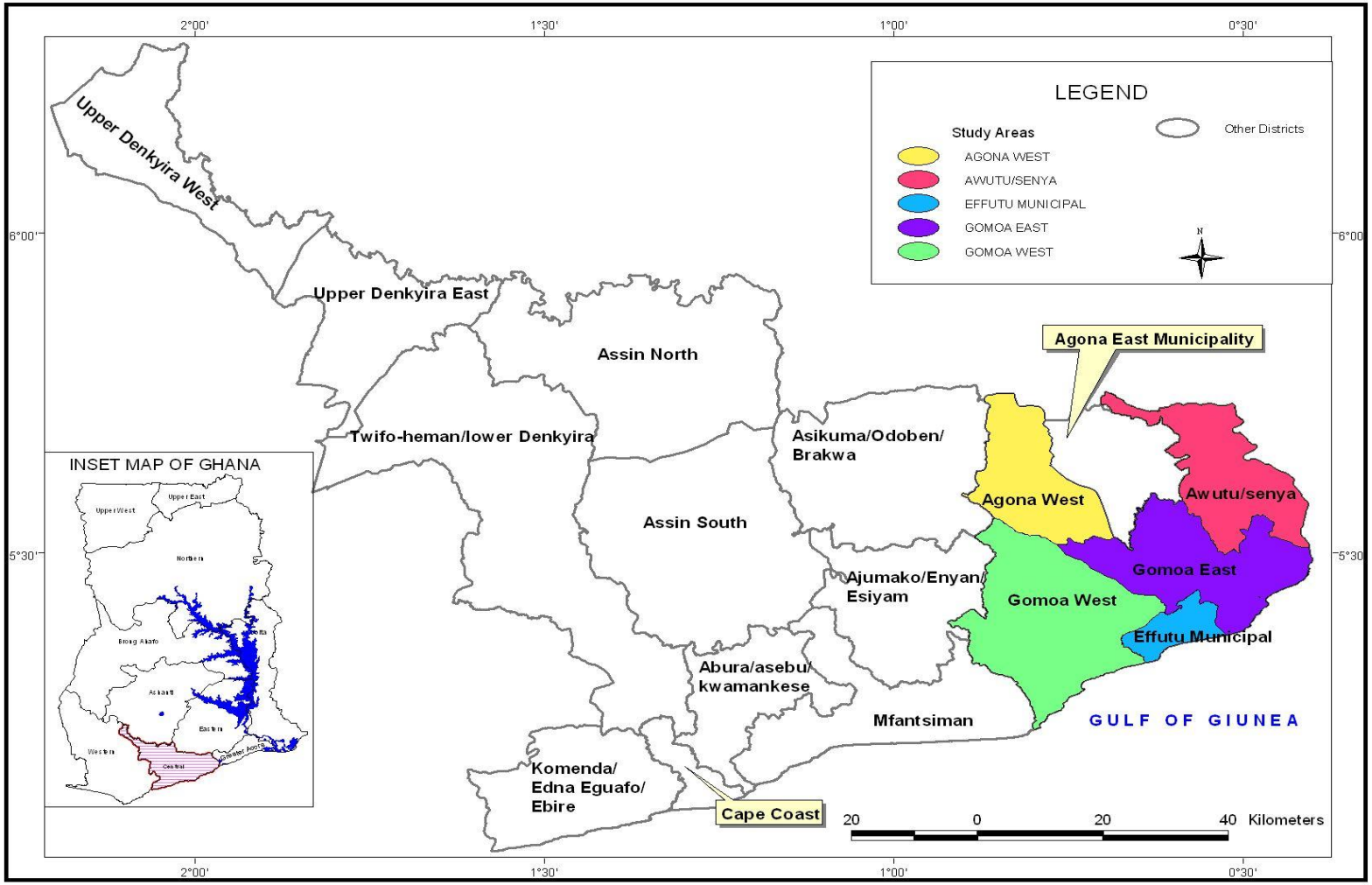


**Figure 2: Map of Central Region showing the Study Area**



Digitized by UCC, Library

**Study Population**

The population comprised all farmers and who listen and those who do not listen to Radio Peace-CSIR agricultural programme within the transmission range of Radio Peace in the Central Region of Ghana. The transmission range is the area in which a station's signal strength is sufficient for most receivers to decode.

The Radio Peace broadcasts on frequency modulation of 88.9 MHz and the transmission range is estimated at 70km radius (Personal communication with station manager in June 2013). The ten districts and municipalities covered by Radio Peace are Efutu Municipality, Gomoa East District, Gomoa West District, Awutu-Senya District, Agona West Municipality, Abura-Asebu-Kwamankesse District, Ajumanko-Enyan-Essiam District, Asikuma-Odoben-Brakwa District, Agona East District and Ekumfi District.

**Sampling Procedure and Sample size**

A multistage sampling technique was used to select the respondents for the study. The sampling technique was chosen because it allows larger clusters to be subdivided into smaller, more targeted groupings for the purposes of surveying (Agresti & Finlay, 2008).

At the first stage, a simple random technique was used to select 50% of the ten municipalities and districts in the transmission range of Radio Peace. At the second stage, a list of farming communities was obtained from Ministry of Food and agriculture (MOFA) offices. One of the communities was randomly selected in each district or municipality.



Digitized by UCC, Library

At the third stage, the list of registered farmers was collected from MOFA offices in each of the districts and municipalities and six (6) farmers who listened to and six (6) farmers who do not listen to Radio Peace-CSIR agricultural programme were purposively selected from each community and interviewed. In all 33 out 101 communities were selected for the study. This was done based on time and resources available. The sample size of farmers for the study was three 396. Table 1 provides the summary of farmers selected from the municipalities, districts and communities.

**Table 1: The Population and Sample Size Used for the Study**

| Municipality/ District | Number of Communities | Communities Selected | Farmers who listen to radio Peace | Farmers who do not listen to radio Peace |
|---|---|---|---|---|
| Gomoa East | 30 | 10 | 60 | 60 |
| Efutu | 21 | 7 | 42 | 42 |
| Awutu-Senya | 18 | 6 | 36 | 36 |
| Agona West | 15 | 5 | 30 | 30 |
| Gomoa West | 15 | 5 | 30 | 30 |
| Total | 101 | 33 | 198 | 198 |

Source: Field Survey, 2013



Digitized by UCC, Library

**Instrumentation**

Two sets of instruments (interview schedules) were developed and used to collect data from farmers who listen (Appendix A) and those who do not listen (Appendix B) to Radio Peace-CSIR programme. Trained enumerators who knew the territory, culture and could speak the language of the respondents used the interview schedule to collect data. Sections A of both interview schedules collected data on demographic characteristics such as sex, age, formal education, qualification, marital status, ethnicity, gender, major agricultural enterprise and membership of farmer organization. Sections B of both interview schedules were devoted to the extent of use of information disseminated by Radio Peace CSIR programme.

Section C of the interview schedule of farmers who listen measured the level of perceived impact of the Radio Peace programme on livelihoods of farmers. A five point Likert-type scale ranging from 5= 'Very High 'to 1= 'Very Low' was used to determine farmers perceived impact of the programme on their livelihoods. In section D farmers were also to rate their perceived challenge from a scale of 5= Serious challenge to 1= not a serious challenge.

The section E of the interview schedule collected data on ways respondents felt Radio Peace-CSIR programme could be improved. Structured and validated interview schedule was developed as an instrument for the study. Both face and content validity were ensured. Face validity was ensured by the researcher while content validity was checked by the principal supervisor, lecturers in the Department of Agricultural Economics and Extension University of Cape Coast and researchers at the Council for Scientific and Industrial Research.



Digitized by UCC, Library

The structure of questions in both instruments was a combination of close-ended, open-ended and partially close ended questions. Table 2 shows the Likert-type scales and their interpretation.

**Table 2: Interpretation of Likert-Type Scale**

| Ratings | Intervals | Effect of Radio Peace-CSIR programme on Farmers livelihoods |
|---|---|---|
| 5 | 4.35 - 5.34 | Very High Extent [VH] |
| 4 | 3.35 – 4.34 | High Extent [HE] |
| 3 | 2.35 – 3.34 | Moderately High Extent [MH] |
| 2 | 1.35 – 2.34 | Low Extent [LE] |
| 1 | 0.35 – 1.34 | Not at all [NA] |

Source: Field Survey, 2013

Table 3 depicts the interpretation of Likert-Type scale on challenges faced by farmers when listening to Radio Peace CSIR programme in the study area. A five (5) point Likert-type scale (Very Serious Challenge to Not a serious Challenge) was developed to measure challenges farmers face when listening to the Radio Peace-CSIR programme.



Digitized by UCC, Library

**Table 3: Interpretation of Likert-Type Scale on Challenges Faced by Farmers when Listening to Radio Peace-CSIR Programme**

| Ratings | Intervals | Challenges faced by farmers | |
|---|---|---|---|
| 5 | 4.35 - 5.34 | Very Serious Challenge | [VSC] |
| 4 | 3.35 – 4.34 | Serious Challenge | [SC] |
| 3 | 2.35 – 3.34 | Challenge | [C] |
| 2 | 1.35 – 2.34 | Somehow a Challenge | [NSC] |
| 1 | 0.35 – 1.34 | Not a serious Challenge | [NC] |

Source: Field Survey, 2013

**Pre-testing**

Thirty farmers from the Ekumfi District were selected to pretest the research instrument (interview schedule). These farmers had the same characteristics as the farmers selected for the study since the Ekumfi District falls within the transmission range of Radio Peace. The pre-testing was done from the 29th of April to 3rd of May 2013. The researcher together with enumerators did the pre-testing.

To determine the reliability of the interview schedule, data from the 30 respondents at pre-testing were entered into Statistical Product and Service Solutions (SPSS) version 16.0 software. Cronbachs alpha were generated for the Likert-type scale (Table 4).



Digitized by UCC, Library

**Table 4: Cronbachs Alpha Reliability Co-efficient for Subscales on Interview Schedule**

| Subscales | No. of Items | Cronbach's Alpha Coefficient |
|---|---|---|
| Impact of Radio Peace-CSIR programme on farmers livelihoods | 19 | 0.90 |
| Challenges faced by farmers when listening to Radio Peace-CSIR programme | 12 | 0.73 |
| Improvement of the Radio Peace-CSIR programme | 3 | 0.72 |

Source: Field Survey Data, 2013

The Cronbach Alpha co-efficient ranged from 0.90 for livelihoods, 0.73 for farmers challenges facing farmers in listening to Radio Peace CSIR programme and 0.72 suggestions for improvement of the Radio Peace CSIR programme The alpha were deemed reliable because according to Pallant (2001), scales with Cronbach alpha co-efficient of 0.70 or more are considered to be reliable.

**Data Collection**

Five enumerators selected from each of the five municipalities and districts were trained on interviewing skills as well as meaning and interpretation of each item on the interview schedule of farmers to collect data for the study. The content



Digitized by UCC, Library

validated and pretested structured interview schedules were used to collect data from the five selected districts and municipalities between April and May 2013.

**Data Analysis**

Data collected was coded and entered into the Statistical Product and Service Solutions (Version 16.0) computer software for analysis. Descriptive statistics were generated to the clean data. Values that were out of the expected range from the descriptive statistics were deemed to have been entered wrongly. The Interviewed schedule were then retrieved and re-entered accurately. Specific statistics (Table 5) based on specific objectives generated are described as follows:

To determine the influence of background of farmers on listenership, descriptive statistics and inferential statements (T-test and Chi-square) were used. The mean and standard deviation was used to describe the demographic and farm related characteristics of respondents in the five districts and municipalities as set out in objective one (1). The T-test was chosen because it allows the researcher to compare the mean scores and Chi-square is used to test relationship between two or more actual samples (Pallant, 2001).

To analyse the second Objective, which examined the impact of Radio Peace-CSIR programme on the farmers in the catchment area, Frequencies, percentages, Chi-square test, means, standard deviations, ANOVA and Tamhane's T2 post hoc multiple comparison were used. The ANOVA enable the researcher to compare the means scores of more than two groups while the T2 post hoc was



Digitized by UCC, Library

selected because it allowed the researcher to test if there are significant differences among the various municipalities and districts (Pallant, 2001).

To determine the socio demographic determinants of the use of agricultural information disseminated through Radio Peace-CSIR Programme, the binary logistic regression model was used. According to Abdelrahman (2010) the logistic regression which is the odds of an event occurring is the probability that the event occurred divided by the probability that the event did not occur. The logistic regression function is the logit transform of logit (P), where:

$$Logit\ (P) = In\ \frac{P}{1-P} = \beta 0 + \beta 1X1 + \cdots \ldots\ldots\ldots\ldots\ldots + \beta qXq$$

The logistic regression was used since no assumption about the distribution of the independent variables was made. Moreover, the distribution was not normally distributed. The variables were normally linearly related and not of equal variance within each group (Pallant, 2001). The dependent variable used in the study was the use of information disseminated by Radio Peace-CSIR programme (coded as 0 for those who do not use information, 1 for those who use information by Radio Peace). The explanatory variables used were: sex (male and female), age, education (formal and no formal), marital status (married and single), household size and number of years in farming. Table 5 shows the codes and sign of explanatory variables used in the analysis.

Finally, frequencies and percentages were generated to describe the challenges associated with Radio Peace-CSIR programme with the dissemination of agricultural information and reasons why farmers do not listen to Radio Peace-CSIR programme in the study area as in objective four.



Digitized by UCC, Library

**Table 5: Summary of Statistical Tools Generated to Analyse each Objective**

| Specific objective | Statistical tools used for Analysis |
|---|---|
| One | Frequencies, percentages, means, standard deviation chi-square and T-test |
| Two | Frequencies, percentages and chi-square |
| Three | Means, standard deviations, Anlyses of Variance (ANOVA) and Tamhane's T2 post hoc multiple comparison |
| Four | Binary logistic regression |
| Five | Frequencies and Percentages, |

Source: Field Survey, 2013



Digitized by UCC, Library

**Table 6: Codes, Sign and Explanation of Explanatory Variables used in the Analysis**

| Explanatory variables | Codes | Sign | Explanation |
|---|---|---|---|
| Sex | 1=Male<br>0 =Female | Positive | Probability that Males use information by Radio Peace is higher than Females |
| Age | Number of Years | Positive | Older age increases the probability of use of information by Radio Peace programme |
| Formal Education | 1= Formal<br>0=No formal | Negative | Formal education decreases the probability of use of information by Radio Peace programme |
| Marital Status | 1= Married<br>0=Not married | Positive | Probability that, the married use information by Radio Peace is higher than single respondents |
| Household size | Number of people in the household | Negative | Large household size decreases the probability of use of information by Radio Peace programme |
| Farming experience | Number of Years in farming | Negative | Long years in farming decreases the probability of use of information by Radio Peace |

Source : Filed Data, 2013



Digitized by UCC, Library

# CHAPTER FOUR

# RESULTS AND DISCUSSION

## Introduction

This chapter presents and discusses the results of the study according to the specific objectives.

## The Influence of Socio-demographic Background of Farmers on Listenership of Radio Peace-CSIR Programme

This section discusses the extent to which the socio-demographic characteristics of the farmers such as sex, age, education, marital status, ethnicity, household size, farming experience, farm size, secondary occupations, major agricultural enterprises, membership of farmer groups, sources of information, sources of credit, type of labour in the communities, and assets owned by farmers influence the extent to which they listen to Radio Peace-CSIR programme.

## Sex of Farmers

Table 7 shows the sex distribution of farmers who listen to the Radio Peace-CSIR programme and those who do not listen to the programme. There were more males (62.6%) who listen to the programme than males (58.1%) who do not listen to the programme. On the other hand, there are more females who do



Digitized by UCC, Library

not listen (41.9%) than those who listen (37.4%) to the programme. This is not surprising as females are likely to be burdened with household duties. The Chi-square and P-values (0.67 and 0.41) respectively revealed that there was no significance difference between farmers who listen and those who do not listen to the Radio Peace-CSIR programme. This implies that sex had no effect on whether a farmer listened to the agricultural programme or not. Therefore, the null hypothesis which stated that there is no significant difference between sex of farmers and the extent to which they listen to the programme is accepted and the alternate rejected

**Table 7: Sex and Extent to which Farmers Listen or do not Listen to Radio Programme**

| | Farmers who listen | | Mean | Farmers who do not listen | | Mean | Chi-square value | Df | *P-value |
|---|---|---|---|---|---|---|---|---|---|
| Sex | Freq | % | | Freq | % | | | | |
| Male | 124 | 62.6 | 1.4 | 115 | 58.1 | 1.4 | 0.675 | 1 | 0.411 |
| Female | 74 | 37.4 | | 83 | 41.9 | | | | |
| Total | 198 | 100.0 | | 198 | 100.0 | | | | |

Source: Field Survey, 2013. *p>0.05



Digitized by UCC, Library

**Age Distribution of Farmers and Extent of listening of Radio Peace-CSIR Programme**

The results presented in Table 8 show that majority of farmers (71.2%) who listen to Radio Peace-CSIR Programme and those who do not listen (64.1%) are within the age range of 21 and 50 years. The Mean age of farmers who listen to Radio Peace (46.6 years) and those who do not listen (46.1 years) were below 50 years. The farmers in the catchment area of Radio Peace could be described as young.

**Table 8: Age and Extent to which Farmers Listen or do not Listen to Radio Peace-CSIR Programme**

| Age (Years) | Farmers who listen (N=198) | | Farmers who do not listen (N=198) | | Df | T-value | *P-value |
|---|---|---|---|---|---|---|---|
| | Freq | % | Freq | % | | | |
| 21-30 | 12 | 6.1 | 12 | 6.1 | | | |
| 31-40 | 53 | 26.7 | 52 | 26.2 | | | |
| 41-50 | 76 | 38.4 | 63 | 31.8 | | | |
| 51-60 | 33 | 16.7 | 50 | 25.3 | 394 | .193 | .847 |
| 61-70 | 23 | 11.6 | 21 | 10.6 | | | |
| 71-80 | 1 | 0.5 | - | - | | | |
| Total | 198 | 100.0 | 198 | 100.0 | | | |
| Mean | | 46.26 | | 46.06 | | | |
| SD | | 10.52 | | 10.33 | | | |

Source: Field Survey Data, 2013. *Not Significant at Alpha level 0.05



Digitized by UCC, Library

This result is consistent with findings of La-Anyane (1985) and Dankwa (2002) who concluded that farmers in the farming communities in Ghana are aged below 50 years. The T-test value of 0.193 was not significant at 0.05 alpha level (P-value = 0.847). This implies that age does not affect the listening of Radio Peace-CSIR programme in the study area. The results does not agree with Zossou, Vodouhe, Van Mele and Lebailly (2012) who reported that more men than women listen to rural radio agricultural broadcast daily. Therefore the null hypothesis which stated that there is no significant difference between age of farmers and the extent to which they listen to Radio Peace-CSIR programme is accepted and the alternate rejected.

**Level of Education of Farmers and Extent to which they listen to Radio Peace-CSIR Programme**

The educational level of farmers is presented in Table 9. More farmers with no formal education (28.8%) do not listen to Radio Peace CSIR Programme compared to those who listen to the programme (18.2 %). On the other hand more farmers with some form of formal education i.e. primary, middle or junior high school, secondary and tertiary education (81.8%) listen to Radio Peace-CSIR programme are more than those who do not listen (72.2%). Educated farmers are expected to understand agricultural information, manage and adopt technologies faster than the uneducated farmers (Cotlear, 1990). Obinne (1991) reported that education among the respondents makes them more responsive to adoption of many agricultural extension programmes and policies. The Chi-square and P-



Digitized by UCC, Library

values of 36.42 and 0.00 respectively revealed that, there was highly significant difference between educational level of farmers who listen to Radio Peace and those who do not.

**Table 9: Level of Education of Farmers and Extent of Listening to Radio Peace -CSIR Programme**

| Educational level | Farmers who listen to Radio Peace (N=198) | | Farmers who do not listen to Radio Peace (N=198) | | | | |
|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Chi-square Value | df | P-value |
| No Formal | 36 | 18.2 | 57 | 28.8 | | | |
| Primary | 41 | 20.7 | 7 | 3.5 | | | |
| Middle School/JHS | 86 | 43.4 | 102 | 51.5 | 36.212 | 4 | 0.00 |
| Secondary School | 30 | 15.2 | 19 | 9.6 | | | |
| Tertiary | 5 | 2.5 | 13 | 6.6 | | | |
| Total | 198 | 100.0 | 198 | 100.0 | | | |

Source: Field Survey Data, 2013. *Significant at 0.05 Alpha level

This result implies that the level of farmers' education affect the listening to the Radio Peace-CSIR programme in the study area. We therefore fail to accept the null hypothesis which stated that there is no significant difference between educational level of farmers and the extent to which they listen to the Radio programme.



Digitized by UCC, Library

**Marital Status of Farmers and Extent of Listening to Radio Peace-CSIR Programme**

The Chi–square value of 22.96 was significant at 0.05 alpha level (P-value= 0.00) (Table 10). In other words being married has influence on the listening of Radio Peace CSIR programmes. Farmers who were married and do not listen (87.9%) were more than those who were married and listen (85.9%) to the Radio Peace CSIR Programme.

**Table 10: Marital Status of Farmers**

| | Farmers who listen to Radio Peace (N=198) | | Farmers who do not listen to Radio Peace (N=198) | | | | |
|---|---|---|---|---|---|---|---|
| Status | Freq | % | Freq | % | Chi-square. Value | Df | *P-value |
| Married | 170 | 85.9 | 173 | 87.9 | | | |
| Single | 4 | 2.0 | 6 | 3.0 | | | |
| Widow | 7 | 3.5 | 19 | 9.6 | 22.965 | 3 | 0.00 |
| Divorced | 17 | 8.6 | - | - | | | |
| Total | 198 | 100.0 | 198 | 100.0 | | | |

Source: Field Survey Data, 2013. *****Significant at 0.05 Alpha level



Digitized by UCC, Library

This finding is corroborated by Opara (2010) who posited that marital status influence the listening of information disseminated by mass media. Therefore the null hypothesis which stated that there is no significant difference between marital status and the extent to which farmers listen to Radio Peace-CSIR programme is rejected and the alternate accepted.

**The Social Class of Farmers and Extent of Listening to Radio Peace CSIR Programme**

Table 11 presents the social class of farmers in their communities. Farmers (28.3%) who do listen to Radio Peace Programme are more in leadership positions than to their counterparts who do not listen to the programme (23.3%). More farmers who do not listen (76.7%) to Radio Peace-CSIR programme are ordinary members of society than those who listen (71.7%) to Radio Peace-CSIR programme.

**Table 11: Social Class of Farmers**

| | Farmers who listen to Radio Peace (N=198) | | Farmers who do not listen to Radio Peace (N=198) | |
|---|---|---|---|---|
| Class | Freq | % | Freq | % |
| Leaders | 56 | 28.3 | 46 | 23.3 |
| Ordinary Members | 142 | 71.7 | 152 | 76.7 |
| Total | 198 | 100.0 | 198 | 100.0 |

Field Survey Data, 2013



Digitized by UCC, Library

The results revealed that farmers in the study area who listen to Radio Peace-CSIR programme are found to be in leadership positions in their communities than those who do not listen

**Ethnicity and Extent to which Farmers Listen to Radio Peace-CSIR Programme**

Ethnic background was identified as one of the factors that influence listenership of radio stations. Almost the same percentage of farmers who listen to Radio Peace-CSIR programme on agriculture (78.8%) and those who do not listen (76.8) are of Akan origin (Table 12). Similarly almost the same number who listens to Radio Peace-CSIR programme (32%) and those who do not listen (36%) are from the Ga, Krobo, Ewe and Efutu ethnic groupings. This result was expected since the programme is mainly conducted in Akan. The Chi-square values and P-values, 237.39 and 0.00 respectively show that there is significant difference between the ethnicity and extent to which farmers listen or do not listen to the Radio Peace-CSIR programme.

The study is not in consistent with Nwachukwu, (2010) who concluded in a similar study that radio farmer agricultural programme enhanced the extent of use of agricultural technologies among different ethnic groups in Imo State, Nigeria. Since ethnicity affects the listening behaviour of farmers, null hypothesis which stated that there is significant difference between ethnicity and the extent to which farmers listen to Radio Peace-CSIR programme is accepted and the alternate rejected.



Digitized by UCC, Library

**Table 12: Ethnicity of Farmers**

| Ethnic Group | Farmers who listen (N=198) | | Farmers who do not listen (N=198) | | Chi-square value | Df | *P-value |
|---|---|---|---|---|---|---|---|
| | Freq | % | Freq | % | | | |
| Ga | 2 | 1.0 | 4 | 2.0 | | | |
| Krobo | 4 | 2.0 | 3 | 1.5 | | | |
| Ewe | 11 | 5.6 | 8 | 4.0 | | | |
| Awutu | 12 | 6.1 | 13 | 6.6 | 237.399 | 7 | 0.00 |
| Efutu | 13 | 6.5 | 18 | 9.1 | | | |
| Akan | 156 | 78.8 | 152 | 76.8 | | | |
| Total | 198 | 100.0 | 198 | 100.0 | | | |

N=198. * Significant at 0.05 alpha level

Source: Field Survey Data, 2013

**Household Size of Farmers and Extent of Listening to Radio Peace-CSIR Programme**

The household size of farmers affects the listening of Radio Peace-CSIR agricultural programme (Table13). Members of a household are likely to compete with household heads (farmers) as to which station to tune in. The household size of farmers who listen and those who do not listen to Radio Peace-CSIR programme ranged from 1 to 15 members.



Digitized by UCC, Library

**Table 13: Household Size of Farmers**

| | Farmers who listen to Radio Peace (N=198) | | Farmers who do not listen to Radio Peace (N=198) | | | |
|---|---|---|---|---|---|---|
| Household Size | Freq | % | Freq | % | T-value | *P-value |
| 1 – 5 | 70 | 35.4 | 25 | 12.6 | | |
| 6 – 10 | 103 | 52.0 | 143 | 72.2 | -5.385 | 0.00 |
| 11 – 15 | 25 | 12.6 | 30 | 15.2 | | |
| Total | 198 | 100.0 | 198 | 100.0 | | |
| Mean | | 6.7 | | 8.05 | | |
| SD | | 3.07 | | 2.74 | | |

* Significant at 0.05 alpha level

Source: Field Survey Data, 2013.

This contrasts the findings of Asante-Mensah (1988) who found out in a similar study that 18% of farmer households were more than 15. Whilst farmers who listen to the programme have more household members (35.4%), those who do not listen to the programme have less (12.6%). Although the largest household size was between 6 and 10, that of those who do not listen to Radio Peace-CSIR programme (72.2%) was higher than those who listen (52.0%).

The T-test value of -5.385 and P-value of 0.000 shows that there is significant difference between the mean score of household size of farmers who listen (Mean = 6.7) to radio Peace and farmers who do not listen (Mean=8.1). This



Digitized by UCC, Library

implies that household size of farmers who to listen or those who do not to listen to Radio Peace-CSIR programme are significantly different. Therefore the null hypothesis which stated that there is no significant difference between household size and the extent to which farmers listen to Radio Peace-CSIR programme is rejected and the alternate accepted.

**Farming Experience of Farmers and Extent of Listening to Radio Peace-CSIR Programme**

The farming experience was measured as the number of years of farming. The farming experience of farmers to a large extent affects their managerial know-how as well as the use of various extension methods (Ani, 2006). Experienced farmers are assumed to have tried out a number of profitable technologies. Hence it is expected to positively affect the use of agricultural information disseminated by radio. Half of the farmers (50%) who listen to radio Peace-CSIR programme have farming experience of 19 years or less whilst almost a third (29.5%) of those who do not listen to Radio Peace-CSIR programme fall in the same farming experience.

On the other hand, a higher percentage of farmers (63%) who do not listen to Radio Peace-CSIR programme had between 20 and 38 years of experience (Table 14).



Digitized by UCC, Library

**Table 14: Farming Experience of Farmers**

| | Farmers who listen to Radio Peace (N=198) | | Farmers who do not listen to Radio Peace (N=198) | | | | |
|---|---|---|---|---|---|---|---|
| Years in farming | Freq | % | Freq | % | Df | T-value | *P-value |
| 1-9 | 31 | 15.7 | 19 | 9.6 | | | |
| 10-19 | 68 | 34.3 | 40 | 20.2 | | | |
| 20-29 | 57 | 28.8 | 81 | 40.9 | | | |
| 30-39 | 29 | 14.6 | 44 | 22.2 | 394 | 1.873 | 0.062 |
| 40-49 | 10 | 5.1 | 14 | 7.1 | | | |
| 50-59 | 3 | 1.5 | - | | | | |
| Total | 198 | 100.0 | 198 | 100.0 | | | |
| Mean | | 19.6 | | 20.0 | | | |
| SD | | 10.8 | | 9.8 | | | |

* Not Significant p>0.05

Source: Field Survey Data, 2013.

The T-value (-1.87) and P-value (0.062) less than 0.05 alpha level show that the Mean years of experience of farmers who listen to the programme (Mean=19.6years) is not significantly different from those who do not listen to the programme (Mean=20years). This implies that farming experience does not affect



Digitized by UCC, Library

the listening of Radio Peace-CSIR agricultural programme The farming experience showed that most of the respondents had farmed for a reasonable number of years as would enable them to be abreast with the use of radio as sources of agricultural information.

**Farm Size of Farmers and Extent of Listening to Radio Peace-CSIR Programme**

The farm sizes of farmers who listen to Radio Peace-CSIR programme and those who do not listen to the programme are shown in Table 15. Half (50%) of the farmers who do not listen to the Radio Peace-CSIR programme cultivate up to 2 hectares while more than two thirds (63.1%) of those who listen cultivates the same size. Another 50% (farmers) of those who do not listen to the programme cultivate between 3-6 hectares while 37.6% of farmers who listen to Radio Peace-CSIR programme also had the same farm sizes. The Mean farm size of farmers who listen and those who do not listen to Radio Peace-CSIR programme are 3.66 and 3.43 hectares respectively. However, there was no significant difference between farm sizes of farmers who listen to the Radio Peace programme and those who do not listen at 0.05 Alpha level. (P-value=.212)



Digitized by UCC, Library

**Table 15: Farm Size of Farmers**

| Farmers who listen to Radio Peace (N=198) | | | Farmers who do not listen to Radio Peace (N=198) | | | | |
|---|---|---|---|---|---|---|---|
| Farm size (Ha) | Freq | % | Farm size (Ha) | Freq | % | T-value | *P-value |
| 1– 2 | 125 | 63.1 | 1 – 2 | 99 | 50.0 | | |
| 3 – 4 | 69 | 34.8 | 3 – 4 | 94 | 47.5 | 1.25 | 0.21 |
| 5 – 6 | 4 | 2.8 | 5 – 6 | 5 | 2.5 | | |
| Total | 198 | 100.0 | Total | 198 | 100.0 | | |
| Mean | | 3.66 | | | 3.43 | | |
| SD | | 2.22 | | | 1.19 | | |

*Not significant at P=0.05

Source: Field Survey Data, 2013.

**Secondary Occupations of Farmers**

The result in Table 16 shows secondary occupations of farmers. Apart from farming, trading is the major occupation involve in by farmers who listen to Radio Peace -CSIR programme (62.8%) and those who do not listen (62.3%). This was followed by artisanship. Retired civil servants were also engaged in farming in the study area.

Abubakar, Ango and Buhari, (2009) in a study concluded that crop farming in the local communities needs small amount of capital and also creates self-employment for the rural folk. The results are in consonant with Start and Craig



Digitized by UCC, Library

(2001) who noted that, most rural people combine occupations or what they referred to as livelihood or occupational diversity as a coping strategy.

**Table 16: Secondary Occupation of Farmers**

| | Farmers who listen (N=198) | | Farmers who do not listen (N=198) | |
|---|---|---|---|---|
| Secondary Occupations | Frequency | Percentage | Frequency | Percentage |
| Trading | 44 | 62.8 | 56 | 62.3 |
| Artisan | 17 | 24.3 | 21 | 23.3 |
| Civil Servant (Retired) | 9 | 12.9 | 13 | 14.4 |
| Total | 70 | 100 | 90 | 100 |

Source: Field Data Source, 2013.

**Major Agricultural Enterprise of Farmers and Extent of Listening to Radio Peace-CSIR Programme**

Results presented in Table 17 shows that farmers in the study area are engaged in various agricultural enterprises. Almost all farmers (both listeners and non-listeners) in the study area are involved crop production (90.4% and 96.5%) respectively. Similarly, about half of the farmers (both listeners and non-listeners) keep animals (50.5% and 49%). However the production of animals is low as compared to crop production. Crop production in the study area was mostly on subsistence level with an average farm size of 0.4 hectares



Digitized by UCC, Library

**Table 17: Major Agricultural Enterprise of Farmers**

| | Farmers who listen (N=198) | | Farmers who do not listen (198) | |
|---|---|---|---|---|
| Enterprise | Freq | % | Freq | % |
| Crop Production | 179 | 90.4 | 191 | 96.5 |
| Animal production | 98 | 49.5 | 100 | 50.5 |
| Agricultural Marketing | 91 | 46.0 | 19 | 9.6 |
| Agro Processing | 53 | 26.8 | 104 | 52.5 |
| Fishing | 20 | 10.1 | 7 | 3.5 |

*Multiple Responses.

Source: Field Data Source, 2013

**Membership of Farmers Associations and Extent of Listening to Radio Peace-CSIR Programme**

The Chi square value (16.455) and P-value (0.00) show that there is significant difference between those who listen and those who do not listen to the programme in terms of membership of social group.

More farmers (87.4%) who listen to Radio Peace-CSIR programme belong to social groups than those who do not listen to the programme (69.7%) (Table18). Participation in social grouping stimulates information exchange (Katungi, 2006).



Digitized by UCC, Library

**Table 18: Membership of Social Group of Farmers**

| | Farmers who listen (N=198) | | Farmers who do not listen (N=198) | | | | |
|---|---|---|---|---|---|---|---|
| Membership | Freq. | % | Freq. | % | Chi-square. value | Df | P-value |
| Yes | 173 | 87.4 | 138 | 69.7 | | | |
| No | 25 | 12.6 | 60 | 30.3 | 16.455 | 1 | 0.00 |
| Total | 198 | 100.0 | 198 | 100.0 | | | |

* Significant

Source: Field Survey Data, 2013.

**Sources Farmers Use to Obtain Information on Agriculture**

Majority of farmers (92.4%) who listen to Radio Peace-CSIR programme use it as a major source of agricultural information. This was followed by friends (69.7%) while 57.6% turns to colleagues and extension agents (55.1%). Some of the farmers reported getting agricultural information through farmer forum, family relations, agricultural workshops and cooperative societies. Table 19 indicates that most farmers (91.9%) who do not listen to Radio Peace look up to friends as a source of agricultural information. Farmers who use traders as a source of information were 71.2%, while 58.0% and 45.9% consulted input dealers and extension agents respectively.



Digitized by UCC, Library

In the same way, farmers (42.9%) who do not listen to Radio Peace-CSIR programme used Veterinary officers as sources of agricultural information. Furthermore farmers to the programme used friends (91.9%) and traders (71.2%) as major sources of information on agriculture. The result is in line with findings of Rogers (1995) who reported that localized sources of information such as neighbours and friends constitute a major source of information for farmers.

**Table 19: Sources Farmers use to Obtain Information on Agriculture**

| | Farmers who listen | | Farmers who do not | |
|---|---|---|---|---|
| Source | Freq. | % | Freq. | % |
| Radio | 183 | 92.4 | | |
| Friends | 138 | 69.7 | 182 | 91.9 |
| Traders | | | 141 | 71.2 |
| Input Dealers | | | 115 | 58.0 |
| Extension Agents/Veterinary officers | 109 | 55.1 | 91 | 45.9 |
| Farmers Forum | 95 | 48.0 | | |
| Family Relations | 66 | 33.3 | 60 | 30.3 |
| Agricultural Workshops | 37 | 18.7 | 56 | 28.2 |
| Farmer Co-operative Society | 31 | 15.7 | 48 | 24.2 |

*Multiple Responses, n=198

Source: Field Survey Data, 2013.



Digitized by UCC, Library

**Major Sources of Agricultural Credit for Farmers**

Lack of credit in Ghana has been identified as one of the major constraints limiting agricultural growth. Especially small farmers, whose contribution to agriculture production is crucial, are not benefiting from existing credit sources. It is evident from Table 20 that, farmers depend on their own savings as sources of agricultural credit (80.3%). More than two-thirds (60.6%) of the respondents depend on rural banks for credit. Those who sell their assets to raise credit were 59.1 percent of the respondents. Those who raise credit from friends, family members and money lenders were 46.5%, 32.8% and 11.6% respectively.

The non-patronage of rural banks as the primary of obtaining credit may be due to the demand for security or collateral by the banks which the farmers could not meet (Owusu-Antwi & Antwi 2010). This agrees with the finding of Olaleye, Gana, Umar, Ndanisa & Peter (2009) that farmers in Nigeria now depend on personal savings (87.4%) as their main sources for agricultural credit.

**Table 20: Major Sources of Agricultural Credit for Farmers**

| Source | Frequency | Percent | Rank |
|---|---|---|---|
| Own Savings | 159 | 80.3 | 1 |
| Rural Banks | 120 | 60.6 | 2 |
| Sale of Assets | 117 | 59.1 | 3 |
| Friends | 92 | 46.5 | 4 |
| Family Members | 65 | 32.8 | 5 |
| Money Lenders | 23 | 11.6 | 6 |

.* Multiple Response, n=198

Source: Field Survey Data, 2013



Digitized by UCC, Library

**Labour Accessibility in the Communities**

Results presented in Table 21 show that the majority (93.9%) of the farmers in the study area preferred hired labour while about half (58.9%) of the farmers use family labour. The result however showed that hired labour for agricultural production is favoured in the study area. This in consonance with Akanni and Dada (2012) who concluded in a study that hired labour is the only main source of labour available to small-holder farmers in Nigeria. It also represents an alternative form of employment and source of income, most especially to the rural folks.

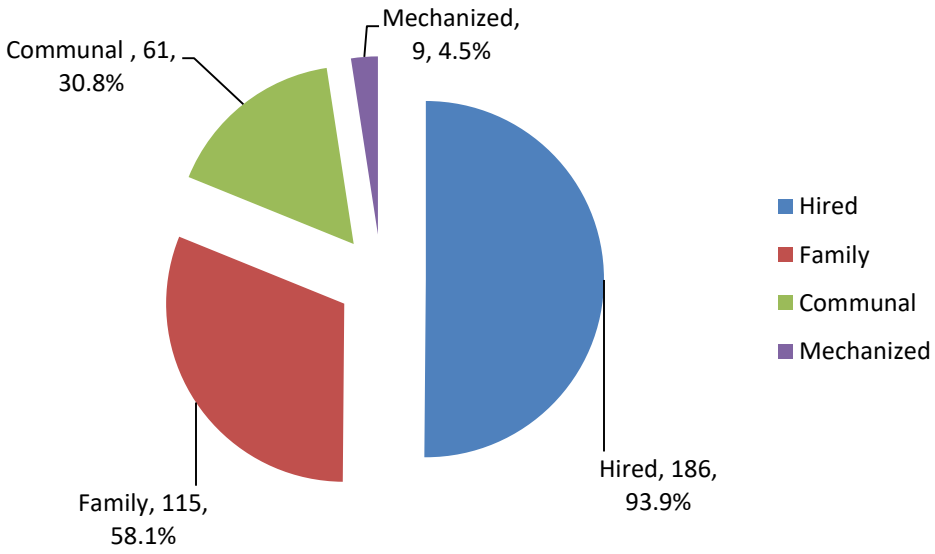


**Figure 3: Labour Accessible in the Communities**

Source; Field Survey Data, 2013. N= 198.



Digitized by UCC, Library

**Effects of Radio Peace-CSIR Programme on Farmers in the Catchment Area**

Information is important for farmers to maintain livelihoods and to gain a competitive edge in a rapidly changing economic and production environment where traditional farming methods might be ineffective to meet new demands (Morton & Matthewman, 1996). The Radio Peace-CSIR programme disseminates agricultural information on crops, animals, marketing, agro-processing, fishing and sources of agricultural credit to farmers within the study area. This section looks at the effects in terms of use of information in their various agricultural activities.

The Use of Information on Crop Production

The results presented in Table 21 show that as a result of the Radio Peace CSIR programme, there had been a significant increase in the use of the various information on crop production practices disseminated by Radio Peace-CSIR programme. Although the was a percentage change in use of information on efficient land preparation; pruning in plantations; crop rotation practices; transplanting of seedlings and organic fertilizer before and after the programme were not significant as indicated by the corresponding chi-square values and p-values.

On the other hand, the programme has had significant effects on the use of information on post-harvest handling of crop produce, crop planting dates, safe handling of pesticides, control of crop diseases, control of crop pests, handling of Knapsack sprayer and mulching/staking.



Digitized by UCC, Library

The use of information on crop practices such as mineral fertilizers, harvesting techniques, nursery management, improved methods of weed control, selection of improved plant materials and planting in rows before and after the programme were also significant.

**Table 21: The Use of Information on Crop Production technologies**

| Information on Crop Production | Before | | After | | % Change | Chi-square Value | P-value |
|---|---|---|---|---|---|---|---|
| | Freq | % | Freq | % | | | |
| Efficient Land preparations | 98 | 49.4 | 177 | 89.3 | 39.9 | 0.219 | 0.640 |
| Pruning in plantations | 73 | 38.6 | 165 | 87.3 | 48.7 | 0.583 | 0.445 |
| Crop rotation practices | 131 | 66.1 | 141 | 71.2 | 5.1 | 1.053 | 0.305 |
| Transplanting of seedlings | 77 | 40.7 | 129 | 68.3 | 27.6 | 1.347 | 0.246 |
| Organic fertilizer usage | 138 | 69.6 | 165 | 83.3 | 13.7 | 2.839 | 0.092 |
| Mineral fertilizers usage | 13 | 6.9 | 171 | 90.5 | 83.6 | 4.006* | 0.045 |
| Harvesting techniques | 103 | 52.0 | 177 | 89.3 | 37.3 | 4.573* | 0.032 |
| Nursery management | 63 | 33.3 | 129 | 68.3 | 35.0 | 5.512* | 0.019 |
| Improved methods of weed control | 73 | 38.6 | 176 | 93.1 | 54.5 | 6.323* | 0.012 |
| Selection of improved plant materials | 140 | 70.7 | 164 | 82.8 | 12.1 | 6.505* | 0.011 |



Digitized by UCC, Library

Table 22, continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Planting in rows | 63 | 33.8 | 183 | 96.8 | 63.5 | 10.258* | 0.001 |
| Mulching/staking | 56 | 28.2 | 141 | 71.2 | 43.0 | 15.772* | 0.000 |
| Handling of Knapsack sprayer | 103 | 52.0 | 171 | 86.3 | 34.3 | 71.324* | 0.000 |
| Control of crop pests | 85 | 45.0 | 183 | 96.8 | 51.8 | 36.959* | 0.000 |
| Control of crop diseases | 79 | 41.8 | 183 | 96.8 | 55.0 | 17.372* | 0.000 |
| Safe Handling of pesticides | 73 | 38.6 | 158 | 83.6 | 45.0 | 91.744* | 0.000 |
| Crop planting dates | 72 | 38.1 | 170 | 89.9 | 51.8 | 25.114* | 0.000 |
| Post-harvest handling of crop produce | 62 | 32.8 | 183 | 96.8 | 64.0 | 90.524* | 0.000 |

Multiple Responses *Significant

Source: Field Survey Data, 2013:

The use of Information on Animal Production

Information use on animal production practices disseminated by the Radio Peace CSIR programme is presented in Table 22. There were significant differences in results on the use of information on animal production practices in the study area before and after the programme. Specifically, the use of information on pest control, diseases control, animal health, animal breeding, feeding, housing, sanitation in animal housing and production of non-traditional animals before and after the programme was highly significant as shown by the corresponding chi-.



Digitized by UCC, Library

square and P-values. However information use on castration and dehorning/hoof trimming in farm animals before and after the Radio Peace-CSIR programme was not significant

**Table 22: Use of Information on Animal Production (N=98)**

| Information on Animal Production | Before | | After | | | | |
|---|---|---|---|---|---|---|---|
| | Freq | % | Freq | % | % Change | Chi-square value | P-value |
| Castration in farm animals | 39 | 39.8 | 59 | 60.2 | 20.4 | 0.212 | 0.645 |
| Dehorning/hoof trimming in farm animals | 80 | 81.6 | 92 | 93.8 | 12.2 | 1.007 | 0.316 |
| Production of Non Traditional animals | 12 | 12.2 | 52 | 53.1 | 40.9 | 8.103* | 0.004 |
| Sanitation in animal housing | 18 | 18.4 | 92 | 93.9 | 75.5 | 95.167* | 0.000 |
| Housing of farm animals | 16 | 16.3 | 83 | 84.7 | 68.4 | 60.549* | 0.000 |
| Feeding farm animals | 23 | 23.5 | 89 | 90.8 | 67.3 | 39.394* | 0.000 |
| Animal breeding practices | 18 | 18.4 | 86 | 87.8 | 69.4 | 22.797* | 0.000 |
| Animal health | 23 | 23.5 | 83 | 84.7 | 61.1 | 76.843* | 0.000 |
| Control of animal diseases | 25 | 25.5 | 82 | 83.7 | 58.2 | 80.204* | 0.000 |
| Pest control in farm animals | 24 | 24.5 | 80 | 81.6 | 57.1 | 84.245* | 0.000 |

Multiple responses; n=198; * Significant

Source: Field Survey Data, 2013.



Digitized by UCC, Library

Agricultural Marketing

Table 23 shows that there was no significant differences (p>0.05) in the marketing of vegetable, cereal, root crop and oil palm as a result of the Radio Peace-CSIR programme. On the contrary, marketing of agricultural inputs and supply and availability of market information before and after the Radio Peace - CSIR programme were significant (P> 0.05).

**Table 23: Use of Information on Agricultural Marketing (N=91)**

| Information on Agricultural Marketing | Before | | After | | % Change | Chi-square value | P-Value |
|---|---|---|---|---|---|---|---|
| | Freq | % | Freq | % | | | |
| Vegetable marketing | 37 | 40.6 | 46 | 50.5 | 9.9 | 1.802 | 0.180 |
| Cereal marketing | 46 | 50.5 | 46 | 50.5 | 0 | 1.220 | 0.269 |
| Root crop marketing | 46 | 50.6 | 49 | 53.8 | 3.2 | 1.623 | 0.203 |
| Oil palm marketing | 43 | 47.3 | 49 | 53.8 | 6.5 | 0.160 | 0.689 |
| Market information | 15 | 16.5 | 70 | 76.9 | 60.4 | 6.267* | 0.012 |
| Input supply/marketing | 12 | 13.2 | 70 | 76.9 | 63.7 | 4.997* | 0.025 |

*Significant

Source: Field Survey Data, 2013

The reason for the nonuse of vegetable, cereal root crop and oil palm marketing information may be that farmers in the study area did not understand the information disseminated through the programme. However, the result agrees



Digitized by UCC, Library

with Asogwa, Ezihe & Ogebe (2012) who reported that, farmers found agricultural marketing information useful as it allows them to do away with exploitative activities of middlemen. Thus agricultural marketing information as a tool will help farmers to take economic decisions that would benefit them and thus enhance their market access.

Use of Information on Agro processing

The use of information on oil palm processing techniques, cassava processing techniques and vegetable processing techniques by farmers before Radio Peace CSIR programme was not significant after the programme as presented in Table 24. The P-value for Chi-square was greater than the prior value of 0.05. Only information on hygiene at the work place was significant after the programme. The results confirm the report of similar study carried out in Kenya by Gitonga, Gathambiri, Kamau, Njuguna, Muchui, Gatambia and Kiiru (2012) that Farmers need training in processing and to promote agro-processing to reduce post-harvest losses to increase market value of their products and income. There is high potential of agro-processing within the study area. High post-harvest losses occur due to poor harvesting methods, pests and diseases and lack of processing knowledge. Based on the results, there is need to redevelop a programme on agro-processing technologies which can later be disseminated to the farmers.



Digitized by UCC, Library

**Table 24: Use of Information on Agro processing. (N=53)**

| Information on Agro processing | Before | | After | | | | |
|---|---|---|---|---|---|---|---|
| | Freq | % | Freq | % | % Change | Chi-square value | P-value |
| Oil palm processing Techniques | 12 | 22.6 | 36 | 67.9 | 45.3 | 0.000 | 1.000 |
| Cassava processing Techniques | 13 | 24.5 | 37 | 69.8 | 45.3 | 3.634 | 0.057 |
| Vegetable processing Techniques | 10 | 18.9 | 38 | 71.6 | 52.7 | 0.028 | 0.867 |
| Hygiene at the work Place | 18 | 34.0 | 43 | 81.1 | 47.1 | 5.924* | 0.015 |

*Significant; n=53

Source: Field Survey Data, 2013

Use of Information on fishing

The results in Table 25 shows that information disseminated by Radio Peace CSIR programme on sea fishing in its catchment area was significant ($p>0.05$). On the other hand, the use of information on fish processing was not significant at 0.05 alpha level. The result is not in consonance with Ofuoku, Emah and Itedjere (2008) who indicated that 90% of the fishermen in Delta State, Nigeria, utilized information on all fishing operations.



Digitized by UCC, Library

**Table 25: Use of Information on fishing**

| Information on Fishing | Before Freq. | % | After Freq | % | % Change | Chi-square Value | P-value |
|---|---|---|---|---|---|---|---|
| Fish processing | 8 | 40.0 | 14 | 70.0 | 30.0 | 0.003 | 0.956 |
| Sea fishing | 4 | 20.0 | 6 | 30.0 | 10.0 | 6.269* | 0.012 |

*Significant; n=20

Source: Field Survey Data, 2013

The Use of Information on Agricultural Credit

Table 26 revealed that as a result of the Radio Peace-CSIR programme, there had been a highly significant (p>0.000) change on the formation of cooperatives, accessing of loans from financial institutions, acquiring agricultural inputs and information on credit sources. This confirms the results of Nwaru, Onyenweaku, and Nwosu (2006) who observed that credit facilitates adoption of innovations leading to increased farm productivity and income, encourages capital formation and improves marketing efficiency.



Digitized by UCC, Library

**Table 26: Use of Information on Agricultural Credit**

| Information | Before | | After | | | | |
|---|---|---|---|---|---|---|---|
| | Freq | % | Freq | % | % Change | Chi-square value | P-value |
| Formation of credit cooperatives | 66 | 33.3 | 185 | 93.4 | 60.1 | 47.104* | 0.000 |
| Accessing loans from Financial Institutions | 92 | 46.5 | 191 | 96.5 | 50.0 | 43.369* | 0.000 |
| Acquiring agricultural inputs | 72 | 36.4 | 192 | 97.0 | 60.6 | 97.441* | 0.000 |
| Credit sources | 78 | 39.4 | 198 | 100.0 | 60.6 | 19.373* | 0.000 |

*Significant; n=198

Source: Field Survey Data, 2013

**Effects of Radio Peace-CSIR Programme on the Livelihood of Farmers in the Catchment Area of Broadcasting**

To examine the effects of Radio Peace-CSIR programme on the livelihood of farmers in the catchment area of broadcasting, five areas of livelihood namely natural, human, physical, financial and social were studied. The differences in imparts in the districts and municipalities were examined. Generally, farmers' perceived high level of effect of the programme on their livelihoods.



Digitized by UCC, Library

The farmers greatly differed in their opinions on the effect of Radio Peace -CSIR programme on natural capital (SD>1) (Table 27). They perceived that Radio Peace-CSIR programme had highly improved their livelihood in terms of natural capital. Specifically, the respondents also were of the view that as a result of the programme, they had acquired crop plantations, had access to land and owned livestock.

The respondents perceived that Radio Peace-CSIR programme has effect on their physical capital (Table 27). They were of the view that as a result of the programme, they have renovate or build a house, own a knapsack sprayers, put up a storage facility, own a truck and corn mill. This result confirms that of Nxumalo and. Antwi (2013) that, there were significant differences in physical capital of farmers before and after a project in respect of ownership of transport, storage infrastructure, and buildings among others after a radio agricultural project in Dr. Kenneth Kaunda District, South Africa

The effect of Radio Peace-CSIR programme on financial capital of respondents was high (Table 27). This is not surprising because all the respondents (198) said that the programme had helped decrease their debt levels and also helped them to have access to agricultural credit. Results from the study agrees with Asenso-Okyere and Mekonnen (2013) who indicated that radio improves the livelihood of rural farmers mainly by strengthening human capital to increase financial capital through improved access to information on better agricultural practices and market information.



Digitized by UCC, Library

**Table 27: Farmers Perceived Effect of Radio Peace-CSIR Programme on their Livelihoods.**

| Livelihood Type | Measure | Mean | SD |
|---|---|---|---|
| Natural Capital | Crop plantations | 4.01 | 1.21 |
| | Access to land | 3.66 | 1.30 |
| | Livestock | 3.59 | 1.37 |
| Physical Capital | Renovated/Build a house | 4.43 | 0.93 |
| | Ownership of knapsack sprayer | 4.31 | 0.99 |
| | Storage facility | 3.90 | 1.20 |
| | Ownership of a truck | 3.87 | 1.29 |
| | Ownership of a corn mill | 3.85 | 1.30 |
| Financial Capital | Decrease in debt levels | 4.75 | 0.47 |
| | Access to credit | 4.73 | 0.60 |
| | Increase in income levels | 3.83 | 1.53 |
| | Increase in savings | 3.79 | 1.50 |
| Human capital | Access to labour | 3.70 | 1.28 |
| | Access to Knowledge | 3.77 | 1.25 |
| | Acquisition of skills | 4.15 | 1.30 |
| Social Capital | Ability to pay school fees | 4.21 | 1.23 |
| | Membership of association | 4.08 | 1.08 |
| | Support to family members | 3.83 | 1.31 |
| | Contribution to community development | 3.78 | 1.31 |
| Overall Mean | | 3.99 | 0.77 |

Scale: 1 = Very Low (VL), 2= Low (L), 3= Moderately High (MH), 4=High (H), 5= Very High (VH)



Digitized by UCC, Library

Farmers' perceived effect of the programme on their human capital as presented in Table 27 greatly differed (SD>1). Nonetheless, they perceived that, the Radio Peace-CSIR programme to have improved access to labour, knowledge and acquisition of skills. The result agrees with Addul, Barkatullah, Ghulam, and Shakil, (2014) who noted that radio agricultural programmes has brought changes in access to labour, knowledge and acquisition of skills of farmers in sectors of society as radio continues broadcast latest agricultural information to farmers.

Though the farmers were varied in their views they perceived the programme to have helped them pay school fees for their dependants, belong to farmer associations, support their family members and also contributed to community development.

**Differences in Effect of Radio Peace-CSIR Programme on Livelihood of Farmers in the Catchment Area of Broadcasting**

The Analysis of Variance (ANOVA) results presented in Table 28 shows significant differences in effect levels of Radio Peace-CSIR programme in the five districts and municipalities (F-ratio=8.923; P-value=0.000). The level of effect of the programme on farmers' livelihoods was highest in the Gomoa West District (Mean=4.28, SD= 0.26) followed by Awutu Municipality (Mean= 4.22, SD= 0.26), Efutu Municipality (Mean=3.98, SD=0.53), Gomoa East District (Mean= 3.89, SD= 0.38) and Agona West Municipality (Mean=3.76, SD=0.58) respectively.



Digitized by UCC, Library

The Tamhane's T2 post hoc multiple comparison show significant difference in effects on livelihood of farmers between Awutu Municipality and Agona West District (Mean df=0.464; p=0.003) and Gomoa West District (Mean df=0.331; p= 0.000). There were significant differences in effect between Agona West and Gomoa West (Mean df= -0.524; p=0.001); Awutu Municipality (Mean df=-0.464; p=0.003). Similarly, there were significant difference in effect between Gomoa East and Gomoa West districts (Mean df=-0.391; p=0.000). Differences also existed between Gomoa West District and Efutu Municipal (Mean df= 0.307; p=0.031).

**Table 28: Mean Effect of Radio Peace Programme on Respondents' Livelihoods in the 5 Districts and Municipalities of the Study Area.**

| District/Municipality | N | Mean | SD | F- ratio | P-value |
|---|---|---|---|---|---|
| Gomoa West | 36 | 4.22 | 0.26 | 8.923 | 0.000* |
| Awutu | 30 | 3.76 | 0.58 | | |
| Efutu | 60 | 3.89 | 0.38 | | |
| Gomoa East | 30 | 4.28 | 0.31 | | |
| Agona West | 42 | 3.98 | 0.53 | | |

*Significant; Scale: 5= Very High, (VH), 4=High (H), 3=Moderately High (MH), 2=Low (L), I=Very Low (VI); n=198

Source: Field Survey Data, 2013.



Digitized by UCC, Library

**Table 29: Tamhane's T2 Post Hoc Multiple Comparison of Mean Effect of Radio Peace Programme on Livelihood by District and Municipality**

| Districts/Municipalities | | Mean Difference | | |
|---|---|---|---|---|
| A | B | A – B | Std Error | P-value |
| Awutu | Agona West | 0.464* | 0.116 | 0.003 |
| | Gomoa East | 0.331* | 0.067 | 0.000 |
| | Gomoa West | -0.059 | 0.073 | 0.995 |
| | Efutu | 0.247 | 0.093 | 0.100 |
| Agona West | Awutu | -0.464* | 0.116 | 0.003 |
| | Gomoa East | -0.133 | 0.118 | 0.955 |
| | Gomoa West | -0.524* | 0.122 | 0.001 |
| | Efutu | -0.217 | 0.135 | 0.700 |
| Gomoa East | Awutu | -0.331* | 0.672 | 0.000 |
| | Agona West | 0.133 | 0.118 | 0.955 |
| | Gomoa West | -0.391* | 0.076 | 0.000 |
| | Efutu | -0.084 | 0.096 | 0.992 |
| Gomoa West | Awutu | 0.059 | 0.073 | 0.995 |
| | Agona West | 0.524* | 0.122 | 0.001 |
| | Gomoa East | 0.391* | 0.076 | 0.000 |
| | Efutu | 0.307* | 0.100 | 0.031 |

*p< 0.05; n=198

Source: Field Data Source, 2013



Digitized by UCC, Library

Differences in effect of the Radio Peace-CSIR programme may be as the result of how well farmers use of the information on each of the technologies disseminated in each district/municipality. For example, the use of information on efficient land preparation. Other external factors may have also resulted in such differences which may beyond the control of the programme or farmer. One of such factor could have been the availability and distribution of rainfall in the various district and municipalities

**Extent to which the Socio-demographic Characteristics of Farmers Influence the Use of Information Disseminated through the Radio Peace-CSIR Programme**

Age, household size and number of years in farming were significant socio demographic predictors of the use of information disseminated through the Radio Peace-CSIR programme at the 0.05 alpha level (Table 30). The Cox Snell R-Square and Nagelkerke R- Square (pseudo R Squares) values of 0.119 and 0.158 which are the measures of goodness of fit imply that 12 to 16 % of the variance in respondents' use of information disseminated by Radio Peace-CSIR programme is being explained by age, household size and number of years in farming. The Chi-square test of the regression model was significant at alpha level 0.01. This means that the variables in the model have significant influence on farmers' use of agricultural information disseminated through Radio Peace-CSIR Programme. These results are in line with Tiamiyu, Akintola and Rahji (2009) who in a similar



Digitized by UCC, Library

**Table 30: Logistic Regression Showing Socio Demographic Factors that Influence the Use of Information Disseminated through Radio Peace-CSIR Programme**

| Explanatory variables | β coefficient | Wald | P-value | Odd Ratio |
|---|---|---|---|---|
| Constant | -.739 | 1.425 | 0.233 | 2.094 |
| Sex | .442 | 3.453 | 0.063 | 0.642 |
| Age | .068 | 11.442 | 0.001** | 0.934 |
| Education | -.394 | 2.112 | 0.146 | 1.483 |
| Marital Status | .189 | .310 | 0.577 | 0.828 |
| Household size | -.245 | 29.185 | 0.000** | 1.278 |
| Farming experience | -.041 | 4.050 | 0.044* | 1.042 |
| Model Summary | | | | |
| Cox Snell R- Square | 0.119 | | | |
| Nagelkerke R- Square | 0.158 | | | |
| Chi- square | 50.083** | | | |
| Sig. (p - value) | 0.000 | | | |

**; *; Significant at 0.01 and 0.05 alpha levels respectively.

Source: Field Data, 2013

study concluded that technology adoption is affected significantly by farmers' age, family size and farming experience. Asiabaka and Owens (2002) also reported that socio-economic demographic characteristics of the farmers have interacting influences in the frequency of use of agricultural information. Agrarian



Digitized by UCC, Library

information users are influenced by variables such as farming experience, age, household size, and gross income from the choice of information sources (Mtega, 2012).

Knowledge of how these factors influence information seeking behaviour of farmers is important for improving access and usage of information in rural areas. The logit model for use of information disseminated through Radio Peace CSIR programme, $Z = -0.73 + .442(Sex)_1 + .068(Age)_2 - .394(Education)_3 + .189(Marital\ status)_4 - .245(Household\ size)_5 - .041(Farming\ experience)_6$

**Challenges Faced by Farmers in Listening to the Radio Peace-CSIR Agricultural Programme**

Table 31 shows that out of the ten challenges listed in the study, to the listening of Radio Peace-CSIR agricultural programme, five were considered to be major. They include: short duration of the programme (73.2%), power outages (68.7%), inappropriate scheduling of programme (66.7%), difficulty in understanding content (65.2%) and inability to ask relevant questions and get feedback from the radio presenter (63.1%). However, the time allocated for presenting the programme is too short for farmers to understand what the presenter teaches. The major determining challenge in listening to Radio Peace-CSIR programme is the short duration of the programme. This is followed by power outages and inappropriate scheduling of the programme.

The results agree with Agwu, Ekwueme and Anyanwu (2008) who reported that, the major constraints to adoption of technologies include short



Digitized by UCC, Library

duration in presenting the programme, inappropriate scheduling of programme and inability to ask relevant questions and get the feedback from the radio presenter. The finding further revealed that irrelevant content (37.4%), Lack of interest (35.4%), poor reception of radio signals (32.8%), poor presentation techniques (29.3%), and difficulty in understanding language used in presentation were other challenges faced by farmers.

**Table 31: Challenges Faced by Farmers when Listening to Radio Peace Programme**

| Challenges | Frequency | Percent |
|---|---|---|
| Short duration of Programme | 145 | 73.2 |
| Inappropriate scheduling of programme | 145 | 66.7 |
| Power outages | 136 | 68.7 |
| Difficult in understanding content | 129 | 65.2 |
| Inability to ask relevant question/lack of immediate feedback from the presenters | 125 | 63.1 |
| Irrelevant contents | 74 | 37.4 |
| Lack of interest | 70 | 35.4 |
| Poor reception of radio signals | 68 | 31.8 |
| Poor presentation techniques | 63 | 29.3 |
| Difficulty in understanding language used in presenting some programmes | 62 | 31.3 |

Source: Field Survey Data, 2013; Multiple response.



Digitized by UCC, Library

**Reasons Why Farmers do not listen to Radio Peace-CSIR Programme**

Table 32 shows that 36.4 percent of the farmers were not able to listen to the programme because of its non-visible demonstration nature while 28.3% also indicated that time of listening not convenient to them. This agrees with Swanson (1997) that farmers do better in what they see and practice than what they hear only. Correspondingly, 18.7% pointed out inadequate resources in applying information (technology) obtained on their farms and 10.1% specified that they do not like the format of presentation. Thirteen farmers indicated that they were not interested in the Radio Peace-CSIR programme. The findings of study imply that visible demonstration of the agricultural programme to the farmers in the study area is the main determining factor limiting listening to Radio Peace-CSIR agricultural programmes among the remaining farmers.

This is because the farmers need to see with their naked eyes how a particular agricultural programme is being demonstrated step by step. The results is in line with Zoheir, Hassan, and Bahaman (2012) who noted that almost one third of the population studied did not listened to radio agricultural programmes due to its non-visible demonstration nature and Nyareza and Archie (2012) also reported in a similar study that farmers were not interested in radio agricultural programmes because they access to extension agents.



Digitized by UCC, Library

**Table 32: Reasons why Farmers do not listen to Radio Peace-CSIR Programme**

| Reasons | Frequency | Percentage |
|---|---|---|
| Non- visible demonstration of programme | 72 | 36.4 |
| Time of listening not convenient | 56 | 28.3 |
| Inadequate resources in applying information | 37 | 18.7 |
| Do not like the format of presentation | 20 | 10.1 |
| Not interested in Radio Peace/CSIR programme | 13 | 6.6 |
| Total | 198 | 100.0 |

Source: Field Survey Data, 2013.



Digitized by UCC, Library

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## Introduction

This chapter presents the summary, conclusions and recommendations of the study. The areas for further studies are also included in the chapter.

## Summary

The low adoption of appropriate technologies and ineffective institutional frameworks to provide information on proven agricultural technologies from research prompted the CSIR to collaborate with Radio Peace and other stakeholders to disseminate agricultural information to farmers, processors and fishermen in Central Region of Ghana. The study examined the effects of radio Peace-Council for Scientific and Industrial Research programme of agricultural information dissemination on farmers in Central Region of Ghana

The study used a descriptive correlation survey design to interview 396 farmers within the broadcasting range of Radio Peace from five Districts and Municipalities in the Central Region of Ghana. The respondents were selected using a multistage sampling technique. Frequencies, Percentages, Chi-square, dependent T-test, Analysis of variance (ANOVA), Post hoc multiple comparison and Logistic regression were the statistical tools used to analyze the data. The



Digitized by UCC, Library

summaries of major findings as they relate to the specific objectives of the study are presented in the following bullets.

Males who listen to the radio programme were more than those who do not listen. On the other hand, females who do not listen were more than those who listen. There was no significant difference between sex and listening of the radio programme. Similarly age does not affect the listening behaviour of farmers. Farmers with formal education do listen to Radio Peace-CSIR programme more as compared to their counterparts with no formal education. Married farmers who do not listen to the Radio Peace-CSIR programme were more than those who listen.

Farmers who listen to the Radio Peace-CSIR programme are in leadership positions as compared to those who do not listen. Ethnicity affects the extent to which farmers listen to the Radio Peace-CSIR programme. There was a significant difference between ethnicity and extent to which farmers listen or do not listen to the Radio Peace CSIR programme. Household size of farmers affects the listening behaviour farmers as there was a significant difference between the household size of farmers who listen to the programme and those who do not listen. Farming experience of farmers does not affect listenership of Radio Peace-CSIR programme.

The mean years of experience of farmers who listen is (19.6years) and those who do not listen (20years) were almost the same. The mean farm size of farmers who listen (3.66 ha) was higher than those who do not listen (3.43 ha) to Radio Peace-CSIR programme.



Digitized by UCC, Library

Farmers who listen to Radio Peace-CSIR programme and are also involved in other occupations such as trading and artisanship are more than those who do not listen. Farmers who belong to social groups listen more to radio Peace-CSIR programme than those who are not involved in any social group activities. Radio Peace-CSIR programme was the most preferred sources of information by farmers. Farmers depend on their own savings and rural banks for their agricultural credit and also used hired labour than family labour.

There was a significant difference in the use of information on crop production practices between the periods before and after information has been disseminated through Radio Peace-CSIR programme. On the contrary information on efficient land preparation, pruning in plantations, crop rotation practices, transplanting of seedlings and organic fertilizer usage was not significant.

There was a great percentage change in the use of information on animal production practices before and after the programme in the study area. On the other hand, information on castration and dehorning/hoof trimming in farm animals was not significantly used. Information disseminated by Radio Peace-CSIR programme on input supply and market information was significantly use by farmers in the study area. Conversely, there was no significant difference in use of information on vegetable, cereal, root crop and oil palm marketing.

There was a significant difference in the use of information on hygiene at the work place. Information disseminated through Radio Peace-CSIR programme on oil palm, cassava and vegetable processing was not significantly used by farmers.



Digitized by UCC, Library

Information disseminated through Radio Peace-CSIR programme on fishing was highly used by the fishermen in the study area but information on fish processing was not significantly used by fish mongers. As a result of the Radio Peace-CSIR agricultural programme, there had been a highly significant use of information on agricultural credit after the Programme.

Effects of the programme on farmers' livelihoods as a whole were high. This is because their natural, physical, financial, human and social capitals have been improved. There is significant difference in the levels of effects in the study area. The level of effect of the programme on farmers' livelihoods was highest in Gomoa West District followed by Awutu Municipality, Efutu Municipality, Gomoa East District and Agona West municipality.

Three socio-demographic characteristics namely age, household size and farming experience influenced the use information disseminated through Radio Peace-CSIR programme by farmers. Challenges encountered by farmers who listens to Radio Peace-CSIR programme were; short duration of programme, inappropriate scheduling of programme, power outages, difficult in understanding content, inability to ask relevant question/lack of immediate feedback from the presenters. The majority of the farmers suggested that the duration of the programme should be two hours while others were of the view that farmers should be involve in the development of the final content for broadcasting.

The main reasons why some farmers in the catchment area of broadcasting do not listen to radio Peace-CSIR programme are; non – visible nature of the programme, time of broadcasting not convenient and inadequate resources in



Digitized by UCC, Library

applying information gathered on their farming activities. Farmers suggested that the Radio Peace-CSIR programme should be telecasted on the national television so that they can watch the demonstrations. Also the time of broadcasting should be early in the morning before they go to farm.

**Conclusions**

Based on the summary of the findings of the study, the study concludes as follows:

1. Although more males listen to the radio programme than females, the effect of sex on listenership of the Radio Peace-CSIR agricultural programme was not significant.
2. The farmers in the catchment area of Radio Peace described as youthful listen to Radio Peace-CSIR Programme. Age does not affect the listening of Radio Peace-CSIR programme.
3. Educational background of farmers has effect on listenership of radio peace programme. More farmers with some form of formal education listen to Radio Peace-CSIR programme than their counterparts who do not listen with the same educational level. Moreover there was a significant difference between educational level of farmers who listen to Radio Peace and those who do not.
4. Marital status of farmers influences the listening of Radio Peace-CSIR programmes. More married farmers do not listen compared the unmarried.
5. Ethnicity affects the extent to which farmers listen or do not listen to the Radio Peace-CSIR programme.



Digitized by UCC, Library

6. The household size of farmers affects the listening of Radio Peace-CSIR agricultural programme.
7. Farmers in the study area have rich working experience. There was no significant difference between farming experience of farmers who listen to Radio Peace-CSIR programme and those who do not listen
8. Farmers in the study area have acquired information on various practices of agriculture disseminated through Radio Peace-CSIR programme.
9. Farmers in the five districts and municipalities who listen to were able to confirm to some extent that, all the five facets of their livelihoods examined (natural, physical, financial, human and social capitals) have been improved through information disseminated by Radio Peace-CSIR programme
10. The use of information disseminated through radio Peace-CSIR programme depends mainly on age, household size and farming experience of farmers.

**Recommendations**

Based on the conclusions of the study, the following recommendations are made:

1. Male farmers should help their female counter parts with household duties on the day of broadcast so that they listen to the programme. Some had complained that they were often burdened with household duties.
2. In terms of reaching the age categories, the programme should be maintained. Efforts made at the problem identification phase that involved



Digitized by UCC, Library

both the young and old is laudable and should be continued and replicated for radio programmes that intend to reach farmers.

3. Radio Peace–CSIR programme managers should incorporate some form of non-formal education as part of the programme to ensure farmers comprehend fully some of the terms that may not have local language interpretation.
4. The programme should incorporate programme such as childbirth, family planning and health and agriculture that will benefit both couple so that they will listen together.
5. Radio Peace–CSIR programme managers should consider incorporating other languages even if sparingly to win the listenership of all ethnic groups who have migrated to farm in the study area.
6. Farmers with large household size should acquire more radio sets to limit the situation where members of a household are likely to compete with household heads (farmers) as to which station to tune in.
7. Extension Agents should encourage farmers in their operational areas to listen to the programme since it complement their work.
8. Information on some technologies of crop production should be rebroadcast by Radio Peace-CSIR programme (efficient land preparation, pruning in plantations, crop rotation practices, transplanting of seedlings and organic fertilizer usage) for farmers to understand.
9. Extension Agents who work with the Radio station should come up with demonstrations of some of the technologies in the various communities for



Digitized by UCC, Library

farmers to take part. For example castration and dehorning/hoof trimming in farm animals.

10. The Ministry of Food and Agriculture should collaborate with the CSIR to replicate the programme in the various districts and municipalities where community radio stations operate.
11. The management of Radio Peace should look for sponsorship for more air time for the programme so that so that farmers' questions will be addressed by the panelist.

**Suggested Areas for Further Study**

In the present study, only farmers were surveyed for the effect of Radio Peace-CSIR programme in the context of information dissemination. The future researcher should, in addition to farmers include other stakeholders like extension agents and media personnel. Similarly, a comparative study should be conducted between Radio Peace-CSIR programme and other agricultural programmes aired on other radio stations in the Central Region.



Digitized by UCC, Library

## REFERENCES


Abara, I. O. C., & Singh, S. (1993). Ethics and biases in technology adoption: The small farm argument. *Technological Forecasting and Social Change, 43*, 289 – 300.

Abbas, M., Lodhi, T.E., Bashir, A., & Mahmood, M. A. (2008). Dissemination of wheat production technologies and interface of out-reach efforts with farmers. *Journal of Agricultural Research, 46* (1).

Abbey-Mensah, S. (2001). *Rural broadcasting in Ghana*. Retrieved March 2, 2013 from http://www.fao.org/documents/

Abdul, R. C., Barkatullah, Q., Ghulam, M. K., & Shakil, A. (2014). Impact of information and communication technologies in agriculture development. *Journal of Basic and Applied Scientific Research, 4* (1), 281 – 288

Aboyade, B. O. (1987). *The provision of information for rural development.* Ibadan: Fountain Publications.

Abubakar, B. Z., Ango, A. K., & Buhari, U. (2009). The roles of mass media in disseminating agricultural information to farmers in Birnin Kebbi Local Government Area of Kebbi State, Nigeria: A case study of state Fadama II development project. *Journal of Agricultural Extension, 13* (2), 4–5 Retrieved September 4, 2013 from http://www.ajol.info/

Achia, R. (2002). Rural women's access to agricultural information in Uganda. *African Gender Institute Newsletter 4*, 11. Retrieved May 5, 2013 from http://www.irfd.org/events /wf2003/cc/papers/papersafrica/R19.pdf

Adams, M. E. (1982). *Agricultural extension in developing countries*. Singapore: Longman Group Ltd,




Digitized by UCC, Library

Adesiina, A. A., & Baidu-Forson, J. (1995). Farmers' perceptions and adoption of new agricultural technology: Evidence from analysis in Burkina Faso and Guinea. *West Africa Journal of Agricultural Economics*, *13*, 1–9.

Adesope, O. M., Asiabaka, C. C., & Agumagu, A. C. (2007). Effect of personal characteristics of extension managers and supervisors on information technology needs in the Niger Delta Area of Nigeria. *International Journal of Education and Development. 3* (2), 4–15.

Adewuyi, D. (2008, October 6-7). *African Scholars publishing in American Online Journals: An Empirical Analysis by an Editor.* Paper presented at the Conference on Electronic Publishing and Dissemination, Dakar, Senegal. Retrieved April 5, 2013 from http://www.codesria.org/IMG/pdf/04_David_A-_Adewuyi-2.pdf

Agbamu, J. U. (2006). *Essentials of agricultural communication in Nigeria*. Lagos: Malthouse Press Limited.

Agboola, A. T. (2000). Rural information supply and Nigerian agricultural libraries. *Rural libraries, 20* (2), 29–37.

Agresti, A., & Finlay, B. (2008). *Statistical methods for the social sciences (4th ed.).* Toronto: Prentice Hall

Agwu, A. E., Ekwueme, J. N., & Anyanwu, A. C. (2008). Adoption of improved agricultural technologies disseminated via radio farmer programme by farmers in Enugu State, Nigeria. *African Journal of Biotechnology, 7*(9), 1277–1286.

Aina, L. (1995). Information in agriculture. In L. O. Aina, A. Kaniki, & J. B. Ojiambo (Eds.), *Agricultural Information in Africa,* (pp.1-11). Ibadan: Third World Information Services.



Digitized by UCC, Library

Aina, L. O. (1990). Informing African farmers: Some obstacles to information flow. *Information Development (UK), 6* (4), 201–203

Aina, L. O. (20-24 August, 2006). *Information provision to farmers in Africa: The library-extension service linkage.* Paper presented at World Library and Information Congress: 72nd IFLA General Conference and Council, Seoul, Korea. Retrieved June 8, 2013 from http://www.ifla.org/IV/ifla72/index.htm

Aina, L. O. (2006). *Information provision to farmers in Africa: The library extension service linkage.* Paper presented at World Library and Information Congress: 72nd IFLA General Conference and Council 20–24 August 2006, Seoul, Korea. Retrieved June 8, 2013 from http://www.ifla.org/IV/ifla72/index.htm

Aina, L. O., & Dulle, F. W. (1999). Meeting the information needs of small-scale dairy farmers in Tanzania. *The International Association of Agricultural Librarians and Documentalists*, *44* (3/4), 173–176.

Akanni, K. A., & Dada, A. O. (2012). Analysis of labour-use patterns among small-holder cocoa farmers in South Western Nigeria. *Journal of Agricultural Science and Technology*, *2*, 107–111.

Akudugu, M. A., Guo, E., & Dadzie, S. K. (2012). Adoption of modern agricultural production technologies by farm households in Ghana: What factors influence their decisions? *Journal of Biology, Agriculture and Healthcare*, *2* (3), 2–3. Retrieved May 23, 2013 from www.iiste.org.

Amin, F. D. K. (2011). Factors affecting rural household farm labour supply in farming communities of South Africa. *Journal of Human Ecology*, *34* (1), 23–28.



Digitized by UCC, Library

Amin, M. R., Adhikary, M. M., Ahmed, M. B., & Kashem, M. A. (2013). Effectiveness of radio programme in the dissemination of agricultural information as perceived by the farmers of Sadar Upazila under Sylhet District of Bangladesh. *Research Journal of Agricultural Sciences, 4* (4), 507–512

Ani, A. O. (2001, September 4-5). *The essence of monitoring and evaluation in extension delivery*. Paper presented at a training workshop on Extension Communication for Agricultural Development Projects, Sokoto, Nigeria.

Ani, A. O., Ogunbamerun, B. O., & Undiandeye, U. C. (2008). Factors affecting adoption of agricultural technology. In B. O. Ogunbamerun, U. C. Undiandeye & A. O. Ani (Eds.), *Agricultural extension methodologies*. (pp 45-50). Ibadan, Nigeria: Loud Books Publishers.

Arbab, F., & Prager, M. (1991). An approach to promoting tree growing in Africa: The World Neighbors experience in northern Ghana. In B. Haverkort, J. Van de Kamp, & A. Waters-Bayer, (Eds.), *Joining farmers' experiments: Experiences in participatory technology development,* (pp 65–70). London: Intermediate Technology Publications

Aryeetey, E. (2004). *Household asset choice among the rural poor in Ghana*. Proceedings of workshop for the Project on Understanding Poverty in Ghana. Institute of Statistical, Social and Economic Research (ISSER). Legon: University of Ghana. Legon.

Asante, M. S., & Seepersad, J. (1992). Factors influencing the adoption of recommended practices by cocoa farmers in Ghana. *Journal of Extension Systems*, *8* (1), 2–6.



Digitized by UCC, Library

Asante-Mensah, S. (1988). *The adoption of recommended practices by cocoa farmers: The Ghana cocoa rehabilitation programme*. (Unpublished MPhil Thesis) The University of West Indices. St. Augustine. Trinidad and Tobago.

Ayivor, J. S., & Ekpe, E. (2013). Community-Based integrated natural resource management in Okyeman Traditional Area of the Eastern Region, Ghana: Socio-economic profile of the Okyeman Traditional Area. *West African Journal of Applied Ecology, 20*(3), 3–6. Retrieved May 22, 2013 from http://www.ajol.info/index.php/wajae/article/view/86337/76162

Asenso-Okyere, K., & Mekonnen, D. A. (2012, August 13-14). *The importance of ICTs in the provision of information for improving agricultural productivity and rural incomes in Africa.* Paper presented at the United Nations Development Programme Conference on ICTs in agricultural information provision to farmers. Nairobi, Kenya. Retrieved May 23, 2013 from http://www.undp.org/content/dam/

Asiabaka, C. C., & Owens, M. (2002). *Determinants of adoptive behaviors of rural farmers in Nigeria*. Proceedings of the 18th Annual Conference of Association for International Agricultural and Extension Education *(AIAEE)*. Durban, South Africa.

Asogwa, B. C., Ezihe, J. A. C., & Ogebe, F. O. (2012). Agricultural marketing information usage among soybean farmers in Nigeria. *International Journal of Innovation and Applied Studies, 1* (2), 160–170

Baidu-Forson, J. (1999). Factors influencing adoption of land-enhancing technology in the Sahel: Lessons from a case study in Niger. *Journal of Agricultural Economics, 20*, 231–239.



Digitized by UCC, Library

Bala, B., & Sharma, S. D. (Eds). (2008). *Information technology in agriculture*. (2nd ed ). South Melbourne, Australia: Thomson

Bilonkwamanagara, M. F. (2008). *Role of informal agricultural information dissemination networks in poverty alleviation in Njombe District, Tanzania*. (Unpublished M.A. Thesis), Sokoine University of Agriculture, Tanzania.

Boahene, K., Snijders, T. A. B., & Folmer, H. (1999). An integrated socio economic analysis of innovation *Journal of Policy Modeling, 21* (2), 167-184.

Bogunjoko, J. O. (2003). Sources of information on improved farm practices. A study of farmers in Giwa District of Kaduna state, Nigeria. *The Nigeria Journal of Agricultural Extension, 7*(2), 153.

Bolarinwa, K. K., & Fakoya, E. O. (2011). Impact of farm credit on farmers' socio-economic status in Ogun State, Nigeria. *Journal of Social Science, 26* (1), 67–71. Retrieved April 12, 2013 from http://www.krepublishers.com/02Journals/

Bond, R., Kapondarngaga, P. H., & Ragubendra, P. S. (2003, November, 24–25). *Monitoring the livelihood platform:* Paper presented at the New Directions in Impact Assessment for Development: Methods and Practice Conference, University of Manchester.

Bonye, S. Z., Kpieta, B. A., & Seidu, J. G. (2012). Promoting community-based extension agents as an alternative approach to formal agricultural extension service delivery in Northern Ghana. *Asian Journal of Agriculture and Rural Development, 2*(1), 76–95.Retrieved May 20, 2013 from http://www.aessweb.com/pdf-files/%2810%2928-ajard%5B1%5D.pdf



Digitized by UCC, Library

Cartmell, D. D., Orr, C. L., & Kelemen, D. B. (2004). *Methods of information dissemination to limited-scale land owners*. (25th ed.), Edinburgh, Scotland: Elsevier.

Caswell, M., Fuglie, K., Ingram, C., Jans S., & Kascak, C. (2001). *Adoption of Agricultural production practices* (12th ed.) *Australia:* Wadsworth Cengage learning

Chatman, E. (1983). The diffusion of information among the working poor. *Dissertation abstracts international*, *44* (8) 7–8. Retrieved April 10, 2013 from http://faculty.washington.edu/harryb/courses/INFO310/Chatman.pdf

Chaudhary, K. M. (2006). *Analysis of alternative extension approaches to technology dissemination and its utilization for sustainable agricultural development in the Punjab, Pakistan*. Ph.D. thesis, University of Agriculture, Faisalabad, Pakistan. Retrieved April 3, 2013 from prints.hec.gov.pk/2800/.

Cotlear, D. (1990). The effects of education on farm productivity. In K. Griffin & J. Knight (Eds.), *Human development and the international development strategy for the 1990s*. London: MacMillan

Daku, L. (2002). *Assessing farm-level and aggregate economic impacts of olive integrated pest management programs in Albania*. (Doctoral dissertation), Virginia Polytechnic Institute and State University, Virginia.

Dankwa, J. B. (2002). *Factors affecting the adoption levels of cocoa technologies in the Ashanti Region of Ghana*. (Unpublished Master's thesis), University of Cape Coast, Cape Coast, Ghana.



Digitized by UCC, Library

Daudu, S., Chado, S. S., & Igbashal, A. A. (2009). Agricultural information sources utilized by farmers in Benue State, Nigeria. *Production Agriculture and Technology Journal*, *5*(1), 39–48. Retrieved 13 April 2013 from http://patnsukjournal.net/Vol5No1/p5.pdf

Dawson, P. (1984). Labour on the family farm: A theory and some policy implications. *Journal of Agricultural Economics* 35 (1) 1–19. Retrieved 15 April, 2013 from http://onlinelibrary.wiley.com

De Leeuw, P. N., Mc Dermott, J. J., & Lebbie, S. H. B. (1995). Monitoring of livestock health and production in Sub-Saharan Africa. *Preventive Veterinary Medicine*, *25*, 195 – 212. Retrieved April 9, 2013 from http://www.sciencedirect.com/science/article/pii/0167587795005471

Demiryurek, K. (2010). Information systems and communication networks for agriculture and rural people. *Agricultural Economics – Czech*, *56* (5), 209–214. Retrieved April 13, 2013 from http://www.agriculturejournals.cz/publicFiles/21266.pdf

Demiryurek, K., Erdem, H., Ceyhan, V., Atasever, S., & Mayıs, O. U. O. (2008). Agricultural information systems and communication networks: The case of dairy farmers in the Samsun province of Turkey. *Information Research*, *13* (2). Retrieved March 13 from http://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/5731/agricultural%20information%20systems.pdf?sequence=1

Developing Countries Farm Radio Network (2004). *Annual report*. 35, 4-5 Retrieved April10, 2013 from http://www.fao.org/documents/showcdr.asp?url_file



Digitized by UCC, Library

Djojomartono, M., & Pertini, S. (1998). Present status of information technology utilization in Indonesian agriculture. Bogor: *The Asian Federation for Information Technology in Agriculture, 12* (3), 5–6. Retrieved April 12, 2013 from http://www.afita.org/files/web_structure/

Doss, C. R., & Morris, M. L. (2001). How does gender affect the adoption of agricultural innovations? The case of improved maize technology in Ghana. *Agricultural Economics, 25*, 27 – 39.

Durutan, N. (1999). *Agricultural extension for women*. Washington DC: The World Bank. Retrieved May 7, 2013 from http://ressources.ciheam.org/om/pdf/c02-

Dutta, R. (2009). Information needs and information-seeking behaviour in developing countries: A review of the research. *The International Information & Library Review*, *41* (1), 44–51.

Edeoghon, C. O., & Ajayi, M. T. (2009). An assessment of agricultural enterprises owned by women farmers in Ikpoba-Okha local government, Edo State, Nigeria. *Global Journal of Agricultural Sciences, 8* (2), 6–7. Retrieved April 16, 2013 from http://www.globaljournalseries.com/

Ehler, L. E., & Bottrell, D. G. (2000). *The illusion of integrated pest management. Issues in science and technology.* New York, NY: Bell and Howell.

Ekoja, I, (2003). Farmers' access to agricultural information in Nigeria. *Bulletin of the American Society for Information Science and Technology*, *29* (6), 21–23. Retrieved April 17, 2013 from onlinelibrary.wiley.com/doi/10.1002/bult.293/pdf



Digitized by UCC, Library

Ekoja, I. I. (2004). Sensitizing users for increased information use: The case of Nigerian farmers. *African Journal of Library, Archives and Information Science, 14* (2), 193 – 204.

Ekong, E. E. (2003). *An Introduction to rural sociology* (2nd ed.). New York, NY: McGraw-Hill

Ellen, D. (2003) Telecenters and the provision of community based access to electronic information in everyday life in UK. *Information Research, 8* (2), 146. Retrieved April 17, 2013 from http://informationr.net/ir/8-2/paper146.html

Emenyeonu, B. N. (1987). Communication and adoption of agricultural innovations: Quantifications and notes towards a conceptual model. *Africa Media Review,* 1 & 2 (2), 3-5.

Esman, M. J. (2004). *An introduction to ethnic conflict*. Cambridge: Polity Press.

Etonihu, K. I., Rahman, S. A., & Usman, S. (2013). Determinants of access to agricultural credit among crop farmers in a farming community of Nasarawa State, Nigeria. *Journal of Development and Agricultural Economics, 5* (5), 192 – 196. Retrieved April 13, 2013 from http://www.academicjournals.org

FAO (1998,September 4-6). *Training for agricultural and rural development: Extension Education Reshaping African Universities and Colleges for 21st Century.* Workshop proceedings on Bringing African Universities and Colleges more into Agricultural Development, Accra,.

FAO (2001). *Agricultural and rural extension worldwide. Options for institutional reforms in the developing countries*. Rome: FAO Regional Office, Ghana.



Digitized by UCC, Library

Fariha, R. (2011). *Development of a strategy to enhance the role of print media in the dissemination of agricultural information among farmers in the Punjab, Pakistan.* (Doctoral thesis), University of Agriculture, Faisalabad, Pakistan. Retrieved May 20, 2013 from eprints.hec.gov.pk/7257/.

Fasina, O. O. (2013). Farmers' perception of the effect of aging on their agricultural activities in Ondo State, Nigeria. *The Belogradchik Journal for Local History, Cultural Heritage and Folk Studies*, *4*(3), 5. Retrieved April 3, 2013 from http://www.venets.org/getfile.php?id=164

Feder, G., & Slade, R. (1984). The acquisition of information and the adoption of new technology. *American Journal of Agricultural Economics, 66,* 312 – 320.

Flores, I. M. (2004). *Rural development and food security in West Africa.* London: Sage Publications.

Folarin, B. (1990) Broadcasting for rural development. In B. Oso & L. Adebayo (Eds.), *Communication and Rural Development in Nigeria* (pp.74-90). Abeokuta, Nigeria: Millennium Investments Ltd.

Gabre-Madhin, E. Z., & Haggblade S. (2001). Success in African agriculture: Results of an expert survey. Washington DC: International Food Policy Research Institute.

Gamble, T. K., & Gamble, M. (2002). *Communication works* (7th ed.). New York: McGraw-Hill/Irwin.

Gebremedhin, B., & Swinton, S. (2001). Reconciling food-for-work project feasibility with food aid targeting in Tigray, Ethiopia. *Food Policy, 26,* 85–95. Retrieved April 12, 2013 from www.sciencedirect.com/science/article/



Digitized by UCC, Library

Geta, E., Dadi, L., & Adugna, T. (2005). Adoption and improved sweet potato verities in Boloso Sore Woreda. *Ethiopian Journal of Development of Research, 27* (1), 25 – 55. Retrieved April 18, 2013 from http://www.ajol.info/index.php/ejdr/

Ghana-QAS (2010). *Question and answer service for rural development*. Accra: CSIR-INSTI.

Gitonga, J., Gathambiri, C., Kamau, M., Njuguna, K., Muchui, M., Gatambia, E. & Kiiru, S. (2006). Enhancing small-scale farmers' income in mango processing through agro processing and improved access to markets. *African Journal of Horticulture Science, 6* (1), 1–16.

Gocowski, J., & Oduwole, S. (2013). *Sector of southwest Nigeria with special focus on the role of children*. Ibadan, Nigeria: Monograph, IITA.

Green, D. A. G., & Ng'ong'ola D. H. (1993). Factors affecting fertilizer adoption in less developed countries: An application of multivariate logistic analysis in Malawi. *Journal of Agricultural Economics, 44* (1), 99 – 109.

Habtemariam, A. (2004). *The comparative influence of intervening variable in the adoption of maize and dairy farmers in Shashemene and Debrezieit, Ethiopia*. (Doctoral thesis), University of Pretoria, South Africa. Retrieved April 18, 2013 from http://www.upetd.up.ac.za/thesis/submitted/trash/etd-05262005oofronf.pdf

Hambly-Odame, H., & Kassam, A. (2002). Listening to stakeholders: Agricultural research and rural radio linkages. *Information Worldwide, 45*. (2), 3-4

Harper, J. K., Rister, M. E., Mjelde, J. W., Drees, B. M., & Way, M. O. (1990). Factors influencing the adoption of insect management technology. *American Journal of Agricultural Economics, 72* (4), 997–1005.



Digitized by UCC, Library

Harris, P. J. C., Browne, A. W., Barrett, H. R., & Cadoret, K. (2001). Facilitating the inclusion of the resource-poor in organic production and trade: Opportunities and constraints posed by certification. *Pakistan Journal of Agricultural Science*. 41(3-4):158-161.

Hassan, M. S., Shaffril, H. A. M., Ali, M. S. S., & Ramli, N. S. (2010). Agriculture agency, mass media and farmers: A combination for creating knowledgeable agriculture community. *African Journal of Agricultural Research*, 5 (24), 3500–3523. Retrieved from http://www.academicjournals.org/ajar/PDF

Ikoja-Odongo, J. R. (2008). *Strengthening women farmers' information networks to contribute to the millennium development goals*. Retrieved May 10, 2013 from http://www.referenceglobal.com/.

Ilboudo, J. P. (2000). Prospects for rural radio in Africa. In R. Fardon & F. Graham (Eds.), *African Broadcast Cultures: Radio in Transition* (pp. 42–71). Connecticut: Praeger Publications.

Imberti, P. (2007). Who resides behind the words? Exploring and understanding the language experience of the non-English speaking immigrant. *Familiesin Society*, *88* (1), 67 –73.

International Institute for Communication and Development (2006). *ICTs for agricultural livelihoods: Impact and lessons learned from IICD supported activities.* Retrieved April 23, 2013 from http://www.iicd.org/articles/booklet-impact-agric

ISSER (2013). The s*tate of the Ghanaian economy in 2012.* Accra: Institute of Statistical, Social & Economic Research, University of Ghana.



Digitized by UCC, Library

Kalusopa, T. (2005). The challenges of utilizing information communication technologies (ICTs) for the small-scale farmers in Zambia. *Library High Technology, 23* (3), 414 – 424. Retrieved April 25, 2013 from www.emeraldinsight.com/journals

Kantumaya, A. C. (1992). Public libraries and community information services in Africa. *African Journal of Archives and Information Science, 2* (1), 33 – 38.

Kasenge, V. (1998). Socio-economic factors influencing the level of soil management practices on fragile land. *Journal of International Agriculture and Extension Education 4* (2). 87 – 94.

Katungi, E. (2006). Gender, social capital and information exchange in rural Uganda. *Quarterly Bulletin of IAALD, 34*(1):23-26.

Kaye, D. (1995). The importance of information. *Library Management, 16* (5), 6 – 25. Retrieved on May 20, 2014 from http://www.emeraldinsight.com/

Khan, S. A. (2005). Introduction to extension education. In R. A. Memon, & E. Bashir (Eds.), *Extension Methods* (3rd ed.). Islamabad: National Book Foundation.

Kumi, J. A. (2003). *Factors affecting attitudes of cocoa farmers towards replanting of cocoa in the Kwaebibirem District of the Eastern Region, Ghana.* Unpublished Doctoral thesis, University of Cape Coast, Cape Coast, Ghana.

Kuponiyi, F. A. (2000). Mass media in agricultural development: The use of radio by farmers of Akinyele Local Government Area of Oyo State, Nigeria. *Nigeria Agricultural Development Studies, 1* (1), 26 – 32. Retrieved April 25, 2013 from www.sciencedomain.org/download.php?f=1366697198...pdf&aid

La-Anyane, S. (1985). *Economics of agricultural development in tropical Africa*. London: John Wiley.



Digitized by UCC, Library

Lee, M. K. O. (1996). Information access behaviour and expectation of quality: Two factors affecting the satisfaction of users of clinical hospital information systems. *Journal of Information Science, 22* (3), 171 – 199. Retrieved April 18, 2013 from www.academia.edu/

Lewis, G. A. (1997). *Leadership products as innovations in context of Rogers Diffusion Theory.* (Doctoral dissertation), Virginia Polytechnic Institute and State University. Retrieved April 13, 2013 from http://scholar.lib.vt.edu/theses

Lwoga, E. T. (2010). Bridging the agricultural knowledge and information divide: The case of selected telecenters and rural radio in Tanzania. *The Electronic Journal of Information Systems in Developing Countrie*s, *43* (6), 1–14. Retrieved April 16, 2013 from https://www.ejisdc.org/ojs2/index.php/ejisdc/article/

Malhan, I. V., & Rao, S. (2007). Impact of globalization and emerging information communication technologies on agricultural knowledge transfer to small farmers in India. *World Library 4* (2), 4-6

Manyong, V. M., Ikpi, A., Olayemi, J.K., Yusuf, S. A., Omonona, B. T., Okoruwa, V., & Idachaba, F. S. (2005). *Agriculture in Nigeria: Identifying opportunities for increased commercialization and investment*. Ibadan: IITA. Retrieved April 12, 2013 from http://old.iita.org/cms/articlefiles/92-Agric%20in%20Nigeriareport.pdf

Masuki, K. F., Kamugisha, R., Mowo, J. G., Tanui, J., Tukahirwa, J., Mogoi, J., & Adera, E. O. (2010). Role of mobile phones in improving communication and information delivery for agricultural development. *Journalism Quarterly, 63* (3), 451-462.



Digitized by UCC, Library

Materu-Behtsa, M. (2004). Information support for gender and development issues. In A. Njau & T. Mruma (Eds.), Gender and development in Tanzania: Past, present and future. *Sarhad Journal of Agriculture. 20* (1):169-173.

Matovelo, D. S. (2008). *Enhancing farmers' access to and use of agricultural information for empowerment and improved livelihood*. (Unpublished Doctoral Dissertation), University of Dar es Salaam, Tanzania.

Mbozi, P. (2002). Ground up: Facilitating networking and sharing in sub-Saharan Africa. *LEISA,18* (2),13-15. Retrieved May 20, 2013 from http://subscriptions.leisa.info/.

Mbwana, S. (1994). Barriers to information flow to farmers in Tanzania. *Indian Journal of Agricultural Sciences, 78* (9), 737 – 747.

Mchombu, K. J. (1993). *Information needs and seeking patterns of rural people's development in Africa.* Gaborone, IDRC/ University of Botswana

Mchombu, K. J. (2000). Measuring the impact of information on rural Development. *International Journal of Education and Development using Information and Communication Technology, 2*(1), 79-94.

Mchombu, K. J. (2003) Information dissemination for development: An impact study. *Information Development, 19* (3), 111 – 126.

McNamara, K. T., Wetzstein M. E., & Douce, G. K. (1991). Factors affecting peanut producer adoption of integrated pest management. *Review of Agricultural Economics, 13*, 129 – 139.

Meitei, S., & Devi, T. P. (2009). Farmers' information needs in rural Manipur: An assessment. *Annals of Library and Information Studies, 56* (1), 35 – 40. Retrieved April 12, 2013 from http://nopr.niscair.res.in/handle/123456789/4165



Digitized by UCC, Library

Mgbada, J. U. (2006). Effectiveness of information sources on improved farming practices to women farmers in Enugu state, Nigeria. *Global Approaches to Extension Practice, 2* (1), 67–78. Retrieved May 23, 2013 from http://www.ajol.info/index.php/gaep/article/view/34952

Michael, L. (1982). Information and farmers' needs in agriculture. *Information Development Bulletin,* 3(5), 3-5

Ministry of Food and Agriculture (2010). Agriculture in Ghana: Facts and figures. Retrieved 6 July, 2013 from http://mofa.gov.gh/site/wp-content/uploads.pdf

Ministry of Food and Agriculture (2011). *Agricultural extension approaches being implemented in Ghana*. Directorate of Agricultural Extension Services. Retrieved 6 July, 2013 from http://mofa.gov.gh/site/wp-content/uploads.pdf

Ministry of Local Government/Rural Development (2013). *Ghana districts.* Environment & Maks Publications & Media Services. Retrieved June 3, 2013 from http://www.ghanadistricts.com/region

Mittal, S., & Tripathi, G. (2009). Role of mobile phone technology in improving small farm productivity. *Agricultural Economics Research Review*, 22, 451–459. Retrieved April 19, 2013 from http://ageconsearch.umn.edu/handle/57502

Mntambo, B. D. (2007). *Socio-economic, institutional and behavioural determinants of accessibility and utilization of agricultural information by women farmers in Korogwe District*. (Master of Arts Dissertation),Sokoine University of Agriculture, Tanzania. Retrieved April 29, 2013 from www.suanet.ac.tz/.



Digitized by UCC, Library

Mohammad, R. N., & Hassan, S. B. (2011). The role of television in the enhancement of farmers' agricultural knowledge. *African Journal of Agricultural Research, 6* (4), 931–936.

Momodu, M. O. (2002). Information needs and information seeking behaviour of rural dwellers in Nigeria: A case study of Ekpoma in Esan West Local Government Area of Edo State, Nigeria. *Library Review Journal, 51* (8), 406 – 410. Retrieved April 10, 2013 from www.emeraldinsight.com/journals.htm?articleid=859703&

Morrow, K., Nielsen, F., & Wettasinha, C. (2002). Changing information flows. *LEISA*, *18* (2), 4–5. Retrieved 10 May 2013 from www.digitalcommons.unl.edu

Morton, J., & Matthewman, R. (1996). Improving livestock products through extension. *The Journal of Animal & Plant Sciences, 19*(2), 94 – 97.

Mtega, W. P. (2012). Access to and usage of information among rural communities: A case study of Kilosa District, Morogoro Region, in Tanzania. *The Canadian Journal of Library and Information Practice and Research, 7* (1), 3–4. Retrieved July 19, 2013 from https://journal.lib.uoguelph.ca/index.

Muhammad, S. (2005). *Agricultural extension: Strategies and skills*. Faisalabad, Unitech Communications.

Muhammad, S., & Gerforth, C. (1995). Farmers' information exposure and its impact on their adoption behaviour pattern. *Pakistan Journal of Agricultural Science*, 32, 262 – 265.

Munyua, H. (2000). *Information and communication technologies for rural development and food security: Lessons from field experiences in developing countries*. Retrieved July 19, 2013 from http://www/fao.org/sd/CD / Cdre00556.htm



Digitized by UCC, Library

Naidoo, S., London, L., Burdorf, A., Naidoo, R., & Kromhout, H. (2008). Agricultural activities, pesticides use and occupational hazards among women working in small-scale farming in northern KwaZulu-Natal, South Africa, *International Journal of Occupational and Environmental Health*, *14* (3), 218–224.

Nakabugu, S. B. (2001). The role of rural radio in agricultural and rural development in Uganda. *Communications of the International Information Management Association (IIMA), 9*(2), 101 – 120.

Nath, V. (2001). Empowerment and governance through information and communication technologies: Women's perspective. *International Information & Library Review, 33,* 317 – 339.

Ndahitsa, M. A. (2008). .Impact of small-scale irrigation technologies on crop production by Fadama users in Niger State. *Technological Forecasting & Social Change, 74* (4), 491 – 518.

Nelson, N. (1981). *African women in the development landscape*. London: Case and Company Ltd.

Neuman, W. L. (2003). *Social research method: Qualitative and quantitative approaches* (6th ed.). Boston: McGraw-Hill.

Nisha, M. (2006). *Understanding extension education*. New Delhi: Kalpaz Publications.

Nwachukwu, I. (2003). *Agricultural communication principles and practice*. Umuahia: Lamp House Publishers.

Nwaru, J. C. (2004). Rural credit market and resource use in arable crop production in Imo State of Nigeria. *Agricultural Economics Research Review, 22* (2), 451 – 459.



Digitized by UCC, Library

Nwaru, J. C. (2010). Credit use and technical change in smallholder food crop production in Imo State of Nigeria. *New York Science Journal, 3* (11).Retrieved April 23, 2013 from http://www.sciencepub.net

Nwaru, J. C., Onyenweaku C. E., & Nwosu, A. C. (2006). Relative technical efficiency of credit and non-credit user crop farmers. .*African Crop Science Journal, 14* (3), 241 – 251.

Nxumalo, K. K. S., & Antwi, M. A. (2013). Impact of proactive land acquisition strategy on physical capital livelihood of beneficiaries in Dr. Kenneth Kaunda District, South Africa. *Journal of Human Ecology*, *44*(2), 161 – 169. Retrieved March 24, 2013 from http://www.krepublishers.com/02-Journals/

Nyakuni, A. (2001). *ULAMP extension approach*. Nairobi: Regional Land Management Unit.

Nyareza, S., & Archie L. D. (2012). Use of community radio to communicate agricultural information to Zimbabwe's peasant farmers. *Journal of Extension Education, 5* (3): 912-914.

Obinne, C. P. O. (1991). Adoption of improved cassava production technologies by small farmers in Bendel State, Nigeria. *African Journal of Biotechnology, 7* (9), 1227–1286. Retrieved April 12, 2013 from http://www.academicjournals.org/

Obinne, C. P. O. (1995). Adoption of improved cassava production technologies by small scale farmers in Bendel State. *Journal of Agricultural Science and Technology, 1* (1), 12–15.

Obwona, M. (2002). Determinants of technical efficiency amongst small and medium scale farmers in Uganda: A case of tobacco growers. *Economic Policy Research*



Digitized by UCC, Library

*Centre (EPRC) Uganda*, 19-24. Retrieved April 14, 2013 from http://dspace.cigilibrary.org

Ochieng, R. (1999). Rural women and information in Uganda. *Quarterly Bulletin of the International Association of Agricultural Information Specialists:* IAALD/CABI 40(1):15 – 20.

Odoemenem, I. U., & Obinne, C. P. O. (2010). Assessing the factors influencing the utilization of improved cereal crop production technologies by small scale farmers in Nigeria. *Indian Journal of Science and Technology 3* (1), 4. Retrieved April 14, 2013 from http://www.indjst.org/

Ofori, R. & Dampson G. D. (2011). *Research methods and statistics using SPSS*. Kumasi Payless publication limited, Ghana.

Ofuoku, A. N., Emah, G. N., & Itedjere, B. E. (2008). Information utilization among rural fish farmers in central agricultural zone of Delta State, Nigeria. *World Journal of Agricultural Science, 4* (5), 558 – 564.

Ogunbameru, B. O. (2001, Oct. 8). Practical agricultural communication. *Daily Graphics, Nigeria,* (No. 12010), p.6.

Ogunlade, I. (2007). Backyard fish farmer' information needs in Osun Sate, Nigeria *Journal of Agricultural Extension Education. 11*(1): 81-89.

Okoye, A. A. (1988). Factors affecting adoption process by farmers in selected Local Government Areas of Anambra State. *Nigeria Agricultural Journal*, 24, 19–20.

Okunade, E. O. (2006). Factors influencing adoption of improved farm practices among women farmers in Osun State, Nigeria. *Journal of Human Ecology, 19* (1), 45 –



Digitized by UCC, Library

49. Retrieved April 17, 2013 from http://www.krepublishers.com/02-Journals/JHE

Okunade, E. O. (2007). Effectiveness of extension teaching methods in acquiring knowledge, skill and attitude by women farmers in Osun State. *Journal of Applied Science Research, 3*(4), 282-286. Retrieved April 18, 2013 from http://www.aensiweb.com

Okuneye, P. A. (2000). Employment generating potentials of agricultural processing and storage technology *African Journal of Biotechnology,. 7* (9), 1277-1286,

Okwu, O. J., Kaku, A. A., & Aba, J. I. (2007). An assessment of the use of radio in agricultural information dissemination: A case study of Radio Benue in Nigeria. *African Journal of Agricultural Research, 2* (1), 14 – 19. Retrieved April 20, 2013 from http://www.academicjournals.org/article/

Oladosu, I. O., & Okunade, E. O. (2006). Perception of village extension agents in disseminating agricultural information in Oyo Agricultural Zone of Oyo-State. *Journal Social Science, 12* (3), 187 – 191.

Olaleye, R. S., Gana, F. S., Umar, I. S., Ndanisa, M. A., & Peter, E. W. (2009). Effectiveness of radio in the dissemination of agricultural information among farmers in Edu Local Government Area of Kwara State, Nigeria, *Continental Journal of Agricultural Science, 3* (1), 6 – 20.

Olayide, S. O. (1992). Nigerian small farmers: Problems and prospects in Zaria Radio Script writing and production. *World Development, 22* (9), 125- 138.

Olorunda, O., & Oyelude, A. (2003). Professional women's information needs in developing Countries: ICT as a catalyst. *Journal of Extension system.* 32-44.



Digitized by UCC, Library

Oluyole, K. A., & Lawal, J. O. (2010). Precision farm labour supply for effective cocoa production in Nigeria. *Research Journal of Applied Sciences, 5* (3), 19 –194

Oluyole, K. A., & Sanusi, R. A. (2009). Socio-economic variables and cocoa production in Cross River State, Nigeria. *Journal of Human Ecology, 25* (1), 5 – 8. Retrieved April 24, 2013 from http://www.krepublishers.com/02-Journals/

Opara, U. N. (2008). Agricultural information sources used by farmers in Imo State, Nigeria. *Information Development, 24* (4), 289–295. Retrieved April 16, 2013 from http://www.sagepub.com/content/24/4/289.full.pdf.

Opara, U. N. (2010). Personal and socio-economic determinants of agricultural information use by farmers in the Agricultural Development Programme (ADP) Zones of Imo State, Nigeria. *Library Philosophy and Practice, 3* (2), 3. Retrieved April 26, 2013 from Retrieved from http://www.webpages.uidaho.edu-mbolin

Osei, S. K., & Entsua-Mensh, C. (2003). Information needs of agricultural extension agents in Ghana. *Quarterly Bulletin of the International Association of Agricultural Information Specialists, 51* (2), 3–4.

Ostrom, E. (1990) *Governing the commons: The evolution of institutions for collective action.* Cambridge: Cambridge University Press.

Osuala, E. C. (2005). *Introduction to research methodology*. Yola: Paraclete Publishers.

Otuka, J. O., Azare, A., & Bamidele, O. (2004). *Educational research methods*. Ibadan: National Open University of Nigeria.

Overfield, D., & Fleming, E. (2001). A note on the influence of gender relations on the technical efficiency of smallholder coffee production in Papua New Guinea. *Journal of Agricultural Economics*, 2 (4),153–156.



Digitized by UCC, Library

Owusu-Antwi, G., & Antwi, J. (2010). The analysis of the rural credit market in Ghana. *International Business & Economics Research Journal, 9* (8), 45–56.

Ozowa, V. N. (1995). Information needs of small scale farmers in Africa: The Nigeria example. *Quarterly Bulletin of the International Association of Agricultural Information Specialists, 40* (1), 6. Retrieved April 27, 2013 from www.worldbank.org/html/cgiar/newsletter/june97/9nigeria.html

Pallant, J. (2001). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows* (Version 10). Crown Nest: Allen & Unwin.

Phiri, D., Franzel, S., Mafongoya, P., Jere, I., Katanga, R., & Phiri, S. (2004). Who is using the new technology? The association of wealth status and gender with the planting of improved tree fallows in Eastern Province, Zambia. *Agricultural Systems, 79* (4), 131–144. Retrieved May 20, 2013 from http://www.sciencedirect.com/science/article

Place, F., Kariuki, G., Wangila, J., Kristjanson, P., Makauki, A., & Ndubi, J. (2002). Assessing the factors underlying differences in group performance. *The Electronic Journal of Information Systems in Developing Countries*, *43*, 6, 1-14 Retrieved May 20, 2013 from http://www.ejisdc.org/ojs2/index.php/

Protz, M. (2002). Transforming agricultural communication technology. *American Journal of Scientific Research,* 16, 6-14. http://www.eurojournals.com/

Rehman, F. (2010). *Development of a strategy to enhance the role of print media in the dissemination of agricultural information among farmers' in the Punjab*. Pakistan. Retrieved May 20, 2013 from http://prr.hec.gov.pk/Thesis/845S.pdf

Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). New York, NY: The Free Press.

Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York, NY: The Free Press.



Digitized by UCC, Library

Ruben, R., & van der Berg, M. (2001). Non-farm employment and poverty alleviation of rural farm households in Honduras. *World Development, 29* (3),549–560. Retrieved February 23, 2013 from http://www.sciencedirect.com/science/article

Rwazo, A. J. M. (2007). Readers' forum: Small-scale farmers need information to reduce pesticides risks. *Southern Africa Pesticides Newsletter, 2* (1), 1–2. Retrieved from http://web.uct.ac.za/depts/oehru/dox/vol2issue1.pdf

Sadati, S. A., Hosain, S. F., Khalil, K., Yaser, M., & Asakere, F. (2010). Investigating effective factors on attitude of paddy growers towards organic farming: A case study in Babol County in Iran. *Research Journal of Applied Sciences, Engineering and Technology, 3* (4), 362–367

Sailaja, A., & Reddy, M. N. (2003). Changing needs of farm women in Agriculture. *MANAGE Extension Research Review*, 164–75.

Salifu, A., & Funk, R. (2012). *Farmer based organizations in Ghana – Ghana Strategy Support Programme (GSSP) Notes*. Retrieved April 12, 2013 from gssp.ifpri.info/files/2012/04/FBOs-in-Ghana.pdf

Scoones, I. (1998). *Sustainable rural livelihoods: A framework for analysis* (Working Paper 72). Sustainable Livelihoods Programme. Sussex: IDS.

Starasts, A. M. (2004). Battling the knowledge factor: A study of farmers information seeking learning. *Moor Journal of Agricultural Research, 4*, (1), 164-169, http://www.ajol.info/index.php/mjar/article/view/31771

Start D., & Craig J. (2001). Transformation, well-being and the State: Rural livelihood diversification in South Africa. *African Journal of Agricultural Research*, 5, (24), 3500-3513.http://www.academicjournals.org/ajar/PDF/pdf0al.pdf



Digitized by UCC, Library

Stefano, L. A., Hendriks S. L., Stilwell, C., & Morris, C. (2005). Printed information needs of small-scale organic farmers in KwaZulu-Natal. *Libri, 55*, 56–66. Retrieved June 10, 2013 from www.librijournal.org/pdf/2005-1pp56-66.pdf

Swanson, B. E. (1997). The changing role of extension in technology transfer. *Journal of International Agricultural and Extension Education, 4*(2), 87–94

Tadesse, D. (2008). *Access and utilization of agricultural information by resettler farming households: The case of Metema Woreda, North Gondar,* (MSc. Thesis), Haramaya University, Ethiopia. Retrieved April 23, 2013 from http://www.ipmsethiopia.org/content/files/Documents/publications/

The Technical Centre for Agricultural and Rural Cooperation (CTA) (2002). *Strengthening the information and communication management capacities of farmers.* Retrieved from http://www.agrita.org/icadd

Tiamiyu, S. A., Akintola, J. O., & Rahji, M. A. Y. (2009). Technology adoption and productivity difference among growers of new rice for Africa in Savanna Zone of Nigeria. *TROPICULTURA, 27*(4), 193–197. Retrieved June 23, 2013 from http://www.tropicultura.org/text/v27n4/193.pdf

Udo, R. (1978). *A comprehensive geography of West Africa*. Ibadan: Heinemann Education Books (Nigeria) Ltd.

van den Ban, A. W., & Hawkins, H. S. (2004). *Agricultural extension* (6th ed.). London: Blackwell Science Ltd.

Venkatesan, V. (1995, January 1-2). *The World Bank's experience with T & V in Africa: Issues for the future agricultural extension in Africa*. Conference proceedings of an International agricultural extension education, Yaoundé, Cameroon,



Digitized by UCC, Library

Walker, A. S. (2002). *A new tool to open access to information for rural women in Africa*. Retrieved March 11, 2013 from http://www.wougnet.org/

Waller, B. E., Hoy, C. W., Henderson, J. L., Stinner, B., & Welty, C. (1998). Matching innovations with potential users: A case study of potato IPM practices. *Agriculture, Ecosystems and Environment*, *70*, 203–215.

Woodhouse, P., Howlett, D., Bond, R., & Rigby, D. (2000). *Stakeholder analysis and local identification of indicators of the success and sustainability of farming based livelihood systems* Conference proceedings of New Zealand Association for cooperative education. (DFlD Project R7076CA). Retrieved on March 15, 2013 from www.http://les.man.ae.uk/ses/research

World Conference on Women (1995). The Beijing declaration and the Platform for Action on Women and Health. *Population and Development Review*, *21*(4), 907–913.

Yaron, D., Dinar, A., & Voet, H. (1992). Innovations on family farms: The Nazareth Region in Israel. *American Journal of Agricultural Economics*, 361–370.

Yemisi, I. O., & Aisha, A. M. (2009). Gender issues in agriculture and rural development in Nigeria: The role of women. *Humanity & Social Sciences Journal, 4* (1), 19–30.

Zijp, W. (1994). *Improving the transfer and use of agricultural information: A guide to information technology*. World Bank, Washington DC.

Zoheir, S. A., Hassan, S., & Bahaman, A. S. (2012). Gratification obtained from agricultural information disseminated through radio among Malaysian farmers.



Digitized by UCC, Library

*Journal of Basic and Applied Scientific Research, 2* (11), 11711–11716. Retrieved June 6, 2013 from http://www.textroad.com/pdf/JBASR

Zossou, E., Vodouhe, D. S., Van Mele, P., & Lebailly, P. (2012). *Linking farmers' access to rural radio, gender and livelihoods: Case study of rice processors in Benin*. Proceedings of the 3rd IAALD, Africa Chapter (pp104-116). Johannesburg, South Africa.



Digitized by UCC, Library

## APPENDIX A

## EFFECTS OF RADIO PEACE-COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH PROGRAMME OF AGRICULTURAL INFORMATION DISSEMINATION ON FARMERS IN CENTRAL REGION OF GHANA

The main purpose of this study is to examine the effect of the Council for Scientific and Industrial Research Radio Peace Programme on Dissemination of Agricultural Information on farmers in Central Region of Ghana**.** It is anticipated that the results would be useful to the Council for Scientific and Industrial Research (CSIR) to make decisions on how to improve the programme. This is part of requirement for award of MPhil. Degree in Agricultural Extension at the University of Cape Coast.

Please Note:

The information given would be used for the purpose it is provided only. Therefore, be sincere in expressing your opinions and suggestions as much as possible. Your confidentiality is assured.

**THANK YOU**



Digitized by UCC, Library

**STRUCTURED INTERVIEW SCHEDULE FOR FARMERS WHO LISTEN TO RADIO PEACE-CSIR PROGRAMME**

**A: Types of Farmers who patronize the CSIR Radio Peace programme**

1. District ……..
2. Town or village……
3. Sex : a. Male [ ] b. Female [ ]
4. Please indicate your age (Yrs) ----------
5. Kindly indicate your formal educational level by ticking (√) the appropriate box:
    a. Non formal education [ ]
    b. Primary school level [ ]
    c. Middle School/JHS [ ]
    d. Secondary school level [ ]
    e. Tertiary institution [ ]
    f. Other (Specify)……..
6. Marital Status: a. Married [ ] b. Single [ ] c. Widow [ ] d. Divorced [ ]
7. Status in society…….
8. Ethnicity…….
9. Household size:……
10. Number of Years in Farming……
11. Farm size: a. Before: Ha…….
    b. After: Ha: ……
12. Secondary occupation
    a. Farming [ ]
    b. Trading [ ]
    c. Civil Service (retired) [ ]
    d. Artisan [ ]
    e. Others (specify)……..
13. Major agricultural enterprises in which you are involved



Digitized by UCC, Library

a. Crop Production [ ]
b. Animal Production [ ]
c. Agricultural marketing [ ]
d. Agro Processing [ ]
e. Fishing [ ]
f. Any other, Please specify……..

14. Do you belong to any association in the community?

a. Yes [ ] b. No [ ]

15. What is your position in the group? ……...

16. What are your major sources of agricultural information? Tick [ √] as many as applicable

a. Radio [ ]
b. Co-farmers [ ]
c. Co-operative Society [ ]
d. Farmers' Forum [ ]
e. Workshop on Agriculture [ ]
f. Extension Agent [ ]
g. Friends [ ]
h. Family Relations [ ]
i. Any other, Please specify……..

17. Do you have access to credit facilities?

a. Yes [ ] b. No [ ]

18. What are your major sources of credit?

a. Rural Banks [ ]
b. Friends [ ]
c. Family members [ ]
d. Sale of assets [ ]
e. Money lenders [ ]
f. Own savings [ ]
g. Any other, please specify…….

19. Do you have access to labour in your community?



Digitized by UCC, Library

a. Yes [ ] b. No [ ]

20. What type of labour do you access in your community?

a. Family [ ] b. Communal [ ] c. Hired [ ] d. Mechanical [ ]

**B. Extent of use of information disseminated by CSIR Radio Peace programme**

21. Which of this information that you heard on CSIR radio Peace do you use? Please

Ticking [√] Yes or NO

22. Indicate whether you use the information "Before" the CSIR Radio programme or "After" by Ticking in the box [√]

23. Give a brief reason for your answers

| | **Usage** | | | | |
|---|---|---|---|---|---|
| **Information on Crop production** | **Yes** | **No** | **Before** | **After** | **Reason, briefly** |
| Handling of knapsack sprayer | | | | | |
| Safe handling of pesticides | | | | | |
| Selection of improved plant materials | | | | | |
| Spacing of crops planting dates | | | | | |
| Planting in rows | | | | | |
| Improved methods of Weed Control | | | | | |
| Control of crop pests | | | | | |
| Control of crop diseases | | | | | |
| Efficient Land preparations | | | | | |
| Mineral fertilizers usage | | | | | |
| Organic fertilizer usage | | | | | |



Digitized by UCC, Library

| | | | | | |
|---|---|---|---|---|---|
| Crop rotation practices | | | | | |
| Mulching/staking | | | | | |
| Burning crop residues | | | | | |
| Harvesting techniques | | | | | |
| Pruning in plantations | | | | | |
| Post harvest handling of crop produce | | | | | |
| Nursery management | | | | | |
| Transplanting of seedlings | | | | | |
| | | | | | |
| **Information on Animal production** | **Usage** | | | | **Reason, briefly** |
| | **Yes** | **No** | **Before** | **After** | |
| Sanitation in animal housing | | | | | |
| Housing farm animals | | | | | |
| Feeding farm animals | | | | | |
| Castration in farm animals | | | | | |
| Dehorning/hoof trimming in farm animals | | | | | |
| Animal breeding practices | | | | | |
| Animal health | | | | | |
| Control of animal diseases | | | | | |
| Pest control of farm animals | | | | | |
| Production of non- traditional animals | | | | | |
| | | | | | |



Digitized by UCC, Library

| | Usage | | | | |
|---|---|---|---|---|---|
| **Information on Agricultural Marketing** | **Yes** | **No** | **Before** | **After** | **Reason, Briefly** |
| Vegetable marketing | | | | | |
| Cereal marketing | | | | | |
| Root crop marketing | | | | | |
| Oil palm marketing | | | | | |
| Market information | | | | | |
| Input supply | | | | | |
| | | | | | |
| | **Usage** | | | | |
| **Information on Agro processing** | **Yes** | **No** | **Before** | **After** | **Reason, briefly** |
| Oil palm processing techniques | | | | | |
| Cassava processing techniques | | | | | |
| Vegetable processing techniques | | | | | |
| Hygiene at the work place | | | | | |
| | | | | | |
| **Information on Fishing** | **Yes** | **No** | **Before** | **After** | **Reason, briefly** |
| Fish pond construction | | | | | |
| Stocking of fish | | | | | |
| Feeding of fish in ponds | | | | | |



Digitized by UCC, Library

| | | | | | |
|---|---|---|---|---|---|
| Harvesting of fish in ponds | | | | | |
| Healthcare of fish | | | | | |
| Fish processing | | | | | |
| Sea fishing | | | | | |
| | | | | | |
| | **Usage** | | | | |
| **Information on Agricultural credit** | **Yes** | **No** | **Before** | **After** | **Reason, Briefly** |
| Formation of cooperatives | | | | | |
| Accessing loans from Financial Institutions | | | | | |
| Acquiring agricultural inputs | | | | | |
| Information on credit source | | | | | |

**C. Effects of Radio Peace - CSIR programme on Farmers livelihoods**

24. To what extent has Radio Peace-CSIR programme contributed to the following aspects of your life?

5. = Very High [VH], 4. = High [H], 3. = Moderately High [MH], 2. = Low [L], 1. = Very low [VL]. Please tick [√] the appropriate ratings in the table below using the above information

| **Livelihood Asset** | | **Ratings** | | | | |
|---|---|---|---|---|---|---|
| | | **VH** | **H** | **MH** | **L** | **VL** |
| **A** | **Natural capital** | 5 | 4 | 3 | 2 | 1 |
| a. | Access to Land | 5 | 4 | 3 | 2 | 1 |
| b. | Ownership of herds of cattle, goats, sheep | 5 | 4 | 3 | 2 | 1 |



Digitized by UCC, Library

| | | | | | | |
|---|---|---|---|---|---|---|
| c. | Ownership of Crop plantations-palm, cocoa, economic trees | 5 | 4 | 3 | 2 | 1 |
| | | | | | | |
| **B** | **Physical capital** | **5** | **4** | **3** | **2** | **1** |
| a. | Own a Knapsack sprayers | 5 | 4 | 3 | 2 | 1 |
| b. | Own a vehicle | 5 | 4 | 3 | 2 | 1 |
| c. | Corn mill | 5 | 4 | 3 | 2 | 1 |
| d. | Storage facility | 5 | 4 | 3 | 2 | 1 |
| e. | Renovated a house | 5 | 4 | 3 | 2 | 1 |
| | | | | | | |
| **C** | **Financial Capital** | **5** | **4** | **3** | **2** | **1** |
| a. | Increase in income levels | 5 | 4 | 3 | 2 | 1 |
| b. | Increase in saving levels | 5 | 4 | 3 | 2 | 1 |
| c. | Decrease in debt levels | 5 | 4 | 3 | 2 | 1 |
| d. | Access to credit facility | 5 | 4 | 3 | 2 | 1 |
| | | | | | | |
| **D** | **Human capital** | **5** | **4** | **3** | **2** | **1** |
| a. | Access to labour | 5 | 4 | 3 | 2 | 1 |
| b. | Access to knowledge- use of chemicals, application of fertilizer | 5 | 4 | 3 | 2 | 1 |
| c. | Access to information | 5 | 4 | 3 | 2 | 1 |
| | | | | | | |
| **E** | **Social Capital** | **5** | **4** | **3** | **2** | **1** |
| a. | Membership of association/group | 5 | 4 | 3 | 2 | 1 |
| b. | Support to other family members | 5 | 4 | 3 | 2 | 1 |
| c. | Ability to pay school fees | 5 | 4 | 3 | 2 | 1 |
| d. | Contribution to community development | 5 | 4 | 3 | 2 | 1 |



Digitized by UCC, Library

**D. Challenges faced by farmers and suggestions for improvement**

25. What are the challenges that you face when listening to the Radio Peace-CSIR programme? Please rate by ticking [√] as many as applicable

5. = Very serious challenge [VC], 4. = Serious challenge [SC], 3. = Challenge [C], 2. = Somehow a challenge [SHC], 1. = Not a serious challenge [NC]

| **Challenges** | | **Ratings** | | | | |
|---|---|---|---|---|---|---|
| | | **VSC** | **SC** | **C** | **SHC** | **NC** |
| | | **5** | **4** | **3** | **2** | **1** |
| **a.** | Time of presentation | 5 | 4 | 3 | 2 | 1 |
| **b.** | Form of presentation | 5 | 4 | 3 | 2 | 1 |
| **c.** | Poor reception of radio signals | 5 | 4 | 3 | | 1 |
| **d.** | Power outages | 5 | 4 | 3 | 2 | 1 |
| **e.** | Inappropriate scheduling of programme | 5 | 4 | 3 | 2 | 1 |
| **f.** | Irrelevant contents | 5 | 4 | 3 | 2 | 1 |
| **g.** | Innovation difficult/complicated to understand | 5 | 4 | 3 | 2 | 1 |
| **h.** | Inability to ask relevant question and get the feedback from the radio presenter | 5 | 4 | 3 | 2 | 1 |
| **i.** | Language used in presenting the programme is difficult | 5 | 4 | 3 | 2 | 1 |
| **j.** | Short duration of programme | 5 | 4 | 3 | 2 | 1 |
| **k.** | Lack of interest | 5 | 4 | 3 | 2 | 1 |
| **l.** | Other (State and rank)……. | 5 | 4 | 3 | 2 | 1 |



Digitized by UCC, Library

## APPENDIX B

## EFFECTS OF RADIO PEACE-COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH PROGRAMME OF AGRICULTURAL INFORMATION DISSEMINATION ON FARMERS IN CENTRAL REGION OF GHANA

The main purpose of this study is to examine the effect of the Radio Peace/ Council for Scientific and Industrial Research Programme on Dissemination of Agricultural Information in the Central Region of Ghana**.** It is anticipated that the results would be useful in assisting top management of the Council for Scientific and Industrial Research (CSIR) to make decisions on how to improve the programme. This is part of requirement for award of MPhil. Agricultural Extension at the University of Cape coast.

Please Note:

The information given would be used for the purpose it is provided only. Therefore, be sincere in expressing your opinions and suggestions as much as possible. Your confidentiality is assured.

**THANK YOU**



Digitized by UCC, Library

**STRUCTURED INTERVIEW SCHEDULE FOR FARMERS WHO DO NOT LISTEN TO RADIO PEACE-CSIR PROGRAMME**

**Demographic Characteristics of farmers**

1. District ……..

2. Town or village……

3. Sex : a. Male [ ] b. Female [ ]

4. Please indicate your age (Yrs) ----------

5. Kindly indicate your formal educational level by ticking (√) the appropriate box:

g. Non formal education [ ]
h. Primary school level [ ]
i. Middle School/JHS [ ]
j. Secondary school level [ ]
k. Tertiary institution [ ]
l. Other (Specify)……..

6. Marital Status: a. Married [ ] b. Single [ ] c. Widow [ ] d. Divorced [ ]

7. Status in society…….

8. Ethnicity…….

9. Household size:……

10. Number of Years in Farming……

11. Farm size in Ha: ……..

12. Primary occupation

f. Farming [ ]



Digitized by UCC, Library

g. Trading [ ]

h. Civil Service (retired) [ ]

i. Artisan [ ]

j. Others (specify)……..

13. Major Agricultural Enterprises in which you are involved

g. Crop Production [ ]

h. Animal Production [ ]

i. Agricultural Marketing [ ]

j. Agro Processing [ ]

k. Fishing [ ]

l. Any Other, Please Specify……..

14. Do you belong to any association in the community?

A. Yes [ ] B. No [ ]

15. What is your position in the group? ……...

16. Which of the following assets do you own?

a. Farm Plantations [ ]

b. Land [ ]

c. House [ ]

d. Truck (Vehicle) [ ]

e. Corn Mill [ ]

f. Any Other, Please Specify……

17. Reasons why you do not listen to Radio Peace CSIR programme

……

……

……..



Digitized by UCC, Library

**B. Use of agricultural information disseminated by Radio Peace-CSIR Programme**

18. Do you use the following information in your farming activities?

| | | | **If No, reason** |
|---|---|---|---|
| **Information on Crop production** | **Yes** | **No** | **If , Yes major source** |
| Handling of knapsack sprayer | | | |
| Safe handling of pesticides | | | |
| Selection of improved plant materials | | | |
| Spacing of crops planting dates | | | |
| Planting in rows | | | |
| Improved methods of Weed Control | | | |
| Control of crop pests | | | |
| Control of crop diseases | | | |
| Efficient Land preparations | | | |
| Mineral fertilizers usage | | | |
| Organic fertilizer usage | | | |
| Crop rotation practices | | | |
| Mulching/staking | | | |
| Burning crop residues | | | |
| Harvesting techniques | | | |
| Pruning in plantations | | | |
| Post harvest handling of crop produce | | | |
| Nursery management | | | |
| Transplanting of seedlings | | | |



Digitized by UCC, Library

| | Usage | | If No, reason |
|---|---|---|---|
| **Information on Animal production** | **Yes** | **No** | **If Yes, major source** |
| Sanitation in animal housing | | | |
| Housing farm animals | | | |
| Feeding farm animals | | | |
| Castration in farm animals | | | |
| Dehorning/hoof trimming in farm animals | | | |
| Animal breeding practices | | | |
| Animal health | | | |
| Control of animal diseases | | | |
| Pest control of farm animals | | | |
| Production of non- traditional animals | | | |

| | Usage | | If No, Reason |
|---|---|---|---|
| **Information on Agricultural marketing** | **Yes** | **No** | **If Yes, major source** |
| Vegetable marketing | | | |
| Cereal marketing | | | |
| Root crop marketing | | | |
| Oil palm marketing | | | |
| Market information | | | |
| Input supply | | | |

| | Usage | | If No, Reason |
|---|---|---|---|
| **Information on Agro processing** | **Yes** | **No** | **If Yes, major source** |



Digitized by UCC, Library

| | | | |
|---|---|---|---|
| Oil palm processing techniques | | | |
| Cassava processing techniques | | | |
| Vegetable processing techniques | | | |
| Hygiene at the work place | | | |
| | **Usage** | | **If No, Reason** |
| **Information on Fishing** | **Yes** | **No** | **If Yes, major source** |
| Fish pond construction | | | |
| Stocking of fish | | | |
| Feeding of fish in ponds | | | |
| Harvesting of fish in ponds | | | |
| Healthcare of fish | | | |
| Fish processing | | | |
| Sea fishing | | | |

| | **Usage** | | **If No, Reason** |
|---|---|---|---|
| **Information on Agricultural credit** | **Yes** | **No** | **If Yes, major source** |
| Formation of cooperatives | | | |
| Accessing loans from financial institutions | | | |
| Acquiring agricultural inputs | | | |
| Information on credit source | | | |



Digitized by UCC, Library