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A STUDY OF THE AGRICULTURAL EXTENSION SERVICE IN
THE UNITED STATES (NORTH CAROLINA) AND THE
AGRICULTURAL EXTENSION SERVICE IN GHANA

By

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(ABSTRACT)

The objectives of the study were as follows:

1. To investigate the following of the Agricultural Extension Service in the United States (North Carolina) and Ghana:
 - A. Background and History;
 - B. Organization;
 - C. Program Areas;
 - D. Communication Processes and Methods Used; and
 - E. Reporting and Evaluation of Programs.
2. To write a descriptive comparison of the two extension systems.
3. To make recommendations for the improvement of the Ghanain Extension Service based on the findings.

Ghana has an Agricultural Extension Service which has not been successful in changing the life of the peasant farmers and needs to be improved if agriculture is to be successful in Ghana. It is now believed by the Ghanain policy makers that agriculture is a more stable and everlasting base for the economy and again needs to be a primary source of income.

The methods used in this study were as follows:

- A. Resources Review. A resource review was made of the elements selected for the study.
- B. Sources of Information. Additional information was obtained from other sources such as the Agricultural Extension Service in the United States and Ghana through personal interviews.
- C. A descriptive comparison was made of all of the elements studied, and conclusions were drawn.
- D. Recommendations for the improvement of the Ghana Extension Service were made.

The comparison of the Agricultural Extension Service in the United States and the Ghanain Extension Service shows a number of similarities and differences. There are differences in the organizational structure, methods used to carry out the Extension programs, variety of programs and methods of reporting and evaluation of programs.

Ten important recommendations resulted from the study for the improvement of the Agricultural Extension Service in Ghana.

1. That laws or decrees be enacted to provide a legal basis for the organization and operation of the extension service by the Ghana government.

2. That a formal functional organizational relationship be established between the Agricultural Extension Service and the higher educational institutes.

3. That advisory committees be organized at each level of the organizational structure of the Agricultural Extension Service.

4. That clientele committees' input be utilized in the development process of the program areas.

5. That the Home Economics area be emphasized so that it will have more impact on the local people.

6. That youth programs be established as a part of the total extension programs.

7. That the program areas of the Extension Service be developed and implemented at the local levels.

8. That an evaluation unit be created as part of the Extension division.

9. That the farm demonstration technique of teaching be used as the primary teaching method, and

10. That adequate working relationships be established at the top organizational level and maintained at the local levels between the Agricultural Extension Service and all agriculturally related institutions.

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CHAPTER I

INTRODUCTION

Agricultural Extension work is a philosophy; with many, it is almost a religion. And the satisfaction that one gets in seeing the improvement in the standard of living of the people served is the most satisfying remuneration that anyone can experience (Selaub, 1979).

Agriculture is one of the largest and one of the most important industries in the world. Food grown for human consumption as well as food that is used as basic materials in manufacturing comes from the farm. The development of a strong agricultural industry is basic to every nation since farming and the related industries are the only way to produce the food on which our lives depend. The needs and problems of farmers are important parts of every rural community. About 200 years ago, the United States produced little or no food for export, but since the 1920s, through the use of machines and new technology and through the educational efforts of the Agricultural Extension Service, farm output has increased substantially; today the nation produces enough food to feed its people and for export to many other countries. The United States is an industrial nation; however, agriculture accounted for 18% of its total exports in 1984. The United States is the world's largest exporter of agricultural products (\$38 billion in 1983 compared to a total of \$208 billion for the world), selling

60% of its wheat, 41% of its corn, 59% of its soybeans and soybean products, more than 59% of its cotton, and 37% of its tobacco overseas in 1983. In addition agriculture is the largest employer in the United States with about 22 million people working in some phase of agriculture (Fact-Book of US Agriculture, 1984).

Studies by agricultural economists in the United States indicate a very high payoff to society from agricultural research and extension. The 1980 National Evaluation of Extension report cited Evanson's estimate concerning the value of the extension effort. It stated:

Public sector agricultural research and extension and the level of the education of the farmer may account for nearly fifty percent of the agricultural productivity increase between 1948 and 1979. (Hildreth, 1981).

American farmers today produce over 60% more crop output on the same number of acres than did their forefathers. The relative efficiency in production of agricultural products has given the United States an important role in supplying food and food products to others through world trade. The United States has a natural resource base large enough to produce substantially more food than it can consume. For example, the United States has only a small portion of the world's population, yet it produces about half of the world trade in grain. More specifically, in 1983 U. S. farmers

supplied about 37% of world wheat exports, 56% of coarse grain exports, 86% of world soybean exports, and 21% of world rice exports (Yearbook of U. S. Agriculture, 1985).

Agricultural exports account for a third to a half of the total farm income in North Carolina and 15 other states (Yearbook of U.S. Agriculture, 1986).

Low farm income is a characteristic of the small farmer all over the world. In the United States, 68% of United States farms had annual gross sales of less than \$10,000, and about half of these had gross sales below \$2,500 (U. S. Census of Agriculture, 1985). Due to the low income earned by the small farmers, the number of farms had decreased while the average size has increased (Clayton, 1981). The complexity of the small farmer's problems are well known all over the world, especially among the nations where the major occupation is farming. Farmers problems are many, but the most common problems are the following.

1. Low level of education,
2. Low farm income,
3. Lack of knowledge of farm practices,
4. Lack of capital resources,
5. Lack of knowledge of where to purchase production and harvesting materials economically, and
6. Poor organization and management of farm enterprises (McAfee, 1978).

"The extension service concentrates its efforts on helping farmers produce efficiently." (Vines and Anderson, 1976).

The Agricultural Extension Service is organized to help the farmers in many nations solve their home, community, and farm problems. This is done through farmer education and farmer use of the latest information from research. In the United States, the extension workers use many formal and informal techniques in teaching farm people.

The extension service offices are located in nearly three thousand counties in the United States. County agents and technicians are present in the counties to assist through translating information from research into practical down-to-earth answers to individual or group problems. (Hildreth, 1981)

They present information to farmers and the public, by telephone, mail, at meetings, in newspapers, and by radio and television. In the United States, information is made available to farmers through land-grant universities, agricultural experiment stations, state Extension Services, public and private libraries, education departments and businesses and industries. The Agricultural Extension Service is a partnership between the federal government, state government (land-grant institutions) and the local government. The Extension Service provides education designed to meet the needs of the people.

Legislation affecting the extension program in the U. S. was first passed by Congress in 1862, when the Land-Grant College Act was passed. Since then, additional federal legislation has been enacted. The Agricultural Experiment Station Act was passed in 1884 and the Extension Service was established in 1914 through the passage of the Smith-Lever Act. This legislation has been extremely valuable in supporting and advancing the development of agriculture in the United States. The Agricultural Extension system has attracted the attention of the industrialized nations, the developing nations, and the Third World nations; and it is the envy of many countries throughout the world.

There are changes in farm mechanization and technology taking place in most farming countries. Ghana, the country of the researcher, has about 70% of its working population engaged in subsistence farming and is affected by these changes (Kirk-Green, 1974). The estimated population of Ghana in 1985 was about 12 million, of which almost 50% were 14 years old or younger. The annual rate of population growth is a little over 3%. Life expectancy was estimated in 1983 to be a little over 58 years (West Africa, 1986).

Over 60% of the total population of Ghana live in rural areas. Approximately one-third of Ghana's population has

access to medical care, but only 21% of the health facilities are located in rural areas. In 1980, the World Bank estimated that 72% of the urban population but only 33% of the rural population had access to safe drinking water. Only 2% of rural dwellers had access to electricity (World Bank, 1980).

While only a little over 11% of the total available land area is under cultivation, 70% of the total population derives its income from agriculture or related activities. Some 55% of the work force is employed in agriculture, and the cocoa industry employs 24% of the labor force. Cocoa continues to provide almost 70% of export revenue. Cocoa, timber, manganese, diamonds, and gold account for 95% of Ghana's exports, a reminder of what is meant by being a producer of raw materials (West Africa, 1986).

The first strategy pursued by the Ghanain Government was the concept of "The Operation Feed Yourself Program" as a tool for the transformation of agriculture. The second strategy was the launching of a four-year program for economic reconstruction and development (West Africa, 1986). The Ghanain Ministry of Agriculture (Extension Service) has the primary responsibility for carrying out these strategies. During the period of 1979-1984, the government of Ghana increased the number of scholarships for study in the field of agriculture and related subjects by 56% (Personal

interview with Mr. George Akoto, Information Director, Ghana Consulate, Washington, D.C., October 16, 1985).

The government of Ghana spent over \$151 million on agriculture for the Operation Feed Yourself Program; and of this amount, a greater percentage was allocated to extension than any other agricultural division. The 1982-86 program for Economic Reconstruction and Development Plan allocation for agriculture is \$252.3 million, of which 30% is made available for extension. This indicates that the policy makers of Ghana want to improve the farming sector through the implementation of a strong agricultural extension policy (Ministry of Economic Development, 1982).

The poor quality and quantity of agricultural output in Ghana is attributed mainly to the following:

1. The inefficient production techniques used by the farmers,
2. The predominantly illiterate and conservative rural people and communities,
3. The land tenure system,
4. An insufficient number of trained agricultural technicians, and
5. The inefficient system of the agricultural extension service (Kirk-Green, 1974; Nweke, 1978).

The Agricultural Extension Service has also been involved in many functions such as credit, research, direct production of agricultural products, marketing, education, and the supply of farming materials. Other priorities have distracted the extension workers from the work they might be doing. The main weaknesses affecting the Extension Service, as perceived by the writer and other authors are the following: (La-Anyane, 1969; Gordon, 1969).

1. Insufficient pre-service training given to the Extension staff,
2. Isolation of the extension worker from the farmers they seek to serve due to an insufficient number of trained Extension staff members,
3. Most junior and intermediate extension workers have been posted to work in their home areas and as a result, they were unable to communicate sensitively with the farmers in their villages, especially those who knew when and where the extension workers were born,
4. Each extension worker has too many farmers to work with--"The current ratio is one extension worker to one thousand, five hundred farmers" (FAO Terminal Report, 1979),
5. Lack of good transportation and facilities for the Extension staff,

6. People are assigned to jobs for which they do not have the proper background and training. For example, in the early 1970s, the Minister of Agriculture was a legal practitioner (lawyer),
7. There has been poor programing and weak supervision in the agricultural sector,
8. The inability of the government to introduce and provide simple mechanized farm equipment and techniques, and
9. The extension workers are responsible for various non-extension functions.

Apart from the weaknesses of the Ghana Extension System mentioned above, the farmers of Ghana have many other problems, for example:

1. The laws and customs governing the land and its inheritance or acquisition (Safo-Ado, 1970).
2. The traditional land tenure system,
3. The lack of cooperative effort among the farmers,
4. A lack of capital resources,
5. A lack of educational level,
6. A lack of knowledge of where and how to purchase production and harvesting materials economically,
7. A lack of managerial ability,
8. The poor value attached to farming by farmers,

9. The peasant labor supply movement to the urban areas (Ogionwo, 1978), and
10. The traditional farming techniques used by the peasant farmers of Ghana (La-Anyane, 1969).

Ghana has not been as fortunate and successful as the United States in the development and improvement of its agricultural extension system. The country has social, economic, educational, organizational and other problems which have affected the development and improvement of its extension system.

Statement of the Problem

The population of Ghana is increasing at an alarming rate of over 3% a year, and an increase in the production of food is essential to the well being of the country. Some attempts have been made to introduce new methods of farming. These have been done through the reorganization of the Ministry of Agriculture and the launching of three agricultural programs, "Operation Feed Yourself," "The Four-Year Program for Economic Reconstruction and Development," and "The Five Year Food Development Plan. Some progress has been made; however, much needs to be done. The country needs a good extension program to help improve the educational standard

and the knowledge of farmers in the modern practices of agriculture (Ministry of Agriculture, 1980).

In Ghana, the modernization of agriculture and increased production of food and fiber are seen as the answer to many of the nation's self-sufficiency and economic problems. The agricultural policy makers want to help and are interested in obtaining information about ways to improve the Agricultural Extension Service and thus, the agricultural industry in Ghana (Minister of Economic Development, 1982).

No intensive study has been made to determine the elements of the United States Agricultural Extension Service which would suggest possible changes in the Ghanain system. In the United States, the farmers are helped almost daily through the efforts of a well organized effective system of agricultural extension (Vines and Anderson, 1976).

In this study, an analysis of the Agricultural Extension Service in the United States, using North Carolina as a model, and the Ministry of Agricultural Extension Service (Ghana) will be made. As a result of the study, recommendations will be made for the improvement of the Agricultural Extension Service in Ghana.

Objectives of the Study

The three objectives of the study are as follows:

1. To investigate the following concerning the Agricultural Extension Service in the United States (North Carolina) and Ghana,
 - A. Background and history
 - B. Organization
 - C. Program areas
 - D. Communication processes and methods used
 - E. Reporting and program evaluation
2. To compare the two extension systems, and
3. To make recommendations for the improvement of the Ghana Agricultural Extension Service based on the findings.

Research Questions

There are four groups of research questions:

1. Questions about the United States Agricultural Extension Service.
 - A. What is the background and history?
 - B. How is the Extension Service organized?
 - C. How is each program area organized, and the activities conducted?

- D. What communication processes and methods are used?
 - E. How are the programs reported and evaluated?
2. Questions about the Ghana Agricultural Extension Service.
- A. What is the background and history?
 - B. How is the Extension Service organized?
 - C. How is each program area organized, and conducted?
 - D. What communication processes and methods are used?
 - E. How are the programs evaluated and reported?
3. How do the two Extension Systems compare?
- A. Background and history
 - B. Organization
 - C. Program areas
 - D. Communication processes and methods used
 - E. Reporting and program evaluation
4. What recommendations are appropriate for the improvement of the Ghanaian Agricultural Extension Service?
- A. Organization
 - B. Program areas
 - C. Communication processes and methods used
 - D. Reporting and program evaluation

The Need and Justification for the Study

About 70% of the working population of Ghana is engaged in peasant farming. A good extension system of Agricultural Extension is needed to assist both the producers and consumers of agricultural products. The policy makers of Ghana are interested in obtaining new ideas and recommendations from knowledgeable people concerning ways to improve the nation's economic, social and agricultural development.

Between 1979 and 1985, the population of Ghana rose over 3% per year (West Africa, 1986). Changes are needed if the farmers are to produce the necessary amount of food to adequately feed the people. Therefore, the nation needs to develop and improve its food production system within the near future.

Ghana has an agricultural extension system which is in transition. It has not been successful in changing the life of the peasant farmer and needs to be improved if agriculture is to be successful in Ghana. The country's economy has gone down within the last few years due to approximately a 111% annual rate of inflation (West Africa, 1986). It is now believed by the Ghanain policy makers that agriculture is a more stable and everlasting base for the economy and again needs to be the primary source of income in Ghana (Personal

interview with Ibrahim Adam, Undersecretary Minister of Agriculture, August 8, 1985). In international aid and development programs, the agricultural extension program is receiving more and more attention in Ghana. The Organization for Economic Cooperative and Development (OECD) and the International Bank for Reconstruction and Development (IBRD), stress the contribution which the agricultural extension program can make to rural agricultural development. The World Bank is now lending funds and technical assistance for the development and reorganization of agricultural extension programs as an aid to agricultural development in Ghana (Ghana News, Vol, 12, No. 6, 1985). As stated in the Appraisal of the Ministry of Agriculture Extension and Research Project, Ghana, "the present situation or organizational structure of the agricultural extension program in Ghana is unable to give leadership for the needed agricultural development." (Ghana News, Vol. 12, No. 6, 1985). It is for these reasons that this study will be very useful for improving the agricultural extension program in Ghana.

A comparative analysis of the Agricultural Extension Service in the United States and Ghana will reveal some differences, similarities, strengths, and weaknesses of the two systems which are important tools for planning and

improvement of the Agricultural Extension Service. The United States of America possesses a well developed agricultural extension program, and its operation is a unique cooperative undertaking shared by federal, state and local governments, with the main control at the state level (Clayton, 1981). Much of what has happened in the United States has been used as a guideline for review, reconstruction, and redevelopment of the extension service of other countries. The agricultural extension service in the United States has a record of achievement which has drawn the attention of many countries and caused many observers to examine its methods of organization and operation (Ogionwo, 1978). Even though there are 50 states in the United States, the North Carolina Agricultural Extension Service was selected as a model for the comparative study because of some of its outstanding programs. For example, the North Carolina Agricultural Extension Service has the best informed paraprofessional training program in the country; it has been a pioneer in the small farmer assistance program, had one of the most traditional forms of extension organization in the country, and is involved in the extension "teletip" program where farmers from any part of North Carolina can dial a toll-free number to receive information about their agricultural problems (Personal interview with Dr. Dew,

Assistant Director of Operations, North Carolina Extension Service, May 13, 1986). Finally, time and financial resources necessitated using North Carolina as the state for study.

Limitations of the Study

This study is limited to the Agricultural Extension Service in the United States (North Carolina) and the Agricultural Extension Service in Ghana.

The recommendations are specific for use in Ghana and may or may not be appropriate for other countries.

Assumptions

In order to facilitate the analysis of this study, the writer made the following assumptions:

1. The United States Agricultural Extension System has made a major contribution to the well being of the people of the United States (Vines and Anderson, 1976).
2. The United States Agricultural Extension System has some elements which seem to function successfully.
3. Ghana's Agricultural Extension System is in transition, and the country urgently needs ideas and recommendations for its reorganization, development and improvement (Axinn, 1972; Ministry of Agriculture, 1981).

Definition of Terms

The following terms are defined in order to clarify their use in this study.

Clientele - A group of people who are served by the Agricultural Extension Service, usually the farmers and local people.

County (USA) - An administrative district or subdivision of a state.

Federal Formula (USA) - Laws and regulations set down by the federal government by which the states expend the federally appropriated funds.

Human Resource Development (USA) - The acquisition of knowledge, skills, attitudes, and abilities by a nation's citizen to make him or her productive individuals.

Large Farmer (USA) - A farmer whose gross annual income is \$20,000 or who has more than five acres of land and farms full time.

Land-tenure System (Ghana) - The legal, political, and socio-economic arrangements governing the ownership and management of agricultural land.

Memorandum of Understanding (MOU) - An agreement between the 1862 and 1890 Land-Grant Institution which authorizes the two institutions to jointly carry out Agricultural Extension work in a state.

National Development Program (Ghana) - A long-range plan of action for the economic development of Ghana.

Paraprofessionals - Skilled workers or technicians who assist the professional in a business.

Production Resources - Resources such as land, capital, labor, managerial ability, farm materials, etc., that are used for producing agricultural goods.

Program - A regular plan of action for any undertaking.

Small Farmer (USA) - A farmer whose gross annual income is less than \$20,000 or who has five acres or less and farms part-time.

Traditional Farmers or Peasant Farmers (Ghana) - Farmers who farm through the use of practices and methods handed down to them through generations.

Unit (USA) - A group of extension workers who plan and work together.

USAID (USA) - United States Agency for International Development - An international organization that provides technical and financial aid to developing countries.

Diffusion Process (USA and Ghana) - The usage of trial and adoption methods where perception occurs as the result of awareness, interest, and evaluation.

Chapter Summary

In the first chapter, background information about the type of Agricultural Extension Service found in the United States and Ghana is given. Agriculture in both countries is used as a base for economic development. Agriculture employs the largest segment of the population both in the United States and Ghana. The basic aim of the Agricultural Extension Service in both countries is to educate the farmers to solve their home, farm, and community problems.

The statement of the problem explains the necessity of increasing food production due to the alarming rate of population growth in Ghana (3% annually). It also explains the launching of three agricultural programs which, in effect, it is hoped will help increase food production in Ghana.

The four groups of research questions are as follows:

1. Questions about the U. S. Agricultural Extension Service,
2. Questions about Ghana's Agricultural Extension Service,
3. How the two extension systems compare, and
4. What recommendations are appropriate for the improvement of the Ghanain Agricultural Extension Service.

These research questions will be reviewed as they relate to (a) Background and History, (b) Organization, (c) Program Areas, (d) Communication Processes and Methods Used, and (e) Reporting and Program Evaluation.

The chapter also explains the justification of the study. Since 70% of the working population in Ghana is engaged in subsistence farming, a good extension system is needed to assist both the producers and consumers of agricultural products. The study is limited to the Agricultural Extension Service in the United States (North Carolina) and Agricultural Extension Service in Ghana.

CHAPTER II

REVIEW OF RESOURCES

Introduction

Chapter II is divided into two Sections. Section A contains a review of information about the Agricultural Extension Service of the United States (North Carolina), and Section B contains information about the Agricultural Extension Service of Ghana. The information is presented in relation to Background and History, Organization, Program Areas, Communication Processes and Methods Used, and Reporting Evaluation. The extension service in the United States is reviewed at the federal, state and local or county levels where applicable. The extension service in Ghana is reviewed at the national, regional, district and village level as appropriate.

A. THE AGRICULTURAL EXTENSION SERVICE OF THE UNITED STATES (NORTH CAROLINA)

The Agricultural Extension Service is a saga of achievement in American education which grew from a unique partnership of local people and their organizations; county, state and federal governments; and the land-grant colleges and universities. As the plant symbolizes, this partnership finds root in the needs of people at home and at work. It builds on a pooling of their common problems and the creative application of their own talents and resources. This statement is a product of the partnership, having taken from the aspirations expressed in countless program planning efforts by people and their extension workers across the countryside of America, the American Association of Land-Grant Colleges and Universities through the Extension Committee on Organization and Policy, and the United States Department of Agriculture through the Federal Extension Service (North Carolina Agricultural Extension Service; Shared Ideals, 1979).

Background and History

The United States of America with 50 states is a vast area of diverse topographical and climatic conditions and is the fourth largest country in the world, both in population and in area. Located in the middle of the North American continent, it stretches over 3,000 miles from the Atlantic to the Pacific Ocean and is bordered by Canada on the north and Mexico and the Gulf of Mexico on the south. Westward from the Atlantic Coast, the Coastal Plain and Appalachian Mountains of the east and prairies of the wide Midwest give way to the sharp peaks of the Rocky Mountains. Extremes of climate range from the subtropical temperatures of southern Florida to the icy blizzards of the Midwest. Waterways were the most important roads in the United States until the construction of railways began in the early 1800s. Over 300,000 miles of track now exist. A network of super highways was sponsored by state and federal governments so that long distances can be traveled quickly and in relative safety. The transportation system is unparalleled in the world. The diversity of population united into one relatively cohesive society is a striking characteristic of the United States. All Americans are immigrants or descendants of immigrants, including American Indians. The

official language of the United States is English, but an English with somewhat different spelling, vocabulary, usage, and pronunciation from that of the British. Most people of the United States belong to a protestant religious denomination (Miller, 1975).

The problems of the small farmer in the United States are manifold. Thomas Jefferson, one of the pioneer farmers, believed that farmers were the "chosen people of God," persons "whose breasts he had made his peculiar deposit for substantial and genuine virtue....that focus fire, which otherwise might escape from the face of the earth." (Betts, 1953). It has been suggested that Jefferson loved democracy because it gave free expression to farmers, but he himself always argued that the establishment and survival of democracy depended on peopling the land predominantly with farmers (Betts, 1953).

The leaders of the colonial period, practically all of whom were engaged in agriculture, kept up a constant correspondence with other colonists and also with friends in Europe. They communicated to each other the benefits of their own experience, but found that inadequate to solve the problems at hand (Edmond, 1978).

As a further means of help, they organized themselves into agricultural societies. The first of these was in Philadelphia in 1785, with George Washington and Benjamin

Franklin as members. This was followed by one in Charleston, South Carolina, later the same year. Meetings of these societies for the purpose of discussing agricultural problems proved quite beneficial and during the next few years, many similar organizations were formed throughout the colonies (Stimson and Lathrop, 1942).

Stimson and Lathrop (1942) said that agricultural papers were few and limited in circulation. Even by 1850, there were only 36 agricultural papers, and 11 of these were in New York State. Real development of the agricultural press did not materialize until many years later when transportation permitted wide and rapid circulation.

There was no instruction in agriculture in the public schools as late as 1850, and it was not until 1855 that the Michigan Agricultural College was established as the first of many schools for the farm sector (Edmond, 1978). In 1862 and then 1890, the agricultural college movement had its most far-reaching victory with the passing of the Morrill Act. The Act stated that a land grant of United States government-owned land totaling 30,000 acres for each senator and representative from each state, in accordance with the census of 1860, would be given to the state. This Act also allowed the state to establish a land-grant college to offer agricultural-related courses. Morrill was quoted as saying

that the agricultural schools were "...to give...the boys of farmers going into institutions...an opportunity...to come out farmers...and to do so with advantage if they see fit" (Kellogg and Knapp, 1966). He also added that other subjects should be offered so as to allow these boys the freedom to choose other occupations.

Almost immediately after the formation of the schools of agriculture, the need for research became obvious. The fledging research programs initiated by individual universities soon found federal support through the Hatch Act passed in 1887 (Kellogg and Knapp, 1966). Through several revisions: Adams Act - 1906, Purnell Act of 1925, and the Bankhead-Jones Act of 1935, the experiment station became technically the location of all or most of the research programs of the college of agriculture (Kellogg and Knapp, 1966).

The Smith-Lever Act of 1914 completed the land-grant triad by creating federal support to colleges for extension services. Two early extension "pioneers," Kenyon L. Butterfield and Seaman A. Knapp, actually began extension type work before that time and had much to do with the legislation. Representative Frank Lever of South Carolina first submitted the bill in the House in 1911; and a little over a year later, Senator Hoke Smith of Georgia submitted

the bill in the Senate. The Act, when passed and signed on May 8, 1914, provided that Cooperative Extension Service (USDA) and land-grant colleges working together:

shall consist of the giving of instructions and practical demonstrations in agriculture and home economics to persons not attending in said colleges in the several communities, and imparting to such persons information on said subjects through field demonstrations, publications and otherwise... (Vitzhum and Florrel, 1976).

Local funding was required by the Act, and much of this money in the first stages of participation was provided by the State Farm Bureaus.

The Farmers Cooperative Demonstration farms did not start until 1903, when Seaman Knapp at a mass meeting of businessmen and farmers at Tyrell, Texas, submitted a proposition to establish a demonstration farm under the auspices of the Department of Agriculture, provided the community would select a suitable place and raise by subscription a sufficient amount to cover any losses that might be sustained by the owner and operator of the farm by reason of following the directions of the department in the matter of planting and cultivation. His proposal was accepted and a committee of eight was formed to provide the \$1,000 as an insurance fund. Farmer Walter C. Porter volunteered his farm of 70 acres of land. In spite of boll weevil damage, Porter estimated at the end of the year that he received a profit of \$700, more than he probably would have made if he had followed his old practices (Hightower, 1973).

After Seaman A. Knapp initiated the extension work in Texas, he appointed Cassius R. Hudson in 1907 to start the demonstration work in North Carolina. A native of Alabama, Hudson had intended to make Raleigh his headquarters. It was later stated by Mrs. Hudson, his wife, that people at both the college and department of agriculture gave this "federal man" a cold shoulder so he moved to Statesville, where the Extension work took root in North Carolina (North Carolina Extension Service, 1979). Since Mr. Knapp's work was paid for by the United States Department of Agriculture, the General Education Board of New York, and private concerns, it would follow that Mr. Hudson's work was funded in like manner. At any rate, neither the North Carolina Department of Agriculture nor The Agriculture and Mechanical College (now North Carolina State University) would participate with Mr. Hudson in his early demonstration work.

After Mr. Hudson moved to Statesville, it was part of his responsibility to hire additional people to help with this demonstration program. When the Agricultural Extension Service was officially established in 1914, with the passage of the Smith-Lever Act, North Carolina had 18 men and women working with Mr. Hudson in demonstration work in agriculture and home economics. The men and women working in this effort prior to 1914 along with Mr. Hudson were known as the House of Pioneers (North Carolina, Extension Service, 1979).

From the beginning Negro farmers were just as much interested in improving their farming operations as white farmers. At first, they secured their information largely by observation of demonstrations with white farmers. Dr. Knapp, recognizing the need and opportunity to give special assistance to Negroes, arranged in 1906 with Tuskegee Institute in Alabama and Hampton Institute in Virginia, to initiate work with Negro agents serving Negro farmers (North Carolina Extension Service, 1979).

At Tuskegee, Mr. T. M. Campbell, who had been working with Booker T. Washington, president of the institution, when he began his "Farmer Day" program, was selected as the first Negro agent (Schaub, 1979). At Hampton Institute, Mr. J. B. Pierce was appointed just after Mr. Campbell began work. He continued to serve as an extension agent until his death (Schaub, 1979).

The first Negro County Agent in North Carolina was Neil Armstrong Bailey. He was hired in 1910 and worked in Guilford, Randolph, and Rockingham Counties. Bailey was a native of Chatham County and graduated at the age of 50 from A & T College with a bachelor of science degree (Schaub, 1979).

The more recent legislative acts that have promoted the improvement of the Extension Service are the Purnell Act of

1925 which allocated funds for economic and social research, the Capper-Ketcham Act of 1928 which allocated funds for agricultural extension with a provision that at least 80% of the funds be used to pay salaries of extension agents, the Bankhead-Flannagan Act of 1935 which allocated additional funds to the states for research, and the Agricultural Marketing Act of 1946 which allocated funds for marketing research and development of marketing programs. The most recent legislative act was in 1953, when the funds and direction provided under the different acts was consolidated into one amendment act, the Amendment of the Smith-Lever Act of 1953.

Organization

The term organization is defined by H. C. Sanders in his book, The Cooperative Extension Service as:

The pattern of ways in which large numbers of people, too many to have intimate face-to-face contact with all others, and engaged in a complexity of tasks, relate themselves to each other in the conscious, systematic establishment and accomplishment of mutually agreed purpose (Sanders, 1966).

This definition emphasizes the important point that organization is the medium through which individuals work as a group as effectively as each would work alone. An organization such as the Cooperative Extension Service is

developed by (a) defining the broad purposes of the Service and what is required to achieve them; (b) assembling and arranging the various resources available to the Service--people, laws, information, funds, physical facilities--in whatever pattern will most likely result in achieving the agreed purpose; and (c) developing purposes to guide persons in making the maximum use of available resources (Sanders, 1966).

Williams (1968), and Sanders (1966), held the same belief of how the extension service should be organized. These authors indicated that the Cooperative Extension Service should be organized in cooperation with the county services, the land-grant colleges, and the Federal Extension Service of the United States Department of Agriculture (USDA).

The authors of the books, Cooperative Extension Work and Heritage Horizon; Extension Commitment to People, written by Kelsey and Hearne (1963) and Vines and Anderson (1976), respectively, held the same belief of how the extension service should be organized. The Agricultural Extension Service is an arrangement of cooperation between the federal government, the state land-grant institutions, and the local government.

Williams (1968) wrote on his views of the organization of the Agricultural Extension Service. He said that the complex

nature of the organization of the system comprises three main categories of participants; namely, the county, state and federal government. The Agricultural Extension Service is organized by groups: the extension functional unit of the Science and Education Administration of the United States Department of Agriculture (USDA), the land-grant college, and the county or local extension service (See Figure 1, The Organizational Chart of the North Carolina Agricultural Extension Service).

Program Areas

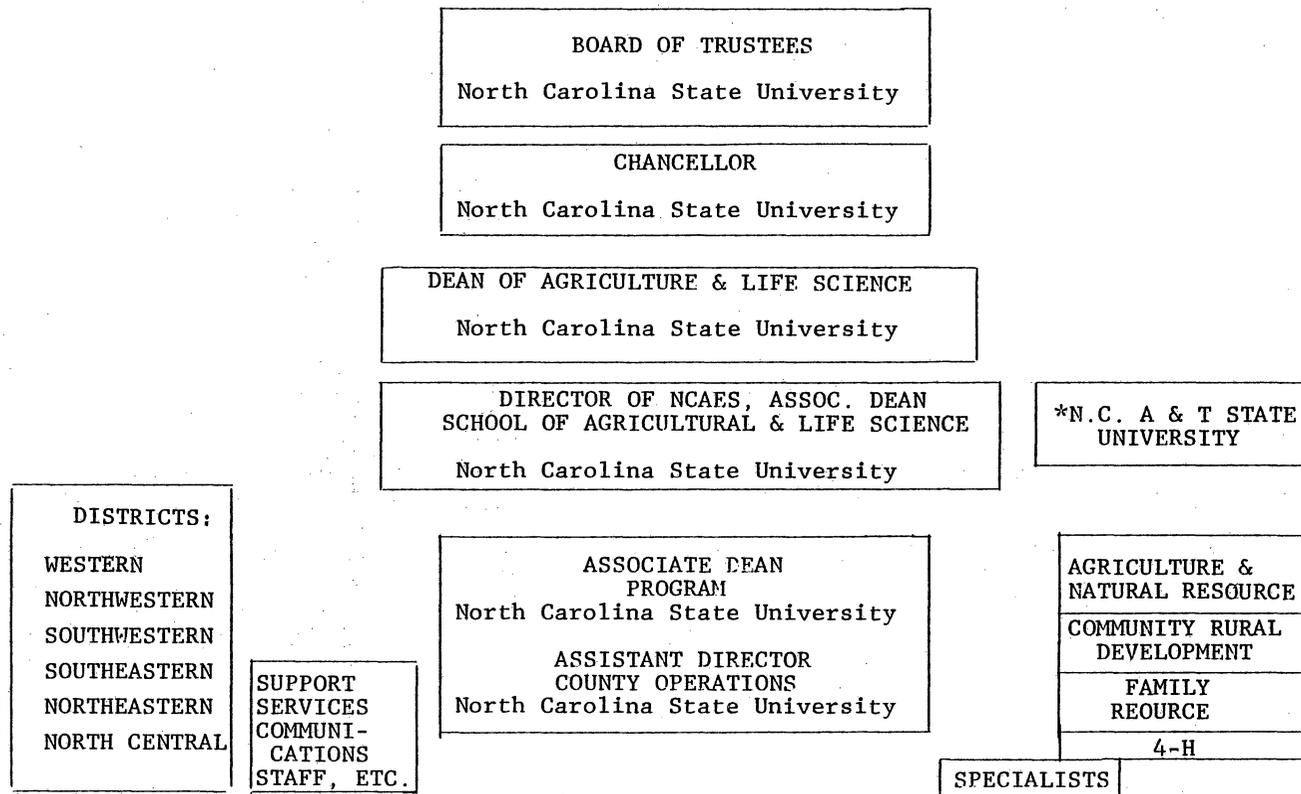
Swanson (1984) reported that there are four main program areas of the Agricultural Extension Service. The areas are:

1. Agriculture and Natural Resources;
2. 4-H Program;
3. Community Resource Development or Community Rural Development; and
4. Home Economics.

Agricultural and Natural Resources

In North Carolina, the agriculture and natural resources program is the broadest of all the Agricultural Extension Service Programs. The main objectives of the program are to:

1. Develop programs to analyze the costs of machinery, land and ownership for the various farm enterprises with varying levels of use,



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*The Subprograms under Agricultural Extension are planned and carried out cooperatively by North Carolina State and A & T State as agreed to in a memorandum of understanding between USDA, N.C. A & T State University, and North Carolina State University.

Figure 1. Organizational Chart of the North Carolina Agricultural Extension Service

2. Develop programs to assist farmers in developing and analyzing the cost of production by enterprise. Present North Carolina State University prepared sample enterprise budgets could be used as a norm in developing enterprise budgets for specific localities,
3. Evaluate investment opportunities in livestock and poultry housing, greenhouses, equipment, etc.,
4. Conduct programs to evaluate the economic feasibility of changing production practices such as fertilization rates, chemical use, and
5. Conduct programs on marketing alternatives for North Carolina commodities. Programs will include explanations and examples for using cash contracts and/or the futures market in forward selling (North Carolina Extension Service, 1985).

There are some agriculture and natural resource programs conducted in North Carolina by the 1862 institution:

1. Peanut Production Program

Peanut production program meetings have been held in 15 counties involving contact with over 1,000 peanut producers. Over 35 on-farm tests were conducted in 12 counties with cooperating peanut growers in 1981. As a

result of the meetings and participation by cooperating farmers in on-farm tests, peanut quality in North Carolina has been improved as measured by the Federal State Marketing Service grade standards (North Carolina EAS Annual Report, 1982).

2. Swine Production Program

Swine Husbandry Specialist, working with the local livestock planning committees, conducted regional conferences, made farm visits, and held county producer meetings to increase and improve the swine industry. As a result, there was a 40% increase in swine production between October 1982 to September 1983.

3. Beef Production Program

Twenty-six Extension Livestock Agents, working with beef cattle producers, conducted meetings, held consultations, and made farm visits to increase the efficiency of the beef production industry.

4. Feeding Program for Turkeys

Extension Poultry Nutritionists, working closely with poultry companies, developed educational programs and materials and held individual meetings, group meetings and nutritional conferences and prepared newsletters, popular press articles, and field trials to improve poultry feed quality (North Carolina EAS Annual Report, 1982).

There have been other programs like individual farm management assistance, drought assistance, integrated weed management systems, cotton assistance, and insect management on turn grass assistance (Personal interview with Dr. Brooks, State Leader, Agriculture, May 12, 1986).

Some of the programs and results of the agricultural and natural resources activities conducted in 1985 by the 1890 institution are the following:

<u>Program</u>	<u>Result</u>
1. Agricultural practices and technologies	344 farmers adopted new agricultural practices and or technologies.
2. Budget maintenance by small farmers	(a) 87 farmers maintained a general budget and record keeping system (b) 25 farmers maintained an enterprise budget.
3. Non-traditional commodities	10 farmers produced for the first time a non-traditional or new commodity.
4. Services of the major public agricultural agencies	11 farmers were introduced to the public agricultural agencies.

<u>Program</u>	<u>Result</u>
5. Money saved	54 farmers saved \$8,100 by each growing a garden.
6. Increased managerial skills	300 farmers increased overall managerial skills.

(Personal interview with Dr. Lyons, Program Coordinator, Agriculture and Natural Resource, April 24, 1986).

Other programs like individual farm management assistance, drought assistance, plant clinics, and North Carolina farm management tours have been planned and conducted.

The 4-H Program

The editor of the 4-H Project Leader Guide, North Carolina EAS (1979) traced the history and organization of the 4-H Club. He said that the 4-H organization was started as a "corn and tomato" clubs for boys and girls in 1900 by Dr. Bailey and Seaman Knapp. The first sponsored 4-H Club was established in 1907. The youths carried out projects in corn growing, vegetable gardening, canning, and livestock raising. The older farmers adopted new practices as a result of the youths' demonstration farms and projects. In 1909 the clover leaf emblem was introduced by O. H. Benson and Miss Jessie Fields from Wright and Page Counties of Iowa,

respectively. The 4-H Club program was organized to teach the youths how to farm and be good citizens. The program included many projects in agriculture, resource development and home economics. In 1914, Woodrow Wilson signed the Smith-Lever Act which provided funds for extension work nationwide. It specified that "work shall ... consist of the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges...." (Vines and Anderson, 1976).

Four-H is the youth program of the Cooperative Extension Service. It is a practical, dynamic, informal education program designed to meet the needs of all boys and girls between 9 and 19 years of age regardless of whether they are rural or urban, white or black, and regardless of their social and economic lifestyle. 4-H offers young people a wide range of learning experiences to help them enjoy learning new things, develop new interests, make new friends, learn demographic group action, and develop leadership ability (North Carolina AES Community 4-H Leader's Handbook, 1979).

The major objective of the 4-H program is to help boys and girls develop into useful and desirable citizens. Through 4-H they have opportunities to develop good character traits, wholesome attitudes, leadership qualities, and knowledge and skills in areas of special interest to them (North Carolina Extension Agents, 4-H Project Manual, 1979).

From its beginning, 4-H has been a "learning by doing" program." The name 4-H refers to the elements of the head, heart, hands, and health. Each element contains a specific concept as follows (North Carolina Extension Agents 4-H Project Manual, 1979):

- Head - To develop an awareness of and learn to apply the latest scientific knowledge in many subjects such as agriculture, home economics, sociology and psychology in their own lives and the lives of their families.
- To provide young people many opportunities to develop an intelligent understanding of natural phenomena in their environment.
 - To help young people develop the thinking, reasoning, and decision-making habits they need to become capable individuals and useful members of society.
 - To help young people realize the importance of continuing education and to help them develop a desire to continue to learn.
- Heart - To aid in the development of wholesome character and personality qualities, loyalty, good citizenship, high ideals, and a sense of responsibility.
- To arouse worthy ambitions for personal, family, and community development.

Hands - To help youth develop useful and creative skills in a variety of subjects such as agriculture and home economics.

To provide opportunities to "learn by doing" through 4-H projects, activities, demonstrations, and illustrated talks.

Health - To help youth know about and understand what constitutes good health.

- To help cultivate good health habits and the intelligent use of leisure time which will lead youth to satisfying rewarding lives.

The following are some of the projects carried out by North Carolina 4-H club members between 1979-1984:

1. Proper telephone use - Youth in the City of Greensboro participated in learning sessions that taught proper telephone use.
2. Skill driving contest - Fifty 4-H youth participated in skill driving contests.
3. Creative Stitchery - Two hundred 4-H'ers in Guilford and Brunswick counties participated in creative stitchery contests.
4. Living in a Family - Three hundred 4-H'ers participated in a "living in a family" program.

5. Crop production - Fifty 4-H members participated in a tobacco project where they managed a one-acre plot of tobacco and handled the production from the plant bed to the warehouse floor.
6. Automotive safety - Automotive safety clinics for 4-H members were held at three locations in Surry County.
7. Partners-in-Learning - Twenty-five 4-H members participated in this program to create a partnership between them and their parents or other adult volunteers.
8. Computer Workshop - The computer science faculty at North Carolina A & T sponsored a computer workshop for 4-H'ers in public housing communities in three counties.
9. Water Safety - Fifty-four 4-H youth participated in a Coast Guard Day Camp.

(Personal interview with Dr. Davis, Associate State 4-H Leader Specialist in Charge (4-H Curriculum) March 22, 1986

4-H Camp

In North Carolina, there are six major 4-H camp centers, namely:

1. Betsy-Jeff Penn 4-H Center near Reidsville,

2. Millstone 4-H Camp near Ellerbe,
3. Mitchell 4-H Camp near Swansboro,
4. Roanoke Island 4-H Camp near Manteo,
5. Schaub 4-H Camp near Waynesville, and
6. Swannanoa 4-H Camp near Swannanoa.

All the 4-H camps carry out similar activities. They utilize the natural resources around them for informal class activities (Personal interview with Dr. Davis, Assistant State 4-H Specialist in Charge 4-H Curriculum, March 22, 1986).

Community and Rural Development Program

The Community and Rural Development Program in North Carolina is concerned with the types of problems and issues that affect all or a substantial portion of the people in a community. Therefore, the program focuses upon problems which can be best served through study, discussion and decision making by voluntary groups and policy-making bodies. Extension contributes to community problem solving by providing educational information (both technical and non-technical), by identifying resources that are available, and by assisting local citizens in other ways as they work together to resolve community issues. Often, the Community and Rural Development Program involves helping develop leaders in community organizations. It also involves use of

a decision-making procedure commonly referred to as the public policy process. This process entails the identification of problems, the identification of alternative solutions to problems, and the evaluation of the consequences of adopting the alternative solutions (North Carolina Extension Service, 1985).

The Extension Plan in CRD is the product of a statewide effort involving members of the Community and Rural Development Advisory Leadership Committee and Extension personnel at the state and county levels. Numerous county, regional, and state-level meetings are held to obtain input from interested citizens across the state. As a result of these deliberations, 12 major program groupings have been identified and grouped under four broad thrusts. These thrusts are:

1. Local government and citizen organization;
2. Natural resources;
3. Economic and manpower development; and
4. Programs for limited resource audiences.

(North Carolina Extension Service, 1985).

Some examples of Community and Rural Development work in North Carolina are:

1. Citizen Organizations Programs. The North Carolina Agricultural Extension Service conducted programs in leadership development and citizen organizations in

about 60 counties. These were done to increase the pool of leaders who possess the interpersonal, organizational, and analytical skills for effective leadership in a variety of settings. The programs also helped to increase the number of leaders who possess an understanding of community organizations, group decision making, and strategies by which group decisions may be effectively implemented.

2. Land-Use Program. Land-Use Programs were organized in Wilkes, Surry, and Mecklenburg Counties in 1984 to provide information on a variety of land-use issues and to help citizens solve their problems. The program increased citizen understanding of land-use changes and the social and demographic effects of community growth and decline. It also increased the extent to which resource data, trends, rural issues and policies are evaluated and incorporated in decision making.
3. Environmental Quality, Water Resource and Soil Conservation Programs. These programs were conducted in 40 counties in 1985 to increase citizen and community leader awareness of the capabilities and limitations of the soil and water resource base

and its capacity for accommodating the variety of demands placed upon it. Some of the results achieved were:

- a. improved utilization of land resources for municipal and industrial wastes, on-site waste disposal for individual homes, erosion and sedimentation, and waste management,
- b. conservation of water and reduced water pollution, and
- c. improved individual environment and aesthetic quality of communities.

Home Economics

The family is a vital part of individual growth and development and the strength and stability of society as a whole. Families have a major impact on agriculture and the economy in North Carolina through their consumption, home production practices, provision of human capital, and contribution to preserving the quality of the natural environment.

Extension Home Economics is concerned about problems facing North Carolina families today and the effect of these problems on their quality of life. The mission of Home Economics is to help all family members achieve their greatest potential for a full and satisfying life. Extension

Home Economics applies and integrates scientific findings from research in a way that helps families with the tasks of everyday living. Increased effort and concerted action by Extension will be required to help solve the problems of families in the eighties (North Carolina Extension Service, 1985).

The Extension Plan in Home Economics is the result of the input of the Home Economics Advisory Leadership Committees and Extension personnel and the county and state levels. Problems and needs are identified that might be solved through educational efforts, and the problems are then prioritized by the Advisory Committee at both levels. Five major programs in Home Economics were identified. These are:

1. Family Economic Stability and Security,
2. Foods, Nutrition and Health,
3. Energy and Living Environment,
4. Family Strengths and Social Environment, and
5. Volunteerism and Leadership Development.

This concept is a problem-centered approach to planning Home Economics programs in North Carolina (North Carolina Extension Service, 1985).

Some of the techniques used by the paraprofessionals to teach their clients are demonstrations, workshops, group meetings, television, radio, newsletters and publications. Some of the topics covered by the agents were:

1. Child abuse prevention
2. Nutrition education
3. Estate planning
4. Diets for athletes
5. Gardening
6. Health
7. Consumerism for elderly people
8. Family night
9. Child rearing practices
10. Food preservation
11. Whip inflation
12. Wills and deeds
13. Leadership training
14. Public service announcements

Communication Processes and Methods Used

Communication Process

The editor of the Agricultural Extension, A Reference Manual (Swanson, 1984) said that the message prepared by an extension worker must be clear as to its purpose. Objectives must be specified, the content of the message must be relevant to the audience and directly linked to the intent or purpose of the communication. In addition, the treatment of the message must be such as to be intelligible to the intended audience. Complex ideas are not easily encoded in such a way that an intended audience can, in turn, decode and

derive the information contained in a message. Preparation of a message which can be understood by an audience requires a considerable depth of understanding, ideally includes practical experience with the implementation of ideas involved in the message, and also assumes considerable knowledge of how particular message elements fit into the aggregate agricultural production process of farmer clients (Swanson, 1984).

Methods Used in Extension Work

Providing instruction for its clientele is the first function and primary responsibility of the Agricultural Extension Service. Instruction is giving through learning experiences arranged for by Extension personnel. During more than half a century of Extension work, there has developed a variety of ways to influence persons to change their practices. Each way has advantages and limitations and is especially adapted to a particular situation. To know when, where, and how to provide each learning experience to the best advantage is the mark of a professional extension worker. Some of the methods used by the extension personnel to teach their clientele in North Carolina are:

Visits - Visits are a most useful method for extending information so that it will be understood and used. Visits often take place at the learner's home amid familiar surroundings. They usually start with a discussion of the

learner's situation, his problems, his hopes, or, as the Extension worker says, "start where he is." This increases interest and understanding (Sanders, 1966).

Office Calls, Telephone Calls, Mail Requests and Answering

Sets - An office call is a visit in person by an individual seeking agricultural or home economics information, the result of which some definite assistance of information is given. Office calls are an effective medium of communication, since persons usually go to the office for a specific purpose and are ready to accept advice and apply recommended practices. Field studies indicate that 6% of all practices changed as a result of extension teaching may be credit to office calls (Wilson, 1955).

The telephone call also is an important means of person-to-person communication linking the county extension agents and the people of the county. The number of calls made to and from all county extension agents in the United States exceeds 11 million annually. This makes up over 40% of all personal contacts reported by county extension agents (Wilson, 1955).

Requests to an agent by mail are another form of personal request for information on a particular topic. Correspondence such as this is an effective personal contact teaching method and not be treated lightly or dispensed with quickly.

The answering set program in North Carolina is called the Teletip Program. Messages on the sets include information on such problems as lawns, gardens, insects, and marketing tips. Agents or farmers use calls that come in through regular telephone lines as guides to problems that people believe are important and tape answers pertinent to the questions asked.

Result Demonstrations and Method Demonstrations

An extension result demonstration is conducted by a farmer, homemaker, or other person under the direct supervision of an extension worker to prove the advantages of a recommended practice or combination of practices. It involves careful planning, a substantial period of time, adequate records and comparison of results. It is designed to teach others in addition to the person who conducts the demonstration (Sanders, 1966).

The method demonstration involves showing and telling simultaneously with a visual and verbal explanation of a process, fact, or idea. Although demonstrations are commonly used with groups, they are used constantly in transferring knowledge from one individual to another. Other methods used by the North Carolina Agricultural Extension personnel are meetings, mass media, local leaders, and direct mails.

Reporting and Program Evaluation

Reporting

Swanson (1984), defined reporting as a process of collecting statistical and other data about a piece of extension work. The data are usually reported on standardized forms to enable tabulation and analysis. The description of methods and results are often reported under suggested headings for ease in compiling summaries and finding items of interest. Most people assume that reporting is necessary because some superior requires it--to come extent that is true, because generally law and the public interest demand reports. Reports in extension work, however, are valuable to extension workers themselves. The summary of the work and its organization and analysis puts the worker in a better position to decide what is needed in the future. It also improves job satisfaction which has a surprising correlation to general success (Swanson, 1984).

The North Carolina Agricultural Extension Service and the Agricultural Extension Service agree on an annual plan of work and technical support which contains the following sections:

1. Administration,
2. Information,
3. Agricultural production, management and natural resources,

4. Marketing and utilization,
5. Home Economics,
6. 4-H and other youth,
7. Community and public affairs, and
8. Organization and supervision of County Extension operations (Sanders, 1966).

The two broad content areas or parts in a reporting system are (a) operational data, and (b) accomplishment data or information relative to work performed by the staff and the cooperating persons. Accomplishment reports contain information regarding program achievement and changes resulting from the activities of the Extension organization. It has been found that an effective way to tell the story of Extension in a comprehensive and understandable manner is to divide the report at each reporting level into two parts: (a) activities and time used, and (b) program progress and accomplishment (Sanders, 1966).

Evaluation

Swanson (1984) defined evaluation as a continuous and systematic process of assessing the value or potential value of extension programs. This process includes developing criteria from the concerns of the relevant audiences for the evaluation, the collection of data relating to the criteria, and the provision of information that adequately addresses the concerns (Swanson, 1984).

One of the earliest writers on extension evaluation (Frutchery, 1967) pointed out that there are two different kinds of evaluation, namely the "casual everyday evaluation" or informal evaluation, and the "extensive formal studies." Casual everyday evaluations can be equated with first impressions of a particular experience. According to Frutchery (1967), "They are the ones we ordinarily make without much consideration of the principles of evaluation in the decisions we make about simple problems." On the other hand, extensive formal studies involve the use of sophisticated research procedures and are often conducted by teams of evaluation specialist.

Informal evaluations are unsystematic; the criteria and evidence used in making judgments are implicit. They can, therefore, be biased and misleading. The more systematic the evaluation, the more likely it will contribute to making useful decisions about an extension program. Thus, we should at all times attempt to make our evaluation more systematic and more formal. This is not to imply that the only good evaluations are those which approximate the extensive formal study. Such studies may only be justified where a major extension program is involved (Swanson, 1984).

Swanson (1984) enumerated some devices which can be used to evaluate progress toward an educational objective as follows:

1. Value scales (used to determine the values people place on things),
2. Attitude scales (show how people feel toward things),
3. Opinion polls (used to get people's opinions on various questions),
4. Knowledge and comprehension tests (used to determine if a person understands or can apply certain acquired knowledge),
5. Interest checks (used to find out subjects in which people are interested),
6. Skill or performance ratings (used to determine the amount of skill attained),
7. Adoption of practices (used to find out if certain things are being done, by whom, how many times, and mostly used in extension, and
8. Case history. This is a technique by which an individual club or farm is studied intensively and reported and is used a great deal in extension evaluation.

The North Carolina Agricultural Extension Service is using a system called Accountability/Evaluation (A&E) that requires the district or the unit to identify and report changes in clientele knowledge, planning, attitude, skills and aspirations. Program accomplishments are made known to

the extension advisory committee members, other decision makers, key individuals, and the public. During the evaluation phase, the staff will determine the impact of the educational activities, and the extension staff will be required to submit an annual plan of work and evaluation plan.

B. THE AGRICULTURAL EXTENSION SERVICE OF GHANA

Now that we are our own masters and now that the end of colonialism in Africa has become a fact, the World would show us little sympathy if we made no endeavor to do our planning to mechanize and diversify our agriculture and introduce new farms, ways, and methods to revitalize our farming society. Agriculture must not merely provide food for our people; it must create industrial strength by providing raw materials both for exports and for home manufacture (Dr. Kwame Nkrumah, 1970).

The area of modern Ghana is 92,100 square miles. This is approximately the size of the United Kingdom. Unlike Africa as a whole, Ghana contains neither desert, rugged ranges, nor particularly uninhabitable arid savannah. Ghana is in the main part an undulating scrub or grassland, which on its southern boundary supports a more luxurious vegetation. The Ashanti and Western regions have the thickest rain forest in the whole of Ghana. The hinterland of Ghana is not very hilly, and, even north of the forest, aridity is a seasonal rather than a general problem. The north is, however, too dry to support a forest, and so cannot share in the cash income derived from forest tree crops. The position is

aggravated by the high cost of moving produce from the north to the southern markets or ports. Water transport has been of no great importance within Ghana, until recently when the lake behind the Volta River Dam was full. The Tsetse fly has been seen to it that horses and cattle have played no significant role in transportation. The northern part of Ghana is mostly inhabited by Hausas, who are Moslems, but about 80% of the people in Ghana are Christians who speak Twi. The good roads and railway transportation are found only in the southeastern part of the country (Ahn, 1969).

The entity of Ghana was not known until it was colonized by the British in the 1880s. Before then, it was known as the Gold Coast (Kay, 1972). After the Gold Coast was constituted into a colony, its economy and social development became formally the concern of the British Colonial Government. Following a short break at the turn of the century the Gold Coast resumed its course of economic and social progress. Throughout the period under review, the country underwent a change from subsistence to a money economy. The local British Government proceeded to organize this changing economy of the Gold Coast in mercantilist fashion so that, like other colonies, the Gold Coast could develop into a producer of raw materials for Britain, the mother country (Agbodeka, 1972).

Religious beliefs affect the Agriculture Extension Service in Ghana. For example, in the northern region of Ghana and some parts of the Ashanti region, where Islamism is the main religion of the people, pigs among the livestock kept by the farmers are forbidden animals, and pork is not eaten by the Moslems. The eastern, western and central regions are occupied mostly by Christians and pagans, and they keep and eat all types of livestock. The pagans are the group of people who believe in the living spirits of their ancestors. They are usually found in the most remote parts of the country. Their beliefs affect agricultural extension practices. The pagans believe that the living spirit of their forefathers controls the weather and the productivity of the soil. If their "gods" are appeased or pleased, there will be plenty of food. Most of the pagans are farmers, and most of them use traditional practices in farming; however, attempts are being made to get them to use modern practices (Furon, 1971).

Ghana has two distinct seasons: the rainy season and the dry season; and Agricultural Extension work is affected by the climatic conditions in Ghana. Most crop farming is carried out in the rainy season while during the dry season, the farmers do harvesting, transportation, processing, storage, and marketing of their produce. Livestock production is carried out on a large scale during

the dry season, while crop farming is carried out on a small scale since the scorching effect of the sun kills most of the crops. Much agricultural extension work is accomplished during the rainy season.

Agriculture in Ghana depends almost entirely on human power. Neither animal drawn tools, except wooden plows in Northern Ghana, nor mechanical implements such as tractors are widely used by the farmers. Chemical fertilizers and farm yard manures are not being used on any appreciable scale by the farmers, and most farmers maintain the fertility of their land by a system of rotating bush crops (Oginonwo, 1978). Crop yields are generally low due to the poor farming techniques used by the Ghanain farmers. This is brought about by an insufficient number of trained agriculturists and an undeveloped system of agricultural extension service (FAO Terminal Report, 1979).

Ghana in the 1940s became an important producer and exporter of cocoa, palm produce, natural rubber, cotton and groundnuts (peanuts). Cocoa was the main cash crop earning foreign exchange. The staple food crops such as yams, rice, plantain, cassava and vegetables were produced at a subsistence level. Timber was produced for local industries and for export (Agbodeka, 1972).

Animal husbandry consisted of cattle, poultry, goats, sheep, rabbits, and pigs, most of which are left to wander on free range. Fish and other sea foods are harvested from the sea, rivers, and streams, which also water the hinterland.

Ghana soil is generally not fertile. In some areas where the soil is fertile, ample rainfall in the rainy season and too much heat from the sun in the dry season are limiting factors for effective agricultural production work.

Ghana has an agricultural extension system in transition. The system is classified as a typical "British Colonial type" since it is an integral part of the ministry of Agriculture.

The history of the development of agricultural extension in Ghana cannot be discussed in isolation, but must include the history of agriculture in Ghana. The Committee on Agricultural Policy and Organization reported in 1928 and identified four phases in the history of the Department of Agriculture (Sessional Paper No. XVII, 1927-28). The first phase (1889-1905) characterized as the "botanical garden era" was a time when "agricultural policy was limited to the importation of plants and the study of their behavior under local conditions." The result was a time of confusion in the minds of the public between horticulture and agriculture.

The second phase (1905-15) saw the addition of instructional and demonstrational work to the duties of the department. During this phase, the structure of the staff of the department and most of the agricultural stations and substations that existed in the twenties were established. The third phase (1915-22) saw marked changes of function and organization. During this period, instructional work was organized on a provincial basis and a staff of specialists was provided.

Agriculture was belatedly included in the Ten Year Development Program and accounted for just over 1% of the actual expenditure under the program, slightly more than was anticipated. Table 1 gives a breakdown of anticipated and actual expenditures.

In his speech to the Legislative Council in 1923, the Governor surveyed the schemes and developments in other fields and concluded that "the Department of Agriculture has made excellent progress both in dealing with the cocoa industry and in encouraging new products" (Document 24, 1927). A more comprehensive survey was undertaken in 1926 by Ormsby-Gore, who argued strongly in favor of greater importance being attached to agricultural development (Document 25, 1928).

Table 1

Anticipated and Actual Expenditure for Agriculture and Forestry Under the Ten Year Development Plan

	Anticipated	Actual
Plantation	47.8	47.8
Copra Development	31.6	16.3
Firewood Reserve (Achimota)	17.0	5.6
Rice Development	5.3	5.3
Plant Sanitation	100.0	51.3
Forest Reserve Survey	20.0	9.1
Cotton Development	30.0	15.0
Total	251.7	150.6

The British Colonial Department of Agriculture issued these points in 1951-51 as its policy to be implemented:

1. To ensure within the existing system of agriculture efficient distribution, processing and maximum production of food crops, consistent with the preservation of the natural resources of the country, in order to maintain an adequate standard of living and level of nutrition.
2. To suppress all major diseases and pests, and in particular, to control at the earliest possible date the "swollen shoot" disease of cocoa, and to rehabilitate plantations devastated by the disease.
3. To encourage within the Department of Animal Health the adoption of mixed farming and improved animal husbandry practices wherever conditions are favorable.
4. To stimulate the diversification and increased production of suitable primary products for export and provision of facilities for the inspection and grading of all such produce.
5. To carry out agricultural, ecological, economic, soil and land resource surveys in order to provide a guide for the introduction of modern methods wherever appropriate; and

6. To undertake research and experimentation in all branches of scientific agriculture and animal husbandry with a view to the improvement of local farming practices.

The first extension workers carried out advisory services. Their functions were directed toward the improvement of traditional farming through the local authority organization. In the northern part of Ghana, there were British specialists in the areas of animal husbandry; and in the south, they had an entomologist and a pathologist, all providing information for the farmers. Most of the extension work was carried out by men on horses in the north and on bicycles and sometimes on foot in the south and consisted of extensive touring of the villages (Axinn, 1972).

The major function of the early senior extension workers was teaching the rural farmers ways of fitting the major export crop, cocoa, into their farming systems. Later on, indigenous junior agricultural assistants went around convincing farmers to accept the practices of the expatriates. There were some changes in agricultural policies made, and there evolved regional ministries of agriculture in the South, North, and Ashanti regions, and a School of Agriculture was established in the Ashanti region in 1954. The regions paid more attention to agricultural

extension, but they were still providing more of services other than teaching, e.g., distribution of inputs. Later, there were training institutes and the conducting of short-term training programs in Agricultural Extension techniques. These were established in each of the regions. These institutes trained extension workers having less than five years of successful high school education (Lawson, 1972).

In the Ashanti Region, the Ministry of Agriculture has been reorganized and named the Ministry of Agriculture, Mineral Resources Division. Thus, the organization of the Ministry of Agriculture has been in transition since it was started in 1860 (Dickson, 1969).

The extension part of the Ministry has been involved in supply, education, marketing, research, and direct production of agricultural products. The main aim of the Ministry of Agriculture (Extension Division) was to improve the conditions of the small farmers in all ways. There was no national legislation passed to establish and develop the Agricultural Extension Service in Ghana.

Organization

Scott (1969) said that the activities performed in an organization are affected by the structure of the

organization. An organization calls for unity of command "one boss for each group of employees," assignment of a function to one unit, authority to act commensurate with the responsibility assigned, limited span of management (number of positions supervised by a manager), and other organizational patterns. An organization is viewed as a process of balancing the demands of individual and work group performance, enabling performers to work together as effective as possible in the achievement of the overall objectives (Mintzberg, 1979).

The organization of the Agricultural Extension Service in Ghana is under the affairs of the national government (Ministry of Agriculture) and the regional Ministries of Agriculture. The two bodies at the rural farmer level do the same work of improving the productivity of the peasant farmers of Ghana (La-Anyanee, 1969). The Ministry of Agriculture in Ghana has the following branches or sections:

- (a) Extension Division,
- (b) Fisheries Division,
- (c) Natural Resources Division,
- (d) Research Division.
- (e) Cocoa Division,
- (f) Mining Division,

- (g) Timber Division,
- (h) Forestry Division, and
- (i) Animal Husbandry Division

See Figure 2, The Organizational Chart of Ghana Ministry of Agriculture.

The Agricultural Extension Service is further subdivided into programmatic areas such as Food Crops, Tree Crops, Livestock, Home Economics, and Horticulture.

The Principal Agricultural Office (PAO) is in charge of Agricultural Extension Service in Ghana (National Level). He reports to the Permanent Secretary of the Ministry of Agriculture who is housed in Accra. The regions are further divided into districts. The Chief Agricultural Officers are usually in charge of the agricultural extension programs at the regional level. They are assisted by agricultural officers who are usually placed in charge of districts to organize the Agricultural Extension Service Programs. See Figure 2, The Organizational Chart of Ghana Ministry of Agriculture.

Local

At the local level, the Agricultural Extension Service is organized through the District Agricultural offices in the regions. The districts are made up of villages. The Agricultural Officers (AOs) are usually in charge of the organization on the district levels. Agricultural Assistants

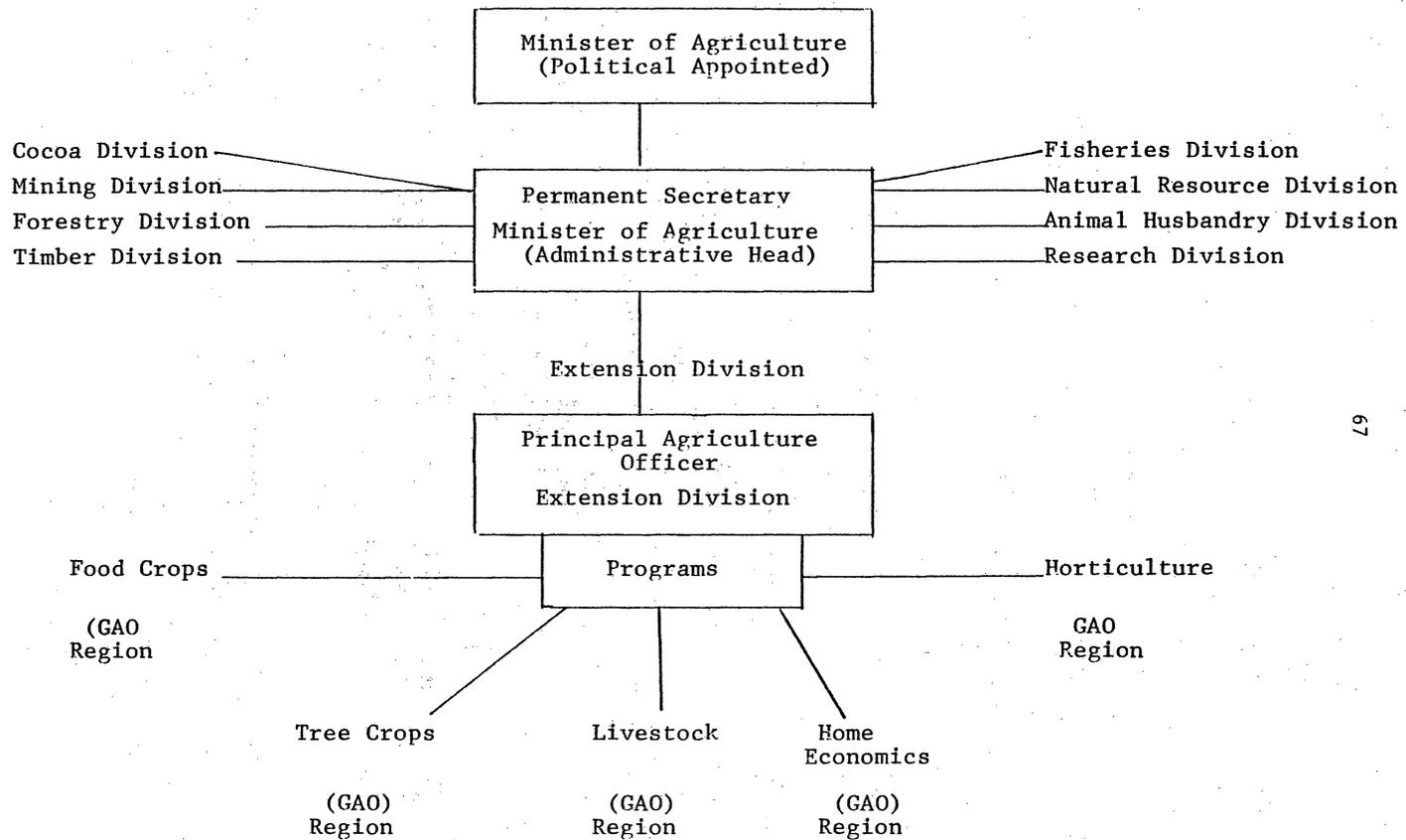


Figure 2. Organizational Chart of the Ghana Ministry of Agriculture

(AA), Agricultural Demonstrators (ADs) and Laborers and Machine Operators (MO) carry out programs of general extension work. Agricultural Assistants are placed in charge of the districts. The Laborers and Machine Operators are housed at the district agricultural offices from where they provide support services to the agricultural extension workers in the field (village farms and government farms).

Program Areas

The extension division of the Ministry of Agriculture in Ghana has the following program areas:

1. Tree Crops
2. Food Crops
3. Home Economics
4. Livestock
5. Horticulture
6. Other integrated programs such as fertilizer promotion programs, supervised agricultural credit programs, seed multiplication programs, plant protection, etc. (Furon, 1971).

Tree Crops Program

Tree crops of importance in the Ghanaian forest zone include cocoa, coffee, rubber, oil palm, and coconuts, though other tree crops such as citrus also have possibilities (Beckman, 1976).

Cocoa requires a very fertile soil. In the Brong Ahafo and Ashanti regions, cocoa and rubber are produced. In the southern part of Ghana, oil palm and cocoa are the main tree crops grown. The Agricultural Extension Division carries out tree crop rehabilitation schemes to encourage farmers to establish plantations of these permanent tree crops.

Projects such as tree crop nursery projects and plant protection projects are developed. Farmers who operate tree crop plantations receive subsidies in the form of cash and kind (Ahn, 1969).

Food Crops Program

The food crops program is geared toward the production of enough food crops as a weapon against malnutrition and disease and to help in the reduction of food imports from other countries.

Under the Food Crops Program are projects such as annual crops, seed improvement, gardening, spraying, and plant protection. The Ghana government large scale food production projects were centered in the Brong Ahafo and the Ashanti regions where the Farmers Cooperatives were established to produce, process, store, and market such food as yams, cassava, maize, corn, plantain, and selected root crops (Ahn, 1969).

Home Economics

The Government of Ghana in collaboration with the Food and Agriculture Organization of the United Nations, initiated a Home Economics planning project for rural development. This project is to coordinate all the Home Economics Extension Services in the country.

The Home Economics program in Ghana has the following aims:

1. Effective child-rearing practices based on the situations found in the rural areas.
2. Encouragement of rural women to pool their resources through cooperative societies and small-scale industries with a view to increasing family income.
3. Reduction of urban migration.
4. Improvement of the health of the people.
5. Encouragement of the use of appropriate clothes.
6. Education of families on birth-control methods.

Livestock Program

This program is still in the early phase of establishment. The livestock program includes projects such as beef production, dairy production, poultry, livestock research and veterinary service and grazing research and pasture development. The program was allocated a total of \$105 million for the 1984-85 fiscal year (FY). There are

establishments in the areas of cattle ranches, rehabilitation of livestock, provision of marketing and distribution infrastructures, feed and pasture development and the provision of essential services and infrastructure (Economic Recovery Program 1984-85, Accra, Ghana, 1984).

Horticulture Program

The horticulture program in Ghana is designed to encourage and help the peasant farmers in producing plenty of fruits and vegetables. The agricultural extension horticulture workers sell vegetable seeds and help the vegetable garden farmers to obtain seeds from the agricultural stations. The Extension Division sometimes gives out free seeds and seedlings to encourage the farmers to engage in horticulture. Farmers are encouraged to establish gardens in the urban areas as well as in the rural areas. This program is also planned to encourage low income peasant farmers to reduce their expenditure for food and obtain nutritional meals at the same time.

The horticulture program in Ghana also promotes the planing of flowers and shrubs for home beautification; however, the peasant farmers are mostly concerned with planting familiar horticulture plants like tomatoes, onions, peppers, spinach, and other indigenous vegetables.

In the horticultural program, the government activities are directed toward providing fertilizer, pesticides, improved seeds and seedlings, farm machinery and equipment, extension services and some infrastructure.

Other Integrated Programs

Ahn (1969) reported that the total program included agricultural information programs, supervised agricultural credit programs, plant protection programs, fertilizer promotion programs, soil conservation programs, agricultural economics programs, rural women's programs, and other training programs.

Communication Process and Methods Used

The only way to insure "transfer" (i.e., to insure that training received in one situation will prove helpful in another) is to increase the similarity or the number of so called identical elements between the learning situation and the situation in which you want the learning applied (Sanders, 1966).

Rogers and Shoemaker (1971) analyzed a study about research on the adoption of new ideas carried out in some societies where the villagers live according to the laws and their customs. They said that social structure always serves to hamper the diffusion of innovations and that local traditions like the beliefs of the villages even if they are not scientifically proven to be true. They concluded that in

traditional societies the important factor affecting the adoption of any innovation is its compatibility with the cultural beliefs of the social system. They also said:

In summary, a social system with modern norms is more change oriented, technologically developed, scientific, reactionary, cosmopolite, and empathetic. A traditional system embodies the opposite characteristic (Axinn, 1972).

Communication is the process by which information is passed from a source to a receiver. Communication channels provide the means by which the information is transmitted.

The communication channels used by farmers are commonly classified as follows:

1. Mass media, such as radio, television, newspapers and leaflets from the government,
2. Personal contact with extension workers, either on an individual basis or in small groups.
3. Personal contacts with other farmers (Swanson, 1984).

The Agricultural Extension Service in Ghana uses a variety of mass media methods to change attitudes and behavior and teach new skills. Some of the methods used are newspaper, bulletins, leaflets, exhibits, agricultural shows, and radio and television programs. Of these the radio is most used for informal agricultural education. The radio station is operated and controlled by the government at the

district level. The government cannot depend on a good network of roads, fuel supplies, or serviceable transport, nor do they demand a high level of literacy; and the programs are broadcast in the local languages. Other mass methods are effective only when people are drawn together for other purposes, for example at weekly markets, soccer matches, or other mass gatherings.

Axinn (1972) reported that in a study carried out in southern Ghana, talking with one another was the main means of communication found among farmers and that rural people devoted an extremely low proportion of time to such activities as listening to the radio and reading newspapers or any other kind of material. They also reported that the major methodology of the extension system, with respect to its education function, seems to consist of personal visits and demonstrations.

Axinn noted that how to get from one farm or demonstration plot to the next is a problem in extension education. In Ghana, the face-to-face or individual contact method, the farm and home visit, demonstration method, meetings, lecture meetings, radio and exhibits are the common methods used by extension workers to communicate with the farmers. Office calls, telephone calls, correspondence, use of visual aids, publications and television are not used

extensively because most farmers cannot read or write. These methods are also expensive, and there are not networks of radio, telephone, and television in the rural areas. Table 2 shows different methods used in extension work and the degree of their use in Ghana.

Many of the teaching methods are not commonly used in Ghana. There exist some domestic, social, economic, education, religious, and political factors which influence the adoption of agricultural practices through these teaching methods. Methods used must be compatible with the lifestyle of the people, inexpensive and easy to comprehend.

Reporting and Program Evaluation

Reporting

Evaluation is utilized for identifying how well the programs are progressing. It is an important tool because it guides the extension workers in their activities. Evaluation provides the extension agents with the results of their efforts expressed in terms of changes in the clientele behavior and also acts as a benchmark by which the progress of the extension work is measured. Many extension personnel avoid evaluation of their work in Ghana in order not to expose their incompetence and apathy (Personal interview with Ibrahim Adam, Undersecretary of Agriculture, August 8, 1985).

Table 2

Extension Method Used in Ghana

Type of Method	Most Common	Used Sparingly	Not Common
1. Individual Contact Method			
(a) Farm and Home Visit	X		
(b) Office Calls		X	
(c) Telephone Calls			X
(d) Correspondence			X
(e) Result and Method Demonstration	X		
2. Group Methods			
(a) Method and Result Demonstration	X		
(b) General Meetings		X	
(c) Lecture Meetings	X		
(d) Use of Audio-visual Aids		X	
(e) Group Discussion			X
(f) Program Planning Meetings			X
(g) Field Meetings		X	
(h) Tours		X	
(i) Achievement Days			X
3. Mass Media Method			
(a) Publications		X	
(b) Radio	X		
(c) Television		X	
(d) Exhibits		X	
4. Indirect Influence Method			
(a) Neighbors	X		
(b) Local Leaders	X		

Davis (1967) noted that there is no specific section within the agricultural extension division to carry out the evaluation of agricultural extension programs in order to assess the success and failure of the system.

The evaluation of extension programs is carried out by the personnel of the Ministry of Agriculture on the national, regional, and district levels. Each agricultural extension worker incorporates in his monthly report of work an evaluation statement of the programs he or she is carrying out. Each agricultural extension workers keeps a daily record of work.

Reporting

The personnel of the Agricultural Extension Service in Ghana report monthly on the following endeavors or undertakings:

1. Work schedule accomplishments
 - (a) Educational visits to farmers
 - (b) Condition of tree-crop nurseries
 - (c) Condition of food-crop nurseries
 - (d) Size of oil-palm plantations
 - (e) Livestock farmers
 - (1) New herds and ranches
 - (2) Number of goats, sheep, poultry, and cows
 - (f) Condition of horticultural plants

2. Disease and pest control activities undertaken by the extension personnel.
3. Irrigation report - (number of farms that were irrigated by the extension agents).
4. Spraying report - (what kinds of crops or trees were sprayed).
5. Breeding measures report - (the number and accomplishments of breeding activities).
6. Number of supported farmers - (number of new farmers who received a cash subsidy).
7. Nutrition report - (how many new farm families joined the nutrition program).
8. Fertilizing and ridging report - (number of farmers involved in fertilizing and ridging activities).
9. Labor report - (number of people working on the farm).
10. Climatic conditions report - (the weather conditions for the month).

Chapter Summary

The U. S. Agricultural Extension Service grew out of a unique partnership of federal, state and local governments and the land-grant colleges and universities. The Morrill Acts of 1862 and 1890 and Smith-Lever Act of 1914 provided support and funds for the Agricultural Extension Service.

The Agricultural Extension Service is organized by the federal, state, and county governments. The chief organizers are the Secretary of Agriculture, the Director of the Extension Service, and the district and county chairmen. There are personnel on the various levels to help carry out the programs of the Extension Service.

There are four program areas of the Agricultural Extension Service: Agricultural and Natural Resources, 4-H, Community and Rural Development, and Home Economics. These programs help the individual members in their rural areas to achieve their educational goals.

The methods used in extension work are visits, office calls, telephone calls, mail requests, answering sets, and demonstrations. These same methods are used in teaching the clientele.

There are two broad content areas used in reporting; the operational data and the accomplishment data. With accomplishment reporting, certain information regarding program achievement and changes resulting from the activities of the Extension organization are provided. Two kinds of evaluation are used--the casual everyday evaluation and extensive formal annual evaluation.

The Agricultural Extension Service in Ghana grew out of the need for increased raw materials for Britain, the mother country. The extension service was established after the Ormsby Gore's policy in 1926 to improve the indigenous farmers' methods of farming.

The Agriculture Extension Service in Ghana is organized on the National, Regional and District levels. The Minister of Agriculture, a political appointee, is the chief organizer. The Extension Division is one component of the Ministry of Agriculture.

The program areas of the Extension Service are tree crops, food crops, home economics, livestock, horticulture, and other integrated programs.

The main communication system found among farmers in Ghana is talking with one another. Most of the common extension methods used in the United States are not used in Ghana due to social, economic, and religious hindrances. Evaluation programs are carried out by the personnel of the Ministry of Agriculture on a monthly basis, but little attention is paid to program outcome. Some of the programs reported on a monthly basis in Ghana are the work schedule accomplishment, disease and pest control, and nutrition.

CHAPTER III

METHODOLOGY

Introduction

This chapter is divided into four sections as follows:

1. Steps in descriptive research study;
2. Review of resources;
3. Sources of information; and
4. Conclusion and recommendations

Descriptive Research

In conducting a descriptive research study, Kerlinger (1964) stated that "predicting and identifying relationships among and between variables is the goal of the competent investigator." He further gave an outline of the steps of descriptive research as follows:

1. examine the problematic situation;
2. define the problem;
3. list the assumptions;
4. select the appropriate subjects and source materials;
5. select or construct techniques for collecting the data;

6. establish categories for classifying data; and
7. make discriminating, objective observations and describe, analyze, and interpret the findings in a clear precise terms (Kerlinger, 1964).

Isaac and Micheal (1981) and Kerlinger (1964) noted that "descriptive research does not necessarily seek or explain relationships, test hypotheses, make predictions, or get at meanings and implications."

Review of Resources

In the initial phase of the research, a literature review was made. The following elements of the Agriculture Extension Service of the United States (North Carolina) and Ghana were reviewed:

1. background and history;
2. organization;
3. program areas;
4. communication processes and methods used; and
5. reporting and program evaluation.

Even though there are 50 states in the United States, limited time and available resources did not permit the selection of more than one state for an in-depth study of the Agricultural Extension Service. The writer made a number of visits to interview North Carolina Agricultural extension

personnel to collect information on organization, program areas, communication processes and methods used, and reporting and program evaluation. Whenever needed, the writer made field trips to interview agents and personnel to gather factual information on farmer participation in the Agricultural Extension programs in the selected areas to be researched.

Based on the writer's experience in agricultural extension in Ghana and available material, the agricultural extension service in Ghana was described. The study presents information on the background and history, organizational structure, program areas, communication processes and methods used, and reporting and program evaluation for both North Carolina and Ghana.

Source of Information

1. Organizations:

Printed materials were obtained from the World Bank, the United States Agency for International Development, the Library of Congress, public libraries, the U. S. Agricultural Extension Service, and the Ghana Embassy in Washington D. C.

2. People:

North Carolina State University (Agricultural Extension Service), Raleigh, North Carolina:

The Assistant Director, County Operations of North Carolina Agricultural Extension Service, Dr. Paul Dew; the Associate State Leader, Agriculture, North Carolina Agricultural Extension Service, Dr. F. Brooks, the Associate State 4-H Leader Specialist In Charge of 4-H, North Carolina Agricultural Extension Service, Dr. Michael Davis; The Associate State Leader, Community and Rural Development, North Carolina Agricultural Extension Service, Dr. V. E. Hamilton; the 4-H Specialist, EFNEP (4-H EFNEP), Mrs. Minnie Brown (retired).

North Carolina A & T State University (Agricultural Extension Service, Greensboro, North Carolina:

The Associate Dean and Administrator, North Carolina A & T State University, Dr. D. C. Godfrey;
The Program Coordinator, Home Economics, North Carolina A & T State University, Dr. Thelma Feaster;
The Program Coordinator, Agriculture and Natural Resources, North Carolina A & T State University, Dr. Daniel Lyons; The Specialist of

Forestry, North Carolina A & T State University, Dr. Robert Williamson; The Professor of Agricultural Economics, North Carolina A & T State University, Dr. Albert Yeboah; and Professor of Agricultural Education, North Carolina A & T State University, Dr. I. C. Rogers.

Virginia Polytechnic Institute and State University,
Blacksburg, Virginia:

The Associate Dean and Assistant Director, Virginia Cooperative Extension Service, Dr. William Flowers.

Ghana Consulate, Washington, D. C.:

The Information Director, Ghana Consulate, Mr. George Akoto.

Answers to each research question were determined, and descriptive comparisons were made.

Conclusions and Recommendations

Conclusions and recommendations for each element were made based on the results of the comparison of the United States (North Carolina) and the Ghanain extension systems

CHAPTER IV
AN ANALYSIS OF THE AGRICULTURAL EXTENSION SERVICE
OF THE UNITED STATES (NORTH CAROLINA) AND THE
AGRICULTURAL EXTENSION SERVICE OF GHANA

Introduction

The agricultural extension education programs in both the United States and Ghana have been described in chapter two. There is some similarity in the organizational structure in both countries, but there are many differences in how the programs are carried out. Swanson (1984) enumerated a number of variations that contributed to differences in the agricultural extension education programs between the United States and Ghana. Some of these were stages in economic advancement, advances in science and technology, per capita income of the farmers, educational level of farmers, stages of farmers in the adoption of new farming methods, and the different sizes of farming operations. In this chapter will be found a comparison of the agricultural extension education programs of the United States and Ghana with reference to background and history, organization, program areas, communication processes and methods used, and reporting and evaluation of programs.

Background and History

USA

The Agricultural Extension work in the United States grew out of the historical situation. Many societies of agriculture were formed in the late 1700s that promoted the agricultural industry. One of the first societies was the Pennsylvania Society in 1785. The leaders of the colonial period who were engaged in agriculture kept in constant correspondence with the other colonists and friends in Europe, so that they might benefit from their farming experience. Agricultural papers were few and livestock production limited in circulation, and it was not until after 1850 that an agricultural press was developed. The Morrill Acts of 1862 and 1890 established the land-grant universities which allowed each state to establish land-grant colleges to offer agricultural courses. Booker T. Washington began his Farmer's Day at Tuskegee Institute. He did weekend plowing and planting in the communities. He later used a motorized unit known as a Jessup Wagon in 1906 for his farm demonstration. There was no instruction in agriculture in the public schools as late as 1850, and it was not until 1855 that the Michigan Agricultural College was established as the first of many schools for the farm sector (Edmond, 1978). The Extension

GHANA

The British government organized and changed the mercantilist economy of Gold Coast to a producer of raw materials.

Religious beliefs affected the Agricultural Extension Service in Ghana. In the northern part of Ghana and parts of the Ashanti Region pigs are forbidden animals, and pork is not eaten by the Moslems.

Crop farming in Ghana is very seasonal. Most crop farming is carried out in the rainy season

is carried on during the dry season.

Agriculture in Ghana depends almost entirely on human power. Neither animal drawn tools, except wooden plows in northern Ghana, nor mechanical implements such as tractors are widely used by farmers.

Animal husbandry consisted of cattle, poultry, goats, sheep, rabbits, and pigs, most of which were left to wonder on free range.

In most areas the Ghana soil is not fertile. Where the soil is fertile, ample rainfall in the rainy season and too much heat from the sun in the dry season are limiting factors for effective agricultural production.

The Agricultural Ex-

Service was established after the enactment of Smith-Lever Act of 1914, following the Morrill Acts (of 1862 and 1890), and the Hatch Act (Experiment Station Act) of 1887. The primary purpose was to extend education from the land-grant institutions and experiment stations to the farmers in the communities. The Smith-Lever Act was passed to provide funds and develop the Agricultural Extension Service. Men such as Seaman Knapp and Cassius Hudson carried out farm demonstrations. The more recent legislative acts that promoted the improvement of the Extension Service were Purnell Act of 1925, which allocated funds for economic and social research and the Capper-Ketcham Act of 1928 which allocated funds for agricultural extension with a provision that at least 80% of the funds be used to pay salaries of the extension agents.

tension System is classified as a typical "British Colonial type" since it is an integral part of the Ministry of Agriculture.

The Agricultural Extension Service in Ghana was established after the Ormsby Gore's Policy in 1926 as a by-product of the British Colonial government.

Prior to the establishment of the Ministry of Agriculture in 1890, the extension service was characterized as the "botanical garden era," and agricultural policy was limited to the importation of plants and the study of their behavior under local conditions. The last phase saw the addition of instructional and demonstration work to the duties of the department. During this phase, the structure of the staff of the department and most of the agricultural demonstrations that existed in the twenties were established.

Summary of Similarities and Differences

Similarities

The colonial leaders who were engaged in agriculture stayed in contact with other colonists and friends in Europe through correspondence to benefit from their farming

experience. The Agricultural Extension service grew out of an historical situation. It was formed to help serve the needs of farmers. The Smith-Lever Act of 1914 facilitated the formal organization, but many other legislative acts provided funds and direction. The success of the Agricultural Extension Service is attributed to the flexible nature of its goals and objectives according to the changing needs of society.

The Agricultural Extension Service in Ghana is classified as a typical "British Colonial type" since it is an integral part of the Ministry of Agriculture. The Agricultural Extension Service in Ghana was characterized as a botanical garden era because most of the agricultural policy was limited to the importation of plants and the study of their behavior under local conditions. The formal Agricultural Extension program did not start until the Ormsby-Gore's policy in 1926, and its development and improvement have been neglected until recently.

Differences

Many societies were formed in the late 1700s that promoted the concept of an agricultural extension service. The Smith-Lever Act was passed to provide funds and develop the Agricultural Extension Service. The most recent legislation was in 1953, when the funds and directions

provided under the different acts were consolidated into one piece of legislation, the Amendment of the Smith-Lever Act of 1953.

The establishment of an agricultural press after 1850 promoted and improved the circulation of agricultural papers. From about 1890, Booker T. Washington carried out farm demonstration work at Tuskegee and did weekend plowing and planting in the communities.

Religious beliefs affected the Agricultural Extension Service in Ghana. Mostly in the northern and some parts of the Ashanti region, pigs are forbidden animals, and pork is not eaten by Moslems. Crop farming in Ghana is seasonal. Most crop farming is carried out in the rainy season, and livestock production is carried out during the dry season. The Agricultural Extension Service in Ghana was established solely to produce raw materials for the mother country, Britain.

The agricultural extension work almost entirely depended on human power, except for the use of wooden plows in northern Ghana. Tractors and mechanical implements are still not widely used. The Agricultural Extension Service is part of the Ministry of Agriculture.

Organization

USA

GHANA

Districts

There are six extension districts in North Carolina that are supervised by the district chairmen. There are also secretarial staffs to provide support services at the various district offices.

Districts

There are 86 extension districts in Ghana which are supervised by the Agricultural Officers report to the Chief Agricultural Officers who report in turn to the Principal Agricultural Officer.

Counties

There are 100 counties in North Carolina. In each there are Agricultural Extension Service programs. There are about 350 extension agents working in the counties. The extension agents report to the county chairman, who reports in turn to the district chairman.

Villages

The extension districts in Ghana are made up of villages and are supervised by the Agricultural Assistants with the Agricultural Demonstrators and the Machine Operators providing support services.

Summary of Similarities and Differences

Similarities

The Agricultural Extension Service in the United States is a cooperative arrangement between the land-grant institutions, the United States Department of Agriculture, and the local or county governments. The extension hierarchy begins with the county or local level and moves upward to the state and federal levels. The Agricultural Extension Service in Ghana has four hierarchy levels starting from the village level to the district, regional, and national levels.

Differences

The Agricultural Extension Service in the United States is highly decentralized and is functionally linked with the land-grant institutions. The Service is responsible for extension education only. The administrative process is highly decentralized at the state and the county or local levels.

In Ghana, the administrative process is highly centralized. The Ministry of Agriculture in Ghana is solely responsible for the entire extension organization. The organizational structure does not have any functional link with the institutions of higher education. Other functions like marketing are carried out in addition to the extension education responsibilities.

Program Areas

USA

The Agricultural Extension Service has four program areas, Agriculture and Natural Resources, 4-H, Home Economics, and Community and Rural Development (CRD). The main purpose of these programs are to increase the educational level of the people, enhancing their social status and improving their productivity. The programs are developed from the "bottom to the top" (from the local people to the administrator). The

GHANA

The Extension division of the Ministry of Agriculture in Ghana has the following program areas: Tree Crops, Food Crops, Home Economics, and Livestock. The programs are designed to help the clientele increase productivity, income, social status and knowledge of modern farming methods. The program development process is from the "top to bottom" (from administrators to the local people).

The Agricultural and Natural Resource Program is the broadest of all Agricultural extension programs. There are other programs such as individual farm management assistance, drought assistance, integrated weed management systems, cotton assistance, and insect management on turf grass assistance. The 4-H youth program offers informal educational programs designed to meet the needs of all boys and girls between the ages of 9 and 19.

The Community and Rural Development Program involves the use of a decision-making procedure commonly referred to as the public policy process. The CRD program involves the members of the Community and a Rural Development Advisor Leadership Committee and Extension personnel at the state and county levels. Meetings are held to obtain input from interested citizens in each county across the state. There are five major programs in the Home Economics Program and are categorized on the basis of priority. They are family economic stability and security; foods, nutrition and health; energy and living environment; family strength and social environment; and voluntaryism and leadership development.

The problem-centered approach is used in planning the Home Economics programs. Some of the techniques and media used by the paraprofessionals are demonstrations, workshops, meetings, television, radio, newsletters, and publications.

Under food crops program are projects such as annual crops, seed improvement, gardening, spraying and plant protection.

Farmers who operate tree crop plantations receive subsidies in form of cash kind.

The Home Economics program is initiated by the Ghana Government with help from the FAO.

The livestock program is in its early stage of development. In the horticulture program the government activity is directed toward providing fertilizer, pesticides, improved seeds and seedlings, farm machinery and equipment. There are other integrated programs such as fertilizer promotion programs, supervised agricultural credit programs, seed multiplication programs, and plant protection programs.

Summary of Similarities and Differences

Similarities

There are four different types of programs carried out by the Agricultural Extension Service in the United States. The programs are Agriculture and Natural Resources, 4-H, Home Economics, and Community and Rural Development (CRD). Some other programs exist such as the individual farm management assistance, drought assistance, integrated weed management assistance, cotton assistance and insect management.

The Agricultural Extension Service in Ghana has the Tree Crops, Food Crops, Home Economics, and Livestock programs. There are other integrated programs such as fertilizer promotion programs, supervised agricultural credit programs, seed multiplication programs, and plant protection programs.

Differences

The United States Agricultural Extension Service is a "bottom-to-top" type of program development process. Long range and annual plans are prepared as a result of combining the knowledge of the local people from each county. The county agents have more freedom to plan and implement local extension programs, and administrative direction has been kept to a minimum.

The Community and Rural Development Program involves the use of a decision-making procedure commonly referred to as the public policy process. The five major program areas in Home Economics are categorized on the basis of priorities. The problem-centered approach is used in planning Home Economics programs.

The Agricultural Extension Service in Ghana has a "top-to-bottom" type of program development process. A common district program implementation is developed annually for each district but not for the villages. Since administrative control is in the hands of higher level officers, most of the ideas of those officers are included in the program developed. There is no opportunity for village workers or lower level personnel to plan and implement extension programs. The Agricultural Extension Service does not have any youth program like its counterpart in the United States. The Home Economics program was initiated by the Ghanaian government and is sponsored by the Food and Agriculture Organization of the United Nations.

In the horticultural program, the government activity is directed toward providing fertilizer, pesticides, improved seeds, and farm machinery.

Communication Processes and Methods Used

USA

The North Carolina Agricultural Extension Service basically uses the diffusion process (usage of trial and adoption methods where perception occurs as a result of awareness, interest and evaluation) of communicating ideas to its clientele.

Some of the specific methods that are used often are farm and home visits, office calls, telephone calls, and correspondence. Most of the clientele are reached in North Carolina on a group-by-group basis, through the use of local leaders and the mass media. Some examples of mass media used in the United States are exhibits, fairs, bulletins, leaflets, circulars, radio, television, and visual aids. The individual contact method is used when it is requested.

There is also a telephone answering service program at the North Carolina Agricultural Extension Service called the "teletip" program. Agents or farmers can call on a regular telephone line to the teletip office and receive answers on specific programs.

GHANA

The diffusion process (usage of trial and adoption methods where perception occurs as a result of awareness, interest and evaluation) is used mostly in Ghana to communicate ideas to the farmers. Some of the methods that are group methods, mass media, indirect influence, and use of local leaders.

Some examples of mass media used to teach new skills are newspaper, bulletins, leaflets, exhibits, shows, radio, and television. Of these the radio is used most. It is centrally controlled by the government at district level. The programs are given in the local languages. Other effective mass methods used are when the people are drawn together for such things as weekly market, soccer matches, or other mass gatherings. Most of the farmers are reached in Ghana individually and by means of home visits. The group contact method is used sparingly.

Summary of Similarities and Differences

Similarities

The Agricultural Extension Service in the United States basically used the diffusion process (usage of trial and adoption methods where perception occurs as a result of awareness, interest, and evaluation) of communicating ideas to its clientele. Most of the clientele are reached on a group basis through the use of local leaders and mass media.

The Agricultural Extension Service in Ghana uses the diffusion process. It is used mostly to communicate ideas to farmers. Some of the methods that are used often are group methods, mass media methods, indirect influence and use of local leaders.

Differences

The Agricultural Extension Service in the United States also uses answering service programs where agents or farmers can call and receive answers on a specific program or topic. The clientele are met more frequently on a group basis other than on an individual basis.

Most of the farmers in Ghana are reached individually and by means of home visits. The group contact method is used sparingly. The training and visit system has been adopted as

the best approach to reach the clientele. Visits are made on an individual basis. Radio is the most used mass media method in Ghana. It is centrally controlled by the government, and the programs are broadcast in local languages. Another mass media method used in Ghana that is effective is when the people are drawn together; for example, at weekly markets and soccer matches.

Reporting and Program Evaluation

USA

The North Carolina Agricultural Extension Service has its own evaluation unit. Evaluation activities are under the guidance of a trained staff member called an "Evaluation Specialist." It emphasizes accountability, and people are kept informed about the achievement of the agricultural extension program through reports and news media. Some of the devices used for evaluation are:

- (1) Value scales
- (2) Opinion polls
- (3) Comprehensive tests
- (4) Interest checks
- (5) Attitude checks
- (6) Performance ratings
- (7) Case histories
- (8) Adoption of practice checks

The accountability and evaluation report system is submitted periodically

GHANA

There is not a section within the Ministry of Agriculture for evaluation purposes. Some of the extension workers keep records of their activities on a weekly or monthly basis. The public or the people are not informed about their success or failures. Data and important information is not organized or kept in a systematic way. Most of the extension personnel are not adequately trained for their jobs.

Some of the programs that are reported on monthly basis by the Agricultural Extension personnel in Ghana are:

- (1) Work schedule accomplishment
- (2) Disease and pest control
- (3) Irrigation report
- (4) Spraying report
- (5) Breeding measures report
- (6) Number of supported

USA

ranging from daily reports to an annual narrative report. Benchmark data and information are stored in the computer. The extension personnel are trained to report and evaluate their own and others' activities effectively.

GHANA

farmers
 (7) Nutrition report
 (8) Fertilizing and ridging report
 (9) Labor report, and
 (10) Climatic conditions report

Summary of Similarities and Differences

Similarities

The Agricultural Extension Service in the United States at the state level has a separate evaluation and reporting unit that is headed by a specialist for evaluation.

The Agricultural Extension Service personnel in Ghana report on such programs as disease and pest control, irrigation, spraying, and nutrition. The reporting system is voluntary; the extension personnel decide whether or not to report on their programs.

Differences

The Agricultural Extension Service in the United States has a separate evaluation and reporting unit at all levels. Special emphasis is placed on accountability. The public is informed about program achievement at all levels. The

reporting and evaluating unit is organized and systematic at all levels. Special devices like interest checks and opinion polls are used to evaluate programs.

The Agricultural Extension Service in Ghana has no special evaluation and reporting unit. The Extension programs are evaluated by the personnel of the Ministry of Agriculture on the national, regional and district levels. Each extension worker incorporates in his monthly report of work evaluation statements on the programs he or she is carrying out. Data and important information is not organized or kept in a systematic way.

Summary

The comparison of the background and history of the Agricultural Extension Service in the United States and Ghana shows that the Agricultural Extension Service in the United States was established after the enactment of the Smith-Lever Act of 1914, Morrill Acts of 1862 and 1890, and the Hatch Act of 1887, while the Extension Service of Ghana was established after the Ormsby-Gore's Policy in 1926 as a by-product of the British government.

The United States Agricultural Extension Service is organized on the county, state, and federal levels, but its counterpart in Ghana is organized on the national, regional, and local levels.

The program areas of the United States Extension Service are agricultural and natural resource, 4-H, home economics, and community and rural development. The extension division of the Ministry of Agriculture in Ghana has a different set of program areas; namely the tree crops, food crops, home economics, livestock horticulture, and other integrated programs.

Both the United States and the Ghana extension service use the diffusion process of communicating ideas to its clientele.

The United States Agricultural Extension Service has its own evaluation unit under the guidance of a trained staff, but the extension service in Ghana does not have any section responsible for evaluating the programs, communication processes, methods used, or methods of reporting and program evaluation.

A summary of similarities and differences between the Agricultural Extension program in the United States (North Carolina) and Ghana is shown in table 2.

Table 3

Summary of Similarities and Differences Between the
Agricultural Extension Programs of the United States (North
Carolina) and Ghana

United States Agricultural Extension Service (North Carolina)	Ghana Agricultural Extension Service
--	---

Background and History

Similarities

- | | |
|--|---|
| 1. Smith-Lever Act of 1914 established and funded Agricultural Extension Service at the federal level. | 1. Ormsby-Gore's Policy of 1926 provided for the development of the Agricultural Extension Service. |
|--|---|

Differences

- | | |
|--|--|
| 1. Establishment of Agricultural Societies. | 2. Goals and objectives are fixed. |
| 2. Agricultural Extension Service is a cooperative effort between the federal, state and county or local levels. | 2. Was started to produce raw materials for Great Britain. |
| 3. Originated to serve the needs of the people | 3. Established botanical gardens only. |
| 4. Instruction is provided by means of demonstration. | 4. Religious beliefs affected the Extension activities. |
| 5. Success is attributed to flexibility in its goals and objectives. | |

Table continued

Organization

Similarities

- | | |
|---|--|
| 1. There exists 3 levels of organizational structure. | 1. The organizational structure is composed of 4 levels. |
|---|--|

Differences

- | | |
|---|---|
| 1. It is a cooperative arrangement between the federal government, land-grant institutions, and the local or county government. | 1. The national government is solely responsible for Agricultural Extension work. |
| 2. There is a functional link between the Extension Service and the land-grant institutions. | 2. Supply and marketing functions are performed in addition to extension education. |
| 3. Responsible for extension education only. | 3. All levels of the extension service are administered from the national level. |
| 4. Each of the 3 levels is responsible for the administration of the extension program at that level. | |

Table continued

Program Areas

Similarities

There are no similarities in the program areas.

Differences

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Programs at the state and federal level are developed based on the people at the local level. 2. Long-range and annual plans are prepared with the help of personnel at the land-grant institutions. 3. There is more freedom for agents to plan and implement local extension programs. | <ol style="list-style-type: none"> 1. All programs are developed at the national level. 2. All district programs are developed at the national level without the consideration of the needs of the village people. 3. The Extension Service does not have a youth program. |
|---|---|

Communication Processes and Methods Used

Similarities

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. The diffusion process is used to teach the clientele. 2. The mass media used are exhibits, radio, fairs, and leaflets. | <ol style="list-style-type: none"> 1. Diffusion methods are used to communicate with the farmers. 2. The mass media used are exhibits, radio, fairs and leaflets. |
|--|---|

Differences

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Clientele are met more often on a group basis rather than individual basis. 2. Answering service telephones are used to teach clientele. | <ol style="list-style-type: none"> 1. Most farmers are reached individually by means of home visits. 2. Methods used are indirect influence such local chiefs. |
|--|--|

Table continued

Reporting and Evaluation

Similarities

There are no similarities in the reporting and evaluation of programs.

Differences

- | | |
|--|---|
| 1. There is a separate evaluation and reporting unit at each level. | 1. There is no special evaluation and reporting unit at any level. |
| 2. Special emphasis is placed on accountability. | 2. Information is not organized, reported, or available for future use. |
| 3. The public is informed about program achievement at all levels. | 3. The public is not informed about program achievement. |
| 4. The reporting and the evaluating unit is organized and systematic at all levels. | |
| 5. Special devices like interest checks and opinion polls are used to evaluate programs. | |
-

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Agriculture is one of the largest and most important industries in the world. The development of the agricultural industry depends not only on technology and institutional changes, but also on the educational level of the farmer and others involved in agriculture. The efficiency of farmers could be increased substantially through informal extension education. Many of the agricultural extension education systems in the world differ in their organizational form more than in their functions regardless of their socio-economic and political status (Swanson, 1984). The United States Extension Service is well developed and has been used in many countries as a guideline for review, reconstruction and redevelopment. The Ghanain Extension Service is in transition and is in the process of reconstruction and redevelopment so that it can develop viable and practicable extension programs to help the farmers improve the country's agricultural sector.

There were three objectives of the study as follows:

1. To investigate the following aspects of the Agricultural Extension Service in the United States (North Carolina) and in Ghana.

- A. Background and history
 - B. Organization
 - C. Program areas
 - D. Communication processes and methods used
 - E. Reporting and evaluation of programs
2. To make a descriptive comparison of the two extension systems.
 3. To make recommendations for the improvement of the Ghanain Agricultural Extension Service

This was a descriptive research study based on personal interviews and a literature review. The investigation shows that there were similarities and differences in the organizational structure and the operation of the two extension systems.

Background and History

The Agricultural Extension Service grew out of a historical situation in the United States. The colonial leaders who were engaged in agriculture stayed in contact with other colonists and friends in Europe through correspondence. The Extension Service was formed to help serve the needs of farmers. The Smith-Lever Act of 1914 facilitated the formal organization, but many other legislative acts have provided funds and direction. The

success of the Extension Service is attributed to the flexible nature of its goals and objectives according to the changing needs of the people. The establishment of an agricultural press after 1850 promoted and improved the circulation of Agricultural papers. Booker T. Washington carried out farm demonstration work at Tuskegee and did weekend plowing and planting in the communities. Many societies were formed that promoted the agricultural industry. The most recent legislation was in 1953, when the funds and directions provided under different acts were consolidated into one piece of legislation, the Amendment of Smith-Lever Act of 1953.

The Agricultural Extension Service in Ghana grew out of a historical situation. It was established to produce raw materials for the mother country, Britain. It is classified as a typical "British colonial type" since it is an integral part of the Ministry of Agriculture. The Extension Service in Ghana used to be characterized as a botanical garden era because most of the agricultural policy was limited to the importation of plants and the study of their behavior under local conditions. The formal Agricultural Extension program did not start until the Ormsby-Gore's policy in 1926, and its development and improvement has been neglected until recently. Religious beliefs affected the Extension Service in Ghana. Crop farming is seasonal. Most crop farming is

carried out in the rainy season and livestock production in the dry season. The Agricultural Extension work in Ghana almost entirely depended on human power, except for the use of wooden plows in northern Ghana. Tractors and mechanical implements are still not widely used.

Organization

The Agricultural Extension Service in the United States is a cooperative arrangement between the land-grant institutions, the United States Department of Agriculture, and the local or county governments. The Extension hierarchy begins with the county or local level and moves upward to the state and federal levels. The Extension Service is highly decentralized and is functionally linked with the land-grant institutions and is responsible for extension education only.

The Agricultural Extension Service in Ghana has four hierarchy levels starting with the village and moving up to the district, regional and national levels. The administrative process is highly centralized, and the Ministry of Agriculture in Ghana is solely responsible for the entire extension service organization. The organizational structure does not have any functional link with institutions of higher education. Other functions like marketing are carried out in addition to the extension education responsibilities.

Program Areas

The Agricultural Extension Service in the United States has four program areas: Agriculture and Natural Resources, 4-H, Home Economics, and Community and Rural Development (CRD). There are other programs like individual farm management assistance, drought assistance, integrated weed management assistance, cotton assistance, and insect management. It has a "bottom-to-top" program development process. Long-range and annual plans are prepared as a result of combining the knowledge of the local people from each county. The county agents have more freedom to plan and implement local extension programs, and administrative direction has been kept to a minimum. The Community and Rural Development program involves the use of a decision-making procedure commonly referred to as the public policy process. The five major programs in Home Economics are categorized on the basis of priorities, and the problem-centered approach is used in planning Home Economics programs.

The Agricultural Extension Service in Ghana has Tree Crops, Food Crops, Home Economics, and Livestock programs. There are other integrated programs such as fertilizer promotion programs, supervised agricultural credit programs, seed multiplication programs, supervised agricultural

credit programs, seed multiplication programs and plant protection programs. It has a "top-to-bottom" type of program development process. A common district program is developed annually for each district but not for the villages. Such administrative control is in the hands of higher level officers, and most of the ideas of these officers are included in the program developed. There is no opportunity for village workers or lower level personnel to plan and implement extension programs. The Extension Service does not have any youth program. The Home Economics program is initiated by the Ghanaian government and is sponsored by the Food and Agricultural Organization of the United Nations. In the horticultural program, the government activity is directed toward providing fertilizer, pesticides, improved seeds and farm machinery.

Communication Processes and Methods Used

The Agricultural Extension Service in the United States basically uses the diffusion process of communicating ideas to its clientele. Most of the clientele are reached on a group basis through the use of local leaders and the use of mass media. It also uses an answering service program where agents or farmers can call and receive answers on a specific program or topic.

The Agricultural Extension Service in Ghana uses a diffusion process to communicate ideas to farmers. Some of the methods that are used often are group methods, mass media methods, indirect influence, and the use of local leaders. The training and the visit system has been adopted as the best approach to reach the farmers. Visits are made on an individual basis. Radio is the most used mass media method in Ghana. It is centrally controlled by the government, and the programs are broadcast in local languages. Another mass media method that is used in Ghana that is effective is when the people are drawn together; for example, at weekly markets and soccer matches.

Reporting and Program Evaluation

The Agricultural Extension Service in the United States at the state level has a separate evaluation and reporting unit that is headed by a specialist for evaluation. It also has a separate evaluation and reporting unit at all levels. Special emphasis is placed on accountability, and the public is also informed about program achievement at all levels. Special devices like interest checks and opinion polls are used to evaluate programs.

The Agricultural Extension Service personnel in Ghana report on such programs as disease and pest control,

irrigation, spraying, and nutrition. The reporting system is voluntary; the extension personnel may report on their programs if they choose. There is no special evaluation and reporting unit. Data and important information is not organized or kept in a systematic way.

Conclusions

Based on the findings of this study, the following conclusions are drawn about the Agricultural Extension Service in Ghana:

1. The government of Ghana has failed to support and direct the organizational structure of the Agricultural Extension Service through legislative acts or decrees, and this may have hindered the development of the extension programs.
2. The lack of an organizational functional relationship between the Agricultural Extension Service and the higher educational institutes has contributed to limiting the use of personnel and resources available in the institutes.
3. The Agricultural Extension Service in Ghana has not used local clientele committees during the development process of the program areas.

4. Among the Agricultural Extension programs in Ghana, home economics has the least impact and emphasis among the local people.
5. There is no youth program among the program areas of the Agricultural Extension Service in Ghana.
6. The Ghanaian Agricultural Extension Service uses mostly the individual contact method for educating its clientele.
7. The demonstration method of teaching has been overlooked and is used infrequently in agricultural extension activities in Ghana.
8. An evaluation unit is not present in the organizational structure of the Agricultural Extension Service in Ghana.
9. In Ghana, the effectiveness of local agricultural extension activities (program areas) has been limited due to the lack of a working relationship between extension workers and the local agriculturally related institutions.

Recommendations

The study of the organizational structure and operation of the Agricultural Extension Service in the United States and its comparison to the Agricultural Extension Service in Ghana suggests some useful information for the improvement of

the Agricultural Extension Service in Ghana. Based on the findings and conclusions of the study, the following recommendations are made:

1. That laws or decrees be enacted to provide a legal basis for the organization and operation of the extension service by the Ghana government.

2. That a formal functional organizational relationship be established between the Agricultural Extension Service and the higher educational institutes. Establishing such a relationship will not only increase availability of resources and personnel, but also help the Agricultural Extension Service to cover more subject matter areas in its extension activities.

3. That advisory committees be organized at each level of the organizational structure of the Agricultural Extension Service.

4. That local clientele committee input should be utilized in the development process of the program areas.

5. That the Home Economics program area should be emphasized so that it will have more impact on the local people.

6. That youth programs be established as a part of the total extension program.

7. That the program areas of the Extension Service be developed and implemented at the local level.

8. That an evaluation unit be created as part of the Extension Service.

9. That the farm demonstration technique be used as a primary teaching method.

10. That adequate working relationships be established at the top organizational level and maintained at the local levels between the Agricultural Extension Service and agriculturally related institutions.

Summary

Summary, conclusions, and recommendations were made in Chapter V on the selected areas of the Agricultural Extension Service of the United States and the Agricultural Extension Service of Ghana.

The summary of both the Agricultural Extension Service of the United States and Ghana on the selected areas shows that the United States Extension Service is well developed. It has been used in many countries as a guideline for reconstruction and redevelopment. The Ghanaian Extension Service is in transition, and needs a set of guidelines to improve its organizational structure.

From the conclusions and the recommendations it was obvious that a lack of organizational functional

relationship between the Agricultural Extension Service and the higher educational institutes has limited the use of personnel and resources available in the institutes. The other obvious missing element was the youth program area. The absence of these elements in the Ghana Agricultural Extension Service inhibit it in carrying out effective Agricultural Extension programs.

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