

THE PERFORMANCE OF SPECIFIED EXTENSION TASKS BY COUNTY
AGRICULTURAL AGENTS IN OKLAHOMA IN RELATION TO
THEIR PROFESSIONAL TRAINING AND EXPERIENCE

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CHAPTER I

INTRODUCTION

The Cooperative Extension Service of the United States is a nationwide, tax-supported organization, created by Congress under the provisions of the Smith-Lever Act of 1914. The purpose of the law was "to aid in diffusing useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same." The law provided that information on agriculture and home economics be made available to persons not attending or resident in a land-grant college. This national legislation provided the basis for cooperation of county, state, and the Federal government to conduct a program of adult and youth education in agriculture and home economics under the direction of the state agricultural college. The Oklahoma Agricultural Extension Service is an integral part of the Cooperative Extension Service of the United States and is administered under the Director of Extension by the Extension Division of the Oklahoma Agricultural and Mechanical College.

County agricultural agents serve as field agents in the seventy-seven counties of Oklahoma as joint representatives of the county, state, and Federal governments. Their task is to carry out the purposes of the Smith-Lever Act as it relates to agriculture.

The magnitude and increasing importance of the duties imposed upon the county agricultural agents as leaders and coordinators of Federal and state agricultural programs which operate in the county is constantly demanding more highly trained personnel. There has been an increasing

interest in the professional preparation and training of county agricultural agents in many states during the past decade and this interest has been notable in Oklahoma where courses especially designed for extension agents have been conducted on the graduate level at the Oklahoma A. and M. College during the summer sessions since 1952. Since 1952, all county extension agents employed by the Oklahoma Extension Service have had an opportunity during one or more summer sessions to pursue studies related to their extension duties.

Extension administrators and supervisors are continually confronted with the task of developing and maintaining an effective field force of county extension workers. This is due in part to the increasing frequency with which farm people call upon the county agent for assistance with complicated social and economic problems. While many of these problems are local in character, some are national in scope, and others have international implications that extend far beyond the boundaries of any particular farm or ranch. Agricultural leaders and leaders in government throughout the United States generally recognize the importance of maintaining a favorable economic condition for our agricultural producers in relation to the other groups of producers in the United States. In the past, the county agent has traditionally been called upon to assist farm people with problems of agricultural production but the trend is toward greater emphasis on community development, rural family living, international understanding, public policy problems, and economics.¹

¹ Joseph L. Matthews, "The Cooperative Extension Service of the United States", Rural Social Systems and Adult Education by Charles P. Loomis and J. Allen Beegle, Lansing, Michigan: The Michigan State College Press, 1953, p. 79.

For nearly a half century the professional training of county agricultural extension agents has been the concern and responsibility of the land-grant colleges through the Director of Extension at the respective colleges. These directors have been aided in this task by members of the resident teaching staff of the school of agriculture, other cooperating departments of the college, and extension specialists from the Federal Extension Service and the State Extension office. The land-grant colleges have taken the principal responsibility for providing opportunities for the professional preparation and in-service training of the county agricultural agents who are employed as field agents of the Cooperative Agricultural Extension Service to work with farm families.

During recent years, many graduate schools of the land-grant colleges have offered courses designed especially for county agricultural agents. This program has had the effect of improving both the pre-service and in-service training of the agents by making it more functional and professional.

The function of the Cooperative Agricultural Extension Service in the United States is primarily educational. The county agent is fundamentally a teacher of rural people of all ages. Since rural people who participate in extension activities do so on a strictly voluntary basis, the quality of teaching must be high in order for the agent to maintain the continued interest and confidence of the people with whom he works. The role of the county agricultural agent as a teacher has been emphasized since the earliest days of the Cooperative Agricultural Extension Service. In discussing the preparation required for extension agents in agriculture, Dr. A. C. True in 1915 said:

The extension worker, in the first place, is a teacher. I put that first and emphasize it because we are apt to forget or to minimize its importance; partly because of the history of the development of extension work in this country and partly because of the duties, which, in many cases have been imposed upon extension workers.²

Dr. True further characterized the extension worker as a teacher, a counselor with farmers, and a purveyor of information through oral, written, and visual communication.³

In the early period of extension work in the southern states, the men selected as agents were usually local farmers with little or no training in technical agriculture but who had the qualifications of successful farming experience and the respect of other farmers in the area. They were selected largely upon the basis of their ability to demonstrate good farming practices. This was particularly true in the Farmers' Cooperative Demonstration work conducted under the leadership of Dr. Seaman A. Knapp, Special Agent of the United States Department of Agriculture in the southern states. This type of demonstration work is discussed in greater detail in Chapter II.

In 1920, D. J. Crosby appearing on the annual program of the Association of Land-Grant Colleges pointed out the importance and need of special training for extension workers. He stressed the importance of the professional training of extension workers serving the role of teachers of farm people as follows:

² A. C. True, "The Preparation Required for Extension Workers in Agriculture", Proceedings of the 29th Annual Conference of the Association of American Agricultural Colleges and Experiment Stations, held at Berkeley, California, August 11-13, 1915, Montpelier, Vermont: Capital City Press, 1915, p. 161.

³ Ibid., p. 162.

The extension worker, whether a county agent, a state or district leader, or a specialist, needs (a) more than anything else a good, broad educational foundation; (b) technical training in the vocation of the people with whom he is to deal in agriculture; (c) professional training in education, with emphasis in his particular field.⁴

The role of the county agent today demands even greater professional preparation in educational methods and in technical agriculture than in the past. Farming has become more specialized in recent years and many of the problems facing farm people are more complex than formerly. Therefore, it requires greater preparation for the county agent to satisfactorily perform his extension responsibilities in working with rural people.

Purposes of the Study

The purpose of the current study was to investigate the relationships that might exist between performance of extension tasks by county agents in Oklahoma and their formal and informal training (or experience), and it is hoped that the information could be used by extension administrators and supervisors to serve as the basis for planning courses for prospective county agricultural agents and county agricultural agents who are now employed by the Oklahoma Extension Service.

The stimulation to make this study was based primarily upon the investigator's interest in cooperative extension work as a subject matter specialist, state leader of an extension project, and as a teacher of extension methods.

⁴ D. J. Crosby, "The Need of Special Training for Extension Workers", Proceedings of the 34th Annual Convention of the Association of Land-Grant Colleges held at Springfield, Massachusetts, October 19-22, 1920, Burlington, Vermont: Free Press Printing Company, 1921, p. 86.

Statement of the Problem

Since much has been said in Oklahoma about the value of professional training for county agricultural agents, and since most of the opinions expressed have been based upon observation rather than upon investigation in which experimental and statistical methods have been used, the current study was undertaken with a view of making an investigation based upon research methods. This study is concerned with investigating:

What relationship exists between the ability of the county agricultural agents in Oklahoma to perform specified extension tasks and their professional training in specified subject matter areas?

What relationship exists between the ability of the agents to perform extension tasks in specified subject matter areas and the informal training (or experience) they have received in other fields?

Need for the Study

Since county agents in Oklahoma are being asked more frequently to assist farm people with complex and difficult problems ⁵ and since some of the county agents in Oklahoma feel that their past college training is inadequate in helping them to meet satisfactorily many of the human relations problems with which they must currently deal, ⁶ information is needed to assist administrators, supervisors, and representatives of college departments offering courses in agricultural extension in planning professional training for county agents. Many of the current problems faced by county agents involve subjects that are usually treated in the social sciences; other problems involve the biological and physical

⁵ Personal conference with the Director of the Oklahoma Extension Service, October, 1955.

⁶ Personal conferences with county agricultural agents employed in Oklahoma, October and November, 1955.

sciences; while still others are treated in such studies as social psychology and educational psychology, public relations, rural sociology, and cultural anthropology.

Since county agents in Oklahoma are faced with problems that cover a wide range of subject matter, information is needed to evaluate their performance of extension tasks in relation to the formal training they have received to aid them in performing their extension responsibilities.

Scope of the Study

The current study is concerned with the tasks (or problems) encountered by the county agents in Oklahoma, their associates and assistants, who are now employed in the seventy-seven counties of the state and who have had at least one year of experience in the field. It is designed as a status survey to identify difficulties in meeting current problems, the agents evaluation--based upon experience under field conditions--as to the degree of difficulty experienced with each type of problem, and judgments concerning benefits received from training (formal and informal) in specified areas.

Delimitations

This study was limited to the county agents currently employed by the Oklahoma Extension Service. Further, data were included only from those agents who had actually performed the extension tasks investigated in the study. The study was limited to the task of attempting to discover any relationship that might exist between the facility of performing specified extension tasks and the formal and informal training of the agents. This study was not intended to be a critical study of the teaching methods used by the agents, nor to evaluate the effectiveness of different teaching

devices used in extension work. This study further was confined to the white agents who work under the supervision of the four white district agents who have headquarters at the central office of the Oklahoma Extension Service.

Hypotheses

Major hypothesis: There is a relationship between the difficulty experienced by county agricultural agents in Oklahoma in satisfactorily performing their various tasks in working with farm people and their formal training in specified subject matter areas.

Minor hypothesis: The agent's ability to perform extension tasks satisfactorily is related to informal training that the agent has received through experiences in other fields.

Basic Assumptions

The following assumptions are made for purposes of this study:

1. That the agents are capable of evaluating the difficulty they have in performing extension tasks.
2. That competencies to perform extension tasks or to handle extension problems can be developed.
3. That the professional training that the agent receives to aid him in solving extension problems logically falls into particular subject matter areas.
4. Problems which the county agents encounter can be categorized as pertaining to specific subject matter areas.

Sources of the Data

1. Survey of related literature.
2. A questionnaire mailed to all white county agents, associate county agents, and assistant county agents who were employed by the Oklahoma Extension Service in the seventy-seven counties of the state on January 1, 1956, and who had a minimum of one year of experience as an extension agent in an Oklahoma county on that date.

Definitions

The term county agent is defined in this study as meaning the joint representative of the county, state, and Federal governments in the Cooperative Extension Service whose appointment names the county in which he will perform his extension responsibilities related to agriculture. He is administratively responsible for conducting the agricultural phases of the cooperative extension program with farm people in the county named in his appointment.

The term associate county agent is defined to mean an agricultural agent of the Cooperative Extension Service whose professional training and qualifications are essentially the same as those of a county agent but who works with the county agent, and under his general direction, in conducting the agricultural phases of the extension program in the county. In some cases the associate agent may have special qualifications which permit him to conduct work for which he has been especially trained and thus supplement the services of the county agent in performing specified extension tasks.

The term assistant county agent in this study is defined as meaning an agent with an appointment for a specified county in the state who works under the general supervision of the county agent, and who, as a rule, is assigned the responsibility of conducting the 4-H club phases of cooperative extension work in the county. Since the assistant agent works under the supervision of the county agent, he may also spend a portion of his time with adult farmers in the county.

The term district agent is defined as meaning the man agent employed by the Oklahoma Extension Service who supervises the work of the county agents, associate county agents, and the assistant county agents in one of the four extension districts in the state.

The term extension task is defined as meaning work performed by an extension agent that usually comes as the result of a request by a farmer, rancher, or other person for assistance with some problem in the field of agriculture. An extension task usually requires labor, study, or research on the part of the extension agent to assist the person making the request. The task may relate to organization of extension activities, specific subject matter information, or demonstrating how some specific recommended practice may be followed. An extension task usually involves teaching principles adapted to the solution of farm problems and may involve adult farmers, 4-H Club members, or other persons who are interested in the solution of a problem related to agriculture or rural life.

Organization of the Study

Chapter I, the introduction of this study, states the problem, outlines the purposes, defines the terms used, limits the scope, identifies the assumptions, and outlines the procedure involved. Chapter II reviews the development of cooperative extension work with special reference to

Oklahoma. Chapter III reviews the literature and related studies in the area of the problem. Chapter IV presents the methodology used in the study. In Chapter V will be found the results and analysis of the data. Chapter VI presents the summary, conclusions, and recommendations of the study.

Statement of the Limitations of the Study

Certain limitations are readily recognized in this study. These include the weaknesses inherent in a questionnaire, the possibility of faulty interpretation on the part of the respondents regarding the information requested, and the probability of subjectivity on the part of the jurors and the investigator.

CHAPTER II

THE ORIGIN AND DEVELOPMENT OF COOPERATIVE EXTENSION WORK

Cooperative extension work came about as a result of efforts of the land-grant colleges to provide farm people with information on improved farm practices based upon research.

The Morrill Act which was passed by Congress in 1862 provided the basis for a system of land-grant colleges dedicated primarily to higher education related to agriculture and the mechanic arts. For many years after the institution of land-grant colleges, the enrollment in agricultural courses was not impressive. The total enrollment in agricultural courses at all of the forty-two land-grant colleges in the United States in 1894, according to Dr. A. C. True,¹ was 3,847, and the number of graduates in agriculture that year was 229. This represented an average of 5.45 graduates in agriculture per college for that year. Only six of the forty-two colleges reported enrollments exceeding one hundred and fifty, and seventeen reported less than twenty-five students enrolled in agricultural courses. Ten years later (1904), two significant events occurred which had a great influence on the growth and development of education relating to agriculture in the land-grant colleges in the United States. These two events were:

1. The invasion of the boll weevil in the cotton-producing states of the south.

¹ A. C. True, A History of Agricultural Education in the United States, Washington, D. C.: U. S. Government Printing Office, 1929, p. 213.

2. The appointment of a Committee on Extension by the American Association of Agricultural Colleges and Experiment Stations:

The first event led to the formation of the Farmers' Cooperative Demonstration Work in the southern states under the leadership of Dr. Seaman A. Knapp, Special Agent of the United States Department of Agriculture. Dr. Knapp believed that demonstrations carried on by farmers themselves on their own farms and under ordinary farm conditions were more effective in getting farmers to change their practices than were observations of demonstrations on farms operated at public expense. This belief was based upon Knapp's experience in directing the agricultural development of a large tract of land in western Louisiana where he had used "demonstrations" on selected farms to encourage the adoption of better methods of farming in the area.

When the boll weevil threatened cotton production in the South in 1904, Congress made an emergency appropriation to combat this destructive insect. Dr. Knapp was assigned \$40,000, "to bring home to the farmer on his own farm, information which would enable him to grow cotton despite the weevil."² The project established by this grant made it possible to initiate cooperative demonstrations. The plan for combating the boll weevil called for "cooperators" who agreed to farm a part or all of their land under the direction of agricultural "agents" representing the United States Department of Agriculture and "demonstrators" who agreed to demonstrate good farming methods on five to twenty acres of their land.³

² A. C. True, A History of Agricultural Extension Work in the United States, 1785-1923, Washington, D. C.: U. S. Government Printing Office, 1928, p. 60.

³ Ibid., p. 61.

These demonstrations were significantly successful. They attracted widespread attention and created a demand for the assistance of the agricultural "agents."

The first agents were expected to cover six to eight counties. This proved to be too much territory for proper supervision of the demonstrations and did "not create sufficient public sentiment and moral force to change the long-established uses of the masses." ⁴ This condition resulted in the appointment of agents who were assigned to one county.

The first "county agent," W. C. Stallings, was appointed November 12, 1906, for Smith County, Texas as the result of local demand for more demonstrations and more information on better farming methods. Thus began the "county agent" system, and it served as the forerunner of the present national system of cooperative extension work in agriculture and home economics. At that time, the Farmers' Cooperative Demonstration Work was a strictly Federal enterprise, but local funds were provided to pay a part of the salary of the county agent on the basis of an agreement between the local sponsoring agency or organization and the U. S. Department of Agriculture. ⁵

At the annual meeting of the American Association of Agricultural Colleges and Experiment Stations in 1906, the Committee on Extension made a report in which a strong recommendation was made that the colleges and universities sponsor year-round extension activities in the counties and make a special effort to provide more adequate finance for extension work. ⁶ Kenyon L. Butterfield, President of the Massachusetts Agricultural College,

⁴ Ibid., p. 63.

⁵ Ibid., p. 71.

⁶ Ibid., pp. 100-101.

was chairman of the Committee on Extension. He later became President of the Michigan Agricultural College and was very active in formulating a plan whereby the activities of the land-grant colleges and those of the United States Department of Agriculture could be integrated into a national system of agricultural extension. In 1907, the agricultural colleges in thirty-nine states were engaged in agricultural extension activities.⁷ While agricultural extension work was being developed so successfully in the South, there were increasing demands for work of this character in the north central and western states. Extension was inaugurated in the northern and western states in 1911.⁸

Since that date, cooperative extension work has been established in all of the forty-eight states and in all of the territorial possessions of the United States. It has also served as a pattern for establishing similar work in many countries around the world.

The Early Years of Extension Work in Oklahoma

Two separate programs relating to agricultural extension work, a Federal program and a state program, were conducted concurrently in Oklahoma during the period from 1907 to 1914. The Federal program was conducted by representatives of the United States Department of Agriculture and was called the Farmers' Cooperative Demonstration Work. The state program was operated under the Dean of Extension of the Oklahoma A. and M. College and the work was conducted by members of the resident teaching

⁷ A. C. True, A History of Agricultural Education in the United States, Washington, D. C.: U. S. Government Printing Office, 1929, p. 278.

⁸ W. A. Lloyd, Status and Results of County Agricultural Agent Work in the Northern and Western States, 1915, States Relation Service Document 32, Circular No. 1-1916, Washington, D. C.: United States Department of Agriculture Cooperative Extension Work, 1916, p. 1.

staff of the School of Agriculture with the cooperation of representatives of the Oklahoma State Board of Agriculture. Information based upon research at the Oklahoma Experiment Station and other agricultural experiment stations was made available to farmers in a series of farmers' institutes held in many counties of the state. Field days, short courses, and other agricultural events were held at the Oklahoma A. and M. College.

The Farmers' Cooperative Demonstration Work, the Federal program, was inaugurated in Oklahoma in the fall of 1908, when Dr. Seaman A. Knapp selected W. D. Bentley of Wichita Falls, Texas, and W. M. Bamburge from another southern state, to serve as agents to organize the demonstration work in Oklahoma. Bamburge was placed in charge of organizing the program in the eastern counties of Oklahoma. He established an office in Ardmore but resigned in September, 1908. Bentley was then appointed State Agent in charge of the program for the entire state of Oklahoma. In November, 1908, Bentley moved his family from Wichita Falls and established his headquarters at Tishomingo, Oklahoma. The first agent to serve in an Oklahoma county was J. A. Hunter of Snyder, Kiowa County, who reported for work on March 1, 1908.⁹ The first county agents who were employed in the Farmers' Cooperative Demonstration Work were somewhat deficient in academic training, especially in technical agriculture, but they had many years of successful practical experience in farming, understood local farming conditions, and had the respect of other farm people in the county. These qualifications aided them in securing farmer participation in the program which was one of the greatest tests of the early extension agent working in a county.

⁹ W. D. Bentley, Early History of the Farmers' Cooperative Demonstration Work in Northwest Texas and Oklahoma, Oklahoma Extension Circular No. 252, General Series No. 91, Stillwater, Oklahoma: Oklahoma A. and M. College Extension Service, 1930, p. 6.

The Extension Division of the Oklahoma A. and M. College did not employ agricultural agents to work in the counties until July 1, 1914, when the Federal and state extension programs were combined under the provisions of the Smith-Lever Act passed by Congress, May 8, 1914. President Woodrow Wilson signed the Smith-Lever Act which set the pattern for an integrated extension service for farm people whereby the county, state, and Federal governments cooperate in providing funds to support the work in the county. W. D. Bentley was appointed the first Director of Extension in Oklahoma under the provisions of the Smith-Lever Law and was made administratively responsible to the President of the Oklahoma A. and M. College and to the Secretary of Agriculture of the United States. One of the first significant changes under the new plan occurred in 1915, the adoption of a policy to employ only non-residents to serve as county agents in a particular county. This policy was definitely for the purpose of preventing partisan politics from influencing the appointment of the county agent or the character of his work with farm groups in the county. 10

From this beginning, extension work in Oklahoma has been expanded in its scope of activities and services. Today every county in the state has a county agent employed on an annual basis to assist rural people with problems related to agriculture. Associate county agents, as well as assistant county agents, have been employed in a number of counties. These changes have come about as a result of Oklahoma farmers manifesting an increasing interest in better methods of farming based upon research.

10 Extension Division of the Oklahoma A. and M. College, Report of the Extension Division, 1915, Extension Circular 33, Stillwater: Extension Division of the Oklahoma A. and M. College, April, 1916, p. 3.

Professional Training of County Agents in Oklahoma

There appears to have been a gradual improvement in the professional preparation for county agent work in Oklahoma after the Federal and state programs were combined under the provisions of the Smith-Lever Law of 1914. ¹¹ Luther H. Brannon, Assistant Director of Extension, now on leave with the International Cooperation Administration in Ethiopia, has the following to say regarding the academic training of Oklahoma extension personnel:

Available records do not indicate the academic training of the staff transferred to the Extension Division in 1914. It is extremely doubtful if any of the personnel had ever been graduated from a recognized college or university. It is much more unlikely that such work, if any, had included basic training in agriculture. The 1914-15 personnel record listed S. L. Jeffords, Muskogee County Agent, as having received the degree of bachelor of science in 1912. W. A. Conner, appointed county agent in Tillman County, was an agronomy graduate of the class of 1914. Clarence Roberts, appointed county agent in Garfield County in 1914, was a dairy graduate of the same class.

The personnel record for 1919-1920 showed a total of 68 county agents and assistants, of which 13 were graduates of the Oklahoma A. and M. College and 5 held degrees from other institutions. The central office staff at this time consisted of twenty-six people, fourteen of whom had been awarded bachelor of science degrees.

The record in 1929-30 indicated the progress that had been made in raising the educational levels of the extension personnel. Of the eighty-one county agents and assistants employed, fifty-eight had completed a four year course in college leading to a degree in agriculture. ¹²

¹¹ Luther H. Brannon, The Role of the Oklahoma Agricultural Extension Division with Particular Reference to County Program Development, Unpublished Thesis for the Degree of Doctor of Public Administration, Harvard University, 1950, p. 52.

¹² Ibid., p. 53.

By 1930, the majority of the county agents in Oklahoma were graduates of land-grant colleges and had earned degrees in agriculture.¹³ The present study reveals that 125 of the 126 county agricultural agents who returned questionnaires were graduates of a recognized college of agriculture. Six of the agents included in this study have master of science degrees and all have done some work at the graduate level.

¹³ Ibid., p. 61.

CHAPTER III

REVIEW OF RELATED LITERATURE

Some of the earliest studies made in agricultural extension work were conducted cooperatively with some twelve states under the general supervision of Clarence B. Smith and Meridith C. Wilson ¹ during the period from 1922 to 1929. These studies were surveys made by means of interviews with farmers for the purpose of determining the effectiveness of agricultural extension work in improving farm practices. A few investigations related to the training of local extension leaders. Others were conducted to measure the effectiveness of extension methods of teaching. None of these studies, however, related to the formal training of extension personnel.

In 1920, Crosby ² reported the results of a survey he had made to determine what courses were being offered to train extension workers. Of the eighteen land-grant colleges reporting, only six were offering courses for the training of prospective extension workers at that time. These included Minnesota, Missouri, Ohio, New York, Michigan, and Wisconsin. Crosby stated that earlier Iowa, Nebraska, and Texas had offered courses for extension workers, but that these states did not supply information for

¹ Clarence B. Smith and Meridith C. Wilson, The Agricultural Extension System of the United States, New York: John Wiley and Sons, Inc., 1930, pp. 249-255.

² D. J. Crosby, "The Need of Special Training for Extension Workers", Proceedings of the 34th Annual Convention of the Association of Land-Grant Colleges held at Springfield, Massachusetts, October 19-22, 1920, Burlington, Vermont: Free Press Printing Company, 1921, p. 86.

the survey. These courses, with the exception of one course offered for graduate students, were provided for junior and senior students.

In 1927, Shinn and Merrill ³ made a study of the curricula of the land-grant colleges to determine what special courses were being offered to prepare students for agricultural extension work. Of the 23 colleges reporting, 19 were offering courses in extension methods. These included Cornell, Kansas State, University of Missouri, University of Ohio, University of Illinois, Pennsylvania State College, University of West Virginia, University of Minnesota, Michigan Agricultural College, and a few others. In discussing the professional preparation of county extension workers, Shinn and Merrill stated:

Extension workers, though not so officially designated, are essentially teachers, and their importance as educators is recognized. Successful extension workers teach the theory and practice of agriculture and home economics, and need to understand how to conduct demonstrations successfully. They must have a broad knowledge of rural people, and be able to inspire them to follow their teachings. The fact that extension work is a voluntary movement on the part of rural people appears to make it even more important that extension leaders be both technically and professionally trained for their work. ⁴

In September, 1927, Shinn and Merrill published the results of a survey they had conducted to determine what special courses were needed for the professional training of county agents and home demonstration agents. Information was secured from the state directors of cooperative extension work and from the state leaders of home demonstration work. In discussing the results of the survey, the authors stressed the importance of

³ Erwin H. Shinn and F. A. Merrill, A Study of Land-Grant Colleges Curricula, United States Department of Agriculture Extension Service Circular No. 59, Washington, D. C.: United States Department of Agriculture Extension Service, October, 1927, 8 pages.

⁴ Ibid., p. 3.

professional courses as well as technical courses in the preparation of both men and women for extension responsibilities. They state:

The extension field represents a specialized activity, the needs of which can no longer be met by those lacking specialized training for the work. The day is past when one can acceptably fill the role of county agent or home demonstration agent without professional training. Social and economic factors enter so vitally into modern rural life that some knowledge of their working laws is necessary if one is to become a leader in rural development.

Information assembled in connection with this study reveals beyond question that extension directors and state leaders of home demonstration work believe that extension teachers would be better prepared for their work if they had in addition to thorough courses in agriculture or home economics, special preparation in rural sociology, psychology, rural economics, public speaking, and agricultural journalism, including methods in extension teaching and professional subjects in education.⁵

Our failures in county extension work have not been because of lack of technical training, but usually because of lack of professional training that will enable us to properly analyze conditions and situations.⁶

Included in this study were replies from 300 county agents who were asked to suggest ways and means of supplementing previous training they had received while serving as extension agents on a full-time job. The study revealed the following suggestions:

Home reading, district conferences, annual state conferences, short courses, and returning to college on leave for a limited period for special study.⁷

⁵ Erwin H. Shinn and F. A. Merrill, Special Courses for the Preparation of Agricultural and Home Economics Teachers, United States Department of Agriculture Extension Service Circular No. 55, Washington, D. C.: United States Department of Agriculture Extension Service, September, 1927, p. 3.

⁶ Ibid., p. 4.

⁷ Ibid., p. 12.

This appears to be the first reference in the literature in which a definite suggestion was made that county extension agents return to college on leave to pursue special studies relating to extension work. The suggestion resulted in a definite recommendation by the Federal Cooperative Extension Service as follows:

It is recommended that, in so far as compatible with the execution of public duties, county agents be given periods of vacation by the county authorities for further study of their profession at an agricultural college of their choice.⁸

After almost thirty years, this recommendation is now being followed in a majority of the states and counties throughout the United States and has come to be commonly accepted as a desirable and justifiable practice.

Since 1952 the extension service of the Oklahoma A. & M. College has been providing college courses on the graduate level for county extension agents. These courses have provided an opportunity for professional improvement during the summer months for approximately one-half of all extension agents employed in the seventy-seven counties of the state and for the remaining number to study such courses during alternate years. According to Lee Craig, District Supervisor for the county agents working in the southeast district of Oklahoma, these courses have been very valuable to the agents in his district, and he considers that they have been responsible for a marked decrease in the problems related to supervision.⁹

⁸ Ibid., p. 16.

⁹ Lee Craig, District Agent for the southeast counties of Oklahoma, provided the author with this information in a personal conference in November, 1955.

In 1938, Wilson and Grile ¹⁰ published the results of an extensive survey for the Cooperative Extension Service relating to the preparation and training of extension workers. This survey included data from 7,873 extension workers employed in fifty-one state and territorial extension services and represented ninety-two percent of all extension employees on the rolls at the close of 1937. This was a factual survey and did not involve a statistical analysis of the data other than summations, averages, and percentages calculated to present comparisons. Tables were included to show such items as tenure of office by county extension agents, college training and degrees, subjects taken in undergraduate and advanced study courses in college, emphasis placed upon subjects taken in advanced study, subjects found most helpful in extension work, informal experiences of the agents that had contributed to their ability to do extension work, and courses suggested for three to six week summer schools.

Included in the study were reports from 2,866 white county agricultural agents and 628 white assistant county agents. The report showed that among these two groups, 86.3 percent of the county agents and 87.7 percent of the assistant agents held bachelor of science degrees only, eight percent of the county agents and 5.6 percent of the assistant county agents held masters degrees, and 8.4 percent of the county agents and 6.4 percent of the assistant county agents held no academic degrees. ¹¹

¹⁰ M. C. Wilson and Lucinda Grile, Preparation and Training of Extension Workers, United States Department of Agriculture Extension Service Circular 295, Washington, D. C.: United States Department of Agriculture Extension Service, November, 1938, 36 pages.

¹¹ Ibid., p. 6.

In 1941, Grile¹² published a study relating to the preparation and training of state extension subject matter specialists. The study included 1,025 specialists in agriculture and 214 in home economics. The purpose of this study was to furnish factual information on the nature of training needed by prospective and in-service extension subject matter specialists in the different project lines of work and to throw some light on how well the agricultural and home economics curricula were meeting these needs.

The opinions of 1,239 extension specialists were obtained as to the subjects studied in college that had proved most helpful in conducting extension work, subjects in which the specialists felt the need of additional training, and informal experiences that had contributed to their ability to perform their extension responsibilities. Data were collected to indicate the amount of time the specialists had devoted to the various subject matter courses in their undergraduate and graduate courses in college. Grile reported that:

Considering undergraduate and advanced college work as a whole, the order of subjects according to the combined time devoted to them for the agricultural specialists was: Technical agriculture, biology, economics, foreign language, sociology, business administration, history, chemistry, English, mathematics, education, and selected subjects related to technical home economics.¹³

The author, in discussing the needs for additional training of the agricultural specialists, stated the following conclusion:

¹² Lucinda Grile, Preparation and Training of State Subject Matter Specialists, U. S. D. A. Extension Service Circular 371, Washington, D. C.: U. S. Department of Agriculture Extension Service, November, 1941, 44 pages.

¹³ Ibid., p. 11.

For the agricultural specialists, the greatest present need in proportion to the time devoted to training is in the field of education followed closely by sociology and business administration.¹⁴

In evaluating the practical experiences which contributed to the ability of the specialists to perform extension duties, past experiences in farming, teaching, and research work were rated as the most helpful in the order named.¹⁵

In 1943 Knaus and Hearne in discussing the qualifications of county extension agents stressed the importance of adequate professional training and experience for both men and women agents:

Almost universally a county extension agent is required to be a graduate of a recognized college of agriculture, to have a creditable scholastic record, and the characteristics of leadership. Many agents now have training above the bachelor's degree. A high percentage of those selected who have not had adequate training have been less successful agents. Farm people want their county extension agents to have a combination of professional training and practical experience. Therefore, successful experience is another standard qualification. Experience after graduation from college as a farmer or homemaker, or teacher of agriculture or home economics is the most desirable.¹⁶

In 1945 Mount¹⁷ prepared a thesis for a master's degree at the University of Wisconsin in which he discussed the results of a study he had made in Ohio and Wisconsin related to the training of personnel for

¹⁴ Ibid., p. 11.

¹⁵ Ibid., p. 26.

¹⁶ Karl Knaus and C. C. Hearne, U. S. Department of Agriculture Extension Circular 409, The Role of Extension Supervisors, Washington, D. C. August, 1943, pp. 7-8.

¹⁷ J. T. Mount, Training for Extension Work in Agriculture, Columbus, Ohio: Ohio Agricultural College Extension, 1945. Thesis (M. S.) University of Wisconsin, Typewritten, 123 pages. A comprehensive abstract of this thesis was published in U. S. D. A. Extension Service Circular 470, Review of Extension Studies--January to June, 1950, pp. 3-5.

extension work in agriculture. Following are a few of the conclusions and suggestions he made as a result of the study:

1. Analyze the content of course offerings of the various departments so as to identify courses that have a significant contribution to make to students in extension education.
2. Establish a professorship in extension education in a department of rural education. This person should be a member of the resident staff whose primary responsibility would be to teach the extension education courses and counsel with students preparing for extension work and graduate students majoring in extension education.

Mount found that agents interested in a graduate program wanted to study adult education, psychology, and educational principles applied to extension work; the application of methods and materials used in influencing human behavior, such as discussion and conference leadership, agricultural news writing, visual aids, public relations, rural sociology and community organization; technical agriculture related to the area where the agent works and courses which aid in the integration of a total farming program; and research as applied to the effectiveness of techniques and methods used in extension teaching. ¹⁸

Matthews ¹⁹ made a study in 1950 to investigate the training needs of county agents with a view toward planning training programs for county

¹⁸ U. S. D. A. Extension Service Circular 470, Review of Extension Studies--January to June, 1950, pp. 4-5.

¹⁹ J. L. Matthews, A Method of Determining the Training Needs of County Agents as the Basis for Planning Training Programs. The author's information was secured from an abstract (13 pages) of Dr. Matthews' dissertation for a Ph. D. at the University of Chicago, 1951, published by the Federal Extension Service in Washington, in Extension Service Circular 474, Review of Extension Studies, January to June, 1951, pp. 3-6.

agricultural extension workers. Information from 232 of the 310 county agents in Texas indicated the importance in their judgment of each item that was listed in the instrument. From the replies of the respondents, a rating score was calculated for each item. Some of the conclusions and implications of the study were as follows:

1. The ratings by the county agents suggest that certain skills and attitudes have universal importance among county agents.
2. The county agents attach more importance to training in the social sciences than to any other area.
3. In general county agents are capable of judging their own training needs regardless of any deficiency.
4. County agents with the highest personnel evaluation scores tend to be the individuals with the highest quality college records.
5. Individuals with higher personnel evaluation scores tend to be those who have completed some graduate college work.
6. The higher evaluation scores tend to be for individuals who have had some classroom teaching experience.
7. County agents with longer tenure tend to be those agents with the higher quality college records. ²⁰

Matthews pointed out the implications of the study for the in-service training of county agents as follows:

The training provided through supervision and other informal operational activities should be integrated with both formal and apprenticeship pre-service training so that all types contribute to the same objectives. Special coordinating and integrating techniques are needed in personnel procurement, training, and supervision to meet the needs expressed in the criteria. ²¹

²⁰ Extension Service Circular 474, Review of Extension Studies, January to June, 1951, pp. 3-4.

²¹ Ibid., p. 6.

In 1948, former Director of the Federal Cooperative Extension Service, M. L. Wilson, appearing on the program of a regional administrative work shop for extension administrators, pointed out some of the problems in extension administration that relate to the training of personnel for field work. Wilson stated that:

We should realize that extension work deals with people as well as with things. The Smith-Lever Act seemed to concentrate on things. If we accept the fact that we are dealing with people as well as with things, our program at once assumes a wider scope. There is a theory that if we have well-trained, able men and women in extension, they can help farm people to help solve the basic problems. If they have proper training, practical experience, and integrity of purpose, they represent a most desirable type of professional leadership. The entire field of adult education, and the Cooperative Extension Service particularly, must take certain realities into account if we are to develop programs that will meet the needs of people in the world today. There is a need for recognition of extension as a highly specialized organization whose personnel require special training. Just as becoming a doctor requires specialized training and internship, so the extension teacher also requires specialized training and field experience. Highly specialized people for extension work cannot be adequately prepared in four years of college work.²²

The Cooperative Extension Service represents the most widespread and penetrating adult educational effort in the world. Some people do not fully appreciate its scope and implications. In our generation the Cooperative Extension Service has grown to a sixty million dollar enterprise, with tremendous responsibilities.²³

Since that date, the Congress has amended the original Smith-Lever Act and repealed a number of laws relating to extension work passed by Congress during the period 1928 to 1949. The amended Smith-Lever Act was approved June 26, 1953 to become effective on July 1, 1954. The amendment was designed to stimulate extension projects along the following three lines:

²² M. L. Wilson, "Current Problems in Extension Administration", Report of Administrative Work Shop, Baton Rouge, Louisiana: Cooperative Extension Service of the University of Louisiana, 1948, p. 5.

²³ Ibid., pp. 5-6.

1. On-the-farm counseling.
2. Public affairs.
3. Marketing of farm products.

The amended Smith-Lever Act has placed new responsibilities upon extension specialists and county agricultural agents. Additional funds have been supplied by the Federal, state and county governments, and according to Kelsey and Hearne, the total appropriations for Cooperative Extension work from all sources for 1954 slightly exceeded one hundred million dollars. ²⁴

The extension projects dealing with public affairs contemplated under the amended Smith-Lever Act were to be directed toward a better understanding on the part of rural people of the following three fields:

1. International understanding for peace.
2. Strengthening of democracy.
3. Understanding and strengthening of the economy.

Loomis and Beegle discussed the role that county agricultural agents play in bringing about a better understanding of the three fields named above in their work with farm people:

Adult education in general and in the three fields in particular will be made more effective if those who are responsible for it have appropriate organization skills and educational methods. All leaders involved in adult education in rural America need professional training and experience in rural life, the social sciences, and adult education. Such training should be of professional level and coupled with in-service training. Relatively few leaders are sufficiently trained in these fields. ²⁵

²⁴ Lincoln David Kelsey and Cannon Chiles Hearne, Cooperative Extension Work, Ithaca, New York: Comstalk Publishing Associates, A Division of Cornell University Press, 1955, p. 60.

²⁵ Charles P. Loomis and J. Allen Beegle, Rural Social System and Adult Education, Lansing, Michigan: The Michigan State College Press, 1953, p. 352.

J. L. Matthews, who is in charge of the Educational Research Section, Division of Field Studies and Training of the Cooperative Extension Service of the United States Department of Agriculture, has made extensive studies related to the training of personnel for extension work in the counties. Based upon his own studies and his broad knowledge of extension work in the United States, he has made the following observations regarding the training of extension personnel:

County extension workers need more education and training in the social sciences and in the techniques of dealing with programs with general education objectives. County extension workers' education and training needs are limiting their effectiveness in developing and carrying out programs and activities that deal with international understanding, democracy, and the economy. Financial assistance and more administrative encouragement are needed for the individuals who are willing to study to improve their competence in these areas.

In summary, it can be said that the Cooperative Extension Service is an important part of the adult education movement in this country. In terms of size of organization, financial support, geographical coverage, scope of program and clientele, it has the largest program of adult education in the rural areas of the United States.²⁶

In June, 1952 the Agricultural Experiment Station of the University of Missouri published the results of a study which investigated the relationship of certain factors to the success of county agricultural agents employed by the Missouri Agricultural Extension Service.²⁷

The study as originally planned was composed of two parts: (1) The construction of an instrument to predict county agent success; and (2) the testing of the instrument by employing it to actually predict the

²⁶ Joseph L. Matthews, "The Cooperative Extension Service of the United States", from Rural Social Systems and Adult Education by Charles P. Loomis and J. Allen Beegle, Lansing, Michigan: The Michigan State College Press, 1953, p. 79.

²⁷ Ivan Nye, The Relation of Certain Factors to County Agent Success, Research Bulletin 498, Columbia, Missouri: Agricultural Experiment Station, University of Missouri, June, 1952, 43 pages.

success of the agents at the time of their employment, and, by following their vocational experience for at least two years, to determine the accuracy of the prediction. Only the first part of the study was reported in the research bulletin. The primary hypothesis to be tested was: That success in county extension work can be predicted from a combination of an individual's background, training, intelligence level, vocational interests, and other personality characteristics. County agents employed in the field, and seniors and graduates of the College of Agriculture were compared as well as the most effective and least effective agents as designated by a competent jury of administrators and supervisors. The principal conclusions drawn from the study were:

There was no relationship between an agent's general learning ability and his success as an agent, nor was there any considerable difference between the scores of agents and other graduates of the College of Agriculture. Agents had slightly higher General Learning Ability scores than the random senior group, excluding advisees who were College of Agriculture students who had indicated an interest in becoming a county agent.

The Army General Classification Test was used to make these comparisons. There were no significant differences found between groups compared. The small number of agents with relatively low scores might be accounted for by the consistent policy of not hiring graduates with very low grade point averages. ²⁸

Further:

An investigation of differences in agent and non-agent grades in college shows that more agents had high grade point averages and fewer had low averages than did non-agents. More of the most effective agents had high averages and fewer had low averages than did the least effective agents. The group differences were not very great, however. Thus, it may be said that college grades have some association with county agent work, the higher the grades the better, but there are many other factors of equal or greater importance. ²⁹

²⁸ Ibid., p. 37.

²⁹ Ibid., p. 15.

There were no significant differences between the agents trained in the so-called "training counties" and those trained elsewhere.³⁰

The literature reveals that there has been relatively little research done which relates directly to the training of county agents for their responsibilities in the field. No previous research has been conducted in Oklahoma that is directly related to the current study.

³⁰ Ibid., p. 38.

CHAPTER IV

PROCEDURE

The design of the study required the selection and classification of extension tasks into categories of subject matter, and a record of the number of semester credit hours completed by the agents in each category of subject matter which was obtained from the official transcripts of college courses. A questionnaire was prepared for the agents to indicate the facility with which they had performed extension tasks and to indicate informal training or experience helpful in performing extension duties.

Developing the Questionnaire

In order to select and classify tasks that most of the county agricultural agents are called upon to perform during a calendar year, a careful study was made of the printed form used by the Federal Cooperative Extension Service for securing an annual statistical report from each extension agent in the United States who received any part of his salary from Federal funds.¹ This form provided appropriate items for reporting extension work performed by each extension agent in various subject matter areas.

The tasks most frequently performed by county extension agents in Oklahoma were reviewed and were adapted to a check list in which the various tasks were categorized as relating to specific subject matter areas.

¹ The form ES-21 (Revised June, 1953), Annual Report of County Extension Agents, Cooperative Extension in Agriculture and Home Economics, Extension Service, Washington, D. C., was consulted for the purpose of selecting and classifying extension tasks into categories of subject matter.

Selection of a Jury to Categorize Extension Tasks

In order to have the benefit of the judgment of a committee of competent extension authorities who were familiar with Oklahoma extension work, the investigator invited the administrators and supervisors of the Oklahoma Extension Service to serve as a jury to review every item proposed for the questionnaire and to determine the proper category for each task included as related to a specific subject matter area. The jury consisted of Shawnee Brown, Director of Extension; Errol Hunter, Assistant Director of Extension; Ernest Lowe, District Agent for the northeast counties of Oklahoma; J. M. Ives, District Agent for the northwest counties; Lee Craig, District Agent for the southeast counties; and Ed Chambers, District Agent for the southwest counties of the state. The author considered these men competent to pass judgment on the nature of extension tasks the field agents are called upon to perform and to categorize each task as related to a specific subject matter area.

Revisions were made in the questionnaire in accordance with the suggestions made by the members of the jury. Some of the questions were eliminated and others were modified for the purpose of clarity.

Test Run of the Questionnaire

After the members of the jury had reviewed and approved the preliminary draft of the questionnaire, it was administered to a number of former county agents who were employed at the central office of the Oklahoma Extension Service. A number of the suggestions made by the former county agricultural agents were incorporated into the final draft of the questionnaire as a result of this trial run.

The Instrument

On the basis of the information and suggestions received from members of the jury and the former county agents, who participated in the test run, the final instrument listed 104 tasks classified in nine categories for the consideration of the white county agents, associate county agents, and assistant county agents who had been employed for a full calendar year in an Oklahoma county on January 1, 1956. (See Appendix C.)

The extension tasks were placed in the following categories:

- I. Tasks related to physical science.
- II. Tasks related to biological science.
- III. Tasks related to animal science.
- IV. Tasks related to plant science.
- V. Tasks related to social science.
- VI. Tasks related to agricultural education, extension methods and procedures.
- VII. Tasks related to general education, teaching and educational methods.
- VIII. Tasks involving oral and written communication.
- IX. Tasks related to health education, recreation, music, and the fine arts.

A four-phase check list was provided for the agents to indicate whether the performance of these tasks without the aid of an extension specialist, district agent, or other trained resource person, involved little or no difficulty; some difficulty; considerable difficulty; or was usually very difficult. A column was provided on the check list, marked "N", and the agents were instructed to place an "N" in this column if they had not performed the extension task named during 1954 or 1955.

The agents were asked to indicate also any informal training they had received which they considered helpful in performing extension tasks.

Selection of the Respondents

There were 148 white agricultural county agents employed in Oklahoma counties at the beginning of the present year and twenty-one of this number had been employed less than one year. Since the total number of agents in the field was relatively small, the decision was made to include in the study all agents except those who had less than one year of extension experience in the field.

The following table indicates the response to the questionnaire by those to whom it was mailed:

TABLE I
NUMBER OF QUESTIONNAIRES MAILED AND RETURNED
AND THE PERCENTAGE RETURNED

Item	County Agents	Associate County Agents	Assistant County Agents	Total
Number mailed	77	16	34	127
Number returned	76	16	34	126
Percentage returned	98.7	100	100	99.2

Due to the serious illness and hospitalization of one of the county agents, one questionnaire could not be completed and returned.

Collection of the Data

In addition to data gathered by means of the questionnaire, the plan for the study called for the number of semester credit hours completed by each agent in ten different subject matter areas. This required the careful checking of the official transcripts of the agents in the Office of the Registrar of the Oklahoma A. and M. College. The transcripts were reviewed and the course number, credit hours, and grades were recorded on the form. (See Appendix D.) These data provided a means of calculating the grade point averages earned by the agents in courses, subject matter areas, and total grade points earned.

Tabulation of the Data

The data submitted by the county agents and associate county agents were tabulated separately from the data submitted by the assistant county agents. Data from the two groups were then combined for an analysis of the information received from all respondents. This separate treatment seemed advisable since the assistant county agents spend a greater share of their time with 4-H Club members than with adult farmers while the responsibilities of the associate county agents are much like those of the county agents.

Statistical Computations

Frequency tables were compiled for the purpose of constructing contingency tables to apply the chi-square test to determine whether the two attributes of semester credit hours completed in college and the performance of specified extension tasks in the field were related or independent.

In order to investigate the relationship between the facility of the agents in performing extension tasks and their professional training in each subject matter area, a contingency table was prepared for each category according to the method outlined by Garrett.¹ This method was employed for the purpose of calculating independence values and applying the chi-square test to determine the probability that the deviations of the observed frequencies from the expected frequencies could have occurred by chance or by errors in sampling.

The chi-square test involved the preparation of contingency tables in which varying degrees of two attributes or characteristics were placed

¹ Henry E. Garrett, Statistics in Psychology and Education, New York: Longman's, Green & Co., Fourth Edition, 1938, p. 254.

Garrett states that the chi-square test represents a useful method of comparing experimentally obtained results with those to be expected theoretically on some hypothesis. The formula for chi-square is stated as follows:

$$X^2 = \sum \frac{(f_o - f_e)^2}{f_e}$$

(chi-square formula for testing agreement between observed and expected results)

in which

f_o = frequency of occurrence of observed or experimentally determined facts

f_e = expected frequency of occurrence on some hypothesis

The difference between observed and expected frequencies are squared and divided by the expected number in each case, and the sum of these quotients is X^2 .

in a double entry or two-way table for determining the probability of any real association between the two attributes.²

In making application of the chi-square test, the hypothesis to be tested was the null hypothesis, namely, that the ability of county agricultural agents to perform selected extension tasks in a specified subject matter field is essentially independent or unrelated to the number of semester credit hours completed in college as a part of their professional training. In order to compute chi-square values, an "independence value" for each cell in the contingency table was calculated. In the following contingency tables, the "independence values" are represented by figures in parentheses within the different cells. These give the frequency we should expect to find in comparing the two attributes in the absence of any real association. Garrett states:

When the expected or independence values have been computed, we find the difference between the observed and expected values for each cell, square each difference and divide in each instance by the independence value. The sum of these quotients gives X^2 .³

Tables have been constructed by Fisher and Yates for determining the significance of chi-square values. The chi-square values reprinted in

² Ibid., p. 262.

Garrett discusses the application of the chi-square test to investigate the relationship between two attributes which can be classified into two or more categories as follows:

The chi-square test of independence in contingency tables

We have seen that X^2 may be employed to test the agreement between observed results and those expected on some hypothesis. A further useful application of X^2 can be made when we wish to investigate the relationship between traits or attributes which can be classified into two or more categories.

³ Ibid., p. 264.

Tables for Statisticians by Arkin and Colton⁴ were used. This table of chi-square values indicates probabilities ranging from .001 to .99.

The author selected the five percent level of confidence for the test of significance of the contingency tables by the chi-square method. Where the probability was less than five percent, the level of significance was noted and recorded as a matter of information. The author accepted a significance of chi-square ranging between five and ten percent as indicating a trend of association of the two attributes under study but not adequate to establish a real association. Due to the fact that reports from 98.7 percent of the county agents and associate county agents and 100 percent of the reports from the assistant county agents in the state who had served at least a full year in the field were included in the study, the possibility of errors due to sampling was very small.

Chapter V will present and analyze the results of the study.

⁴ Herbert Arkin and Raymond R. Colton, Tables for Statisticians, New York: Barnes & Noble, Inc., 1950, p. 121.

CHAPTER V

PRESENTATION AND ANALYSIS OF THE DATA

It will be recalled that all county extension agents were asked to report the degree of difficulty they had encountered in personally performing selected extension tasks during the years 1954 and/or 1955. A four-phase check list was provided for them to indicate whether the performance of these tasks involved little or no difficulty, some difficulty, considerable difficulty, or was usually very difficult.

Part I. Analysis of Data Relating to Physical Science

The questionnaire listed twelve tasks which the jurors considered to be related to the category of subject matter usually included in college courses in physical science. The transcripts of each extension agent were checked carefully to determine the number of semester credit hours the agents had completed in undergraduate courses and in graduate courses. The course number, number of semester credit hours completed, and grades for each course were recorded on a form prepared for this purpose. (See Appendix D.)

The tasks named in the check list in the category of physical science involved agricultural engineering, chemistry, mathematics, physics, and geology. Data were analyzed separately for the two groups of county extension agents.

The data were then combined and analyzed for both groups. The county agents and associate county agents reported that 82.6 percent of the possible number of tasks listed in the questionnaire were performed by them during the past two years.

In order to determine the relationship between the facility of the agents to perform tasks related to physical science and their professional training in the area of physical science, contingency tables were prepared for the purpose of calculating independence values and applying the chi-square test.

The combined calculated chi-square values from the contingency tables for both groups of agents were tested by the method outlined by Snedecor.¹

This method was used throughout the study to test the significance of the results when data for the various categories were combined.

Following are the contingency tables relating to physical science:

¹ George W. Snedecor, Statistical Methods, Ames, Iowa: The Iowa State College Press, 1953, Fourth Edition, p. 194.

Snedecor suggests using the formula prepared by Fisher in Statistical Methods for Research Workers, Edinburgh, 1944, for testing chi-square when the degrees of freedom exceed thirty. This method involves the use of the t-test in determining probabilities according to the following formula:

$$t = \sqrt{2X^2} - \sqrt{2(d.f.) - 1}$$

TABLE II

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN PHYSICAL SCIENCE AND THE FACILITY OF PERFORMING EXTENSION TASKS RELATED TO PHYSICAL SCIENCE, COUNTY AGENTS AND ASSOCIATE COUNTY AGENTS

Semester credit hours completed in physical science	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
fo	3	9	14	10	36
41 or more fe	(3)	(5.6)	(12.5)	(14.9)	
fo-fe	0.0	3.4	1.5	-4.9	
fo	7	10	20	43	80
31-40 fe	(6.6)	(12.4)	(28.0)	(33.0)	
fo-fe	0.4	-2.4	-8.0	10.0	
fo	23	23	54	70	170
21-30 fe	(14.1)	(26.4)	(59.6)	(69.9)	
fo-fe	8.9	-3.4	-5.6	0.1	
fo	33	76	172	177	458
16-20 fe	(38.2)	(71.2)	(160.3)	(188.3)	
fo-fe	-5.2	4.8	11.7	-11.3	
fo	10	24	60	76	170
10-15 fe	(14.1)	(26.4)	(59.6)	(69.9)	
fo-fe	-4.1	-2.4	0.4	6.1	
Total	76	142	320	376	914

Calculated chi-square value with 12 degrees of freedom = 21.670 *

Chi-square value needed for significance at the five percent level with 12 degrees of freedom = 21.026.

* An asterisk (*) denotes significance at the five percent level throughout this study.

TABLE III

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN
PHYSICAL SCIENCE AND THE FACILITY OF PERFORMING EXTENSION TASKS
RELATED TO PHYSICAL SCIENCE, ASSISTANT COUNTY AGENTS

Semester credit hours completed in physical science	Frequency with which tasks were reported:				
	Usually very diffi- cult	Consider- able dif- ficulty	Some Diffi- culty	Little or no diffi- culty	Total
41 or more fo	0	0	0	0	0
fe	0	0	0	0	
fo-fe					
31-40 fo	1	4	11	13	29
fe	(3.4)	(5.4)	(10.3)	(9.9)	
fo-fe	-2.4	-1.4	0.7	3.1	
21-30 fo	10	17	21	24	72
fe	(8.1)	(13.3)	(25.8)	(24.8)	
fo-fe	1.9	3.7	-4.8	-0.8	
16-20 fo	21	31	64	58	174
fe	(19.7)	(32.6)	(62)	(59.7)	
fo-fe	1.3	-1.6	2.0	-1.7	
10-15 fo	0	1	5	2	8
fe	(0.8)	(1.7)	(2.9)	(2.6)	
fo-fe	-0.8	-0.7	2.1	-0.6	
Total	32	53	101	97	283

Calculated chi-square value with 9 degrees of freedom = 9.374

Chi-square value needed for significance at the five percent level with

9 degrees of freedom = 18.307

In Table II the calculated chi-square value indicated quite clearly that there was a real association between the number of credit hours completed in physical science and the facility of performing specified extension tasks related to physical science.

Table III showed that there was no significant relationship between the credit hours completed in physical science and the facility with which the assistant county agents performed specified extension tasks. The probability of association of the two attributes tested when interpolation was used to determine the chi-square value was such that the difference between the frequencies observed and the frequencies expected in this table could have happened by chance or by errors in sampling.

The author has used an asterisk (*) in all of the tables included in this study to denote significance at the five percent level.

Part II. Extension Tasks Related to Biological Science

The extension tasks specified in the questionnaire were related to subject matter usually treated in college courses in entomology, botany, plant pathology, bacteriology, and physiology. The number of semester credit hours completed by the county agricultural agents in bacteriology, biology, botany, entomology, physiology, and zoology were recorded from the college transcripts to serve as a basis for preparing contingency tables.

A frequency count was made for each item appearing on the questionnaire to indicate the varying degrees of facility with which the agents reported performing the extension tasks. The frequency count of tasks related to biological science were used in contingency tables which were constructed for the purpose of applying the chi-square test to the data. The chi-square test is a measure of the probability of association of attributes that may be classified into two or more categories.

Tables IV and V are the contingency tables which were prepared for the purpose of investigating the probability of association of the attributes to be tested, namely, semester credit hours completed and the performance of extension tasks related to biological science.

TABLE IV

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN BIOLOGICAL SCIENCE AND THE FACILITY OF PERFORMING EXTENSION TASKS RELATED TO BIOLOGICAL SCIENCE, COUNTY AGENTS AND ASSOCIATE COUNTY AGENTS

Semester credit hours completed in biological science	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
26 or more	fo 20 (13.4)	fo 37 (33)	fo 69 (69.4)	fo 80 (90.2)	206
	fe 6.6	fe 4.0	fe -0.4	fe -10.2	
21-25	fo 8 (8)	fo 17 (19.5)	fo 37 (41)	fo 60 (53.5)	122
	fe 0.0	fe -2.5	fe -4.0	fe 6.5	
16-20	fo 13 (13)	fo 28 (31.9)	fo 68 (67)	fo 90 (87.1)	199
	fe 0.0	fe -3.9	fe 1.0	fe 2.9	
11-15	fo 12 (17.5)	fo 42 (42.9)	fo 91 (90.3)	fo 123 (117.3)	268
	fe -5.5	fe -0.9	fe 0.7	fe 5.7	
0-10	fo 2 (3.1)	fo 11 (7.7)	fo 19 (16.3)	fo 16 (20.9)	48
	fe -1.1	fe 3.3	fe 2.7	fe -4.9	
Total	55	135	284	369	843

Calculated chi-square value with 12 degrees of freedom = 12.404

Chi-square value needed for significance at the five percent level with 12 degrees of freedom = 21.026. The probability of association by interpolating is .35

TABLE V

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN
 BIOLOGICAL SCIENCE AND THE FACILITY OF PERFORMING EXTENSION TASKS
 RELATED TO BIOLOGICAL SCIENCE, ASSISTANT COUNTY AGENTS

Semester credit hours completed in biological science	Frequency with which tasks were reported:				
	Usually very diffi- cult	Consider- able dif- ficulty	Some Diffi- culty	Little or no diffi- culty	Total
26 or more	fo 5 (1.9)	13 (6.4)	20 (15.3)	5 (19.4)	43
	fo-fe 3.1	6.6	4.7	-14.4	
21-25	fo 2 (1.6)	1 (5.5)	19 (13.1)	15 (16.8)	37
	fo-fe 0.4	-4.5	5.9	-1.8	
16-20	fo 6 (4.6)	11 (15)	29 (36)	55 (45.4)	101
	fo-fe 1.4	-4.0	-7.0	9.6	
11-15	fo 0 (4.9)	20 (18.1)	39 (42.6)	60 (53.4)	119
	fo-fe -4.9	1.9	-3.6	6.6	
0-10	fo 0	0	0	0	0
	fo-fe 0	0	0	0	
Total	13	45	107	135	300

Calculated chi-square value with 9 degrees of freedom = 41.679 *

Chi-square value needed for significance at the five percent level with
 9 degrees of freedom = 16.919

In Table IV the chi-square test did not reveal a significant result relating to biological science where the county agents and associate county agents performed extension tasks related to biological science. The probability of association indicated that there were only sixty-five chances in one hundred that there was a real association between the two attributes tested.

Table V revealed that there was a positive relationship between the number of semester credit hours completed in biological science and the facility with which the assistant county agents performed specified extension tasks related to biological science.

Part III. Extension Tasks Related to Animal Science

The extension tasks specified in the questionnaire related to subject matter ordinarily included in the following college courses: the selection and management of livestock, dairy, and poultry; the use of rations for meat-producing animals, dairy animals, and for poultry; the registration of purebred animals; inauguration and supervision of 4-H livestock, dairy, and poultry projects.

A frequency count was made for each item appearing on the questionnaire related to animal science. This count provided the basis for constructing contingency tables VI and VII which were used to apply the chi-square test to the data.

TABLE VI

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN ANIMAL SCIENCE AND THE FACILITY OF PERFORMING EXTENSION TASKS RELATED TO ANIMAL SCIENCE, COUNTY AGENTS AND ASSOCIATE COUNTY AGENTS

Semester credit hours completed in animal science	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
41 or more fo	8	17	67	206	298
fe	(10.5)	(22.5)	(89.7)	(175.3)	
fo-fe	-2.5	-5.5	-22.7	30.7	
31-40 fo	8	5	64	157	234
fe	(8.3)	(17.6)	(70.5)	(137.6)	
fo-fe	-0.3	-12.6	-6.5	19.4	
21-30 fo	8	7	26	47	88
fe	(3.1)	(7.5)	(26.5)	(50.9)	
fo-fe	4.9	-0.5	-0.5	-3.9	
16-20 fo	1	12	43	41	97
fe	(3.4)	(7.2)	(29.2)	(57.2)	
fo-fe	-2.4	4.8	13.8	-16.2	
0-15 fo	13	41	124	181	359
fe	(12.7)	(27.2)	(108.1)	(211)	
fo-fe	0.3	13.8	15.9	-30.0	
Total	38	82	324	632	1076

Calculated chi-square value with 12 degrees of freedom = 62.522 *

Chi-square value needed for significance at the five percent level with 12 degrees of freedom = 21.026

TABLE VII

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN
ANIMAL SCIENCE AND THE FACILITY OF PERFORMING EXTENSION TASKS
RELATED TO ANIMAL SCIENCE, ASSISTANT COUNTY AGENTS

Semester credit hours completed in animal science	Frequency with which tasks were reported:				
	Usually very diffi- cult	Consider- able dif- ficulty	Some Diffi- culty	Little or no diffi- culty	Total
41 or more	fo 2 (3.2)	7 (16.4)	37 (38.2)	135 (123.2)	181
	fe				
	fo-fe	-1.2	-9.4	-1.2	11.8
31-40	fo 0 (2.0)	4 (10.1)	27 (23.6)	81 (76.3)	112
	fe				
	fo-fe	-2.0	-6.1	3.4	4.7
21-30	fo 0 (0.1)	0 (0.6)	4 (1.5)	3 (4.8)	7
	fe				
	fo-fe	-0.1	-0.6	2.5	-1.8
16-20	fo 0 (0.5)	0 (2.3)	6 (5.5)	20 (17.7)	26
	fe				
	fo-fe	-0.5	-2.3	0.5	2.3
0-15	fo 5 (1.2)	25 (6.6)	10 (15.2)	32 (49)	72
	fe				
	fo-fe	3.8	18.4	-5.2	-17.0
Total	7	36	84	271	398

Calculated chi-square value with 12 degrees of freedom = 93.154 *

Chi-square value needed for significance at the five percent level with

12 degrees of freedom = 21.026

Table VI revealed a highly significant result when the chi-square test was used. The results indicated that the difference between the frequencies observed and the frequencies expected could not have occurred by chance or by errors in sampling.

The results of the chi-square test used for Table VII showed a highly significant result. The probability was more than ninety-five chances out of one hundred that the results secured from this contingency table could not have occurred by chance or errors in sampling.

Part IV. Extension Tasks Related to Plant Science

The extension tasks specified in the questionnaire included the following college courses: agronomy, field crops, forestry, horticulture, and soils. The extension tasks relating to the plant sciences performed by the agents included the following: advising farmers and ranchers on pasture and range management, identifying useful grasses and legumes, identifying plants poisonous to livestock, the control of harmful weeds, assisting farmers in beautifying the home grounds, advising farmers regarding the home vegetable garden or the production of truck crops, providing information on the appropriate use of commercial fertilizers, and also information intended to help protect wild life on the farm or ranch.

Following are Tables VIII and IX which were prepared for the purpose of investigating the probability of association of the attributes tested.

TABLE VIII

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN PLANT SCIENCE AND THE FACILITY OF PERFORMING EXTENSION TASKS RELATED TO PLANT SCIENCE, COUNTY AGENTS AND ASSOCIATE COUNTY AGENTS

Semester credit hours completed in plant science	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
41 or more fo	6	16	41	49	112
fe	(7.3)	(17.6)	(40.7)	(46.4)	
fo-fe	-1.3	-1.6	0.3	2.6	
31-40 fo	5	29	57	48	139
fe	(9.0)	(22.1)	(50.4)	(57.5)	
fo-fe	-4.0	6.9	6.6	-9.5	
21-30 fo	6	18	31	35	90
fe	(5.9)	(14.2)	(32.7)	(37.2)	
fo-fe	0.1	3.8	-1.7	-2.2	
16-20 fo	17	29	94	127	267
fe	(17.5)	(42.1)	(96.9)	(110.5)	
fo-fe	-0.5	-13.1	-2.9	16.5	
0-15 fo	21	41	83	90	235
fe	(15.3)	(37.0)	(85.3)	(97.4)	
fo-fe	5.7	4.0	-2.3	-7.4	
Total	55	133	306	349	843

Calculated chi-square value with 12 degrees of freedom = 18.786

Chi-square value needed for significance at the five percent level with 12 degrees of freedom = 21.026

TABLE IX

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN
PLANT SCIENCE AND THE FACILITY OF PERFORMING EXTENSION TASKS
RELATED TO PLANT SCIENCE, ASSISTANT COUNTY AGENTS

Semester credit hours completed in plant science	Frequency with which tasks were reported:				
	Usually very diffi- cult	Consider- able dif- ficulty	Some Diffi- culty	Little or no diffi- culty	Total
41 or more fo	3	9	19	25	56
fe	(3.3)	(8.8)	(22.5)	(21.4)	
fo-fe	-0.3	0.2	-3.5	3.6	
31-40 fo	0	0	1	0	1
fe	(0.0)	(0.2)	(0.4)	(0.4)	
fo-fe	0.0	-0.2	0.6	-0.4	
21-30 fo	2	5	22	14	43
fe	(2.5)	(6.7)	(17.3)	(16.5)	
fo-fe	-0.5	-1.7	4.7	-2.5	
16-20 fo	12	29	63	60	164
fe	(9.6)	(25.7)	(65.9)	(62.8)	
fo-fe	2.4	3.3	-2.9	-2.8	
0-15 fo	1	5	18	18	42
fe	(2.5)	(6.6)	(16.9)	(16)	
fo-fe	-1.5	-1.6	1.1	2.0	
Total	18	48	123	117	306

Calculated chi-square value with 12 degrees of freedom = 7.928

Chi-square value needed for significance at the five percent level with
12 degrees of freedom = 21.026

The calculations for Table VIII did not support the hypothesis that there was a real association between the semester credit hours completed in plant science and the facility of performing extension tasks related to plant science by the county agents and associate county agents. The results were significant only at the 9.52 percent level. This showed a trend of association between the two attributes tested, but it was not sufficient to establish real association at the five percent level.

Table IX did not reveal a real association between the number of semester credit hours completed in plant science and the facility of performing extension tasks related to plant science by the assistant county agents. The chi-square test revealed that the probability was only seventy-nine chances out of one hundred that there was a real association between the attributes tested.

Part V. Extension Tasks Related to Social Science

The college courses placed in the category of social science were agricultural economics, business administration, economics, geography, history, humanities, political science, and sociology. The extension tasks enumerated in the questionnaire related to social science involved the performance of such tasks as making fact-finding surveys to be used in planning and developing a county extension program, organizing and guiding a county extension program based upon the interests and needs of farm people, providing economic information relating to agriculture to farm people, maintaining good working relations and communications with other governmental agencies working in the county, and maintaining cooperative relations and communications with school administrators and teachers in the schools located in the county.

Tables X and XI which follow were constructed for the purpose of investigating the probability of association of formal training in social science and the performance of extension tasks related to social science.

TABLE X

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN SOCIAL SCIENCE AND THE FACILITY OF PERFORMING EXTENSION TASKS RELATED TO SOCIAL SCIENCE, COUNTY AGENTS AND ASSOCIATE COUNTY AGENTS

Semester credit hours completed in social science	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
26 or more fo	17	51	82	114	264
fe	(22.1)	(42.6)	(78.7)	(120.6)	
fo-fe	-5.1	8.4	3.3	-6.6	
21-25 fo	11	15	31	37	94
fe	(7.9)	(15.2)	(28.0)	(42.9)	
fo-fe	3.1	-0.2	3.0	-5.9	
16-20 fo	11	13	66	105	195
fe	(16.3)	(31.4)	(58.1)	(89.2)	
fo-fe	-5.3	-18.4	7.9	15.8	
11-15 fo	65	101	152	257	575
fe	(48.2)	(92.7)	(171.4)	(262.7)	
fo-fe	16.8	8.3	-19.4	-5.7	
0-10 fo	40	97	181	272	590
fe	(49.5)	(95.1)	(175.8)	(269.6)	
fo-fe	-9.5	1.9	5.2	2.4	
Total	144	277	512	785	1718

Calculated chi-square value with 12 degrees of freedom = 37.647 *

Chi-square value needed for significance at the five percent level with 12 degrees of freedom = 21.026

TABLE XI

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN
SOCIAL SCIENCE AND THE FACILITY OF PERFORMING EXTENSION TASKS
RELATED TO SOCIAL SCIENCE, ASSISTANT COUNTY AGENTS

Semester credit hours completed in social science	Frequency with which tasks were reported:				
	Usually very diffi- cult	Consider- able dif- ficulty	Some Diffi- culty	Little or no diffi- culty	Total
26 or more fo	0	2	7	29	38
fe	(3.4)	(5.6)	(12)	(17)	
fo-fe	-3.4	-3.6	5	2	
21-25 fo	2	10	27	22	61
fe	(5.5)	(8.9)	(19.3)	(27.3)	
fo-fe	-3.5	1.1	7.7	-5.3	
16-20 fo	6	10	28	36	80
fe	(7.2)	(11.6)	(25.3)	(35.9)	
fo-fe	-1.2	-1.6	2.7	0.1	
11-15 fo	31	57	101	158	347
fe	(31.4)	(50.6)	(109.8)	(155.2)	
fo-fe	-0.4	6.4	-8.8	2.8	
0-10 fo	15	8	26	22	71
fe	(6.4)	(10.3)	(22.5)	(31.8)	
fo-fe	8.6	-2.3	3.5	-9.8	
Total	54	87	189	267	597

Calculated chi-square value with 12 degrees of freedom = 32.666 *

Chi-square value needed for significance at the five percent level with
12 degrees of freedom = 21.026

In Table X the calculated chi-square value revealed a highly significant result at the five percent level. The results were also significant at the one percent level. The results indicated that there was a very great probability of real association between the two attributes tested.

Table XI when treated by the chi-square test showed a significant result at the five percent level. This indicated that there was a real association between the two attributes tested.

Part VI. Extension Tasks Related to Agricultural and Extension Education

The subject matter courses in agricultural and extension education included adult education; the school and the community; working with farm youth; psychology for extension workers; and the history, functions, and objectives of the extension service. The extension tasks named in the questionnaire included such tasks as organizing and assisting a county-wide advisory committee, furnishing the advisory committee factual information to aid in developing a county-wide extension program, preparing and carrying out a plan of extension work for the county, locating and setting up result demonstrations with adults, conducting method demonstrations, training local 4-H club leaders, conducting field days or farm tours, training adult leaders to assist in conducting cooperative extension work in the county.

Tables XII and XIII which follow relate to an investigation of the attributes to be tested in the field of agricultural and extension education.

TABLE XII

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN AGRICULTURAL EDUCATION AND THE FACILITY OF PERFORMING EXTENSION TASKS RELATED TO AGRICULTURAL EDUCATION, COUNTY AGENTS AND ASSOCIATE COUNTY AGENTS

Semester credit hours completed in agricultural education	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
26 or more fo	3	12	50	49	114
fe	(6.3)	(23.0)	(52.2)	(32.5)	
fo-fe	-3.3	-11.0	-2.2	16.5	
16-25 fo	3	26	23	28	80
fe	(4.3)	(16.2)	(36.7)	(22.8)	
fo-fe	-1.3	9.8	-13.7	5.2	
7-15 fo	28	87	156	72	343
fe	(18.6)	(69.5)	(157.2)	(97.7)	
fo-fe	9.4	17.5	- 1.2	-25.7	
4-6 fo	19	47	146	86	298
fe	(16.3)	(60.3)	(136.5)	(84.9)	
fo-fe	2.7	-13.3	9.5	1.1	
0-3 fo	3	36	96	58	193
fe	(10.5)	(39.0)	(88.4)	(55.1)	
fo-fe	-7.5	-3.0	7.6	2.9	
Total	56	208	471	293	1028

Calculated chi-square value with 12 degrees of freedom = 54.452 *

Chi-square value needed for significance at the five percent level with 12 degrees of freedom = 21.026

TABLE XIII

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN AGRICULTURAL EDUCATION AND THE FACILITY OF PERFORMING EXTENSION TASKS RELATED TO AGRICULTURAL EDUCATION, ASSISTANT COUNTY AGENTS

Semester credit hours completed in agricultural education	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
26 or more	fo 0	2	6	1	9
	fe (0.5)	(1.4)	(3.7)	(3.4)	
	fo-fe -0.5	0.6	2.3	-2.4	
16-25	fo 0	5	20	5	30
	fe (1.7)	(4.8)	(12.2)	(11.3)	
	fo-fe -1.7	0.2	7.8	-6.3	
7-15	fo 4	23	49	50	126
	fe (7.3)	(20.0)	(51.1)	(47.6)	
	fo-fe -3.3	3.0	-2.1	2.4	
4-6	fo 8	14	51	58	131
	fe (7.6)	(20.9)	(53.1)	(49.4)	
	fo-fe 0.4	-6.9	-2.1	8.6	
0-3	fo 8	11	14	16	49
	fe (2.9)	(7.9)	(19.9)	(18.3)	
	fo-fe 5.1	3.1	-5.9	-2.3	
Total	20	55	140	130	345

Calculated chi-square value with 12 degrees of freedom = 31.881 *

Chi-square value needed for significance at the five percent level with 12 degrees of freedom = 21.026

In Table XII the results were significant at the five percent level. The chi-square test also indicated that the results between the two attributes tested were significant at the one percent level. This indicated that the possibility was ninety-nine chances out of one hundred that there was positive relationship between the number of semester credit hours completed in agricultural education and the facility of performing extension tasks related to agricultural education by county agents and associate county agents.

Table XIII revealed that the results were significant at the five percent level and also at the one percent level. This indicated a real association between the number of semester credit hours completed in agricultural education by the assistant county agents and the facility with which they performed specified extension tasks related to agricultural education.

Part VII. Extension Tasks Related to General Education

The following college courses were included in the category of general education: teaching and educational methods, psychology, philosophy, and photography. The tasks specified in the questionnaire included motivating farm people to recognize and to do something about their problems relating to the occupation of farming, preparing and using visual or other teaching aids, making 4-H club projects an educational experience for rural youth, and influencing the attitude of farmers to accept scientific methods and research rather than tradition as a means of solving problems.

Tables XIV and XV which follow relate to teaching and educational methods, and tasks relating to the same subject matter category.

TABLE XIV

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN GENERAL EDUCATION AND THE FACILITY OF PERFORMING EXTENSION TASKS RELATED TO GENERAL EDUCATION, COUNTY AGENTS AND ASSOCIATE COUNTY AGENTS

Semester credit hours completed in general education	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
16 or more fo	2	4	11	21	38
fe	(2.6)	(8.5)	(15.4)	(11.5)	
fo-fe	-0.6	-4.5	-4.4	9.5	
11-15 fo	1	8	22	15	46
fe	(3.1)	(10.3)	(18.6)	(14.0)	
fo-fe	-2.1	-2.3	3.4	1.0	
6-10 fo	11	30	68	59	168
fe	(11.4)	(37.5)	(68.2)	(50.9)	
fo-fe	-0.4	-7.5	-0.2	8.1	
1-5 fo	26	104	165	114	409
fe	(27.8)	(91.4)	(165.9)	(123.9)	
fo-fe	-1.8	12.6	-0.9	-9.9	
0-None fo	19	48	86	54	207
fe	(14.1)	(46.3)	(83.9)	(62.7)	
fo-fe	4.9	1.7	2.1	-3.7	
Total	59	194	352	263	868

Calculated chi-square value with 12 degrees of freedom = 22.778 *

Chi-square value needed for significance at five percent level with 12 degrees of freedom = 21.026

TABLE XV

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN
GENERAL EDUCATION AND THE FACILITY OF PERFORMING EXTENSION TASKS
RELATED TO GENERAL EDUCATION, ASSISTANT COUNTY AGENTS

Semester credit hours completed in general education	Frequency with which tasks were reported:				
	Usually very diffi- cult	Consider- able dif- ficulty	Some Diffi- culty	Little or no diffi- culty	Total
fo	0	0	0	0	0
16 or more fe	0	0	0	0	
fo-fe					
fo	0	0	0	0	0
11-15 fe	0	0	0	0	
fo-fe					
fo	0	3	15	10	28
6-10 fe	(1.5)	(4.3)	(12.3)	(9.9)	
fo-fe	-1.5	-1.3	2.7	0.1	
fo	11	32	99	78	220
1-5 fe	(11.5)	(34)	(96.5)	(78)	
fo-fe	-0.5)	-2.0	2.5	0.0	
fo	6	15	28	27	76
0-None fe	(4)	(11.7)	(33.3)	(27)	
fo-fe	2.0	3.3	-5.3	0.0	
Total	17	50	142	115	324

Calculated chi-square value with 6 degrees of freedom = 5.470

Chi-square value needed for significance at the five percent level with

6 degrees of freedom = 12.502

The chi-square test revealed that the two attributes appearing in Table XIV had a positive relationship. The results of the chi-square test for this table revealed that the calculated chi-square value was significant even at the two percent level. This indicated a probability that there were ninety-eight chances out of one hundred that the two attributes had a real association.

In Table XV the calculated chi-square value failed to reveal a significance at the five percent level. The probability of a real association between the two attributes tested, namely, the number of semester credit hours completed in general education and the facility of performing extension tasks related to general education, was significant only at the 48.7 percent level. The probability in this instance was too great to indicate that the results could not have occurred by chance or by errors in sampling. The transcripts of the assistant county agents showed clearly that they have had relatively little formal training in general education, teaching methods, and educational methods. Approximately one-fourth of them had received no training in college in general education courses, such as psychology, philosophy, teaching methods, and educational procedures.

Part VIII. Extension Tasks Related to Oral and Written Communication

The college courses in this category included English, journalism, speech, and foreign language. Tasks relating to this subject matter category included preparing and presenting information in extension meetings to inform and instruct adult farmers; preparing information of a technical character for the press, radio, or for television; speaking on agricultural subjects before business, civic, or other non-farmer groups; serving as chairman of a meeting that required strict parliamentary procedure; and preparing annual narrative and statistical reports on extension work.

Tables XVI and XVII present the information relating to semester credit hours completed in oral and written communication and the facility with which tasks were reported relating to the subject matter area of oral and written communication.

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN
 ORAL AND WRITTEN COMMUNICATION AND THE FACILITY OF PERFORMING
 EXTENSION TASKS RELATED TO ORAL AND WRITTEN COMMUNICATION,
 COUNTY AGENTS AND ASSOCIATE COUNTY AGENTS

Semester credit hours completed in oral and written communication	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
18 or more fo	0	1	14	23	38
fe	(0.9)	(3.6)	(17.2)	(16.3)	
fo-fe	-0.9	-2.6	-3.2	6.7	
15-17 fo	1	3	5	18	27
fe	(0.6)	(2.6)	(12.2)	(11.6)	
fo-fe	0.4	0.4	-7.2	6.4	
12-14 fo	3	10	76	54	143
fe	(3.3)	(13.6)	(64.8)	(61.3)	
fo-fe	-0.3	-3.6	11.2	-7.3	
9-11 fo	9	37	113	122	281
fe	(6.5)	(26.7)	(127.1)	(120.7)	
fo-fe	2.5	10.3	-14.1	1.3	
6-8 fo	7	30	178	149	364
fe	(8.3)	(34.5)	(164.7)	(156.5)	
fo-fe	-1.3	-4.5	13.3	-7.5	
Total	20	81	386	366	853

Calculated chi-square value with 12 degrees of freedom = 30.463 *

Chi-square value needed for significance at the five percent level with

12 degrees of freedom = 21.026

TABLE XVII

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN ORAL AND WRITTEN COMMUNICATION AND THE FACILITY OF PERFORMING EXTENSION TASKS RELATED TO ORAL AND WRITTEN COMMUNICATION, ASSISTANT COUNTY AGENTS

Semester credit hours completed in oral and written communication	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
18 or more fo	2	4	5	3	14
fe	(0.3)	(1.6)	(5.0)	(7.1)	
fo-fe	1.7	2.4	0.0	-4.1	
15-17 fo	0	0	0	0	0
fe	0	0	0	0	
fo-fe					
12-14 fo	0	5	4	8	17
fe	(0.4)	(2.0)	(6.1)	(8.5)	
fo-fe	-0.4	3.0	-2.1	-0.5	
9-11 fo	2	1	44	70	117
fe	(2.7)	(13.7)	(42.1)	(58.5)	
fo-fe	-0.7	-12.7	1.9	11.5	
6-8 fo	3	25	55	69	152
fe	(3.6)	(17.7)	(54.8)	(75.9)	
fo-fe	-0.6	7.3	0.2	-6.9	
Total	7	35	108	150	300

Calculated chi-square value with 9 degrees of freedom = 37.967 *

Chi-square value needed for significance at the five percent level with

9 degrees of freedom = 16.919

Table XVI revealed a significant result at the five percent level when the two attributes were compared through the use of the chi-square test. The chi-square test indicated a significance even at the one percent level. This indicated that the probability was ninety-nine chances in one hundred that there was a real association between the attributes tested.

Table XVII revealed a significant result at the five percent level. The results were also significant at the one percent level. This signified that the probability was ninety-nine chances out of one hundred that there was a real association between the two attributes tested, namely, the number of semester credit hours completed in oral and written communication and the facility of performing extension tasks in oral and written communication by the assistant county agents.

Part IX. Extension Tasks Related to Health
Education, Recreation, Music, and Art

The college courses in this category included health education, physical education, recreation, art, and music. The tasks that were related to these categories included conducting recreational activities for rural adults and for 4-H club members; determining the health and sanitation problems for the farm families in the county; providing information related to health education for 4-H club members and rural adults; and assisting 4-H club members in preparing programs involving music, dramatics, specialty dancing, or other types of entertainment.

Tables XVIII and XIX are contingency tables which were prepared for the purpose of investigating the probability of association of attributes tested in the field of health education, recreation, music, and art.

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN HEALTH EDUCATION, RECREATION, MUSIC, AND ART AND THE FACILITY OF PERFORMING EXTENSION TASKS RELATED TO SUBJECT MATTER COURSES IN THIS AREA, COUNTY AGENTS AND ASSOCIATE COUNTY AGENTS

Semester credit hours completed in health education, etc.	Frequency with which tasks were reported:				
	Usually very difficult	Considerable difficulty	Some Difficulty	Little or no difficulty	Total
7 or more	fo 0	2	7	10	19
	fe (1.2)	(4.2)	(8.9)	(4.7)	
	fo-fe -1.2	-2.2	-1.9	5.3	
5-6	fo 3	7	20	11	41
	fe (2.7)	(9.2)	(19.2)	(9.9)	
	fo-fe 0.3	-2.2	0.8	1.1	
3-4	fo 10	22	32	12	76
	fe (4.9)	(17.0)	(35.6)	(18.5)	
	fo-fe 5.1	5.0	-3.6	-6.5	
1-2	fo 8	31	55	35	129
	fe (8.4)	(28.9)	(60.6)	(31.2)	
	fo-fe -0.4	2.1	-5.6	3.8	
0-None	fo 11	43	117	51	227
	fe (14.8)	(50.7)	(106.7)	(54.3)	
	fo-fe -3.3	-2.7	10.3	-3.8	
Total	32	110	231	119	492

Calculated chi-square value with 12 degrees of freedom = 22.299 *

Chi-square value needed for significance at the five percent level with

12 degrees of freedom = 21.026

RELATIONSHIP BETWEEN THE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN
HEALTH EDUCATION, RECREATION, MUSIC, AND ART AND THE FACILITY
OF PERFORMING EXTENSION TASKS RELATED TO SUBJECT MATTER
IN THIS AREA, ASSISTANT COUNTY AGENTS

Semester credit hours completed in health education, etc.	Frequency with which tasks were reported:				
	Usually very diffi- cult	Consider- able dif- ficulty	Some Diffi- culty	Little or no diffi- culty	Total
7 or more	fo 0 fe (0.4) fo-fe -0.4	0 (0.7) -0.7	1 (2.6) -1.6	6 (3.3) 2.7	7
5-6	fo 0 fe (1.0) fo-fe -1.0	0 (1.8) -1.8	4 (7.0) -3.0	15 (9.2) 5.8	19
3-4	fo 2 fe (2.2) fo-fe -0.2	5 (3.9) 1.1	16 (15.3) 0.7	19 (20.6) -1.6	42
1-2	fo 6 fe (1.9) fo-fe 4.1	5 (3.4) 1.6	11 (13.1) -2.1	14 (17.6) -3.6	36
0-None	fo 2 fe (4.5) fo-fe -2.5	8 (8.2) -0.2	38 (32.0) 6.0	40 (43.3) -3.3	88

Total 10 18 70 94 192

Calculated chi-square value with 12 degrees of freedom = 25.943 *

Chi-square value needed for significance at the five percent level with

12 degrees of freedom = 21.026

The information submitted by the county agents and associate county agents which is shown in Table XVIII indicated that the results were significant at the five percent level. This indicated a true association between the two attributes tested. The results were not significant at the one percent level. Information from the transcripts of the county agents and associate county agents indicated that they had received relatively little formal training in this area of subject matter.

Table XIX proved to be significant at the five percent level. The results were also significant at the two percent level. This indicated that the probability was ninety-eight chances out of one hundred that there was a true association between the number of semester credit hours completed in health education, recreation, music, and art, and the facility of performing extension tasks related to this subject matter area by the assistant county agents. Since the assistant county agents in most instances take responsibility for conducting the 4-H Club activities in the counties, they have apparently selected more courses relating to this area of subject matter on the average than have the county agents and associate county agents.

TABLE XX

THE CALCULATED CHI-SQUARE VALUES FOR THE DIFFERENT CATEGORIES USED IN THIS STUDY WHEN THE DATA FROM THE 126 RESPONDENTS WERE COMBINED

Category	Degrees of Freedom	Calculated Chi-Square Value	Chi-Square Value Needed for Significance at the 5% Level
I. Physical science			
County agents and Associate county agents	12	21.670 *	21.026
Assistant county agents	9	9.374	16.919
	<u>21</u>	<u>31.044</u> ^a	<u>32.671</u>
II. Biological science			
County agents and Associate county agents	12	12.404	21.026
Assistant county agents	9	41.679 *	16.919
	<u>21</u>	<u>54.083</u> *	<u>32.671</u>
III. Animal science			
County agents and Associate county agents	12	62.522 *	21.026
Assistant county agents	12	93.154 *	21.026
	<u>24</u>	<u>155.676</u> *	<u>36.415</u>
IV. Plant science			
County agents and Associate county agents	12	18.786	21.026
Assistant county agents	12	7.928	21.026
	<u>24</u>	<u>26.714</u> ^b	<u>36.415</u>
V. Social science			
County agents and Associate county agents	12	37.647 *	21.026
Assistant county agents	12	32.666 *	21.026
	<u>24</u>	<u>70.313</u> *	<u>36.415</u>
VI. Agricultural education			
County agents and Associate county agents	12	54.452 *	21.026
Assistant county agents	12	31.881 *	21.026
	<u>24</u>	<u>86.333</u> *	<u>36.415</u>

* Significant at the 5.0 percent level.

^a Significant at the 7.66 percent level.

^b Significant at the 38.3 percent level.

TABLE XX (Continued)

Category	Degrees of Freedom	Calculated Chi-Square Value	Chi-Square Value Needed for Significance at the 5% Level
VII. General education			
County agents and Associate county agents	12	22.778 *	21.026
Assistant county agents	6	5.470	12.502
	<u>18</u>	<u>28.248</u> ^c	<u>28.869</u>
VIII. Oral and written communication			
County agents and Associate county agents	12	30.463 *	21.026
Assistant county agents	9	37.967 *	16.919
	<u>21</u>	<u>68.430</u> *	<u>32.871</u>
IX. Health education, recreation, art, and music			
County agents and Associate county agents	12	22.299 *	21.026
Assistant county agents	12	25.943 *	21.026
	<u>24</u>	<u>48.242</u> *	<u>36.415</u>
Total	201	569.083	

The method suggested by Snedecor to test the significance of chi-square when the total degrees of freedom exceed thirty was used to test the significance of the combined data for all categories.¹ The formula suggested by Snedecor gave the following results for the combined data from all respondents and for all categories:

$$t = \sqrt{2 X^2} - \sqrt{2 (d.f.) - 1}$$

* Significant at the 5.0 percent level.

^c Significant at the 6.0 percent level.

¹ George W. Snedecor, Statistical Methods, Ames, Iowa: The Iowa State College Press, 1953, Fourth Edition, p. 194.

Substituting values from the preceding table:

$$\begin{aligned}
 t &= \sqrt{2(569.083)} - \sqrt{2(201) - 1} \\
 &= \sqrt{1144.736} - \sqrt{401} \\
 &= 33.73 - 20.25 = 13.48 *
 \end{aligned}$$

The t-value needed for significance at the five percent level with 201 degrees of freedom is 1.65. Since the probability of chi-square corresponds with that of a single tail of the normal curve, the calculated degree of significance is well above the critical ratio that defines the probability that the obtained results could have occurred by mere chance or by errors in sampling. The relationship between the number of credit hours completed in the nine categories of subject matter tested and the performance of extension tasks by all agents relating to these nine categories of subject matter proved significant at the five percent level in six of the nine categories.

In the category of physical science, results were significant at the 7.66 percent level. In the category of general education, the results were significant at the six percent level. In the category of plant science, the results did not establish the probability of a real relationship between the formal training of the agents in this subject matter area and the performance of extension tasks in the same category under field conditions.

* Significant at the 5.0 percent level.

The major hypothesis to be tested in this study was: There is a relationship between the difficulty experienced by county agricultural agents in Oklahoma in satisfactorily performing various tasks in working with farm people and their formal training in specified subject matter areas. The chi-square test was used to test the null hypothesis for all categories of subject matter and tasks related to these categories. The null hypothesis affirmed that the number of semester credit hours completed by the county agricultural agents in the various categories of subject matter and the performance of tasks related to these categories were essentially unrelated or independent. When the data submitted by all agents were combined, the calculated chi-square value was so great that it refuted the null hypothesis. The probability of the two attributes being unrelated and independent was so small, according to the calculated results of the chi-square test, that the results could not have occurred by chance or by errors in sampling.

Only in the categories of physical science, plant science, and general education was the null hypothesis sustained. The calculated chi-square value in these three categories showed that the results could have occurred by chance or by errors in sampling. The minor hypothesis for these categories was accepted, namely: The agent's ability to perform extension tasks satisfactorily is related to informal training that the agent has received through experiences in other fields.

Part X. Practical Experiences Which Contributed to the Ability
of the Agents to Perform Extension Tasks

Following are tables which summarize the experiences which county agricultural agents considered helpful to them in performing their extension responsibilities.

TABLE XXI
EXPERIENCE IN EXTENSION WORK OF 126 COUNTY
AGRICULTURAL AGENTS EMPLOYED IN OKLAHOMA

Title	Number in Study	Number of Months 12-23	Number of Years							
			2-4	5-7	8-10	11-13	14-16	17-20	21-25	26 or more
County Agents	76	3	6	19	25	8	3	3	3	6
Associate County Agents	16	5	6	3	2	0	0	0	0	0
Assistant County Agents	<u>34</u>	<u>8</u>	<u>9</u>	<u>14</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	126	16	21	36	30	8	3	3	3	6

The above table revealed that the tenure of the county agricultural agents in Oklahoma is relatively brief. The table also showed that 81.7 percent of all of the county agricultural agents included in the study had served ten years or less, and that 90.4 percent had served fifteen years or less. Only twenty-three agents, or 18.2 percent, among the 126 had served more than ten years in the extension service. Among those included in the study, 12.7 percent had served less than two years, and 29.3 percent had served less than four years with the Oklahoma Extension Service.

TABLE XXII
 TENURE OF THE 126 COUNTY AGRICULTURAL AGENTS IN OKLAHOMA
 UNDER PRESENT TITLES AS EXTENSION AGENTS

Title	Number in Study	Number of Months 12-23	Number of Years							
			2-4	5-7	8-10	11-13	14-16	17-20	21-25	26 or more
County Agents	76	15	21	14	15	1	3	1	3	3
Associate County Agents	16	11	5	0	0	0	0	0	0	0
Assistant County Agents	<u>34</u>	<u>13</u>	<u>12</u>	<u>7</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	126	38	38	21	17	1	3	1	3	3

This table revealed that 60.3 percent of the total number of county agricultural agents have held their present titles for four years or less, 90.4 percent for ten years or less, and 92.8 percent have held their present titles for fifteen years or less.

TABLE XXIII

YEARS OF SERVICE OF 126 COUNTY AGRICULTURAL AGENTS IN THE
OKLAHOMA COUNTY IN WHICH THEY ARE NOW EMPLOYED

Title	Number in Study	Number of Months 12-23	Number of Years							
			2-4	5-7	8-10	11-13	14-16	17-20	21-25	26 or more
County Agents	76	10	15	14	16	6	2	6	2	5
Associate County Agents	16	15	1	0	0	0	0	0	0	0
Assistant County Agents	<u>34</u>	<u>10</u>	<u>8</u>	<u>13</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	126	35	24	27	19	6	2	6	2	5

The above table revealed that 46.8 percent of the total number of county agricultural agents had a tenure of four years or less in the county in which they were located at the time the study was made, and 83.3 percent had served ten years or less. The county agents as a group had a longer tenure in the county in which they were located at the time of the study than the associate county agents or assistant county agents. Twenty-five of the county agents, or 32.9 percent, had served four years or less, and fifty-five, or 72.3 percent, had served ten years or less in the county where they were located at the time the study was made.

None of the associate county agents had served longer than four years. Eighteen of the thirty-four assistant county agents, or 52.3 percent, had served four years or less.

TABLE XXIV
PRACTICAL EXPERIENCE AS AN AID IN PERFORMING EXTENSION TASKS IN
OKLAHOMA AS REPORTED BY 126 COUNTY AGRICULTURAL AGENTS

Experience	Percentage of Agents Reporting Experience	Number and Percentage Rating Experience					Total
		First	Second	Third	Fourth	Fifth	
Farming for themselves	62.7	No. 46 % 58.2	16 20.2	11 13.9	5 6.3	1 1.4	79 100
Managing a farm or ranch	11.9	No. 6 % 40.0	2 13.3	4 26.7	1 6.7	2 13.3	15 100
Teaching vocation- al agriculture	10.3	No. 4 % 30.8	7 53.8	2 15.4	0 0.0	0 0.0	13 100
Teaching veterans' classes in agri- culture	23.0	No. 17 % 58.6	8 27.6	4 13.8	0 0.0	0 0.0	29 100
Experiment station or other research	21.4	No. 5 % 18.5	12 44.4	5 18.5	2 7.4	3 11.2	27 100
Managing a business	10.3	No. 0 % 0.0	6 46.1	4 30.8	2 15.5	1 7.6	13 100
Salesman of pro- ducts related to agriculture	10.3	No. 3 % 23.0	2 15.5	3 23.0	2 15.5	3 23.0	13 100
Military service	62.3	No. 6 % 7.4	17 21.0	26 32.0	18 22.2	14 17.4	81 100
Local extension leader	11.0	No. 3 % 15.0	7 35.0	4 20.0	6 30.0	0 0.0	20 100
4-H Club member	62.7	No. 22 % 27.8	23 29.1	14 17.7	12 15.2	8 10.2	79 100

TABLE XXIV (Continued)

Experience	Percentage of Agents Reporting Experience	Number and Percentage Rating Experience					Total
		First	Second	Third	Fourth	Fifth	
Member of a vocational agriculture class	34.1	No. 4 % 9.3	9 20.9	11 25.6	12 27.9	7 16.3	43 100
Agricultural Adjustment Administration	7.1	No. 3 % 33.3	2 22.3	3 33.3	0 0.0	1 11.1	9 100
Soil Conservation Service	4.0	No. 0 % 0.0	2 40.0	1 20.0	1 20.0	1 20.0	5 100
Teaching a rural school	5.6	No. 3 % 42.8	1 14.3	2 28.6	0 0.0	1 14.3	7 100
Teaching agriculture in a Junior College	0.8	No. 0 % 0.0	0 0.0	1 100.0	0 0.0	0 0.0	1 100
Beef cattle herdsman	2.4	No. 0 % 0.0	2 66.7	1 33.3	0 0.0	0 0.0	3 100

The county agricultural agents reporting indicated farming for themselves as a most helpful experience in aiding them to perform extension tasks. There were 62.7 percent reporting this experience.

Assistant county agents considered that teaching veterans' classes in agriculture and supervising their farm practices was a valuable experience in helping them perform their extension responsibilities.

Classroom teaching was considered by both groups of agents as a valuable informal experience. Experience as a 4-H Club member was generally considered valuable; 62.7 percent of the agents reported former membership in a 4-H club. Although 62.3 percent of all agents reported military experience, none ranked this experience as especially valuable in helping to perform extension duties.

TABLE XXV

HOW COUNTY AGRICULTURAL AGENTS IN OKLAHOMA RANKED THEIR EXPERIENCE
IN FARMING FOR THEMSELVES AS A VALUABLE CONTRIBUTION
TO THEIR ABILITY TO DO EXTENSION WORK

Rating by Agents	County Agents		Associate County Agents		Assistant County Agents	
	No.	Percentage	No.	Percentage	No.	Percentage
First	31	62	7	63.6	8	44.4
Second	7	14	4	36.4	5	27.8
Third	8	16	0	0.0	3	16.7
Fourth	3	6	0	0.0	2	11.1
Fifth	<u>1</u>	<u>2</u>	<u>0</u>	<u>0.0</u>	<u>0</u>	<u>0.0</u>
Total	50	100	11	100.0	18	100.0

Seventy-nine of the one hundred twenty-six county agricultural agents reported they had experience in farming for themselves. Fifty of the seventy-six county agricultural agents included in the study had farmed for themselves an average of 7.2 years; eleven of the sixteen associate county agents had farmed an average of 5.8 years; and eighteen of the thirty-four assistant county agents had farmed an average of 4.0 years. This practical experience was considered the most helpful of any informal training experience reported by the agents in helping them to perform extension tasks.

TABLE XXVI

FIELD OF SPECIALIZATION IN UNDERGRADUATE COLLEGE COURSES OF
 COUNTY AGRICULTURAL AGENTS EMPLOYED IN OKLAHOMA
 WHICH WERE INCLUDED IN THE STUDY

Field of Specialization	Number of County Agents	Number of Associate County Agents	Number of Assistant County Agents	Total	Percentage of Total
Agricultural Economics	9	0	1	10	7.9
Agricultural Education	5	1	2	8	6.2
Agronomy	13	1	1	15	12.0
Field Crops	9	2	3	14	11.1
Animal Husbandry	27	9	22	58	45.9
Dairy	6	0	1	7	5.6
Education and General Agriculture	2	0	0	2	1.6
Horticulture	3	0	1	4	3.2
Poultry	0	0	1	1	0.9
Soils	<u>2</u>	<u>3</u>	<u>2</u>	<u>7</u>	<u>5.6</u>
Total	76	16	34	126	100.0

The order of specialization in undergraduate courses in terms of the number of agents included in this study were animal husbandry, agronomy, field crops, agricultural economics, and agricultural education.

TABLE XXVII

AVERAGE NUMBER OF SEMESTER CREDIT HOURS COMPLETED IN COLLEGE
 BY COUNTY AGRICULTURAL AGENTS CLASSIFIED IN
 TEN CATEGORIES OF SUBJECT MATTER

Subject Matter Area	County Agents	Associate County Agents	Assistant County Agents	Percentage of Total Hours Completed
I. Physical science	20.0	21.0	20.7	14.3
II. Biological science	19.4	20.0	14.1	13.6
III. Animal science	27.3	29.5	17.4	18.7
IV. Plant science	24.0	23.6	23.4	16.6
V. Social science	19.3	15.7	15.0	12.5
VI. Agricultural education and extension	10.3	10.5	8.2	6.4
VII. Education and teaching methods	6.0	7.4	3.5	2.9
VIII. Oral and written communication	10.6	10.0	9.9	7.3
IX. Health education, recreation, art, and music	2.7	7.8	3.4	1.5
X. Miscellaneous ¹	<u>9.3</u>	<u>11.1</u>	<u>12.5</u>	<u>6.2</u>
Total	144.8	145.1	134.8	100.0

¹ The miscellaneous category includes military science, religious education, participation in sports, etc., and any courses that could not be classified satisfactorily in other categories.

Table XXVII revealed that county agricultural agents in Oklahoma completed 63.2 percent of the total semester credit hours appearing on their college transcripts in physical, biological, animal, and plant science; 12.5 percent in social science; 6.4 percent in agricultural education and extension courses; 2.9 percent in courses related to general education, psychology, teaching methods, and educational methods; 7.3 percent in courses related to oral and written communication, which included English, speech, and journalism; 1.5 percent in courses such as health education, physical education, recreation, art, and music; and 6.2 percent in miscellaneous courses that could not be classified satisfactorily in the other nine categories.

TABLE XXVIII

ORDER OF PREFERENCE VOTED BY ALL COUNTY AGRICULTURAL AGENTS
FOR SUBJECT MATTER COURSES TO BE PROVIDED
DURING THE SUMMER FOR EMPLOYED PERSONNEL

Rank	Evaluated Score ¹	Subject Matter Courses Preferred
1	236	Entomology, insecticides, and insect control
2	183	Feeds and feeding--livestock, dairy, and poultry
3	143	Farm economics related to marketing farm products
4	141	Farm and ranch organization and management
5	119	Economics related to farm management
6	118	Information on irrigation
7	104	County program planning
8	99	Education--teaching methods
9	98	Farm and home planning
10	90	Horticulture--vegetables, flowers, landscaping
11	81	Soils--laboratory analysis, fertilizers, soil improvement
12	80	Pastures--farm and ranch pasture management
13	67	Psychology adapted for extension workers
14	63	Public relations
15	59	Field crops--latest research, varieties, etc.
16	50	Leadership training for 4-H club work

¹ The evaluated scores were calculated by assigning the values of 6, 5, 4, 3, 2, and 1 point for courses ranked first, second, third, fourth, fifth, and sixth in order of preference by the county agricultural agents.

The agents were requested to list, in the order of their preference, specific courses that would be most helpful to them if offered in summer courses at the Oklahoma A. and M. College and arranged especially for in-service extension employees.

TABLE XXVIII (Continued)

Rank	Evaluated Score ¹	Subject Matter Courses Preferred
17	48	Journalism--publicity methods, radio, television
18	45	Sociology for rural workers
19	45	Plant disease control
20	43	Leadership training for adult extension leaders
21	41	Office organization and management
22	39	Dairy production and management
23	38	Information on fertilizers and soil fertility
24	29	Extension information and its preparation
25	26	History, functions, and objectives of extension

¹ Ibid.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This thesis has been concerned primarily with investigating the relationship between the performance of specified extension tasks by 126 county agricultural agents in Oklahoma and the amount of their formal and informal training.

The purpose of the current study was to investigate the relationships that might exist between performance in the field and the formal and informal training of the county agricultural agents with the view that the findings might be helpful to Oklahoma extension administrators and supervisors and to representatives of college departments in planning courses in agricultural extension for prospective county agents and county agricultural agents who are currently employed by the Oklahoma Extension Service.

The study was limited to the white county agricultural agents currently employed by the Oklahoma Extension Service who had served a minimum of one year in an Oklahoma county on January 1, 1956.

The plan for the study required the preparation of a questionnaire which specified extension tasks related to nine categories of subject matter and a four-phase check list to provide the agents a device whereby they could indicate the degree of difficulty they had encountered in performing the extension tasks named in the instrument. Four columns were

provided to permit the agents to report whether the extension task named had been performed with little or no difficulty, with some difficulty, with considerable difficulty, or whether the performance of the task was usually very difficult. A fifth column was provided for the respondent to indicate that the extension task had not been performed by the agent during the past two years, namely, 1954 or 1955.

The instrument also provided spaces in which the agents were asked to report information on years of experience in extension work, colleges attended, degrees earned, major field of specialization in college, informal training (or experiences), and a list of specific courses the respondents considered would be most helpful to them in performing extension tasks if arranged especially for in-service extension employees during the summer session at the Oklahoma Agricultural and Mechanical College.

A jury consisting of two extension administrators and four district supervisors of the county agricultural agents reviewed the tentative questionnaire with the purpose of properly classifying the extension tasks as related to the nine categories of subject matter--physical science, biological science, animal science, plant science, social science, agricultural and extension education, general education and educational methods, oral and written communication, and health education, recreation, music, and art--and to offer suggestions intended to clarify questions in the instrument.

After the tentative questionnaire had been approved by the jury, a test run was made with the aid of a number of former county agents employed at the central office. When the final draft of the instrument was approved by the jury, the Director of Extension prepared a letter explaining the purpose, character, and need for the study which he mailed to the agents

who had been selected to receive the instrument and requested their full cooperation in returning the information.

The questionnaire was mailed to 127 county agents, associate county agents, and assistant county agents in Oklahoma who had completed at least one calendar year in the field as an employee of the Oklahoma Extension Service. One hundred and twenty-six questionnaires were returned by the agents.

The number of semester credit hours completed by the respondents in each category of subject matter was recorded directly from the transcripts of college courses filed in the Office of the Registrar of the Oklahoma Agricultural and Mechanical College.

Data submitted by the county agents and associate county agents were tabulated separately from the data submitted by the assistant county agents. Frequency counts were made for the purpose of constructing contingency tables to apply the chi-square test to determine the probability of association of the attributes to be tested. Finally, data from all contingency tables were combined in order to apply the chi-square test to the combined data submitted by the respondents.

The five percent level was selected to denote a significant association between the attributes tested.

The chi-square test revealed the following results when the data submitted by the county agents and associate county agents were treated statistically:

When the attributes pertaining to nine different categories of subject matter were subjected to the chi-square test, the relationships between the attributes compared were significant at the five percent level in seven out of nine cases, namely: physical science, animal

science, social science, agricultural and extension education, general education, oral and written communication, and health education, recreation, music, and art.

The relationships between the attributes pertaining to two categories of subject matter, biological and plant science, did not prove to be significant at the five percent level when subjected to the chi-square test.

When data submitted by the assistant county agents were subjected to the chi-square test, the relationships between the attributes pertaining to six categories out of nine proved to be significant at the five percent level. These categories were: biological science, animal science, social science, agricultural and extension education, oral and written communication, and health education, recreation, music, and art.

The relationships between the attributes pertaining to physical science, plant science, and general education did not prove to be significant at the five percent level when subjected to the chi-square test.

When the data received from all agents were combined and tested by the chi-square method, the relationships between the attributes pertaining to six of the nine categories of subject matter were significant at the five percent level. These were: biological science, animal science, social science, agricultural and extension education, oral and written communication, and health education, recreation, music, and art.

The relationships between the attributes compared pertaining to three categories of subject matter did not yield significant results at the five percent level when subjected to the chi-square test. These were: physical science (significant at the 7.66 percent level by interpolation), plant science (significant at the 38.3 percent level by interpolation), and general education (significant at the 6.0 percent level by interpolation).

When the data submitted by all agents were combined and tested by the chi-square method, the calculated chi-square value denoted a significant result at the five percent level for the combined data included in the nine different categories of subject matter.

Farming as an occupation was considered by the respondents reporting this experience as the most helpful informal training they had experienced in aiding them to perform their extension duties in the county. Classroom teaching was considered a valuable informal experience by both groups of agents. Experience as a 4-H Club member was considered valuable in aiding the agents to perform extension tasks. Former membership in a 4-H Club was reported by 62.7 percent of the agents.

Although 62.3 percent of all agents reported military experience, none ranked this experience as especially valuable in helping to perform extension duties in the county.

Conclusions

On the basis of the findings evidenced in this investigation and the limitations inherent in the methods employed in the study, the following conclusions seem apparent:

1. There is a positive association between the amount of formal training the county agricultural agents have received and the facility with which they report having performed specified extension tasks in the field.
2. Agents who have had little or no formal training in specific subject matter areas report that they have greater difficulty in performing tasks that are related to the specified subject matter areas.

3. Oklahoma county agricultural agents included in the study have completed a relatively larger amount of their total semester credit hours (63.2 percent) in physical, biological, animal, and plant science, but in the aggregate have had a relatively limited amount of formal training in social science, agricultural and extension education, general education pertaining to psychology, teaching and educational methods, oral and written communication, and courses related to health education, recreation, art, and music.
4. There was no significant relationship between the formal training of the county agricultural agents in the category of plant science and the performance of specified extension tasks related to this category of subject matter. This would suggest that the agents included in the study have improved their facility to perform tasks related to plant science as a result of informal training and experience.
5. Farming for themselves was considered the most helpful experience to aid the county agricultural agents in performance of specified extension tasks. Sixty-two percent of the agents who submitted information for the study reported that they had an average of 6.7 years experience farming for themselves.
6. County agricultural agents who reported classroom teaching experience rated this experience second only to experience in farming as a helpful experience in performing extension tasks and responsibilities in the county.

7. There appears to be a demand for supplementary training courses for in-service agents in subject matter areas in which there are increasing requests by farmers for the assistance of the agents and in which the agents have had limited formal training.
8. The study indicates that relatively few of the county agricultural agents remain in the extension service for a period of ten years or more. Information in the current study shows that only 18.2 percent of the county agricultural agents reporting have been employed for more than ten years by the Oklahoma Extension Service. This would signify that few of the county agricultural agents remain in the extension service for a period adequate to qualify them for the maximum benefits of the Civil Service Retirement Act privileges for which they are eligible.

Recommendations

On the basis of the findings in this study, the writer recommends the following:

1. That the administrators and supervisors of the Oklahoma Extension Service give careful consideration to the training needs of the county agricultural agents with a view of providing formal training in the subject matter areas in which the agents have expressed a need for additional training to aid them in the performance of their extension duties in the field. See Table XXVIII, page 93, for information on subject matter areas in which the agents expressed a desire for additional training.

Many of the agents reporting expressed the opinion that summer courses for extension employees should be adapted to the needs of extension representatives working in the field and that more time should be devoted to the practical application of the subject matter to field problems and less to theory than is provided in the regular college courses in agriculture for undergraduates.

2. That extension administrators and supervisors consider a plan whereby county agricultural agents who have served ten years or more and who desire to improve their professional training would be granted six to nine months leave of absence with pay to pursue graduate studies in a special field of interest. This recommendation is based upon the opinions expressed by the agents that additional formal training in specified subject matter areas would

be helpful to them in the performance of extension tasks related to subject matter courses in which they have had little or no formal training.

3. The current study reveals that only six of the one hundred twenty-six respondents have had any formal training in statistical methods and that only 0.9 percent of the total number of semester credit hours completed by the respondents were completed in statistical courses.

Since county agricultural agents serve as the connecting link between the agricultural experiment stations and the farmers who are in a position to place into operation recommended practices which are based upon research, the author raises the question as to whether it would be advisable to require all county agricultural agents to complete an elementary course in statistics in order that they have the opportunity to become familiar with the methods that research workers employ to arrive at conclusions based upon experimentation and research methods.

4. A careful review of the college catalog of the Oklahoma Agricultural and Mechanical College reveals that no courses related to the Cooperative Extension Service are currently being offered to undergraduates. The current study reveals a positive association between the number of credit hours completed by the respondents in agricultural and extension education and the performance of extension tasks pertaining to this subject matter category.

The writer recommends that extension administrators and supervisors consider formulating a definite plan for

training and selecting undergraduate students who aspire to become county agricultural agents. This recommendation is based upon judgments expressed by many respondents who returned the questionnaire used in the current study.

College courses related to extension education are offered currently at the Oklahoma Agricultural and Mechanical College only on the graduate level during the summer session.

5. It is further recommended that extension administrators and supervisors give careful consideration to developing a plan for the purpose of inducing county agricultural agents with satisfactory records of service to remain in the Cooperative Extension Service for a longer period of time. The 126 reports submitted in this study clearly indicate that the tenure of service of county agricultural agents in Oklahoma is relatively brief. The results show that only 13.2 percent of the agents submitting reports had served ten years or more as employees of the Cooperative Extension Service. The 126 agents reporting in this study had served an average of 8.3 years as extension employees.

A plan which would offer incentives to county agricultural agents to remain in the service a longer period of time should provide a regular system of promotion based upon an evaluation of the agent's accomplishments as an extension worker and satisfactory performance with the Extension Service. The plan should provide for an

equitable system of promotion with a definite system of salary increases. The plan should also provide some system of designating status of the agents as members of the staff of the Oklahoma Agricultural and Mechanical College which the public would recognize as comparable with the rank of members of the resident faculty.

6. Further research is recommended to investigate the relationship between the scholastic record of county agricultural agents while in college and their later performance in the field; factors which influence the tenure of county agricultural agents with the extension service; and the in-service training needs of employed personnel.

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APPENDIX A

COOPERATIVE EXTENSION WORK IN AGRICULTURE
AND HOME ECONOMICS

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OKLAHOMA AGRICULTURAL AND
MECHANICAL COLLEGE AND
UNITED STATES DEPARTMENT OF
AGRICULTURE, COOPERATING

STATE OF OKLAHOMA
STILLWATER

EXTENSION SERVICE
COUNTY AGENT WORK

January 30, 1956

TO ALL COUNTY AGENTS, ASSOCIATES, AND ASSISTANTS

Dear Agent:

You will soon be receiving from Mr. Paul G. Adams, formerly of our staff, a questionnaire relating to your work as county agent, associate, or assistant.

We are particularly interested in this study because we believe out of it will come information that will help us to do a better job of arranging for the kind of training that will be most helpful to you and to the whole service.

The men district agents have had an opportunity to work with Mr. Adams in developing this questionnaire and believe it will be of value to them in their supervision.

We realize that it will take a little of your time to fill out the questionnaire, but we believe it will be worthwhile and we heartily recommend that you do so and return it to Mr. Adams by February 15. We plan to make available to those who return the questionnaire a summary of the results.

Both Mr. Adams, and myself, will appreciate your cooperation in this study.

Sincerely yours,

Shawnee Brown
Shawnee Brown
Director

APPENDIX B

Stillwater, Oklahoma
January 31, 1956

To the County Agents, Associate County Agents,
and Assistant County Agents in Oklahoma

Dear Agent:

Enclosed is the form to be used in securing information for the cooperative extension study referred to in a letter addressed to you by Director Shawnee Brown under the date of January 30.

We know how very busy county extension agents are at every season of the year and fully realize that only for substantial reasons should they ever be asked to fill out a questionnaire or even a check list. However, this study can have definite value to you and your associates in helping the administrative staff and the district agents to plan courses for your professional improvement.

The purpose of the study is to determine what relationship exists between the performance of extension tasks in the field and the formal training and experience the agents have received to aid them in extension work.

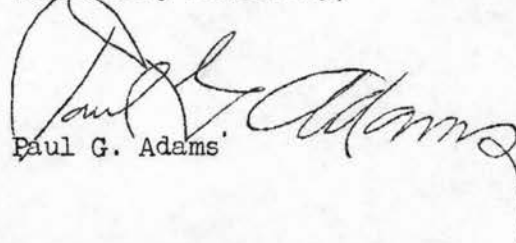
The basic assumptions are: 1) That county extension agents are capable of evaluating the difficulty they have in performing extension tasks; 2) that competencies to perform extension tasks or to handle extension problems can be developed; 3) that the professional training that the agent receives to aid him in solving extension problems logically falls into particular subject-matter areas; and 4) that problems which the county agents encounter can be categorized as pertaining to specific subject-matter areas.

This study is not designed to serve as a critical study of the teaching methods used by the agents nor as an evaluation of the effectiveness of the agent in working with farm people. It is rather for the purpose of identifying areas in which the agent would perhaps welcome in-service training.

Information from each agent will be held in strictest confidence. Only totals and averages are to be released later.

We will deeply appreciate your completing the form and returning it at your earliest convenience. We would like to have all completed forms ready for tabulation and analysis not later than February 15.

Yours very sincerely,


Paul G. Adams

APPENDIX C

INFORMATION FOR A STUDY OF SPECIFIED TASKS PERFORMED BY EXTENSION AGENTS

Name _____ County _____ Your Age _____

Present position: County Agent ____ Associate Agent ____ Assistant Agent ____

How long have you served in your present position? _____ years.

How long have you served in this county? _____ years.

Total years you have been employed in Extension work _____ years

Please indicate below colleges attended, degree(s) received, major, minor, etc.

Name of College	Degree	Year	Major subject	Minor subject

What practical experiences have _____ contributed to your ability to do extension work

(Please rank the helpfulness of each by voting 1,2,3,4,5, etc. in order, using 1 to indicate what you consider the most helpful experience.)

Experience	Number of Years	Rank
1. Farming for yourself		
2. Serving as the manager of a farm or ranch		
3. Teaching vocational agriculture		
4. Teaching veterans' classes in agriculture		
5. Experiment station or other research work		
6. Operating or managing a business		
7. Serving as salesman of products related to agriculture		
8. Journalism or newspaper work		
9. Military service		
10. Serving as a local leader in extension work		
11. Membership in a 4-H Club		
12. Membership in a class teaching vocational agriculture		
13. Other (specify)		
14. Other (specify)		

List in order of preference, specific sources you think should be included in the summer courses offered at Oklahoma A & M College, and arranged especially for in-service extension employees. (Name the ones that would be most helpful to you.)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

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INFORMATION FOR A STUDY OF SPECIFIED TASKS PERFORMED BY EXTENSION AGENTS

Please use a check (✓) mark to indicate the manner in which you have personally performed the extension tasks named in this list without an extension specialist, district agent, or other trained resource person being present at the time the task was performed to assist you.

We would assume that some of the tasks (that you have performed in the past two years) were usually very difficult; others you performed with some or with considerable difficulty; while others were performed with little or no difficulty. Please report your own judgment as to the degree of difficulty you have experienced in performing these tasks or place an "N" in the column so marked to indicate that you have not performed the task during the past two years; namely, 1954 or 1955.

"N" in column N indicates the task was not performed by you in 1954 or 1955.

- (✓) in column 1 indicates the performance of the task was usually very difficult.
- (✓) in column 2 indicates that you performed the task with considerable difficulty
- (✓) in column 3 indicates that you performed the task with some difficulty.
- (✓) in column 4 indicates that you performed the task with little or no difficulty

I. EXTENSION TASKS RELATED TO THE PHYSICAL SCIENCES.

	N	1	2	3	4
1. Aiding farmers in the selection, use, and care of farm water systems.					
2. Aiding in the planning, construction, and care of a farm sewage system.					
3. Assisting farmers with the selection, installation, use and care of a farm home heating and/or cooling system.					
4. Aiding farmers in planning electrical systems.					
5. Training farmers in terracing, contour and strip cropping practices and procedures.					
6. Supplying information and assistance in constructing an irrigation system.					
7. Furnishing plans and advising farmers on the construction of farm buildings.					
8. Assisting farmers in planning and constructing a farm water supply system, including storage and distribution. (e.g. farm ponds, wells, or other water supply)					
9. Assisting farmers in the use, care, and repair of farm mechanical equipment (e.g. farm machinery, tractors, gasoline or electric motors)					
10. Demonstrating the use of labor saving devices and equipment.					
11. Testing soil samples and making recommendations for the use of lime, fertilizers, or other soil treatments.					
12. Calculating a formula to supply the elements needed for a particular soil after testing soil samples.					

II. EXTENSION TASKS RELATED TO THE BIOLOGICAL SCIENCES.

- | | N | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 13. Advising on the control of insects or parasites that affect growing farm crops. | | | | | |
| 14. Advising farmers on the control of plant diseases. | | | | | |
| 15. Demonstrating the control of external or internal parasites that affect livestock or poultry. | | | | | |
| 16. Demonstrating the control of rats, mice, and other rodents or predatory animals. | | | | | |
| 17. Demonstrating the control of insects in the home, including ants, roaches, flies, ticks, clothes moths, termites, and insects that affect house plants. | | | | | |
| 18. Demonstrating the control of insects that attack stored grain. | | | | | |
| 19. Advising beekeepers on the care and management of bees. | | | | | |
| 20. Advising farmers on the control of Bang's Disease. | | | | | |
| 21. Advising farmers on the control of contagious diseases that affect livestock and/or poultry. | | | | | |
| 22. Advising farmers regarding the use of biotics for livestock and poultry (e.g. Aureomycin, Silbesterol, etc) | | | | | |

III. EXTENSION TASKS RELATED TO THE ANIMAL SCIENCES.

- | | N | 1 | 2 | 3 | 4 |
|--|---|---|---|---|---|
| 23. Helping farmers to select beef cattle breeding stock. | | | | | |
| 24. Helping farmers to select dairy cattle breeding stock. | | | | | |
| 25. Helping farmers to select swine breeding stock. | | | | | |
| 26. Helping farmers to select sheep for breeding stock. | | | | | |
| 27. Helping farmers to select poultry breeding stock. | | | | | |
| 28. Advising farmers on the requirements and procedure to be followed in registering purebred beef cattle, dairy cattle, swine or sheep. | | | | | |
| 29. Advising farmers on the economy of livestock rations and the use of balanced rations for meat producing animals. | | | | | |
| 30. Advising farmers on the use of rations for dairy animals. | | | | | |
| 31. Advising farmers on the use of rations for poultry. | | | | | |
| 32. Castrating and/or dehorning farm animals. | | | | | |
| 33. Starting and supervising 4-H livestock, dairy, or poultry projects. | | | | | |
| 34. Completing 4-H livestock, dairy, or poultry projects and securing satisfactory reports from the club members. | | | | | |
| 35. Establishing 4-H breeding projects with livestock, dairy, or poultry | | | | | |

IV. EXTENSION TASKS RELATED TO THE PLANT SCIENCES.	N	1	2	3	4
36. Advising farmers and ranchers on pasture and range management.					
37. Identifying useful pasture and range grasses and legumes.					
38. Identifying plants that are poisonous to livestock and recommending means of preventing livestock losses from them.					
39. Demonstrating the control of harmful weeds or other plants.					
40. Demonstrating the control of shrubs or the clearing of pasture areas of trees or shrubs.					
41. Advising and assisting farmers in landscaping the home grounds.					
42. Aiding farmers with the home vegetable garden or with truck crops.					
43. Advising farmers on the appropriate use of commercial fertilizers.					
44. Advising farmers on proper land use.					
45. Assisting farmers in establishing and protecting wildlife areas.					
V. EXTENSION TASKS RELATED TO THE SOCIAL SCIENCES.	N	1	2	3	4
46. Making fact-finding surveys or studies to be used in planning and developing a county extension program.					
47. Organizing and guiding a county extension program based upon the expressed interests and needs of the farm people of the county.					
48. Securing a suitable place to hold community meetings.					
49. Finding cooperators to sponsor local arrangements for meetings.					
50. Getting a local leader to serve as chairman of community meetings.					
51. Securing a representative attendance at community meetings.					
52. Explaining the keeping of farm records and accounts.					
53. Assisting farmers with income tax and social security problems.					
54. Providing information on the agricultural outlook.					
55. Aiding farmers in developing new sources of income.					
56. Assisting farmers with marketing problems.					

	N	1	2	3	4
57. Training secretarial or clerical office help.					
58. Maintaining office records and files.					
59. Keeping an up-to-date mailing list.					
60. Maintaining an adequate supply of bulletins for distribution.					
61. Maintaining good working relations with the county commissioners.					
62. Maintaining good relations and communications with other governmental agencies working in the county.					
63. Maintaining cooperative relations with chambers of commerce and civic clubs in the county.					
64. Maintaining cooperative relations and communications with the county superintendent, school administrators, and teachers of vocational agriculture in the schools of the county.					
65. Maintaining cooperative relations with farm organizations that have an active membership in the county.					
VI. AGRICULTURAL EDUCATION, EXTENSION METHODS AND PROCEDURES.	N	1	2	3	4
66. Organizing and assisting a county-wide advisory committee.					
67. Furnishing the advisory committee factual information to aid in developing a county-wide extension program.					
68. Preparing and using your plan of work.					
69. Locating and setting up result demonstrations with adults.					
70. Arranging and conducting method demonstrations to instruct adult farmers in some specific farm practice.					
71. Arranging and conducting field days or farm tours.					
72. Securing and training local 4-H Club leaders.					
73. Maintaining interest and membership in the 4-H Clubs.					
74. Maintaining the interest of parents in 4-H Club-work.					
75. Maintaining the active interest of local 4-H Club leaders in the club program and club activities.					
76. Enlisting the aid of local leaders for adult extension work.					
77. Training adult leaders in their work and responsibilities.					

VII. EDUCATION (GENERAL), TEACHING AND EDUCATIONAL METHODS.		N	1	2	3	4
78.	Getting the members of the county-wide advisory committee to attend meetings regularly, participate actively, and accept responsibility for the program adopted.					
79.	Getting farm people to recognize their problems.					
80.	Motivating farm people to do something about their problems.					
81.	Counseling farm people on their personal problems.					
82.	Maintaining professional relations with other extension employees in the county office.					
83.	Preparing and using visual or other teaching aids.					
84.	Discovering the interests and needs of 4-H Club members.					
85.	Making the 4-H Club project an educational experience.					
86.	Changing the attitude of farmers to accept scientific methods (results of scientific investigations and methods) rather than tradition as a means of solving problems.					
87.	Getting 4-H Club members to adopt a scientific approach to problems.					
VIII. EXTENSION TASKS INVOLVING ORAL AND WRITTEN COMMUNICATION.		N	1	2	3	4
88.	Preparing and presenting information in extension meetings to inform or instruct adult farmers.					
89.	Preparing and presenting information or instructions to 4-H members.					
90.	Making use of adult result demonstrations to encourage the adoption of a recommended farm practice.					
91.	Recognizing adult local leaders for work well done.					
92.	Preparing information of a technical character for the press.					
93.	Preparing and presenting information of a technical character for the radio or for television.					
94.	Speaking on agricultural subjects before business, civic, or other primarily non-farmer groups.					
95.	Serving as chairman of a meeting that requires strict parliamentary procedure.					
96.	Preparing annual narrative and statistical reports.					
97.	Making use of monthly and annual reports to improve the effectiveness of the extension program in the county and to keep the public informed on extension accomplishments.					

IX. EXTENSION TASKS RELATED TO HEALTH EDUCATION, RECREATION, MUSIC, AND THE FINE ARTS.

	N	1	2	3	4
98. Conducting recreational activities for rural adults.					
99. Conducting recreational activities for 4-H Club members.					
100. Determining the health and sanitation problems of farm families in the county.					
101. Training 4-H Club members in first aid methods.					
102. Training 4-H members in fire and accident prevention around the farm and home.					
103. Instructing 4-H members in dental and health education leading to physical examinations by a dentist or doctor.					
104. Assisting 4-H members in preparing a program involving music, songs, dramatics, skits, or other types of entertainment.					

APPENDIX D

Number _____

	Cr.H.					
Agr. Eng.						
Chem.						
Geol.						
Math.						
Physcs						
Statis.						
Meteor.						

Bact.						
Biol.						
Bot.						
Entom.						
Physiol.						
Zool.						

An. Hus.						
Dairy						
Poul. H.						
V. M.						
V. Para.						

Agron.						
F. Crops						
Forest.						
Hort.						
Soils						

Agr. Ec.						
Bus. Adm.						
Econ.						
Geog.						
Hist.						
Hum.						
Pol. Sci.						
Sociol.						
Soc. Sci.						

	Cr.H.				
VI. Agr. Ed.					
Ext. Ed.					

VII. Educ.					
Philos.					
Psych.					
Photog.					

VIII. Engl.					
F. Lang.					
Journ.					
Speech					

IX. Art					
Mus.					
He. Ed.					
Ph. Ed.					
Rec.					

X. Defens					
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Total Cr.Hrs.

VITA

PAUL GRUNDY ADAMS

CANDIDATE FOR THE DEGREE OF

DOCTOR OF EDUCATION

Thesis: THE PERFORMANCE OF SPECIFIED EXTENSION TASKS BY COUNTY AGRICULTURAL AGENTS IN OKLAHOMA IN RELATION TO THEIR PROFESSIONAL TRAINING AND EXPERIENCE

Major Field: Education

Biographical:

Personal data: The author was born near Loretto, Washington County, Kentucky, July 5, 1899, the son of Elisha Harrison and Ida Louetta Adams.

Undergraduate study: He came to Perry, Oklahoma, with his parents in December, 1908. He attended grade school in Perry and at the Twin Mound rural school near Lucien. He graduated from the Perry High School in 1919. He graduated from the Oklahoma A. and M. College in May, 1922, with a major in animal husbandry and a minor in agricultural education.

Graduate study: The author entered the Graduate School of the Oklahoma A. and M. College in 1936. He completed a summer course at Cornell University in 1951. He completed the requirements for a Master of Science degree in Agricultural Education in August, 1954. Requirements for the Doctor of Education degree were completed at the Oklahoma A. and M. College in May, 1956.

Experience: The writer served as principal of the Carber High School and teacher in the Department of Vocational Agriculture for a period of three years. He served as Extension Livestock Specialist with the Oklahoma Extension Service for eleven years and as State 4-H Club Agent for nine years. He served as Executive Vice President of the National Livestock Exchange with headquarters in Chicago for four years. He also served as Extension Advisor for the Republic of Nicaragua for four years as an employee of the Foreign Agricultural Service of the United States Department of Agriculture.

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AUTHOR: Paul Grundy Adams

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