COUNTY EXTENSION AGRICULTURAL AGENTS' PERCEPTIONS OF COMPETENCIES AND NEEDS AS BASES FOR IN-SERVICE TRAINING PROGRAMS IN OKLAHOMA

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IN OKLAHOMA

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INTRODUCTION

Today, more than at any other time in our history, the Cooperative Extension Service is functioning in a highly complex and interrelated society. Changes--technological, economic, social, and cultural--are occurring at a rate never before equalled.

The Subcommittee of the Extension Committee on Organization and Policy in its Statement of Scope and Responsibility stated that:

> . . . significant trends reemphasize the fact that the Extension Service must have a dynamic program--one constantly being modernized to keep pace with the everchanging conditions facing the people it serves. Programs and procedures appropriate and adequate yesterday are likely to be inappropriate today--and obsolete tomorrow (25, p. 7).

From its very beginning Cooperative Extension has been faced with change, and no other single factor has persisted with such consistency. If the Cooperative Extension Service is to maintain its leadership role as an outstanding educational organization in this setting and continue to make a vital contribution to society, it must maintain a competent and well trained staff.

Davis (8), in discussing the need for Extension agents keeping up-to-date on new technical and scientific knowledge, stated:

> I found that as an Extension Director, no criticism cut more deeply than the suggestion by a farmer that a staff member was of little use because he was behind the times in his technical knowledge. A basic requirement for all Extension workers is that they be up-to-date on the latest applicable knowledge in their particular field of special activity. This is a require-

> ment, if we are to exert the educational leadership for which we are responsible (p. 115).

If Cooperative Education is to continue as a strong educational organization in this rapidly changing world with rapidly changing roles for all institutions, education must be a never-ending process. This is especially true for the professional educator in the Extension Service (8).

This concern for the need to continually up-date agents was expressed by the Joint U.S. Department of Agriculture-National Association of State Universities and Land-Grant Colleges (USDA-NASULGC) Study Committee: "Knowledge is now acquired and put to use quickly. This imposes severe disadvantages upon the person who drops out of the educational stream or who does not continue to learn throughout his life" (4, p. 9).

Several studies have been done regarding the competencies needed by Extension personnel to remain effective in this rapidly changing society. Leagans (19) expressed the assumption that Extension educators who attain a high professional ability or competency and continue to improve it become more useful and that the opposite is true for those who do not.

The task of providing an innovative training program to develop and maintain a highly competent staff is not an easy one. It is difficult to know what type of training is needed by staff with specific job responsibilities. Leagans (19) expressed his ideas concerning this point when he said:

> What is known today about the personnel development process all points to the necessity of identifying the competencies needed as a precondition for effective professional development activity. Without this knowledge of what competencies are needed, it is virtually impossible for either a trainee or trainer to select accurately the content needed, effective communication techniques or the time span required for a training program (p. 139).

It is important that all Extension workers recognize the need for and receive training in subject matter areas and teaching methods. The National Task Force on Cooperative Extension In-Service Training (26, p. 13) states that: "While each employee has specific training needs that are more or less unique to the individual, there are some common needs." The committee outlines nine areas of competency which are generally considered to be important for all Extension workers. These nine areas were:

1. Extension Organization and Administration
2. Program Planning and Development
3. Understanding Human Development
4. Understanding Social Systems
5. The Educational Process
6. Communications
7. Effective Thinking
8. Technical Knowledge
9. Research and Evaluation.

In dealing with the area of technical knowledge, the National Task Force on Cooperative Extension In-Service Training lists four subareas for which an effective Extension agent should be responsible. They are:

1. Up-to-date information in subject matter fields pertinent to the job.
2. Identification and effective use of resources.
3. How to interpret and use research findings.
4. Methods and techniques of disseminating subject matter (26, p. 15).

An Ohio study by McCormick (23), using the nine competency areas previously listed, ranked the nine areas on the basis of how important

the respondents felt it was for Extension agents to be adequately trained in each specific area. In this study technical knowledge ranked number one.

Developing Extension agents with necessary degrees of competency in technical knowledge is an important and difficult task of the Cooperative Extension Service. The subcommittee on Staff Training and Development of the Extension Committee on Organization Policy asserted that:

> As science and technology increasingly touch the lives of every citizen, the economic and social problems confronting the people, and thus Extension, become greater in numbers, broader in scope and more complex and interrelated (11, p. 8).

The subcommittee goes on to say that maintaining excellence in program content is increasingly more difficult because of the following basic reasons:

1. The Knowledge Explosion--There is more knowledge to be assimilated and interpreted to meet the needs of varied clientele.

2. The Obsolescence of Knowledge--Not only is knowledge in most fields constantly changing but also its use and interpretation.

3. Other Sources Available to Clientele--Today most Extension clientele have many opportunities to secure the knowledge they need. They expect more technical or recent information from their university. Staff members must be ahead of other sources of information if Extension is to maintain its impact and prestige (11, pp. 8-9).

An effective Extension training program designed to meet the needs of its personnel must be one developed not only because of the dictates of the changing times but also because of perceived needs of its staff.

Statement of the Problem

As the concerns and interests of people have broadened, Cooperative Extension programs in Oklahoma, as across the county, have changed

dramatically. With the rapid advances of science and technology, creating a continual change in Extension's program emphasis, there is a critical need for Cooperative Extension personnel to develop and update technical subject matter competencies to keep abreast of, and if possible, ahead of change. To accomplish this task it is necessary for an organization to provide its personnel with an in-service education program which will explore educational and technological content and processes.

There appears to be a consensus, as will be described in the review of literature, that certain professional competencies are needed or used by county Extension agricultural agents, but little research was found by this researcher regarding the technical competencies needed by Cooperative Extension county agricultural agents in Oklahoma. There was also a void in research done to identify in-service training programs based on agents' perceived level of competency, and priority of training in specific technical subject matter topics.

An in-depth study to obtain the state's county Extension agricultural agents' self-assessments of competency levels possessed as well as securing their preferences and priorities for future in-service training efforts was felt to be of prime need.

Purpose of the Study

The purpose of this study was to determine and analyze perceptions of Oklahoma County Extension agricultural agents concerning their levels of competence and educational needs in selected technical agricultural topics; and the implications of these perceptions for future in-service training programs.

Objectives of the Study

The specific objectives of the study were to:

1. Determine the perceived levels of competence of Oklahoma Cooperative Extension county Agricultural Agents in the subject areas of:
    a. Agricultural Economics
    b. Agricultural Engineering
    c. Agronomy
    d. Animal Science
    e. Entomology
    f. Forestry and Wildlife
    g. Horticulture
    h. Plant Pathology.
2. Determine the extent to which these competencies were used by the Agents in their present job assignments.
3. Determine the Agents' perceived priority of need for additional training for each of the identified subject matter topics.
4. Compare the Agents' perceived competencies, frequency of use, and priority of need for additional training by years of experience and supervisory district.

Rationale for the Study

In a recent Oklahoma Extension agriculture program review, a concern was expressed as to the degree of competency possessed by Oklahoma county Extension agricultural agents in technical subject matter areas (27). This same concern appears to exist on the part of several of the state subject matter specialists and Extension supervisors. If the level of technical competence possessed by these county agents is not equal to the

level desired, a major goal of the organization should be to provide an effective in-service training program to increase the agent's level of technical competency possessed.

In developing effective in-service programs, several questions must be answered. What subject matter information should be included and in what priority? Do all agents need the same training? Who determines the subject area of training to be conducted and identifies the agents to attend? No one group or individual should determine the answers to these questions. Rather, Extension administration, program leaders, subject matter specialists, District staff, and local county agents should have representative input into this process.

The purpose of this study was to aid in this process by determining and analyzing the educational needs of Oklahoma county Extension agricultural agents so that an in-service training program can be provided to more effectively serve the needs of agents concerning technical competencies.

Results of this study can be used to plan in-service training programs for both experienced and new employed Cooperative Extension county agricultural agents. This training would be based on identified agricultural knowledge, skills and abilities for specific geographical locations.

Assumptions

For the purpose of this study, the following assumptions were accepted:

1. The technical competencies needed by Cooperative Extension county agricultural agents could be grouped under the eight technical subject matter disciplines.

2. The county Extension agricultural agents could and would indicate their honest opinions as to their perceived level of competency in each of the identified areas.

3. The county Extension agricultural agents would indicate their perceived priorities for additional training in each of the identified areas.

4. The responses to the questionnaire were given in the manner in which the researcher had intended.

5. That data from this study could be utilized to design and improve technical agriculture in-service training opportunities for Oklahoma county Extension agricultural agents.

6. Agents in various counties may not need to possess the same degree of competency in all subject matter areas.

Scope of the Study

The population of this study consisted of those county Extension agents in Oklahoma whose primary responsibility was for the total county agricultural program. The Oklahoma Personnel Subsystem identified 77 positions with this responsibility. Since three positions were vacant at the time of this study, the total population of this study was 74 agents. In this study agents were asked to express their opinions on 66 specific subject topics by indicating their perceived level of competence and the frequency of use of each topic in their present county assignment. In addition, the agents were asked to give their priority for additional training for each of the 66 topics.

Definition of Terms

For better understanding of facts presented in this study, the following terms were defined.

1. Cooperative Extension Service: refers to the organization created by the Smith-Lever Act of 1914, and is a cooperative function between the United States Department of Agriculture, the land-grant universities of each state, and local county governments. The terms "Extension," "Extension Service," and "Agricultural Extension" will also be used and are to be thought of as synonymous with the defined term.

2. Cooperative Extension County Agricultural Agent: a term used to designate the individual responsible for the planning, conduct, and evaluation of the county agricultural program. The terms "County Extension agent," "Extension agent," "Extension workers," and "County agent" are also used and are to be synonymous with the defined term.

3. In-Service Training: a term which refers to the training received by Extension agents after employment and throughout their career. It is for the purpose of maintaining and/or increasing the effectiveness of the individual in performing Cooperative Extension programs and/or administrative responsibilities (6).

4. General Subject Matter Areas: a term which refers to the eight subject matter disciplines used in this study. These include: Agricultural Economics, Agricultural Engineering, Agronomy, Animal Science, Entomology, Forestry and Wildlife, Horticulture, and Plant Pathology.

5. Specific Subject Matter Topics: a term referring to the 66 specific subject matter topics which were grouped under the eight general subject matter areas.

6. Competence: refers to the ability of the agent to discuss specific subject matter intelligently and answer the majority of questions received.

7. Frequency of Use: refers to a measure designed to determine the frequency of utilization of specific subject matter topics by the agent in his present job assignment.

8. Years of Experience: refers to the length of service of the agents in the Oklahoma Cooperative Extension Service or in the Cooperative Extension Service of other states.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this chapter is to present a summary of previously completed investigations and literature related to the identification of training needs of Cooperative Extension employees. Involved in this review were research studies, books, professional magazines, periodicals, reports, and personal interviews pertinent to this study. However, it is not the intent to summarize all literature in the field of training. Selections have been made only from those pieces of information that helped to establish a need for this investigation or that helped to support the findings of the study. The review of literature has been organized into four different sections. These are as follows:

1. The Concept of Training
2. The Need for In-Service Training
3. Determining Training Needs
4. Review of Selected Literature.

The major function of the Cooperative Extension Service as stated in the Smith-Lever Act of 1914 was:

> . . . to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of same. . . (17, p. 29).

If Cooperative Education is to respond to this portion of the act and remain a dynamic, vital, and effective educational force, it must develop and maintain a staff of competent, capable employees. In order to prepare a staff capable of "diffusing" useful and practical information, an effective in-service training program is inevitable.

Concept of Training

Training is one of the most important factors that can greatly influence the effectiveness of an organization's workers. This is true whether they are extension, business, industry, or any other field. The concept of training employees for effective production is not new. Every time one gets someone to do work the way one wants it done, training is usually involved.

It seems important that in any discussion of training needs, one must first establish a clear concept or meaning for the term training. Ussery (36, p. 19), in an analysis of the educational needs of County Extension Agents in Tennessee, defines in-service training as "the in-service education which begins with employment and continues throughout the employment period in the Cooperative Extension Service."

Training has been defined by Halsey (14, p. 126) as "causing people to become interested in their work and aiding them to acquire the knowledge and skill necessary to do that work well."

In an earlier study by Matthews (22), the term training was used to mean agent training activities which were aimed at improving the ability of the agent to do his job well. These activities included acquiring information, developing abilities, and fostering attitudes which would result in greater professional competence in the extension worker. The

National Task Force on Cooperative Extension In-Service Training (26) defined in-service training as follows:

> In-Service training is that phase of organized learning experience which is provided employees by the agency throughout the employment period. It is training directed towards developing understanding of job operations and standards, agency philosophy, policies and procedures, as well as current technical research findings. It includes induction training for new workers and on-the-job training in both subject matter and in educational methods for experienced personnel at all levels of the organization (pp. 1-2).

It is interesting to compare these definitions with some that have been developed by people in business and industry. For example, Pfiffner and Fels (30, p. 204) stated that "Training is not a method with which to solve otherwise insoluble organizational problems; it is rather an ambiguous something without which organizations do not long survive."

Planty et al. (31. p. 25), another authority from industry, proposed this aim for training: "To build continuously and systematically to the maximum degree and in proper proportion that knowledge and those skills and attitudes which contribute to the welfare of the company and the employee." Planty et al. further point out that training is a vital activity. It serves as a remedy for past mistakes as well as a tool for future achievements.

In discussing training in business and industry, McGehee and Thayer (24, p. 3) define training as "the formal procedures which a company uses to facilitate employees' learning so that their resultant behavior contributes to the attainment of the company's goals and objectives."

According to Van Dersal (39):

> Training is the process of teaching, informing, or educating people, (1) so that they become as well qualified as possible to do their work, and (2) so that they may become qualified to perform in positions of greater difficulty and responsibility (p. 83).

A draft of the Oklahoma Cooperative Extension (6) "State Staff Development Plan" defines in-service training (education) as:

> . . . a planned learning experience which Cooperative Extension provides its employees throughout their period of employment. It is planned for specific Cooperative Extension personnel with the purpose of maintaining and increasing the effectiveness of the individual in performing Cooperative Extension program and/or administrative responsibilities (p. 4).

This definition will be the one used in this study.

All of the above definitions regarding training and/or in-service training support the concept that (a) training is the improvement of skills, and (b) it is to help the employee adjust to the demands of the organization and to maintain the flexbility to change as a part of it.

Training, to justify itself, must be able to contribute something to the efficiency of the job. In its narrow sense, training implies learning the requirements in order to perform the skill. If training is to become an effective tool for improving the efficiency of the personnel within the organization, it must be a systematic orderly procedure, striving toward solutions of organizational problems and attainment of organizational as well as personal goals.

The Need for In-Service Training

The need for increased emphasis regarding in-service training has never been more relevant than it is today. Cooperative Extension workers have been recognized as educators and leaders in the most successful voluntary out-of-school educational program in existence. Knowles (18, p. 5) noted adult educator, has stated that: "In adult educational circles, we cite the Cooperative Extension Service as our largest and most successful national adult educational agency."

The same concept is presented in a report published by the Extension Committee on Organization Policy when it reported: "A report by the Carnegie Corporation states that the Cooperative Extension Service provides the chief example of a successful adult educational movement in the United States" (7, p. 22).

If the Cooperative Extension Service is to continue to live up to these expectations, then it must provide its employees with an effective in-service training program. The National Policy Guidelines for Staff Development, prepared by the ECOP Subcommittee on Personnel Training and Development (10), assert the fact that experienced staff members need in-service education experiences to assist them with the following:

1. To further develop technical subject matter competencies to keep abreast of and, if possible, ahead of change.
2. To explore educational and technological content and processes in varying depths to extend personal competencies.
3. To take a broader view and yet focus more sharply on particular Extension role responsibilities and up-date approaches to carrying out responsibilities.
4. To develop a continuing sensitivity to social, economic and political changes and to acquire the capacity to deal with these situations (p. 12).

The need for Cooperative Extension agents to keep abreast of change is again emphasized in a Scope report:

> One consistent characteristic of Extension work has been the necessity to shift programs and methods to meet every changing condition and demand. Extension workers have been acutely aware of this need from the beginning. The tempo of such changes has been accelerated dramatically during the past decade. Every evidence points to an even faster acceleration in the decades ahead (25, p. 5).

Addressing the importance of in-service training in the area of technical subject matter, Quinn and Boone (33, p. 30) stated that "The Extension worker needs to know and understand technical subject matter

appropriate to his needs and the needs of the people with whom he works." Quinn and Boone further stated:

> Technology or technical subject matter is the core of the Extension program content. All successful Extension educational efforts require significant technical subject matter or content appropriate to the problems.
>
> In order to perform his role as an educator effectively, the Extension worker must have adequate knowledge of subject matter appropriate to his job and an understanding of its relationship to the problems of people (p. 30).

If the Cooperative Extension worker is to "aid in diffusing," as stated in basic legislation of the Smith-Lever Act, he must know what to diffuse. It is a responsibility of the organization's in-service training program to keep the agent up to date with this relevant information.

Dunlap (9), in a study of the Louisiana Cooperative Extension Service, emphasized the importance of training by stating that:

> . . . an organization is known by the people who make up its staff. Continuous in-service and professional training is essential for a staff to be competent in interpreting new developments in subject matter, teaching methods and procedures and in keeping various publics informed (pp. 213-214).

Leagans (20) emphasized that competent knowledge and understanding of subject matter is a minimum for the success of Cooperative Extension workers. He stated that: ". . . all successful educational effort requires significant technical subject matter. Subject matter is to Extension education what food is to the human being; it is life's sustenance" (p. 19). Leagans further identified a potential problem with Cooperative Extension agents when he stated, "Attempting to teach something one does not know is to invite failure from the start" (p. 6).

A study by Brumback, Hahn and Edwards (1) stressed the need for competencies in technical subject matter when it supported the concept that a major role of agricultural Extension is responding to the request for information and technical assistance from clientele.

The future of the Cooperative Extension Service will be influenced extensively by the Extension worker's ability to adjust to rapid change and to develop technological competencies which will continue to contribute to the solution of the complex social and economic problems of the people. Rapid changes in the growth of the organization and the demands placed upon it dictate the necessity that the Cooperative Extension program be continually changing if it is to remain dynamic. These changes can be brought about only through the effective use of a competent and well-trained Cooperative Extension staff.

The thinking of many Cooperative Extension administrators and supervisors regarding the need for training was summarized by Collings (3) when she indicated two major reasons for a strong in-service education program. These were: (1) the removal of deficiencies in pre-service and previous in-service preparation, and (2) continuous professional growth of Extension personnel.

Determining In-Service Training Needs

It appears to be logical that the most important task for the Extension training personnel, when developing an Extension training program, is to determine the training needs and develop a program around these needs.

The importance of training was expressed in the National Policy Statement on Staff Training and Development:

> The total effectiveness of Extension depends upon the effectiveness of each staff member. Well-placed training and development programs for Extension staff members are essential to the success of Extension and to the well-being of its citizens (11, p. 11).

The National Task Force on Cooperative Extension In-Service Training (26) emphasized the importance of determining training needs of Cooperative Extension staff by stating:

> An in-service program should be dynamic--directed toward improving the ongoing educational program engaged in by the individual worker and the Extension Service. It should be based on individual problems and on identification of needs. It should allow for differences in abilities and experience but recognize the goals of the Extension service as well as the goals of the individuals. It should utilize the principle of involvement by drawing on ideas of trainees in setting goals and making plans, thereby creating a desire to learn. It should maintain a two-way flow of ideas and activity between trainer and trainee (p. 9).

The National Task Force (26) outlined three steps which could be used in diagnosing training needs:

1. Location of areas of training need through
    a. analysis of jobs
    b. analysis of program emphasis.
2. Identification of the individual worker in need of training through
    a. self-surveys of needs and interests
    b. day-to-day observation by supervisor and specialist
    c. tests
    d. analysis of performance evaluation.
3. Determination of priorities in training need.

It was determined by the National Task Force that a conscious process of analysis would result in a systematic approach and in better use of training time and resources.

In discussing training needs of industry, McGehee and Thayer (24, p. 24) stated that "Training in industry is not an end but a means to an end; it exists only to help achieve organizational goals and objectives."

McGehee and Thayer (24) identified three methods for determining training needs. They are:

> 1. Organizational analysis--determining where within the organization the training emphasis can and should be placed. Organizational analysis places emphasis on a study of the entire organization, its objectives, its resources, and the allocation of those resources as they relate to the organizational objectives.
>
> 2. Operations analysis--determining what should be the contents of training in terms of what an employee must do to perform a task, job, or assignment in an effective way.
>
> 3. Man analysis--determining what skills, knowledge, or attitudes an individual employee must develop if he is to perform the tasks which constitute his job in the organization (pp. 25-26).

Many methods have been effectively used to determine training needs; however, no one method is totally adequate by itself.

The individuals involved can play an important role in identifying training needs. Richert (34) stated:

> It has generally been regarded that county extension personnel could fairly and rather accurately identify their own training needs. The self-expressed needs serve a two-fold purpose: first, determine the average training needs of a group, whether it be a group by position, by tenure, by district, or by state; and second, identify the individual's needs as he views them (p. 15).

Price (32) expressed the importance of agent input into the needs assessment and suggests that periodic surveys be made among agents to determine what they consider to be their training needs at a given time.

Richert (34) identified other methods used to determine training needs. He suggests that: (1) position descriptions can provide a base from which to develop content of the training programs; (2) personnel appraisal instruments can be a means of personnel development if the instrument is developed and used for the primary purpose of staff improvement; (3) county programs and annual plans of work can be excellent tools

to use in determining the agents' specific needs in the understanding of the real problems, objectives, and program content to reach objectives.

> These methods of determining training needs--surveys, job descriptions, performance appraisal, and county programs--are perhaps the most objective ways by which we can delineate not only the average needs of the group, but also the needs of each individual. Thus, training programs developed upon these needs will be sound and up-to-date (34, p. 17).

Job descriptions of county Extension workers provide clues relative to needed areas of competency. The job description of the County Extension Agent--Specialized in Oklahoma, implies the importance of subject matter training, through the items listed below:

A. To develop and implement educational subject-matter programs which will meet objectives of specific clientele groups based upon significant problems, their causes and an analysis of causes with alternative courses of action.

B. To involve continuously representatives of all groups who are vitally interested in or affected by the subject-matter area in the study, development, implementation and evaluation of programs.

C. To be knowledgeable in the subject-matter and its application through continuous intensive study of all its facets and teaching that which is technically sound as indicated by the respective subject-matter specialists.

D. To be adept and continue to learn how to use adult education methods which will be effective in teaching specific subject-matter and its application to specific clientele groups and individuals.

E. To continuously search for and use new program ideas which are progressively more effective than those currently being used.

F. To help keep co-workers up-to-date in subject-matter and its application and serve as resource person to them in the subject-matter area.

G. To confer and cooperate with other agents in inter-disciplinary programs.

H. To develop program ideas and teach in such a manner that lay leaders will be further developed.

1. To draw upon appropriate subject-matter specialists for technical information related to problem areas (29, pp. 10-11).

Further indication of the importance of in-service training in the Agriculture program area was given in a recent report on the Evaluation of Economic and Social Consequences of Cooperative Extension programs (37). The evaluation stated:

> Agriculture and Natural Resources is the largest area within the Cooperative Extension System. Nationwide about 40 percent of the time of profesional staff and 36 percent of the total Cooperative Extension budget have been allocated to this program area in recent years (p. 39).

The major goals, as outlined in the Evaluation of Agriculture Extension, from a national perspective were to:

1. Assist agricultural producers, suppliers, processors, wholesalers and retailers, foresters, forest land owners, and others engaged in agriculture, forestry, and related endeavors to meet the food, fiber, and shelter needs of the nation; develop and maintain the U.S. comparative advantage in worldwide trade; and receive a fair share of the economic and social benefits.

2. Conserve and develop natural resources with special emphasis on soil, water and energy.

3. Protect the quality of the environment from pollution by agricultural wastes and chemicals used in food and fiber production.

4. Enhance the ability of farmers and farm families to utilize available resources to improve their quality of life (37, p. 39).

The importance of the agricultural agent being competent in the areas of technical agriculture is further documented in a recent Oklahoma Agricultural Program Review (27). It is generally accepted that the county Extension agricultural leader is first and foremost responsible for the delivery and development of agricultural programs, and the flow of new agricultural technology within the county.

The determination of training needs is an important aspect of any training program. It should be a continuous process designed to meet

the objectives of the organization and the professional development of its staff, as well as being specific enough to guide selections of training materials, content, and methods to be used in the training process.

Research Studies Based on Training Needs

Several studies have been conducted within the various state Extension services over the past years to identify the training needs of county Extension agents. One of the early studies by Vandeberg (38) found that Wisconsin agents felt their greatest need for training in the areas of: (1) Program planning, (2) Subject matter, (3) Research, (4) Communications, (5) Reporting, and (6) Sources of materials.

Several studies found in the literature have used the nine general areas as identified by the National Task Force on Extension In-Service Training (26), as a basis for investigation. Such studies have been conducted by McCormick (23) in Ohio, Price (32) in Arkansas, Hubbard (15) in South Carolina, and Ussery (36) in Tennessee.

The nine areas of competency used in the above studies were:

1. Extension organization and administration
2. Program planning and development
3. Understanding human development
4. Understanding social systems
5. The educational process
6. Communications
7. Effective thinking
8. Technical knowledge
9. Research and evaluation.

When McCormick (23) ranked these nine areas on the basis of the training Ohio agents said they needed, technical knowledge ranked fourth. When the same agents were asked how important they felt it was for Extension agents to be trained in each area, technical knowledge was ranked first.

In a similar study by Price (32), technical knowledge ranked third on the basis of the training Arkansas agents said they needed in each of the nine areas. Price also found that assistant and associate county agents in Arkansas indicated more need for training in technical subject matter than did county agents.

Hubbard (15) found that of the potential respondents in the area of technical knowledge--agriculture, 40 percent or more of the South Carolina agents indicated a need for much training in the areas of entomology, horticulture, plant pathology, agronomy, and marketing. In comparing agents and administrators' opinions of training needs, Hubbard found that agents tended to place more emphasis on the subject-matter areas relating to specific agricultural enterprises while administrators tended to place more emphasis on subject-matter areas involving broader areas of interest such as marketing, management, community activities, and economics.

Ussery's (36) study of the educational needs of the Tennessee agents was based on the same areas of competency which had been used by McCormick and Price. She found that in the areas of competency in which agents indicated the greatest need for training, technical knowledge--agriculture ranked highest by male agents. Data also showed that four areas in technical knowledge were identified by at least one-third of all male respondents as areas in which much training was needed. These areas were marketing, farm management, plant pathology, and entomology. Ussery also

found that tenure was not a factor associated with training needs. This finding was opposite to what McCormick had found with Ohio agents. Data presented in his study suggested that training needs of Extension agents vary between different tenure groups.

Table I shows a comparison of the expressed training needs as indicated in the four studies quoted above. Since technical knowledge was not included in the comparison of the Tennessee and South Carolina studies, the areas were reranked for the Ohio and Arkansas studies, omitting technical knowledge, so that a more comprehensive comparison could be made.

TABLE I

COMPARISON OF THE RANK ORDER OF THE EXPRESSED TRAINING NEEDS OF EXTENSION AGENTS IN EIGHT COMPETENCY AREAS IN OHIO, ARKANSAS, SOUTH CAROLINA, AND TENNESSEE

Competency Area	Ohio	Arkansas	South Carolina	Tennessee
Program Planning and Development	1	1	1	2.5
Communication	3	3	2	4
Human Development	4	2	3	2.5
Extension Organization and Administration	8	8	4	7
Research	5	4	5	5
Critical or Effective Thinking	2	5	6	6
Educational Process	6	6	7	1
Social Systems	7	7	8	8

In a study to determine the training needs of Oklahoma agricultural agents, Bajaj (2) found that county and associate county agents expressed an immediate and concentrated training need in the areas of farm management, landscaping, and control of insects and pests of crops. Assistant agents, however, perceived their training needs in the areas of field crops, fertilizers, and landscaping.

Flora (13) in researching the needs of Oklahoma Extension agents relative to entomology problems found that respondents estimated approximately one-third of all questions they answered during the crop growing season required entomological information. He further found that over one-fifth of all questions required knowledge of entomology. Data from this study showed over 90 percent of all Oklahoma agricultural agents recommended more entomology training for potential new agents, and 92.8 percent indicated they would take additional entomology courses if available, while 88 percent recommended expanding entomology shortcourse work.

Most of the studies reviewed indicated that although there are training needs common to all agents, there are also those training needs important only to specific agents. Rogers (as cited by Ussery [36]) supported this concept by stating:

> Experience has taught us that our training program must be tailored to fit the individual if it is to succeed. We must first recognize that people are different if all are to tailor the training to the needs of the individual. . . . Since people vary so widely, it is obvious that a major part of the training must be on an individual basis (p. 30).

Summary

This review of literature provided background information with emphasis on three areas: developing a concept of training, establishing

the need for in-service training, and methods of determining training needs.

The review of literature supported the need for and importance of the Cooperative Extension Service having an effective in-service training program. Training is one of the most critical factors that can influence the effectiveness of an organization's employees and thus the organization. For the Cooperative Extension Service to have a productive training program, it must begin the first day the agent is on the job and continue throughout the agent's career. Numerous authors have provided various definitions for training. There does appear to be a consensus that in-service training is an activity an organization makes available for its employees that will, to some degree, benefit both the employee and the organization.

With the enactment of the Smith-Lever Act of 1914, the Cooperative Extension Service was created to take the results of research and advanced technology to the people. For over 65 years, the Extension Service has been effectively filling this role. However, today more than ever before agricultural technology is progressing at an accelerated rate. If the Cooperative Extension Service is to live up to its expectations, county agricultural agents must possess technical subject matter competencies to keep pace with or, if possible, ahead of the advancing technology.

Providing employees with an effective training program is not an easy task. The organization must first know: what are the training needs, who needs the training, what are the objectives of the training program, and why, where, and by whom will the activity be conducted. The review of literature provided insight into several different methods of

identifying training needs. Training needs may be based on organizational needs or employee needs. They may be determined through job analysis; surveys; observation; performance appraisals; national; state; or local thrusts; and many other ways.

One of the most effective ways to analyze training needs seems to be through the individuals themselves. Studies show that not all agents need the same type or amount of training. It is therefore critical that more individual analysis of training needs be conducted. Studies in the review of literature also indicated that supervisors need to take a more active role in identifying the training needs of their subordinates.

Several studies have been conducted throughout the Cooperative Extension Service to identify training needs of county Extension agents. All of these studies provided support to the importance of technical subject matter training for county agricultural agents. These studies indicated that in the area of technical knowledge, as well as other competency areas, Cooperative Extension must tailor a training program to meet the needs of the individual.

Although the review of literature produced studies which dealt with technical agriculture training needs of Extension agents, no research was found utilizing the technical agriculture topics included in this study. There was also an absence of research completed to determine training needs based on agents' perceived level of competence for selected subject matter areas, the frequency of use of these competencies, and the agents' perceived priority for additional training for each of the identified areas. The absence of these studies thus indicated a need still remained for this type of study.

CHAPTER III

DESIGN AND CONDUCT OF THE STUDY

The purpose of this chapter is to describe the methods and procedures used in conducting the study. These were dictated by the primary purpose of the study, which was to determine and analyze perceptions of Oklahoma county Extension agricultural agents concerning their levels of competence and educational needs in selected technical agricultural topics, and implications of these perceptions for future in-service training programs. Specific objectives were formulated to provide guidance for the design and conduct of the investigation. The specific objectives were to:

1. Determine the perceived levels of competence of Oklahoma Cooperative Extension county agricultural agents in the subject areas of:
    a. Agricultural Economics
    b. Agricultural Engineering
    c. Agronomy
    d. Animal Science
    e. Entomology
    f. Forestry and Wildlife
    g. Horticulture
    h. Plant Pathology.
2. Determine the extent to which these competencies were used by the agents in their present job assignments.

3. Determine the agents' perceived priority of need for additional training for each of the identified subject matter topics.

4. Compare the agents' perceived competencies, frequency of use and priority of need for additional training by years of Extension experience, and supervisory district.

In order to collect and analyze necessary data pertaining to the purpose and objectives of the study, it was necessary to accomplish the following tasks:

1. Determine the population for the study.
2. Develop the instrument for data collection.
3. Develop the procedure for data collection.
4. Select the methods for data analysis.

The Study Population

The population of this study was comprised of all county Extension agents in Oklahoma, whose primary responsibility was to plan, conduct, and evaluate county agricultural programs. At the time of the study, the County Extension Agriculture agent positions were vacant in Alfalfa, Delaware, and Woods Counties. This provided a total potential population for the study of 74 county Extension agricultural agents.

Development of the Instrument

The information needed for the study was obtained through the use of a questionnaire. The items to be included on the questionnaire were developed with the aid of state Extension specialists, area specialized agents, district agents, and county agricultural agents. Each of these individuals was asked to develop a list of technical subject matter

topics for which county agricultural agents are or should be responsible for in their county assignments. A summary of these responses provided a list of 67 specific technical subject matter topics. These 67 topics were then categorized under the eight agricultural areas of: Agricultural Economics, Agricultural Engineering, Agronomy, Animal Science, Entomology, Forestry and Wildlife, Horticulture, and Plant Pathology. These eight general agricultural areas were used since they were the departments responsible for providing both pre-service and in-service subject matter training for the 67 specific topics.

A list of the 67 specific topics was then sent to a panel of 28 state, district, and county Extension staff for additional evaluation and input. This group was asked to indicate their feelings as to how important it was for county agricultural agents to possess knowledge and skill for each of the 67 specific topics. After carefully analyzing additional input from the panel, a final list of 66 topics was developed to be included in the final questionniare.

In constructing the instrument, the following recommendations, by Levine and Gordon (21), concerning appearance and effectiveness were considered:

1. Questions should be separated by dotted lines or extra space, distinguishing by boldface type, etc. to ensure that the respondent will answer the right question.

2. The type should be varied to emphasize the important words, phrases or instructions.

3. Check lists, fill-ins, or multiple choice questions should be conveniently arranged. Category designations and space for answers should be placed close together to avoid the possibility of error. When confusion is possible, a series of dots leading from the category to the answer space is helpful.

4. When the questionnaire is necessarily very long, it should look as short as possible (p. 571).

The degree to which a questionnaire obtains the desired information depends considerably upon the manner in which it is constructed. Levine and Gordon (21) summarize comments of several students of the field into the following guides for construction.

1. The questions should be stated simply and clearly in words commonly used by the respondents; they must be relevant and meaningful; the categories to be checked should cover the full range of answers the respondent can give to the questions.

2. The position of the question in relation to other questions frequently affects the responses.

3. Questions should be worded so that it will not be easier for the respondent to answer one way than another.

4. When a rating type of question is used an attempt should be made to counteract the tendency of the respondent to seek a middle ground.

5. In some cases, it may be advisable to encourage the respondent to supply additional information not adequately topped or specified by the questionnaire. A final question may be provided at the end of the questionnaire, or at the end of specific sections, which invites the respondent to discuss any problem that is important to him (pp. 571-572).

The format of the instrument was patterned after ones developed and used by Updyke (35), Jones (16), and Farmer (12).

For each of the 66 topics included on the instrument, respondents were asked to indicate the following: first, their perceived level of competence; second, how often they used each topic in their present assignment; and third, their priority for additional training for each topic.

A final copy of the questionnaire was again reviewed by members of the author's advisory committee and selected Extension staff prior to duplicating and mailing.

Data Collection

A questionnaire was mailed to each of 74 county Extension agricultural agents in Oklahoma, on August 17, 1981 (Appendix A). A cover letter from Dr. William F. Taggart, Associate Director, Oklahoma Cooperative Extension Service, was enclosed explaining the importance and value of the study (Appendix B). A self-addressed, stamped envelope was enclosed to encourage a prompt response and return.

The first mailing resulted in 71 (96%) returns from the agents. On September 2, 1981, a follow-up letter was mailed to the non-respondents stressing the importance of their participation.

The follow-up letter netted the additional three responses, thus providing responses from all 74 agents for a 100 percent return.

Analysis of Data

The population of this study included all 74 Cooperative Extension county agricultural agents in Oklahoma. The raw data collected was entered through the time sharing option (TSO) into the IBM System 370, Model 158 computer, using a 43 teleprinter terminal. A SAS (Statistical Analysis System) program was utilized in deriving statistical calculations used to describe the data collected.

With a 100 percent return of responses providing a total population, the need for sophisticated statistical treatment was limited. After consulting with Dr. James Key, Agricultural Education Department, and Dr. Larry Claypool, Statistics Department, Oklahoma State University, it was decided that descriptive statistics would be the most appropriate. For each item on the questionnaire, a frequency count and percentage of response were calculated, along with the mean response by district and

years of experience. These data gave the average response as well as an indication of dispersion of their responses.

To permit computer analysis of the data, numerical values were assigned to the categories according to the following pattern:

Value	Competence	Frequency of Use	Priority for Training
4	Outstanding	Constantly	Critical
3	Above Average	Frequently	High
2	Average	Occasionally	Medium
1	Below Average	Seldom	Low
0	None	Never	None

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

The major purpose of this study was to determine and analyze perceptions of Oklahoma county Extension agricultural agents concerning their levels of competence and educational needs in selected technical agricultural topics, and implications of these perceptions for future in-service training programs. In addition, it was to compare the agents' perceived competencies, frequency of use, and priority for additional training by years of Extension experience and supervisory district.

Data collected involved the responses of 74 Oklahoma county Extension agricultural agents employed at the time of the study. The purpose of this chapter is to present factual information revealed by the analysis of data compiled.

Population

The population of this study included 74 Cooperative Extension county agricultural agents employed in Oklahoma as of August 1, 1981. The 74 agents were dispersed among the four supervisory districts as follows: 15--Northwest district, 20--Southwest district, 20--Northeast district, and 19--Southeast district. Instruments used in this study were received from all 74 respondents, which represented a 100 percent return. Data

presented in this chapter therefore represent responses from a total population of the study.

Selected Characteristics of the Agents Participating in the Study

Data in Table II provide a breakdown of respondents by years of experience and supervisory district. Thirty (40.5%) of the county agricultural agents had over 21 years of experience while 20 (27.0%) fell into the 0-5 year experience group. The southeast district had the higher percentage (33.3%) of agents with 0-10 years experience while the northeast district had the larger percent (35.3%) of agents with over 16 years experience. It should be noted that there were only 4 respondents in the 16-20 year experience group, and this fact must be kept in mind when considering mean response data from this group.

Data in Table III revealed that only 34 (46.0%) of the county agricultural agents held a master's degree or higher. Of the 54 percent with bachelor degrees, 18 (45.0%) also had been employed with Extension for five years or less. It is noteworthy that only two agents in the 0-5 year experience group possessed master's degrees.

Thirty (40.5%) of the respondents had an undergraduate degree major in Animal Science, while 29 (39.2%) received their undergraduate degrees in Agricultural Education.

Thirty-seven (50.0%) of the agents included in this study indicated they planned to actively participate in an advanced degree program. Eighteen of the 37, or 24.3 percent of the study population, were in the 0-5 year experience group.

TABLE II

DISTRIBUTION OF RESPONDENTS BY EXPERIENCE GROUP AND SUPERVISORY DISTRICT

Years of Experience	Distribution by District									
	Northwest (N = 15)		Southwest (N = 20)		Northeast (N = 20)		Southeast (N = 19)		Total (N = 74)	
	N	%	N	%	N	%	N	%	N	%
0 - 5	6	40.0	5	25.0	3	15.0	6	31.6	20	27.0
6 - 10	1	6.7	2	10.0	3	15.0	4	21.1	10	13.5
11 - 15	0	0.0	7	35.0	2	10.0	1	5.3	10	13.5
16 - 20	0	0.0	1	5.0	3	15.0	0	0.0	4	5.4
21+	8	53.3	5	25.0	9	45.0	8	42.1	30	40.5

TABLE III

DISTRIBUTION OF RESPONDENTS BY DEGREE HELD AND EXPERIENCE

Degree	Distribution by Years of Experience											
	0 - 5 (N = 20)		6 - 10 (N = 10)		11 - 15 (N = 10)		16 - 20 (N = 4)		21+ (N = 30)		Total (N = 74)	
	N	%	N	%	N	%	N	%	N	%	N	%
Bachelor	18	90.0	5	50.0	5	50.0	1	25.0	11	36.6	40	54.1
Master	2	10.0	4	40.0	5	50.0	3	75.0	19	63.3	33	44.6
Other	0	0.0	1	10.0	0	0.0	0	0.0	0	0.0	1	1.4

Data in Table IV provide a summary of agents' responses regarding their perceptions as to the level of effectiveness of their present in-service training program. Forty-three (58.1%) of the agents reported such training to be "moderately effective," while 26 (35.1%) indicated it to "considerably effective." Only one of the respondents perceived present in-service training to be of limited effect.

TABLE IV

SUMMARY OF AGENTS' PERCEPTIONS OF THE LEVEL OF EFFECTIVENESS OF PRESENT IN-SERVICE TRAINING

Level of Effectiveness	Number of Agents	Percent of Respondents
Extremely effective	4	5.4
Considerably effective	26	35.1
Moderately effective	43	58.1
Of limited effect	1	1.4
No effect	0	0.0
Total	74	100.0

As explained in Chapter III, a five-point "Likert-type" scale was used to secure agents' perceptions as to their competency, frequency of use, and priority for additional training for each of 66 specific subject-matter topics. A copy of the instrument used to secure these data is included in Appendix A. The frequency and precentage of response in each category was determined and means obtained, for each of the 66 topics, by supervisory district and experience group.

Findings of the Study

The purpose of this section is to present and analyze data collected relative to the perceptions of county Extension agricultural agents participating in this study. Findings of the study are presented under eight general subject-matter areas and for 66 specific topics within those areas. The mean responses of agents for each specific topic were grouped by supervisory district and experience level to facilitate comparisons and determine differences associated with geographical location and years of experience.

In referring to the mean responses in the tables presented in this chapter, the following scale was used to assign the real limits for each response category.

Range	Level of Competence	Frequency of Use	Priority for Training
3.5-4.0	Outstanding	Constantly	Critical
2.5-3.49	Above Average	Frequently	High
1.5-2.49	Average	Occasionally	Medium
0.5-1.49	Below Average	Seldom	Low
0 -0.49	None	Never	None

Agricultural Economics

Data in Tables V and VI provide a summary of agents' responses regarding their perceived levels of competence, frequency of use, and priority for training for seven specific topics of Agricultural Economics.

Inspection of the data revealed that agents felt their level of competence was "average" for each of the seven topics of Agricultural Economics with mean responses ranging from a low of 1.73 for "machinery management" and "father and son agreements" to a high of 2.09 for "farm

TABLE V

AGENTS' PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN SELECTED TOPICS OF AGRICULTURAL ECONOMICS

Topics	Distribution by Level of Competence: None N	None %	Below Average N	Below Average %	Average N	Average %	Above Average N	Above Average %	Outstanding N	Outstanding %	Mean Response N=74	Rank
Basic Income Tax Management	4	5.4	20	27.0	34	45.9	16	21.6	0	0.0	1.84	5
Outlook: Futures Market & Hedging	1	1.4	23	31.1	35	47.3	14	18.9	1	1.4	1.88	3
Farm Records & Record Keeping Systems	0	0.0	13	17.6	43	58.1	16	21.6	2	2.7	2.09	1
Basic Estate & Financial Planning	2	2.7	22	29.7	35	47.3	15	20.3	0	0.0	1.85	4
Oil & Gas Lease Management	5	6.8	20	27.0	24	32.4	22	29.7	4	4.1	1.97	2
Machinery Management-- Ownership vs. Leasing	4	5.4	26	35.1	30	40.5	14	18.9	0	0.0	1.73	6.5
Father and Son Agreements	4	5.4	24	32.4	34	45.9	12	16.2	0	0.0	1.73	6.5

Topics	Distribution by Frequency of Use: Never N	Never %	Seldom N	Seldom %	Occasionally N	Occasionally %	Frequently N	Frequently %	Constantly N	Constantly %	Mean Response N=74	Rank
Basic Income Tax Management	4	5.4	27	36.5	34	45.9	9	12.2	0	0.0	1.65	5
Outlook: Futures Market & Hedging	5	6.8	21	28.4	36	48.7	12	16.2	0	0.0	1.74	4
Farm Records & Record Keeping Systems	1	1.4	24	32.4	39	52.7	10	13.5	0	0.0	1.78	2
Basic Estate & Financial Planning	3	4.1	23	31.1	37	50.0	11	14.9	0	0.0	1.76	3
Oil & Gas Lease Management	5	6.8	10	13.5	26	35.1	23	31.1	10	13.5	2.31	1
Machinery Management-- Ownership vs. Leasing	8	10.8	39	52.7	25	33.8	2	2.7	0	0.0	1.28	6
Father & Son Agreements	12	16.2	37	50.0	24	32.4	1	1.4	0	0.0	1.19	7

Topics	Distribution by Priority for Training: None N	None %	Low N	Low %	Medium N	Medium %	High N	High %	Critical N	Critical %	Mean Response N=74	Rank
Basic Income Tax Management	0	0.0	34	45.9	32	43.2	8	10.8	0	0.0	1.65	5
Outlook: Futures Market & Hedging	3	4.1	27	36.5	33	44.6	10	13.5	1	1.4	1.72	4
Farm Records & Record Keeping Systems	2	2.7	23	31.1	42	56.8	7	9.5	0	0.0	1.73	3
Basic Estate & Financial Planning	1	1.4	25	33.8	34	45.9	14	18.9	0	0.0	1.82	2
Oil & Gas Lease Management	4	5.4	13	17.6	25	33.8	27	36.5	5	6.8	2.22	1
Machinery Management-- Ownership vs. Leasing	7	9.5	44	59.6	21	28.4	2	2.7	0	0.0	1.24	6
Father & Son Agreements	10	13.5	45	60.8	18	24.3	1	1.4	0	0.0	1.14	7

TABLE VI

SUMMARY OF MEAN RESPONSES FOR SELECTED TOPICS OF AGRICULTURAL ECONOMICS BY DISTRICT AND EXPERIENCE GROUP

Topics	By District				By Years of Experience				
	NW (N=15)	SW (N=20)	NE (N=20)	SE (N=19)	0-5 (N=20)	6-10 (N=10)	11-15 (N=10)	16-20 (N=4)	21+ (N=30)
				Mean Levels of Competence					
Basic Income Tax Management	1.60	1.85	1.95	1.89	1.35	1.90	2.30	1.50	2.03
Outlook: Futures Market and Hedging	2.00	1.95	1.80	1.79	1.70	1.50	2.10	2.00	2.03
Farm Records and Record Keeping Systems	2.00	2.45	1.90	2.00	1.75	2.10	2.60	1.75	2.20
Basic Estate and Financial Planning	1.73	2.05	2.05	1.53	1.45	1.70	1.90	2.00	2.13
Oil and Gas Lease Management	1.87	2.45	1.55	2.00	1.75	1.80	2.20	1.50	2.17
Machinery Management--Ownership vs. Leasing	1.53	2.05	1.70	1.58	1.60	1.40	2.10	1.50	1.83
Father and Son Agreements	1.80	2.00	1.65	1.47	1.50	1.50	2.20	1.50	1.83
				Mean Frequency of Use					
Basic Income Tax Management	1.47	1.75	1.75	1.58	1.15	1.80	2.00	1.50	1.83
Outlook: Futures Market and Hedging	1.87	2.10	1.35	1.68	1.60	1.80	2.20	2.00	1.63
Farm Records and Record Keeping Systems	1.73	1.85	1.70	1.84	1.65	1.90	2.00	2.00	1.73
Basic Estate and Financial Planning	1.80	2.00	1.60	1.63	1.40	2.00	2.00	2.25	1.77
Oil and Gas Lease Management	2.47	2.65	1.80	2.37	2.15	2.10	2.60	2.50	2.37
Machinery Management--Ownership vs. Leasing	1.33	1.50	1.15	1.16	1.15	1.30	1.30	1.25	1.37
Father and Son Agreements	1.47	1.45	1.00	0.89	1.15	0.90	1.40	1.25	1.23
				Mean Priority for Training					
Basic Income Tax Management	1.80	1.50	1.65	1.68	1.60	1.80	1.50	1.25	1.73
Outlook: Futures Market and Hedging	1.87	1.95	1.45	1.63	1.90	1.60	1.70	2.25	1.57
Farm Records and Record Keeping Systems	1.80	1.70	1.65	1.79	1.95	1.90	1.70	1.75	1.53
Basic Estate and Financial Planning	2.20	1.90	1.60	1.68	1.85	1.70	1.50	1.75	1.97
Oil and Gas Lease Management	2.60	2.50	1.50	2.37	2.30	2.00	2.30	2.25	2.20
Machinery Management--Ownership vs. Leasing	1.53	1.35	0.95	1.21	1.50	1.10	1.10	0.75	1.23
Father and Son Agreements	1.33	1.30	0.95	1.00	1.40	1.00	1.20	0.75	1.03

records and record keeping systems." "Oil and gas management" ranked second with a mean competence response of 1.97, but also had the widest dispersion of responses. Agents in the southwest district perceived their level of competence to be higher than did agents in other districts for "farm records and record keeping systems" and "oil and gas management," while data indicated the 11-15 year experience group perceived themselves as possessing an overall greater level of competence than did the other experience groups.

Forty-nine (66.2%) of the agents indicated they "never" or "seldom" used information concerning "father and son agreements," and 47 (63.5%) responded they "never" or "seldom" used information regarding "machinery management." Each of the other five subject topics received an average mean response of "occasionally" with a mean response range from 1.65 for "basic income tax management" to 2.31 for "oil and gas management." Agents in the southwest district reported they used "outlook" information more frequently than did agents in the other districts. Agents in the northwest, southwest, and southeast districts indicated considerably higher use of "oil and gas management" information. Data indicated that overall, the 0-5 year experience group used information from the Agricultural Economics area less frequently than did other experience groups.

Mean responses indicated that agents perceived their highest priority for training for four topics: "oil and gas management" (2.22), "basic estate and financial planning" (1.82), "farm records and record keeping systems" (1.73), and "outlook: futures market and hedging" (1.72). Data in Table V show that agents perceived a higher level of competence and greater frequency of use for these same four topics. Agents perceived "machinery management" (1.24) and "father and son agreements"

(1.14) as "low" priority for training. A summary of responses did not seem to indicate an apparent difference of perceived training needs among the five experience groups. Respondents from the northwest, southwest, and southeast districts indicated a higher priority for training for "oil and gas management" while the 20 respondents from the northeast district indicated the lowest need for training in all seven topics.

For the general area of Agricultural Economics, data showed that agents overall felt they possessed an "average" level of competence (mean 1.87), utilized information from the areas "occasionally" (mean 1.67) and perceived they had a "medium" priority of need for training (mean 1.65).

Agricultural Engineering

Tables VII and VIII were formulated to summarize responses from 74 county agricultural agents regarding their perceived levels of competence, frequency of use, and priority for training for 11 specific topics associated with the area of Agricultural Engineering.

Data in Table VII show that agents perceived their level of competence response ranging from 1.61 for "irrigation systems" to 2.51 for "soil and water conservation." Data indicated agents also felt they possessed a higher level of competence in the areas of "animal housing and handling facilities" (mean response 2.46) and "forage harvesting and handling" (mean response 2.43). Comparison of data showed that agents in the southwest district perceived they possessed the highest level of competence for the topics of Agricultural Engineering. There was no apparent difference in the perceived competence possessed among experience groups.

TABLE VII

AGENTS' PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN SELECTED TOPICS OF AGRICULTURAL ENGINEERING

Topics	Distribution by Level of Competence										Mean Response N=74	Rank
	None		Below Average		Average		Above Average		Outstanding			
	N	%	N	%	N	%	N	%	N	%		
Crop Storage	0	0.0	11	14.9	49	66.2	14	18.9	0	0.0	2.04	8
Animal Housing & Handling Facilities	0	0.0	1	1.4	40	54.1	31	41.9	2	2.7	2.46	2
Farm Safety	1	1.4	7	9.5	43	58.1	21	28.4	2	2.7	2.22	4
Irrigation Systems	2	2.7	31	41.9	36	48.6	4	5.4	1	1.4	1.61	11
Soil & Water Conservation	0	0.0	2	2.7	34	45.9	36	48.7	2	2.7	2.51	1
Rural Water & Waste Disposal	3	4.1	24	32.4	33	44.6	13	17.6	1	1.4	1.80	10
Alternate Farm Fuels	1	1.4	25	33.8	32	43.2	16	21.6	0	0.0	1.85	9
Heating with Wood	1	1.4	14	18.9	34	45.9	23	31.1	2	2.7	2.15	7
Tractor & Machinery Management	0	0.0	9	12.2	42	56.8	22	29.7	1	1.4	2.20	5
Sprayer Calibration & Operation	1	1.4	12	16.2	36	48.7	22	29.7	3	4.1	2.19	6
Forage Harvesting & Handling	0	0.0	0	0.0	44	59.5	28	37.8	2	2.7	2.43	3

Topics	Distribution by Frequency of Use										Mean Response N=74	Rank
	Never		Seldom		Occasionally		Frequently		Constantly			
	N	%	N	%	N	%	N	%	N	%		
Crop Storage	0	0.0	24	32.4	41	55.4	9	12.2	0	0.0	1.80	5
Animal Housing & Handling Facilities	0	0.0	10	13.5	41	55.4	23	31.1	0	0.0	2.18	2
Farm Safety	5	6.8	39	52.7	26	35.1	4	5.4	0	0.0	1.39	11
Irrigation Systems	5	6.8	26	35.1	38	51.4	4	5.4	1	1.4	1.59	8
Soil & Water Conservation	1	1.4	14	18.9	43	58.1	16	21.6	0	0.0	2.00	4
Rural Water & Waste Disposal	7	9.5	33	44.6	30	40.5	4	5.4	0	0.0	1.42	9.5
Alternate Farm Fuels	4	5.4	38	51.4	29	39.2	3	4.1	0	0.0	1.42	9.5
Heating with Wood	3	4.1	32	43.2	29	39.2	10	13.5	0	0.0	1.62	7
Tractor & Machinery Management	1	1.4	23	31.1	42	56.8	8	10.8	0	0.0	1.77	6
Sprayer Calibration & Operation	1	1.4	11	14.9	47	63.5	15	20.3	0	0.0	2.03	3
Forage Harvesting & Handling	0	0.0	7	9.5	37	50.0	29	39.2	1	1.4	2.32	1

Topics	Distribution by Priority for Training										Mean Response N=74	Rank
	None		Low		Medium		High		Critical			
	N	%	N	%	N	%	N	%	N	%		
Crop Storage	4	5.4	28	37.8	36	48.7	6	8.1	0	0.0	1.59	6
Animal Housing & Handling Facilities	2	2.7	14	18.9	51	68.9	7	9.5	0	0.0	1.85	3
Farm Safety	10	13.5	39	52.7	22	29.7	3	4.1	0	0.0	1.24	11
Irrigation Systems	12	16.2	17	23.0	36	48.7	8	10.8	1	1.4	1.58	7
Soil & Water Conservation	7	9.5	22	29.7	38	51.4	7	9.5	0	0.0	1.61	5
Rural Water & Waste Disposal	7	9.5	43	58.1	21	28.4	3	4.1	0	0.0	1.27	10
Alternate Farm Fuels	6	8.1	30	40.5	28	37.8	10	13.5	0	0.0	1.57	8
Heating with Wood	9	12.2	37	50.0	24	32.4	4	5.4	0	0.0	1.31	9
Tractor & Machinery Management	2	2.7	21	28.4	41	55.4	10	13.5	0	0.0	1.80	4
Sprayer Calibration & Operation	0	0.0	18	24.3	33	44.6	22	29.7	1	1.4	2.08	2
Forage Harvesting & Handling	1	1.4	9	12.2	39	52.7	24	32.4	1	1.4	2.20	1

TABLE VIII

SUMMARY OF MEAN RESPONSES FOR SELECTED TOPICS OF AGRICULTURAL ENGINEERING BY DISTRICT AND EXPERIENCE GROUP

Topics	By District				By Years of Experience				
	NW (N=15)	SW (N=20)	NE (N=20)	SE (N=19)	0-5 (N=20)	6-10 (N=10)	11-15 (N=10)	16-20 (N=4)	21+ (N=30)
				Mean Levels of Competence					
Crop Storage	2.07	2.25	1.95	1.89	1.80	2.00	2.40	1.75	2.13
Animal Housing & Handling Facilities	2.33	2.65	2.45	2.37	2.35	2.40	2.50	2.25	2.57
Farm Safety	2.33	2.40	2.00	2.16	2.05	2.10	2.10	2.25	2.40
Irrigation Systems	1.67	1.70	1.55	1.53	1.55	1.90	1.90	1.75	1.43
Soil and Water Conservation	2.60	2.65	2.40	2.42	2.30	2.30	2.60	2.50	2.70
Rural Water & Waste Disposal	1.47	1.85	2.00	1.79	1.30	1.80	1.80	1.75	2.13
Alternate Farm Fuels	1.87	2.05	1.95	1.53	1.80	1.80	2.00	1.50	1.90
Heating with Wood	1.80	2.30	2.25	2.16	2.00	2.00	2.50	2.00	2.20
Tractor & Machinery Management	2.20	2.35	2.10	2.16	2.00	2.30	2.20	2.50	2.27
Sprayer Calibration & Operation	2.07	2.45	2.05	2.16	2.20	2.40	2.40	1.75	2.10
Forage Harvesting & Handling	2.20	2.70	2.40	2.37	2.30	2.50	2.50	2.25	2.50
				Mean Frequency of Use					
Crop Storage	1.73	2.00	1.80	1.63	1.55	1.80	2.20	2.00	1.80
Animal Housing & Handling Facilities	2.20	2.05	2.20	2.26	1.95	2.20	2.10	1.75	2.40
Farm Safety	1.80	1.45	1.25	1.16	1.45	1.50	1.20	1.25	1.40
Irrigation Systems	1.80	1.75	1.35	1.53	1.70	1.80	1.80	1.00	1.47
Soil and Water Conservation	2.00	2.05	2.05	1.89	2.00	1.90	2.00	2.00	2.03
Rural Water & Waste Disposal	1.27	1.35	1.55	1.47	1.15	1.60	1.20	1.50	1.60
Alternate Farm Fuels	1.67	1.50	1.35	1.21	1.35	1.70	1.50	1.00	1.40
Heating with Wood	1.33	1.40	2.05	1.63	1.35	1.80	1.50	1.50	1.80
Tractor & Machinery Management	1.87	1.80	1.55	1.89	1.75	2.10	1.40	1.75	1.80
Sprayer Calibration & Operation	1.87	2.05	2.10	2.05	2.15	2.00	2.40	2.00	1.83
Forage Harvesting & Handling	1.93	2.15	2.60	2.53	2.25	2.60	2.00	2.25	2.40
				Mean Priority for Training					
Crop Storage	1.73	1.70	1.60	1.37	1.75	1.80	1.70	1.75	1.37
Animal Housing & Handling Facilities	1.80	1.65	1.95	2.00	1.85	2.00	1.60	1.75	1.90
Farm Safety	1.40	1.35	.95	1.32	1.35	1.20	1.30	1.00	1.20
Irrigation Systems	1.73	1.90	1.00	1.74	2.05	1.60	1.80	1.00	1.27
Soil & Water Conservation	1.67	1.85	1.30	1.63	1.95	1.80	1.60	1.50	1.33
Rural Water & Disposal	1.13	1.25	1.30	1.37	1.40	1.60	.90	1.00	1.23
Alternate Farm Fuels	1.93	1.70	1.40	1.32	1.80	1.80	1.50	1.00	1.43
Heating with Wood	1.27	1.20	1.50	1.26	1.45	1.50	1.00	1.25	1.27
Tractor & Machinery Management	2.13	1.80	1.45	1.89	2.00	1.80	1.50	1.25	1.83
Sprayer Calibration & Operation	2.27	2.10	1.90	2.11	2.60	2.10	2.40	1.50	1.70
Forage Harvesting & Handling	2.13	2.05	2.45	2.16	2.40	2.20	2.00	2.25	2.13

Information from the topic of "forage harvesting and handling" was used most often by the agents. This was evidenced by a mean response of 2.32, with 40.6 percent of the respondents indicating they used this topic at least "frequently." "Animal housing and handling facilities" and "sprayer calibration and operation" were also used often by respondents. Agents in the northeast and southeast districts reported they used information regarding "forage harvesting and handling" more frequently than any other topic. The topics "Farm safety," "Rural water and waste disposal," and "Alternate farm fuels" were "seldom" used by the agents.

The three topics used most frequently were the topics in which agents indicated the highest need for training. Although no topic received a need for training rating higher than "medium," agents indicated their highest priority for training in "forage harvesting and handling," "sprayer calibration and operation," and "animal housing and handling facilities." Agents from the southwest district indicated a need for training in "irrigation systems" while agents in the northwest district felt additional training was needed in "tractor and machinery management." Agents in the 0-5 year experience group perceived their overall need for training for the 11 topics to be greater than was true for the other experience groups.

The 74 county agricultural agents perceived their overall level of competence as being "average," the frequency of use "occasionally," and their priority for training to be "medium" for the general area of Agricultural Engineering as used in this study.

Agronomy

Tables IX and X contain findings regarding agents' perceived levels

TABLE IX

AGENTS' PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN SELECTED TOPICS OF AGRONOMY

Topics	Distribution by Level of Competence: None N	None %	Below Average N	Below Average %	Average N	Average %	Above Average N	Above Average %	Outstanding N	Outstanding %	Mean Response N=74	Rank
Soil, Water & Forage Testing & Interpret.	0	0.0	1	1.4	17	23.0	49	66.2	7	9.5	2.84	1
Small Grain Production	0	0.0	1	1.4	27	36.5	43	58.1	3	4.1	2.65	5
Sorghum Production	0	0.0	5	6.8	41	55.4	27	36.5	1	1.4	2.32	8
Peanut Production	12	16.2	27	36.5	23	31.1	11	14.9	1	1.4	1.49	12
Soybean Production	6	8.1	17	23.0	35	47.3	12	16.2	4	5.4	1.88	10
Cotton Production	13	17.6	24	32.4	23	31.1	11	14.9	3	4.1	1.55	11
Soil Management & Conservation	0	0.0	2	2.7	39	52.7	29	39.2	4	5.4	2.47	6
Weed & Brush Control	0	0.0	1	1.4	23	31.1	46	62.2	4	5.4	2.72	3
Soil Fertility & Management	0	0.0	0	0.0	21	28.4	47	63.5	6	8.1	2.80	2
Pasture Management & Forage Production	0	0.0	0	0.0	27	36.5	42	56.8	5	6.8	2.70	4
Turf Management	1	1.4	7	9.5	34	45.9	26	35.1	6	8.1	2.39	7
Reduced Tillage & Energy Conservation	0	0.0	15	20.3	36	48.7	22	29.7	1	1.4	2.12	9

Topics	Distribution by Frequency of Use: Never N	Never %	Seldom N	Seldom %	Occasionally N	Occasionally %	Frequently N	Frequently %	Constantly N	Constantly %	Mean Response N=74	Rank
Soil, Water & Forage Testing & Interpret.	0	0.0	0	0.0	7	9.5	45	60.8	22	29.7	3.20	1
Small Grain Production	0	0.0	3	4.1	16	21.6	44	59.4	11	14.9	2.85	5
Sorghum Production	1	1.4	6	8.1	43	58.1	20	27.0	4	5.4	2.27	7
Peanut Production	23	31.0	24	32.4	15	20.1	11	14.9	1	1.4	1.23	11
Soybean Production	11	14.9	23	31.1	24	32.4	12	16.2	4	5.4	1.66	10
Cotton Production	40	54.1	10	13.5	12	16.2	10	13.5	2	2.7	0.97	12
Soil Management & Conservation	0	0.0	11	14.9	42	56.8	18	24.3	3	4.1	2.18	9
Weed & Brush Control	0	0.0	2	2.7	8	10.8	53	71.6	11	14.9	2.99	2.5
Soil Fertility & Management	0	0.0	1	1.4	13	17.6	46	62.2	14	18.9	2.99	2.5
Pasture Management & Forage Production	0	0.0	1	1.4	19	25.7	41	55.4	13	17.6	2.89	4
Turf Management	1	1.4	6	8.1	26	35.1	30	40.5	11	14.9	2.59	6
Reduced Tillage & Energy Conservation	1	1.4	9	12.1	37	50.0	26	35.1	1	1.4	2.23	8

Topics	Distribution by Priority for Training: None N	None %	Low N	Low %	Medium N	Medium %	High N	High %	Critical N	Critical %	Mean Response N=74	Rank
Soil, Water & Forage Testing & Interpret.	0	0.0	10	13.5	35	47.3	27	36.5	2	2.7	2.28	5
Small Grain Production	0	0.0	11	14.9	34	45.9	28	37.8	1	1.4	2.26	6
Sorghum Production	0	0.0	20	27.1	42	56.8	11	14.9	1	1.4	1.91	8
Peanut Production	23	31.1	26	35.1	18	24.3	7	9.5	6	6.0	1.12	11
Soybean Production	12	16.2	26	35.1	26	35.1	8	10.8	2	2.7	1.49	10
Cotton Production	34	45.9	17	23.0	12	16.2	9	12.2	2	2.7	1.03	12
Soil Management & Conservation	2	2.7	20	27.0	42	56.8	9	12.2	1	1.4	1.82	9
Weed & Brush Control	0	0.0	6	8.1	21	28.4	40	54.1	7	9.5	2.65	1
Soil Fertility & Management	0	0.0	9	12.2	30	40.5	33	44.6	2	2.7	2.38	3
Pasture Management & Forage Production	1	1.4	3	4.1	34	45.9	30	40.5	6	8.1	2.50	2
Turf Management	1	1.4	14	18.9	34	45.9	22	29.7	3	4.1	2.16	7
Reduced Tillage & Energy Conservation	1	1.4	10	13.5	30	40.5	31	41.9	2	2.7	2.31	4

TABLE X

SUMMARY OF MEAN RESPONSES FOR SELECTED TOPICS OF AGRONOMY BY DISTRICT AND EXPERIENCE GROUP

Topics	By District				By Years of Experience				
	NW (N=15)	SW (N=20)	NE (N=20)	SE (N=19)	0-5 (N=20)	6-10 (N=10)	11-15 (N=10)	16-20 (N=4)	21+ (N=30)
				Mean Levels of Competence					
Soil, Water & Forage Testing Interpret	2.67	3.10	2.70	2.84	2.55	2.80	3.00	2.25	3.07
Small Grain Production	2.93	2.85	2.35	2.53	2.45	2.50	2.70	2.75	2.80
Sorghum Production	2.33	2.50	2.15	2.32	1.90	2.30	2.70	2.00	2.53
Peanut Production	.87	1.70	1.25	2.00	1.40	1.70	1.90	1.50	1.33
Soybean Production	1.00	1.75	2.40	2.16	1.45	1.70	2.50	2.25	1.97
Cotton Production	1.00	2.45	1.10	1.53	1.40	1.30	2.00	1.75	1.57
Soil Management & Conservation	2.60	2.55	2.35	2.42	2.35	2.40	2.60	2.25	2.57
Weed & Brush Control	2.53	2.80	2.85	2.63	2.40	2.80	2.80	2.75	2.87
Soil Fertility & Management	2.73	2.95	2.70	2.79	2.50	2.70	3.00	2.50	3.00
Pasture Management & Forage Production	2.47	2.85	2.65	2.79	2.50	2.80	2.80	2.50	2.80
Turf Management	2.27	2.70	2.40	2.16	1.95	2.30	2.80	2.00	2.63
Reduced Tillage & Energy Conservation	2.27	2.15	2.05	2.05	1.75	2.20	2.30	1.25	2.40
				Mean Frequency of Use					
Soil, Water & Forage Testing & Interpret	3.20	3.25	3.15	3.21	3.30	3.20	3.40	3.00	3.10
Small Grain Production	3.33	3.05	2.60	2.53	3.05	2.80	3.10	2.75	2.67
Sorghum Production	2.47	2.30	2.15	2.21	2.20	2.30	2.40	2.00	2.30
Peanut Production	.27	1.50	.90	2.05	1.05	1.50	1.70	1.00	1.13
Soybean Production	.67	1.15	2.55	2.05	1.50	1.80	1.50	2.25	1.70
Cotton Production	.33	2.65	.20	.53	.95	.60	2.10	.75	.77
Soil Management & Conservation	2.13	2.40	2.10	2.05	2.30	2.10	2.50	2.00	2.03
Weed & Brush Control	2.93	2.85	3.15	3.00	2.90	2.80	2.90	2.50	3.20
Soil Fertility & Management	2.73	3.10	3.05	3.00	3.05	2.90	3.30	2.75	2.90
Pasture Management & Forage Production	2.67	2.55	3.10	3.21	2.85	3.00	2.40	2.75	3.07
Turf Management	2.80	2.60	2.55	2.47	2.20	2.80	2.80	2.00	2.80
Reduced Tillage & Energy Conservation	2.47	2.20	2.35	1.95	2.25	2.10	2.40	2.00	2.23
				Mean Priority for Training					
Soil, Water & Forage Testing & Interpret	2.33	2.35	2.20	2.26	2.55	2.10	2.50	2.50	2.07
Small Grain Production	2.47	2.50	2.10	2.00	2.65	2.20	2.40	2.50	1.93
Sorghum Production	2.20	1.80	1.80	1.89	2.15	1.90	1.90	1.75	1.77
Peanut Production	.40	1.45	.70	1.79	1.20	1.70	1.30	.50	.90
Soybean Production	.73	.95	2.15	1.95	1.55	1.60	1.20	2.00	1.43
Cotton Production	.53	2.50	.25	.68	1.15	.90	1.90	1.00	.70
Soil Management & Conservation	2.00	1.85	1.80	1.68	2.20	1.80	1.80	1.75	1.60
Weed & Brush Control	2.60	2.45	2.80	2.74	2.80	2.60	2.50	2.50	2.63
Soil Fertility & Management	2.53	2.20	2.40	2.42	2.70	2.30	2.50	2.75	2.10
Pasture Management & Forage Production	2.27	2.15	2.85	2.68	2.60	2.60	2.00	2.75	2.53
Turf Management	2.40	1.80	2.30	2.21	2.30	2.20	1.90	2.25	2.13
Reduced Tillage & Energy Conservation	2.47	2.20	2.50	2.11	2.55	2.30	2.50	2.00	2.13

of competence, frequency of use, and priority for training for 12 specific topics of Agronomy.

Analysis of data in Table IX clearly indicates that agents perceive their level of competence to be "above average" for: "soil, water, and forage testing" (mean response of 2.84), "soil fertility and management" (mean response of 2.80), "weed and brush control" (mean response of 2.72), "pasture management and forage production" (mean response of 2.65), and "small grain production" (mean response of 2.65). Topics with the widest dispersion of responses as well as lowest mean responses were: "soybean production," "cotton production," and "peanut production." Major differences among districts regarding agents perceived competencies were noted for these three topics. Data in Table X show the perceived differences for these three specific topics follow a similar pattern for frequency of use and priority for training. These findings were supported by data found in the 1980 Oklahoma Agricultural statistics report which points out: (1) the top 10 peanut production counties are in the southwest and southeast districts; (2) the top 10 soybean production counties are located in the eastern half of Oklahoma; and (3) 18 of the top 20 cotton production counties are located in the southwest district. Although agents mean training response placed these three topics as "low" priority for training, it should be noted that perceived training needs in these topics was considered "high" or "critical" by agents in certain districts.

Examination of the data in Table IX shows that "soil, water, and forage testing" was used at least "frequently" by over 90 percent of the population. "Weed and brush control" ranked second with 86.5 percent of the agents using it at least "frequently." "Pasture management and

forage production," "small grain production," and "turf management" were were also topics for which agents indicated an overall mean frequency of use as "frequently."

Agents indicated their highest priority for additional training for the topic of "weed and brush control" as determined by an overall mean training response of 2.65. "Pasture management and forage production" ranked second with a "high" priority for training as indicated by a mean training response of 2.50. Data disclosed that agents in the northeast and southeast districts perceived a greater need for training for this topic than did agents in the other districts. Summary of responses identified four other topics which at least 35 percent of the population perceived as a "high" priority for additional training. These topics were: "soil fertility and management," "reduced tillage and energy conservation," "soil, water, and forage testing," and "small grain production."

For the 12 specific topics for the area of Agronomy, respondents perceived their overall mean lelve of competence as being "average." They felt their overall frequency of use to be "occasionally," and their overall priority for additional training for the general area of Agronomy was "medium."

Animal Science

Tables XI and XII were developed to present a summary of agents' responses concerning their perceived levels of competence, frequency of use, and priority for training for eight specific topics of Animal Science.

According to the data presented in Table XI, agents indicated they possessed "above average" competence for four of the specific animal science topics. Agents were most competent in "animal selection" with 58.2

TABLE XI

AGENTS' PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN SELECTED TOPICS OF ANIMAL SCIENCE

Topics	Distribution by Level of Competence										Mean Response N=74	Rank
	None		Below Average		Average		Above Average		Outstanding			
	N	%	N	%	N	%	N	%	N	%		
Animal Selection	0	0.0	0	0.0	31	41.9	36	48.7	7	9.5	2.68	1
Animal Reproduction	0	0.0	1	1.4	38	51.4	32	43.2	3	4.1	2.50	4
Animal Nutrition	0	0.0	5	6.8	33	44.6	31	41.9	5	6.8	2.49	5
Livestock Management	0	0.0	0	0.0	33	44.6	38	51.4	3	4.1	2.59	2
Animal Health, Disease Prevention & Parasite Control	0	0.0	4	5.4	36	48.7	33	44.6	1	1.4	2.42	6
Meat Animal & Carcass Evaluation	1	1.4	10	13.5	35	47.3	25	33.8	3	4.1	2.26	8
Pasture & Forage Utilization	0	0.0	2	2.7	30	40.5	39	52.7	3	4.1	2.58	3
Livestock Skills (Fitting & Showing)	1	1.4	11	14.9	26	35.1	32	43.2	4	5.4	2.36	7

Topics	Distribution by Frequency of Use										Mean Response N=74	Rank
	Never		Seldom		Occasionally		Frequently		Constantly			
	N	%	N	%	N	%	N	%	N	%		
Animal Selection	0	0.0	3	4.1	34	45.9	31	41.9	6	8.1	2.54	5
Animal Reproduction	0	0.0	9	12.2	45	60.8	18	24.3	2	2.7	2.18	7
Animal Nutrition	0	0.0	3	4.1	27	36.5	39	52.7	5	6.8	2.62	2.5
Livestock Management	0	0.0	3	4.1	23	31.1	40	54.1	8	10.8	2.72	1
Animal Health, Disease Prevention & Parasite Control	0	0.0	5	6.8	28	37.8	33	44.6	8	10.8	2.59	4
Meat Animal & Carcass Evaluation	2	2.7	32	43.2	29	39.2	9	12.2	2	2.7	1.69	8
Pasture & Forage Utilization	0	0.0	6	8.1	23	31.1	38	51.4	7	9.5	2.62	2.5
Livestock Skills (Fitting & Showing)	2	2.7	15	20.3	22	29.7	30	40.5	5	6.8	2.28	6

Topics	Distribution by Priority Training										Mean Response N=74	Rank
	None		Low		Medium		High		Critical			
	N	%	N	%	N	%	N	%	N	%		
Animal Selection	2	2.7	12	16.2	44	59.5	15	20.3	1	1.4	2.01	5
Animal Reproduction	1	1.4	15	20.3	43	58.1	13	17.6	2	2.7	2.00	6
Animal Nutrition	1	1.4	5	6.8	35	47.3	30	40.5	3	4.1	2.39	3.5
Livestock Management	1	1.4	5	6.8	30	40.5	35	47.3	3	4.1	2.46	1
Animal Health, Disease Prevention & Parasite Control	0	0.0	4	5.4	36	48.7	32	43.2	2	2.7	2.43	2
Meat Animal & Carcass Evaluation	3	4.1	33	44.6	28	37.8	9	12.2	1	1.4	1.62	8
Pasture & Forage Utilization	1	1.4	11	14.9	25	33.8	32	43.2	5	6.8	2.39	3.5
Livestock Skills (Fitting & Showing)	10	13.5	19	25.7	29	39.2	13	17.6	3	4.1	1.73	7

TABLE XII

SUMMARY OF MEAN RESPONSES FOR SELECTED TOPICS OF ANIMAL SCIENCE BY DISTRICT AND EXPERIENCE GROUP

Topics	By District				By Years of Experience				
	NW (N=15)	SW (N=20)	NE (N=20)	SE (N=19)	0-5 (N=20)	6-10 (N=10)	11-15 (N=10)	16-20 (N=4)	21+ (N-30)
				Mean Levels of Competence					
Animal Selection	2.67	2.80	2.60	2.63	2.55	2.60	2.60	2.75	2.80
Animal Reproduction	2.40	2.55	2.50	2.53	2.45	2.30	2.50	2.50	2.60
Animal Nutrition	2.33	2.60	2.45	2.53	2.30	2.40	2.60	2.50	2.60
Livestock Management	2.53	2.70	2.50	2.63	2.45	2.40	2.60	2.50	2.77
Animal Health, Disease Prevention & Parasite Control	2.27	2.60	2.30	2.47	2.35	2.30	2.30	2.00	2.60
Meat Animal & Carcass Evaluation	2.13	2.25	2.25	2.37	2.10	2.20	2.20	2.00	2.43
Pasture & Forage Utilization	2.07	2.75	2.55	2.84	2.30	2.70	3.00	2.25	2.63
Livestock Skills (Fitting & Showing)	2.33	2.50	2.35	2.26	2.50	2.40	2.00	2.25	2.40
				Mean Frequency of Use					
Animal Selection	2.47	2.70	2.45	2.53	2.55	2.60	2.40	2.25	2.60
Animal Reproduction	1.93	2.40	2.20	2.11	2.00	2.20	2.10	2.25	2.30
Animal Nutrition	2.27	2.80	2.65	2.68	2.40	2.80	2.90	2.50	2.63
Livestock Management	2.33	2.75	2.70	3.00	2.50	2.70	2.50	2.75	2.93
Animal Health, Disease Prevention & Parasite Control	2.20	2.60	2.80	2.68	2.50	2.60	2.30	2.50	2.77
Meat Animal & Carcass Evaluation	1.73	1.65	1.65	1.74	1.50	1.90	1.40	1.50	1.87
Pasture & Forage Utilization	2.00	2.45	3.00	2.89	2.30	3.10	2.50	2.75	2.70
Livestock Skills (Fitting & Showing)	2.60	2.40	1.95	2.26	2.55	2.10	2.10	1.75	2.30
				Mean Priority for Training					
Animal Selection	1.87	2.00	2.20	1.95	1.95	2.10	2.00	2.00	2.03
Animal Reproduction	1.93	2.00	2.10	1.95	2.10	2.30	1.70	2.00	1.93
Animal Nutrition	2.20	2.40	2.50	2.42	2.40	2.50	2.70	2.25	2.27
Livestock Management	2.33	2.30	2.45	2.74	2.40	2.60	2.10	2.75	2.53
Animal Health, Disease Prevention & Parasite Control	2.40	2.30	2.45	2.58	2.55	2.70	1.90	2.00	2.50
Meat Animal & Carcass Evaluation	1.93	1.45	1.55	1.63	1.60	1.70	1.50	1.75	1.63
Pasture & Forage Utilization	2.13	2.00	2.80	2.58	2.25	2.80	2.00	3.00	2.40
Livestock Skills (Fitting & Showing)	1.80	1.65	1.40	2.11	1.95	1.90	1.60	.75	1.20

percent of the respondents in the "above average" and "outstanding" categories and a mean level of competence of 2.68. "Livestock management" and "pasture and forage utilization" were ranked second and third with agents indicating their level of competence as "above average." Findings show that agents possessed a lower level of competence for "livestock skills" and "meat animal and carcass evaluation" with mean competence responses of 2.36 and 2.26, respectively. Data in Table XII show few apparent differences of levels of competence possessed among districts and experience groups.

The frequency of use mean responses illustrated in Table XI ranges from "frequently" for "livestock management" (2.72), to "occasionally" for "meat animal and carcass evaluation" (1.69). Responses indicated that five of the eight topics were used "frequently" by agents in their present assignments. In general, agents in the northwest district used animal science information less frequently than did agents in other districts. No observable differences were apparent when frequency of use was compared by experience group.

An analysis of mean training responses disclosed that agents perceive each of the specific topics as a "medium" priority for additional training. It was observed that mean training responses ranged from 2.46 (medium) for "livestock management" to 1.62 (medium) for "meat animal and carcass evaluation." Agents in the southeast district perceived a "high" need for training in "livestock management" while agents in both the northeast and southeast districts identified "pasture and forage utilization" as a "high" priority for additional training.

Data did not show years of experience to be a contributing factor to

agents' indications of priority for additional training for the general area of animal science.

The 74 agents in this study perceived their levels of competence to be "average," frequency of use "occasionally," and priority of training "medium" for the overall area of Animal Science as presented in this study.

Entomology

A summary of agents' responses concerning their levels of competence, frequency of use, and priority for additional training for seven specific topics of Entomology is provided in Tables XIII and XIV.

Analysis of data show agents perceived level of competence to be highest for "animal insects," with all 74 respondents indicating they possessed at least "average" competence. The topic for which agents possessed the second highest level of competence was "proper use of insecticides and miticides" and the lowest was "turf insects," with a mean level of competence of 2.24 or "average."

"Horticulture insects" was the topic most frequently used, with 90.6 percent of the agents using this topic "frequently" or "constantly." Sixteen (21.6%) of the respondents indicated they "constantly" used the topic "proper use of insecticides and miticides." Data show "rangeland and pasture insects" as the topic with the lowest frequency of use and the only topic not "frequently" used by agents. Agents in the northwest district indicated they used "horticulture insects" less than did the agents in the other districts. Information from "field crop insects" was used most often by agents in the southwest district.

TABLE XIII

AGENTS' PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN SELECTED TOPICS OF ENTOMOLOGY

Topics	Distribution by Level of Competence										Mean Response N=74	Rank
	None		Below Average		Average		Above Average		Outstanding			
	N	%	N	%	N	%	N	%	N	%		
I.D. & Control of Turf Insects	0	0.0	8	10.8	42	56.7	22	29.7	2	2.7	2.24	7
I.D. & Control of Horticultural Insects	0	0.0	1	5.4	33	44.6	34	45.9	3	4.1	2.49	5
I.D. & Control of Field Crop Insects	0	0.0	3	4.1	37	50.0	27	36.5	7	9.5	2.51	4
I.D. & Control of Rangeland & Pasture Insects	0	0.0	6	8.1	35	47.3	28	37.8	5	6.8	2.43	6
I.D. & Control of Household Pests	0	0.0	4	5.4	31	41.9	32	43.2	7	9.5	2.57	3
I.D. & Control of Animal Insects	0	0.0	0	0.0	32	43.2	36	48.7	6	8.1	2.65	1
Proper Use of Insecticides & Miticides	0	0.0	1	1.4	34	45.9	30	40.5	9	12.2	2.64	2

Topics	Distribution by Frequency of Use										Mean Response N=74	Rank
	Never		Seldom		Occasionally		Frequently		Constantly			
	N	%	N	%	N	%	N	%	N	%		
I.D. & Control of Turf Insects	0	0.0	6	8.1	31	41.9	31	41.9	6	8.1	2.50	6
I.D. & Control of Horticultural Insects	0	0.0	1	1.4	6	8.1	52	70.3	15	20.3	3.09	1
I.D. & Control of Field Crop Insects	0	0.0	2	2.7	15	20.3	49	66.2	8	10.8	2.85	3.5
I.D. & Control of Rangeland & Pasture Insects	0	0.0	4	5.4	41	55.4	26	35.1	3	4.1	2.38	7
I.D. & Control of Household Pests	0	0.0	2	2.7	18	24.3	43	58.1	11	14.9	2.85	3.5
I.D. & Control of Animal Insects	0	0.0	3	4.1	30	40.5	36	48.7	5	6.8	2.58	5
Proper Use of Insecticides & Miticides	0	0.0	1	1.4	15	20.3	42	56.8	16	21.6	2.99	2

Topics	Distribution by Priority for Training										Mean Response N=74	Rank
	None		Low		Medium		High		Critical			
	N	%	N	%	N	%	N	%	N	%		
I.D. & Control of Turf Insects	1	1.4	7	9.5	46	62.2	18	24.3	2	2.7	2.18	6
I.D. & Control of Horticultural Insects	0	0.0	5	6.8	26	35.1	40	54.1	3	4.1	2.55	1
I.D. & Control of Field Crop Insects	0	0.0	5	6.8	29	39.2	38	51.4	2	2.7	2.50	2
I.D. & Control of Rangeland & Pasture Insects	0	0.0	12	16.2	41	55.4	19	25.7	2	2.7	2.15	7
I.D. & Control of Household Pests	0	0.0	9	12.2	39	52.7	25	33.8	1	1.4	2.24	5
I.D. & Control of Animal Insects	0	0.0	6	8.1	38	51.4	28	37.8	2	2.7	2.35	3
Proper Use of Insecticides & Miticides	1	1.4	8	10.8	33	44.6	29	39.2	3	4.1	2.34	4

TABLE XIV

SUMMARY OF MEAN RESPONSES FOR SELECTED TOPICS OF ENTOMOLOGY BY DISTRICT AND EXPERIENCE GROUP

Topics	By District				By Years of Experience				
	NW (N=15)	SW (N=20)	NE (N=20)	SE (N=19)	0-5 (N=20)	6-10 (N=10)	11-15 (N=10)	16-20 (N=4)	21+ (N=30)
				Mean Levels of Competence					
I.D. & Control of Turf Insects	2.53	2.30	2.05	2.16	2.15	1.90	2.30	1.75	2.47
I.D. & Control of Horticultural Insects	2.47	2.55	2.40	2.53	2.35	2.20	2.60	2.00	2.70
I.D. & Control of Field Crop Insects	2.73	2.60	2.45	2.32	2.40	2.00	2.50	2.25	2.80
I.D. & Control of Rangeland & Pasture Insects	2.60	2.50	2.30	2.37	2.45	2.00	2.20	1.75	2.73
I.D. & Control of Household Pests	2.60	2.65	2.45	2.58	2.50	2.20	2.40	2.25	2.83
I.D. & Control of Animal Insects	2.73	2.70	2.60	2.58	2.55	2.40	2.60	2.25	2.87
Proper Use of Insecticides & Miticides	2.67	2.70	2.45	2.74	2.35	2.30	2.60	2.50	2.97
				Mean Frequency of Use					
I.D. & Control of Turf Insects	2.53	2.60	2.45	2.42	2.45	2.60	2.40	1.75	2.63
I.D. & Control of Horticultural Insects	2.67	3.10	3.20	3.32	2.95	3.10	3.20	2.75	3.20
I.D. & Control of Field Crop Insects	2.87	3.10	2.85	2.58	2.90	2.60	3.00	2.50	2.90
I.D. & Control of Rangeland & Pasture Insects	2.40	2.25	2.40	2.47	2.45	2.40	2.00	1.75	2.53
I.D. & Control of Household Pests	2.47	2.90	2.95	3.00	2.90	2.70	2.80	2.25	2.97
I.D. & Control of Animal Insects	2.40	2.55	2.70	2.63	2.50	2.50	2.30	2.50	2.77
Proper Use of Insecticides & Miticides	2.73	3.05	3.10	3.00	2.95	2.80	3.10	2.50	3.10
				Mean Priority for Training					
I.D. & Control of Truf Insects	2.27	2.00	2.10	2.37	2.45	2.20	2.00	2.00	2.07
I.D. & Control of Horticultural Insects	2.27	2.65	2.50	2.74	2.80	2.70	2.50	2.50	2.37
I.D. & Control of Field Crop Insects	2.47	2.60	2.45	2.47	2.85	2.60	2.40	2.75	2.23
I.D. & Control of Rangeland & Pasture Insects	2.27	2.05	2.05	2.26	2.55	2.40	1.90	1.75	1.93
I.D. & Control of Household Pests	2.20	2.25	2.10	2.42	2.45	2.40	2.20	2.00	2.10
I.D. & Control of Animal Insects	2.33	2.35	2.30	2.42	2.70	2.40	2.10	2.25	2.20
Proper Use of Insecticides & Miticides	2.27	2.35	2.35	2.37	2.80	2.40	2.20	1.75	2.13

Two topics for which agents indicated a "high" priority for additional training were "horticulture insects" (2.55) and "field crop insects" (2.50). Agents perceived a "medium" priority for training for each of the other specific topics, with the lowest perceived training need being "rangeland and pasture insects" represented by a mean response of 2.15.

Agents in the southwest and southeast districts indicated "horticulture insects" as a "high" priority for additional training, while "field crop insects" was a "high" priority for additional training for agents only in the southwest district. The agents in the 0-5 year experience group expressed a higher need for additional training for all seven specific topics of entomology.

For the overall area of Entomology, as included in this study, agents perceived their level of competence as "above average," frequency of use to be "frequently," and priority for additional training to be "medium."

Forestry and Wildlife

Data presented in Tables XV and XVI summarize agents' responses regarding their perceived levels of competence, frequency of use, and priority for additional training for seven specific topics within the general area of Forestry and Wildlife.

A summary of responses shows that agents felt most competent in "fish and pond management," with a mean competence response of 2.15 or "average." "Marketing forest products" ranked last with 66.2 percent of of the agents perceiving themselves as possessing less than average competence. Agents in the northeast and southeast districts perceived themselves as being more competent in the topics of "forestry management,"

TABLE XV

AGENTS' PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN SELECTED TOPICS OF FORESTRY AND WILDLIFE

Topics	Distribution by Level of Competence. None N	None %	Below Average N	Below Average %	Average N	Average %	Above Average N	Above Average %	Outstanding N	Outstanding %	Mean Response N=74	Rank
Forestry Management	9	12.2	32	43.2	25	33.8	7	9.5	1	1.4	1.45	6
Farm Windbreaks	3	4.1	23	31.1	38	51.4	10	13.5	0	0.0	1.74	5
Marketing Forest Products	12	16.2	37	50.0	19	25.7	6	8.1	0	0.0	1.26	7
Wood Selection for Heating	3	4.1	20	27.0	34	45.9	14	18.9	3	4.1	1.92	4
Wildlife Conservation	3	4.1	11	14.9	41	55.4	16	21.6	3	4.1	2.07	2
Animal & Bird Control	3	4.1	11	14.9	43	58.1	16	21.6	1	1.4	2.01	3
Fish & Pond Management	1	1.4	10	13.5	41	55.4	21	28.4	1	1.4	2.15	1

Topics	Distribution by Frequency of Use Never N	Never %	Seldom N	Seldom %	Occasionally N	Occasionally %	Frequently N	Frequently %	Constantly N	Constantly %	Mean Response N=74	Rank
Forestry Mangement	23	31.1	37	50.0	11	14.9	3	4.1	0	0.0	.92	6.5
Farm Windbreaks	9	12.2	40	54.1	20	27.0	5	6.8	0	0.0	1.28	5
Marketing Forest Products	22	29.7	39	52.7	10	13.5	3	4.1	0	0.0	.92	6.5
Wood Selection for Heating	8	10.8	30	40.5	31	41.9	5	6.8	0	0.0	1.45	4
Wildlife Conservation	4	5.4	33	44.6	32	43.2	5	6.8	0	0.0	1.51	3
Animal & Bird Control	4	5.4	19	25.7	38	51.4	11	14.9	2	2.7	1.84	2
Fish & Pond Management	0	0.0	13	17.6	36	48.7	25	33.8	0	0.0	2.16	1

Topics	Distribution by Priority for Training None N	None %	Low N	Low %	Medium N	Medium %	High N	High %	Critical N	Critical %	Mean Response N=74	Rank
Forestry Management	19	25.7	36	48.7	18	24.3	1	1.4	0	0.0	1.01	7
Farm Windbreaks	13	17.6	33	44.6	23	31.1	5	6.8	0	0.0	1.27	4
Marketing Forest Products	17	23.0	41	55.4	13	17.6	3	4.1	0	0.0	1.03	6
Wood Selection for Heating	8	10.8	43	58.1	19	25.7	4	5.4	0	0.0	1.26	5
Wildlife Conservation	7	9.5	38	51.4	26	35.1	3	4.1	0	0.0	1.34	3
Animal & Bird Control	4	5.4	20	27.0	40	54.1	10	13.5	0	0.0	1.76	2
Fish & Pond Management	1	1.4	16	21.6	34	45.9	22	29.7	1	1.4	2.08	1

TABLE XVI

SUMMARY OF MEAN RESPONSES FOR SELECTED TOPICS OF FORESTRY AND WILDLIFE BY DISTRICT AND EXPERIENCE GROUP

Topics	By District				By Years of Experience				
	NW (N=15)	SW (N=20)	NE (N=20)	SE (N=19)	0-5 (N=20)	6-10 (N=10)	11-15 (N=10)	16-20 (N=4)	21+ (N=30)
				Mean Levels of Competence					
Forestry Management	1.13	1.30	1.55	1.74	1.25	1.50	1.50	1.25	1.57
Farm Windbreaks	1.87	1.90	1.55	1.68	1.65	1.60	1.80	2.00	1.80
Marketing Forest Products	.87	1.10	1.40	1.58	.90	1.30	1.20	1.00	1.53
Wood Selection for Heating	1.47	1.75	2.10	2.26	1.75	1.90	1.90	1.50	2.10
Wildlife Conservation	1.80	2.20	1.90	2.32	1.90	2.00	2.30	1.50	2.20
Animal & Bird Control	1.93	2.10	2.00	2.00	1.75	2.00	2.40	1.50	2.13
Fish & Pond Management	2.00	2.20	2.15	2.21	1.90	2.40	2.40	1.50	2.23
				Mean Frequency of Use					
Forestry Management	.40	.70	1.25	1.21	.75	1.00	.80	.75	1.07
Farm Windbreaks	1.80	1.60	1.00	.84	1.25	1.10	1.60	1.00	1.30
Marketing Forest Products	.53	.75	1.25	1.05	.55	1.20	.90	.75	1.10
Wood Selection for Heating	1.33	1.00	1.80	1.63	1.25	1.80	1.10	1.25	1.60
Wildlife Conservation	1.60	1.50	1.50	1.47	1.45	1.40	1.50	1.00	1.67
Animal & Bird Control	1.67	1.90	1.90	1.84	1.45	1.70	2.20	1.75	2.03
Fish & Pond Management	1.53	2.00	2.45	2.53	1.90	1.90	2.30	2.50	2.33
				Mean Priority for Training					
Forestry Management	.47	.85	1.45	1.16	1.00	1.00	1.00	1.00	1.03
Farm Windbreaks	1.93	1.25	1.25	.79	1.25	1.20	1.50	1.00	1.27
Marketing Forest Products	.60	.80	1.40	1.21	.90	1.20	.90	.75	1.13
Wood Selection for Heating	1.27	.95	1.55	1.26	1.10	1.50	1.00	.75	1.43
Wildlife Conservation	1.60	1.15	1.45	1.21	1.25	1.40	1.30	.75	1.47
Animal & Bird Control	1.87	1.70	1.85	1.63	1.40	1.80	2.10	1.75	1.87
Fish & Pond Management	1.87	1.80	2.25	2.37	1.80	1.90	2.30	2.50	2.20

"marketing forest products," and "wood selection for heating" than did agents in the other districts.

The topic "fish and pond management" was used most often with 82.5 percent of the agents indicating they used it at least "occasionally" and a mean response of 2.16. Data ranked "animal and bird control" and "wildlife conservation" second and third in frequency of use. Sixty-one (82.4%) of the agents indicated they "seldom" or "never" used information regarding "marketing forest products" while 81.1 percent indicated they "seldom" or "never" used "forestry management" information. Agents in the southwest and northwest districts indicated they "occasionally" used information on "farm windbreaks," while agents in the southeast district reported "frequent" use of "fish and pond management" information.

A summary of responses indicate that agents perceived a "low" priority for additional training for all topics except "animal and bird control" and "fish and pond management." Agents perceived additional training for these two topics to be of "medium" priority. Agents in the northwest district indicated a greater priority for training in "farm windbreaks" and "wildlife conservation" than was true for agents in the other districts. The agents' years of experience did not seem to be a contributing factor to their level of competence, frequency of use, or priority for additional training in the general area of Forestry and Wildlife.

For the general area of Forestry and Wildlife, as used in this study, the 74 county agricultural agents indicated they possessed an "average" (1.80) level of competence. The agents felt they use information from this area "seldom" (1.44) and considered it as a "low" (1.39) priority for additional training.

Horticulture

County Extension agricultural agents' responses concerning their perceived levels of competence, frequency of use, and priority for training in the general area of Horticulture are summarized in Tables XVII and XVIII.

An analysis of responses shows that respondents perceived themselves as possessing competence in all seven topics of horticulture. Forty-seven (63.5%) of the agents possessed "above average" or "outstanding" competence in "home vegetable gardening." Agents also indicated they possessed "above average" competence for "soil fertility for horticultural crops" (2.53), "identification of horticultural plants" (2.51), and "care and maintenance of fruit trees" (2.50). Agents perceived they felt least competent in "landscaping for energy," with a mean response of 1.96 or "average."

"Home vegetable gardening" was used most often with 26 agents responding they "constantly" used information from this topic. Agents indicated they used information "frequently" concerning "care and maintenance of fruit trees" (3.08), "soil fertility" (2.74), "identification of horticultural plants" (2.72), and "pruning trees and shrubs" (2.57).

Agents in the southeast district reported "constant" use of "home vegetable gardening," while the agents from the northwest district perceived they used "home vegetable gardening" and "care and maintenance of fruit trees" less frequently than was true for agents in other districts.

Agents identified two topics as "high" priority for additional training: "home vegetable gardening" with a mean response of 2.64, and "care and maintenance of fruit trees" with a mean response of 2.57.

TABLE XVII

AGENTS' PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN SELECTED TOPICS OF HORTICULTURE

Topics	Distribution by Levels of Competence										Mean Response N=74	Rank
	None		Below Average		Average		Above Average		Outstanding			
	N	%	N	%	N	%	N	%	N	%		
Soil Fertility for Horticultural Crops	0	0.0	2	2.7	36	48.7	31	41.9	5	6.8	2.53	2
Identification of Horticultural Plants	0	0.0	11	14.9	39	52.7	20	27.0	4	5.4	2.23	5
Pruning Trees & Shrubs	0	0.0	5	6.8	31	41.9	33	44.6	5	6.8	2.51	3
Basic Landscaping-Types & Placement of Plants	0	0.0	16	21.6	38	51.4	16	21.6	4	5.4	2.11	6
Landscaping for Energy	0	0.0	20	27.0	40	54.1	11	14.9	3	4.1	1.96	7
Home Vegetable Gardening	0	0.0	1	1.4	26	35.1	41	55.4	6	8.1	2.70	1
Care & Maintenance of Fruit Trees	0	0.0	3	4.1	36	48.7	30	40.5	5	6.8	2.50	4

Topics	Distribution by Frequency of Use										Mean Response N=74	Rank
	Never		Seldom		Occasionally		Frequently		Constantly			
	N	%	N	%	N	%	N	%	N	%		
Soil Fertility for Horticultural Crops	0	0.0	4	5.4	17	23.0	47	63.5	6	8.1	2.74	3
Identification of Horticultural Plants	0	0.0	3	4.1	21	28.4	44	59.5	6	8.1	2.72	4
Pruning Trees & Shrubs	0	0.0	5	6.8	27	36.5	37	50.0	5	6.8	2.57	5
Basic Landscaping-Types & Placement of Plants	0	0.0	12	16.2	31	41.9	27	36.5	4	5.4	2.31	6
Landscaping for Energy	3	4.1	22	29.7	38	51.4	10	13.5	1	1.4	1.78	7
Home Vegetable Gardening	0	0.0	0	0.0	8	10.8	40	54.1	26	35.1	3.24	1
Care & Maintenance of Fruit Trees	0	0.0	0	0.0	11	14.9	46	62.2	17	23.0	3.08	2

Topics	Distribution by Priority for Training										Mean Response N=74	Rank
	None		Low		Medium		High		Critical			
	N	%	N	%	N	%	N	%	N	%		
Soil Fertility for Horticultural Crops	1	1.4	7	9.5	35	47.3	29	39.2	2	2.7	2.32	4
Identification of Horticultural Plants	1	1.4	5	6.8	34	45.9	30	40.5	4	5.4	2.42	3
Pruning Trees & Shrubs	1	1.4	13	17.6	37	50.0	20	27.0	3	4.1	2.15	6
Basic Landscaping-Types & Placement of Plants	0	0.0	13	17.6	36	48.7	16	21.6	9	12.2	2.28	5
Landscaping for Energy	2	2.7	23	31.1	28	37.8	19	25.7	2	2.7	1.95	7
Home Vegetable Gardening	0	0.0	4	5.4	25	33.8	39	52.7	6	8.1	2.64	1
Care & Maintenance of Fruit Trees	0	0.0	5	6.8	28	37.8	35	47.3	6	8.1	2.57	2

TABLE XVIII

SUMMARY OF MEAN RESPONSES FOR SELECTED TOPICS OF HORTICULTURE BY DISTRICT AND EXPERIENCE GROUP

Topics	By District				By Years of Experience				
	NW (N=15)	SW (N=20)	NE (N=20)	SE (N=19)	0-5 (N=20)	6-10 (N=10)	11-15 (N=10)	16-20 (N=4)	21+ (N=30)
				Mean Levels of Competencey					
Soil Fertility for Horticultural Crops	2.33	2.75	2.40	2.58	2.20	2.60	2.80	2.25	2.67
Identification of Horticultural Plants	2.27	2.45	2.00	2.21	2.10	2.20	2.20	2.00	2.37
Pruning Trees & Shrubs	2.47	2.60	2.45	2.53	2.20	2.50	2.50	2.50	2.73
Basic Landscaping-Types & Placement of Plants	2.13	2.30	2.05	1.95	1.95	2.10	2.20	2.50	2.13
Landscaping for Energy	2.00	2.20	1.80	1.84	1.75	1.90	2.20	1.75	2.07
Home Vegetable Gardening	2.60	2.80	2.60	2.79	2.35	2.70	2.80	2.75	2.90
Care & Maintenance of Fruit Trees	2.40	2.65	2.40	2.53	2.20	2.60	2.70	2.25	2.63
				Mean Frequency of Use					
Soil Fertility for Horticultural Crops	2.47	2.75	3.00	2.68	2.50	2.70	2.90	2.75	2.87
Identification of Horticultural Plants	2.47	2.95	2.70	2.68	2.80	2.90	2.90	2.25	2.60
Pruning Trees & Shrubs	2.40	2.55	2.50	2.79	2.55	2.40	2.50	2.25	2.70
Basic Landscaping-Types & Placement of Plants	2.33	2.55	2.25	2.11	2.40	2.10	2.40	2.50	2.27
Landscaping for Energy	1.73	2.00	1.70	1.68	2.00	1.70	1.90	1.50	1.67
Home Vegetable Gardening	2.80	3.25	3.30	3.53	3.25	3.40	3.10	2.75	3.30
Care & Maintenance of Fruit Trees	2.80	3.10	3.15	3.21	3.15	3.00	3.10	2.50	3.13
				Mean Priority for Training					
Soil Fertility for Horticultural Crops	2.33	2.10	2.50	2.37	2.45	2.50	2.10	2.50	2.23
Identification of Horticultural Plants	2.47	2.40	2.30	2.53	2.70	2.50	2.50	2.50	2.17
Pruning Trees & Shrubs	2.33	2.05	2.25	2.00	2.25	2.10	2.00	2.00	2.17
Basic Landscaping-Types & Placement of Plants	2.33	2.50	2.20	2.11	2.45	2.30	2.50	2.25	2.10
Landscaping for Energy	2.13	2.00	2.05	1.63	2.25	1.70	2.00	1.50	1.87
Home Vegetable Gardening	2.60	2.40	2.85	2.68	2.85	2.80	2.50	3.00	2.43
Care & Maintenance of Fruit Trees	2.40	2.35	2.75	2.74	2.75	2.70	2.50	2.25	2.47

Agents' mean training responses for the other five topics fell within the limits set forth for a "medium" priority for training. Although "basic landscaping" was ranked fifth in priority for additional training, it should be noted the nine agents indicated a "critical" need for additional training in this area.

There were no apparent differences in the agents' perceived training needs among districts. Agents in the 0-5 year experience group did indicate a higher overall perceived training need for the general area of Horticulture than did agents in other experience groups.

For the general area of Horticulture, as surveyed in this study, data presented showed that the agents perceived themselves as possessing an "average" (2.36) level of competence, utilizing information "frequently" (2.63) and indicated a "medium" (2.33) priority for additional training.

Plant Pathology

The last of the eight general areas included in this study was the area of Plant Pathology. Tables XIX and XX present a summary of agents' responses regarding perceived levels of competence, frequency of use, and priority for additional training for seven specific topics included in the general area of Plant Pathology.

Analysis of data revealed the agents felt most competent in "horticultural crop disease," with a mean competence response of 2.20 and 64 agents indicating an "average" or better level of competence. Agents also possessed a higher level of competence for the topic "field crop diseases," with only 10 agents indicating they possessed "below average" competence. Mean competence responses of 1.31 and 1.35 indicated agents

TABLE XIX

AGENTS' PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN SELECTED TOPICS OF PLANT PATHOLOGY

Topics	Distribution by Levels of Competence										Mean Response N=74	Rank
	None		Below Average		Average		Above Average		Outstanding			
	N	%	N	%	N	%	N	%	N	%		
Turfgrass Diseases	1	1.4	22	29.7	36	48.7	14	18.9	1	1.4	1.89	4
Horticultural Crop Diseases	0	0.0	10	13.5	40	54.1	23	31.1	1	1.4	2.20	1
Field Crop Diseases	0	0.0	10	13.5	44	59.5	19	25.7	1	1.4	2.15	2
Soybean Diseases	6	8.1	29	39.2	27	36.5	12	16.2	0	0.0	1.61	5
Peanut Diseases	13	17.6	35	47.3	17	23.0	8	10.8	1	1.4	1.31	7
Alfalfa & Forage Crop Diseases	2	2.7	13	17.6	44	59.5	13	17.6	2	2.7	2.00	3
Cotton Diseases	17	23.0	26	35.1	21	28.4	8	10.8	2	2.7	1.35	6

Topics	Distribution by Frequency of Use										Mean Response N=74	Rank
	Never		Seldom		Occasionally		Frequently		Constantly			
	N	%	N	%	N	%	N	%	N	%		
Turfgrass Diseases	1	1.4	12	16.2	35	47.3	23	31.1	3	4.1	2.20	4
Horticultural Crop Diseases	0	0.0	1	1.4	21	28.4	44	59.5	8	10.8	2.80	1
Field Crop Diseases	0	0.0	5	6.8	41	55.4	26	35.1	2	2.7	2.34	2
Soybean Diseases	16	21.6	27	36.5	21	28.4	8	10.8	2	2.7	1.36	5
Peanut Diseases	25	33.8	27	36.5	11	14.9	9	12.2	2	2.7	1.14	6
Alfalfa & Forage Crop Diseases	1	1.4	9	12.2	40	54.1	21	28.4	3	4.1	2.22	3
Cotton Diseases	39	52.7	14	18.9	15	20.3	4	5.4	2	2.7	.86	7

Topics	Distribution by Priority for Training										Mean Response N=74	Rank
	None		Low		Medium		High		Critical			
	N	%	N	%	N	%	N	%	N	%		
Turfgrass Diseases	1	1.4	14	18.9	37	50.0	21	28.4	1	1.4	2.09	4
Horticultural Crop Disease	0	0.0	4	5.4	26	35.1	38	51.4	6	8.1	2.62	1
Field Crop Diseases	0	0.0	9	12.2	33	44.6	29	39.2	3	4.1	2.35	2
Soybean Diseases	14	18.9	22	29.7	24	32.4	12	16.2	2	2.7	1.54	5
Peanut Diseases	24	32.4	24	32.4	15	20.3	10	13.5	1	1.4	1.19	6
Alfalfa & Forage Crop Diseases	1	1.4	8	10.8	34	45.9	28	37.8	3	4.1	2.32	3
Cotton Diseases	33	44.6	16	21.6	14	18.9	9	12.2	2	2.7	1.07	7

TABLE XX

SUMMARY OF MEAN RESPONSES FOR SELECTED TOPICS OF PLANT PATHOLOGY BY DISTRICT AND EXPERIENCE GROUP

Topics	By District				By Years of Experience				
	NW (N=15)	SW (N=20)	NE (N=20)	SE (N=19)	0-5 (N=20)	6-10 (N=10)	11-15 (N=10)	16-20 (N=4)	21+ (N=30)
				Mean Levels of Competence					
Turfgrass Diseases	2.20	2.00	1.75	1.68	1.70	1.70	2.30	1.50	2.00
Horticultural Crop Diseases	2.20	2.15	2.35	2.11	1.90	2.10	2.50	2.00	2.37
Field Crop Diseases	2.33	2.15	2.15	2.00	1.90	2.10	2.40	2.00	2.27
Soybean Diseases	1.13	1.35	1.95	1.89	1.35	1.70	2.00	1.75	1.60
Peanut Diseases	1.13	1.30	1.05	1.74	1.10	1.60	1.50	1.00	1.33
Alfalfa & Forage Crop Diseases	2.33	2.05	1.80	1.89	1.75	2.10	2.00	2.00	2.13
Cotton Diseases	1.20	2.00	.90	1.26	1.30	1.20	1.50	1.50	1.37
				Mean Frequency of Use					
Turfgrass Diseases	2.47	2.20	2.30	1.89	2.15	2.20	1.80	1.75	2.43
Horticultural Crop Diseases	2.60	2.80	3.00	2.74	2.70	2.70	2.90	2.50	2.90
Field Crop Diseases	2.67	2.40	2.35	2.00	2.50	2.10	2.50	2.00	2.30
Soybean Diseases	.40	1.10	2.10	1.63	1.45	1.50	1.10	2.00	1.27
Peanut Diseases	.20	1.40	.85	1.89	1.15	1.40	1.50	.50	1.00
Alfalfa & Forage Crop Diseases	2.40	2.40	2.05	2.05	2.55	2.10	2.20	2.25	2.03
Cotton Diseases	.20	2.25	.35	.47	.90	.80	1.70	1.00	.57
				Mean Priority for Training					
Turfgrass Diseases	2.20	2.00	2.15	2.05	2.30	1.90	2.10	2.00	2.03
Horticultural Crop Diseases	2.47	2.60	2.70	2.68	2.90	2.50	2.90	2.50	2.40
Field Crop Diseases	2.60	2.50	2.15	2.21	2.90	2.00	2.70	2.00	2.03
Soybean Diseases	.80	1.30	1.85	2.05	2.00	1.40	1.30	2.25	1.27
Peanut Diseases	.47	1.55	.90	1.68	1.60	1.50	1.50	.50	.80
Alfalfa & Forage Crop Diseases	2.60	2.45	2.20	2.11	2.80	2.00	2.50	2.75	2.00
Cotton Diseases	.53	2.40	.35	.84	1.45	.80	1.90	1.00	.63

perceived their level of competence as "below average" for "peanut diseases" and "cotton diseases."

Agents reported they used information from the topic "horticultural crop diseases" frequently in their assignments. Data show that "soybean diseases," "peanut diseases," and "cotton diseases" were topics "seldom" used by all 74 respondents. It should be noted that for these three specific topics, certain agents did indicate "frequent" and "constant" use.

Agents in the southwest and southeast districts reported they used "peanut diseases" information more frequently and therefore perceived a need for more training in this topic than did agents in the other districts. "Soybean diseases" was used more frequently and was perceived as a higher priority for training by agents in the northeast and southeast districts. A moderate degree of use and a "medium" priority for training for the topic of "cotton diseases" was indicated by agents in the southwest district.

Analyzing the responses of all 74 agents revealed that "horticultural crop diseases" was a "high" priority for additional training determined by a mean training response of 2.62. "Field crop diseases" (2.35), "alfalfa and forage crop diseases" (2.32), and "turfgrass diseases" (2.09) were perceived by agents as "medium" priority for additional training.

For the general area of Plant Pathology, as identified in this study, the 74 county agricultural agents perceived themselves to possess an "average" (1.79) level of competence, utilized information "occasionally" (1.85), and considered the general area of Plant Pathology as a "medium" (1.88) priority for additional training.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to summarize the study procedures and findings related to the purpose and objectives. Also presented are conclusions and recommendations which are based upon the analysis of data collected and observations made by the author in the conduct of this study.

Summary of the Study

Purpose

The purpose of this study was to determine and analyze perceptions of Oklahoma county Extension agricultural agents concerning their levels of competence and educational needs in selected technical agricultural topics, and the implications of these perceptions for future in-service training programs.

Specific Objectives

The following specific objectives were set forth to accomplish the primary purpose of the study:

1. To determine the perceived levels of competence of Oklahoma Cooperative Extension county agricultural agents in the subject areas of:
    a. Agricultural Economics
    b. Agricultural Engineering

c. Agronomy

d. Animal Science

e. Entomology

f. Forestry and Wildlife

g. Horticulture

h. Plant Pathology.

2. To determine the extent to which these competencies were used by the agents in their present job assignments.

3. To determine the agents' perceived priority of need for additional training for each of the specific subject-matter topics.

4. To compare the agents' perceived competencies, frequency of use, and priority of need for additional training by years of experience and supervisory district.

Rationale

With the rapid advances of today's science and technology creating a continual change in Extension's program emphasis, there is a critical need for Cooperative Extension agents to develop and update technical subject matter competencies to keep abreast of and, if possible, ahead of change. To accomplish this task, an effective in-service training program must be a major goal of the organization. It was hoped that information gained from this study would add direction to future in-service training in the eight general subject matter areas which were included in the study.

Procedures

Following a review of literature and research pertaining to the

study, the following tasks were involved in the collection and analysis of data to satisfy the purpose and objectives of the study: (1) determine the study population, (2) develop the instrument for data collection, (3) collect the data, and (4) analyze the findings.

Mailed questionnaires were utilized to collect data for the study. Each of the 74 county Extension agricultural agents in Oklahoma employed at the time of the study was mailed a questionnaire in August, 1981. All 74 agents completed and returned their questionnaire for a 100 percent return of the population.

Selected Characteristics of the Agents Participating in the Study

The study population was 74 county Extension agricultural agents representing the four supervisory districts in Oklahoma.

Twenty-seven percent of the agents had 5 years or less of Extension experience, while 40.5 percent had over 20 years of experience.

Thirty-three (44.6%) of the agents held master's degrees and of this group 19 (57.6%) had over 20 years of experience. Of the 40 (54.1%) agents with bachelor degrees, 18 had 5 years or less of Extension experience.

Fifty percent of the agents surveyed indicated they planned to actively pursue an advanced degree program.

When agents were asked to indicate their perceptions regarding the level of effectiveness of their present in-service training program, 43 (58.1%) responded "moderately effective." Twenty-six (35.1%) of the agents indicated they felt their training had been "considerably effective."

Findings

The major focus of the research effort was to assess county Extension agricultural agents' perceptions of their levels of competence, frequency of use, and priority for additional training for 66 specific subject matter topics. The research findings, in summary form, are presented for each of the eight general subject matter areas under which these 66 topics were categorized.

Agricultural Economics. Table XXI was developed to provide a concise summary of agents' responses concerning the seven specific topics of Agricultural Economics investigated. As indicated in the table, agents perceived their level of competence as being "average" for all seven topics; however, they felt most competent in "farm records and record keeping systems" and "oil and gas lease management." These same two topics were also used by agents most frequently. Agents indicated their perceived level of competence and frequency of use was least for the areas of "machinery management--ownership vs. leasing" and "father and son agreements."

"Oil and gas lease management" was considered to be the topic having the highest priority for training by agents in all districts except those in the northeast district. It was also ranked as the highest priority for training by agents in all five experience groups. Agents ranked "basic estate and financial planning" and "farm records and record keeping systems," respectively, as their second and third priority for additional training. Data showed that overall agents ranked the general area of Agricultural Economics as a "medium" priority for additional training.

TABLE XXI

SUMMARY OF MEAN RESPONSES CONCERNING PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN AGRICULTURAL ECONOMICS

Topics	Mean Level of Competence		Rank	Mean Frequency of Use		Rank	Mean Priority for Training		Rank
Basic Income Tax Management	1.84	Average	5	1.65	Occasionally	5	1.65	Medium	5
Outlook: Futures Market and Hedging	1.88	Average	3	1.74	Occasionally	4	1.72	Medium	4
Farm Records and Record Keeping Systems	2.09	Average	1	1.78	Occasionally	2	1.73	Medium	3
Basic Estate and Financial Planning	1.85	Average	4	1.76	Occasionally	3	1.82	Medium	2
Oil and Gas Lease Management	1.97	Average	2	2.31	Occasionally	1	2.22	Medium	1
Machinery Management-Ownership vs. Leasing	1.73	Average	6.5	1.28	Seldom	6	1.24	Low	6
Father and Son Agreements	1.73	Average	6.5	1.19	Seldom	7	1.14	Low	7

Agricultural Engineering. Data in Table XXII show that agents perceived their level of competence as being "above average" for "soil and water conservation," and "average" for the other ten specific topics investigated in the general area of Agricultural Engineering.

Agents indicated they used information most frequently from the topics: "forage harvesting and handling," "animal housing and handling facilities," and "sprayer calibration and operation." These specific topics were also the ones agents perceived as being of highest priority for additional training. Agents in the northwest and southwest districts indicated their highest priority for additional training was in "sprayer calibration and operation," while agents in the two eastern district indicated that their highest priority for additional training was "forage harvesting and handling."

Agronomy. Data summarized in Table XXIII show that agents perceived their level of competence as being "above average" or "average" for all 12 specific topics in the area of Agronomy except "peanut production." Agents felt most competent in and used most frequently: "soil, water, and forage testing and interpret.," "soil fertility and management," and "weed and brush control."

"Weed and brush control" and "pasture management and forage production" were ranked by agents as "high" priority for additional training. Although agents overall ranked "cotton production" as a low priority for additional training, agents in the southwest district ranked this topic as a "high" priority for additional training. "Peanut production" was ranked as a priority for additional training by agents in the southeast district, while additional training in "soybean production" was perceived as more important by agents in the two eastern districts.

TABLE XXII

SUMMARY OF MEAN RESPONSES CONCERNING PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN AGRICULTURAL ENGINEERING

Topics	Mean Level of Competence		Rank	Mean Frequency of Use		Rank	Mean Priority for Training		Rank
Crop Storage	2.04	Average	8	1.80	Occasionally	5	1.59	Medium	6
Animal Housing and Handling Facilities	2.46	Average	2	2.18	Occasionally	2	1.85	Medium	3
Farm Safety	2.22	Average	4	1.39	Seldom	11	1.24	Low	11
Irrigation Systems	1.61	Average	11	1.59	Occasionally	8	1.58	Medium	7
Soil and Water Conservation	2.51	Above Average	1	2.00	Occasionally	4	1.61	Medium	5
Rural Water and Waste Disposal	1.80	Average	10	1.42	Seldom	9.5	1.27	Low	10
Alternate Farm Fuels	1.85	Average	9	1.42	Seldom	9.5	1.57	Medium	8
Heating with Wood	2.15	Average	7	1.62	Occasionally	7	1.31	Low	9
Tractor and Machinery Management	2.20	Average	5	1.77	Occasionally	6	1.80	Medium	4
Sprayer Calibration and Operation	2.19	Average	6	2.03	Occasionally	3	2.08	Medium	2
Forage Harvesting and Handling	2.43	Average	3	2.32	Occasionally	1	2.20	Medium	1

TABLE XXIII

SUMMARY OF MEAN RESPONSES CONCERNING PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN AGRONOMY

Topics	Mean Level of Competence		Rank	Mean Frequency of Use		Rank	Mean Priority for Training		Rank
Soil, Water, and Forage Testing and Interpretation	2.84	Above Average	1	3.20	Frequently	1	2.28	Medium	5
Small Grain Production	2.65	Above Average	5	2.85	Frequently	5	2.26	Medium	6
Sorghum Production	2.32	Average	8	2.27	Occasionally	7	1.91	Medium	8
Peanut Production	1.49	Below Average	12	1.23	Seldom	11	1.12	Low	11
Soybean Production	1.88	Average	10	1.66	Occasionally	10	1.49	Low	10
Cotton Production	1.55	Average	11	0.97	Seldom	12	1.03	Low	12
Soil Management and Conservation	2.47	Average	6	2.18	Occasionally	9	1.82	Medium	9
Weed and Brush Control	2.72	Above Average	3	2.99	Frequently	2.5	2.65	High	1
Soil Fertility and Management	2.80	Above Average	2	2.99	Frequently	2.5	2.38	Medium	3
Pasture Management and Forage Production	2.70	Above Average	4	2.89	Frequently	4	2.50	High	2
Turf Management	2.39	Average	7	2.59	Frequently	6	2.16	Medium	7
Reduced Tillage and Energy Conservation	2.12	Average	9	2.23	Occasionally	8	2.31	Medium	4

Animal Science. The summary of data in Table XXIV shows that agents perceived their level of competence to be "average" or "above average" for all eight specific topics in the area of Animal Science. They perceived their level of competence as being highest in "animal selection" and "livestock management."

Data showed agents used "livestock management," "animal nutrition," and "pasture and forage utilization" more frequently than the other topics in their present assignments. Agents in the northwest district reported using "pasture and forage utilization" less frequently than did agents in the other districts.

Although agents perceived a "medium" priority for training for all eight topics in Animal Science, they perceived their greatest training need to be for the topics of "livestock management" and "animal health."

Entomology. Data in Table XXV show that while agents perceived their greatest level of competence to be in "I.D. and control of animal insects;" they did possess at least "average" level of competence in all seven specific topics of Entomology.

A review of Table XXV shows that agents used all areas of Entomology at least "frequently" except "rangeland and pasture insects," which they used only "occasionally."

"Horticultural insects" and "field crop insects" were ranked as a "high" priority for additional training by agents surveyed, while the other five topics were perceived as a "medium" priority for additional training. Agents in the 0-5 year experience group indicated a greater need for additional training for the seven specific topics than did the agents in the other experience groups.

TABLE XXIV

SUMMARY OF MEAN RESPONSES CONCERNING PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN ANIMAL SCIENCE

Topics	Mean Level of Competence		Rank	Mean Frequency of Use		Rank	Mean Priority for Training		Rank
Animal Selection	2.68	Above Average	1	2.54	Frequently	5	2.01	Medium	5
Animal Reproduction	2.50	Above Average	4	2.18	Occasionally	7	2.00	Medium	6
Animal Nutrition	2.49	Average	5	2.62	Frequently	2.5	2.39	Medium	3.5
Livestock Management	2.59	Above Average	2	2.72	Frequently	1	2.46	Medium	1
Animal Health	2.42	Average	6	2.59	Frequently	4	2.43	Medium	2
Meat Animal and Carcass Evaluation	2.26	Average	8	1.69	Occasionally	8	1.62	Medium	8
Pasture and Forage Utilization	2.58	Above Average	3	2.62	Frequently	2.5	2.39	Medium	3.5
Livestock Skills (Fitting and Showing)	2.36	Average	7	2.28	Occasionally	6	1.73	Medium	7

TABLE XXV

SUMMARY OF MEAN RESPONSES CONCERNING PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN ENTOMOLOGY

Topics	Mean Level of Competence		Rank	Mean Frequency of Use		Rank	Mean Priority for Training		Rank
I.D. and Control of Turf Insects	2.24	Average	7	2.50	Frequently	6	2.18	Medium	6
I.D. and Control of Horticultural Insects	2.49	Average	5	3.09	Frequently	1	2.55	High	1
I.D. and Control of Field Crop Insects	2.51	Above Average	4	2.85	Frequently	3.5	2.50	High	2
I.D. and Control of Rangeland and Pasture Insects	2.43	Average	6	2.38	Occasionally	7	2.15	Medium	7
I.D. and Control of Household Pests	2.57	Above Average	3	2.85	Frequently	3.5	2.24	Medium	5
I.D. and Control of Animal Insects	2.65	Above Average	1	2.58	Frequently	5	2.35	Medium	3
Proper Use and Insecticides and Miticides	2.64	Above Average	2	2.99	Frequently	2	2.34	Medium	4

Forestry and Wildlife. Data in Table XXVI show that agents perceived their level of competence as being "below average" for "forestry management" and "marketing forest products." However, agents indicated they "seldom" used information from these two specific topics and ranked them as "low" priority for additional training. While agents indicated they possessed an "average" level of competence for the additional five topics, they reported the most frequently used topics, "wildlife conservation," "animal and bird control," and "fish and pond management," were still used only "occasionally."

Agents indicated a "low" priority for additional training for all Forestry and Wildlife topics except "fish and pond management" and "animal and bird control." These two topics were perceived as a "medium" priority for additional training.

"Farm windbreaks" was perceived as the highest priority for additional training by agents in the northwest district, while agents in the other three districts perceived their greatest priority for additional training to be "fish and pond management."

Horticulture. Data in Table XXVII show that agents perceived their level of competence as being at least "average" for all seven specific topics of Horticulture. A summary of responses indicated agents used five of the seven topics "frequently" with "home vegetable gardening" and "care and maintenance of fruit trees" being used most frequently.

Agents indicated a "high" priority for additional training for "home vegetable gardening" and "care and maintenance of fruit trees." All other specific topics in Horticulture were perceived by agents as a "medium" priority for training.

TABLE XXVI

SUMMARY OF MEAN RESPONSES CONCERNING PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN FORESTRY AND WILDLIFE

Topics	Mean Level of Competence		Rank	Mean Frequency of Use		Rank	Mean Priority for Training		Rank
Forestry Management	1.45	Below Average	6	0.92	Seldom	6.5	1.01	Low	7
Farm Windbreaks	1.74	Average	5	1.28	Seldom	5	1.27	Low	4
Marketing Forest Products	1.26	Below Average	7	0.92	Seldom	6.5	1.03	Low	6
Wood Selection for Heating	1.92	Average	4	1.45	Seldom	4	1.26	Low	5
Wildlife Conservation	2.07	Average	2	1.51	Occasionally	3	1.34	Low	3
Animal and Bird Control	2.01	Average	3	1.84	Occasionally	2	1.76	Medium	2
Fish and Pond Management	2.15	Average	1	2.16	Occasionally	1	2.08	Medium	1

TABLE XXVII

SUMMARY OF MEAN RESPONSES CONCERNING PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN HORTICULTURE

Topics	Mean Level of Competence		Rank	Mean Frequency of Use		Rank	Mean Priority for Training		Rank
Soil Fertility for Horticultural Crops	2.53	Above Average	2	2.74	Frequently	3	2.32	Medium	4
Identification of Horticultural Crops	2.23	Average	5	2.72	Frequently	4	2.42	Medium	3
Pruning Trees and Shrubs	2.51	Above Average	3	2.57	Frequently	5	2.15	Medium	6
Basic Landscaping--Types and Placement	2.11	Average	6	2.31	Occasionally	6	2.28	Medium	5
Landscaping for Energy	1.96	Average	7	1.78	Occasionally	7	1.95	Medium	7
Home Vegetable Gardening	2.70	Above Average	1	3.24	Frequently	1	2.64	High	1
Care and Maintenance of Fruit Trees	2.50	Above Average	4	3.08	Frequently	2	2.57	High	2

Although agents in the northwest district indicated they used all surveyed horticultural topics less frequently than did agents in other district, agents in all four districts indicated a similar need for additional training. In general, agents in the 0-5 year experience group perceived their need for additional training in the general area of Horticulture to be greater than agents in the other experience groups.

Plant Pathology. A review of data provided in Table XXVIII show that agents perceived their level of competence, frequency of use, and priority for additional training to be greatest for "horticultural crop diseases" and "field crop diseases." The opposite was true for "peanut diseases" and "cotton diseases," with the 74 respondents indicating a "below average" level of competence, "seldom" frequency of use, and "low" priority for additional training for these two topics. There was, however, a noticeable difference in the agents' perceived training priority for "peanut diseases" and "cotton diseases" when compared by districts. The agents in the southwest district indicated a "medium" priority for training for "cotton diseases," while agents in the southwest and southeast districts indicated a "medium" priority for additional training in "peanut diseases."

Overall Summary. Figure 1 was developed to provide an overall summary of agents' mean perceptions concerning the eight agricultural subject areas included in this study. The overall mean responses for each of the eight agricultural areas reflect agents' perceptions only for the specific subject matter topics as used in the study.

TABLE XXVIII

SUMMARY OF MEAN RESPONSES CONCERNING PERCEIVED LEVELS OF COMPETENCE, FREQUENCY OF USE, AND PRIORITY FOR TRAINING IN PLANT PATHOLOGY

Topics	Mean Level of Competence		Rank	Mean Frequency of Use		Rank	Mean Priority for Training		Rank
Turfgrass Diseases	1.89	Average	4	2.20	Occasionally	4	2.09	Medium	4
Horticultural Crop Diseases	2.20	Average	1	2.80	Frequently	1	2.62	High	1
Field Crop Diseases	2.15	Average	2	2.34	Occasionally	2	2.35	Medium	2
Soybean Diseases	1.61	Average	5	1.36	Seldom	5	1.54	Medium	5
Peanut Diseases	1.31	Below Average	7	1.14	Seldom	6	1.19	Low	6
Alfalfa and Forage Crop Diseases	2.00	Average	3	2.22	Occasionally	3	2.32	Medium	3
Cotton Diseases	1.35	Below Average	6	0.86	Seldom	7	1.07	Low	7

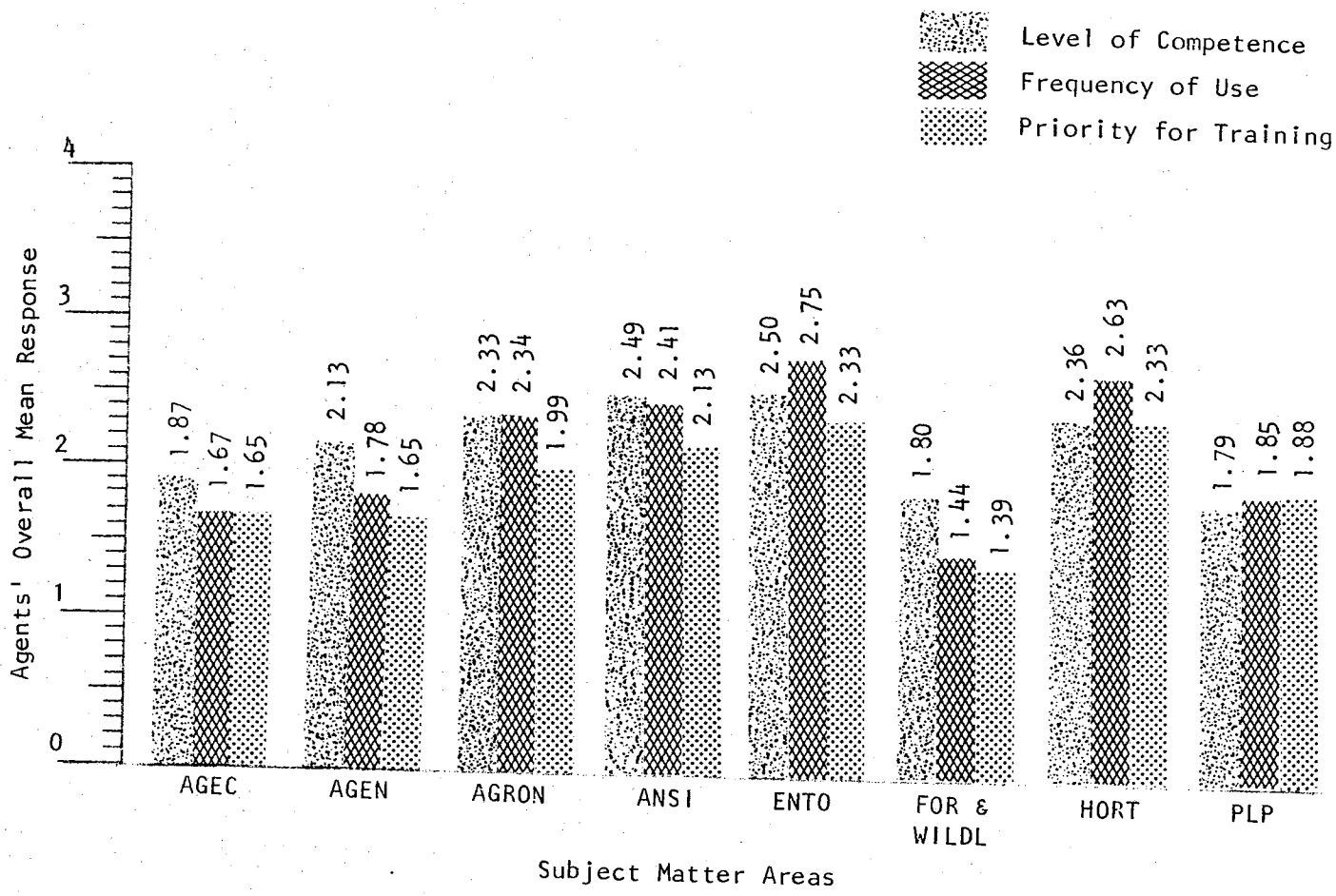

Figure 1. Agents' Overall Mean Perceptions Concerning Levels of Competence, Frequency of Use, and Priority for Training for All Eight Agricultural Subject Matter Areas

Conclusions

Interpretation of the findings of the study prompted the formulation of the following conclusions:

1. County Extension agricultural agents consider themselves to possess adequate levels of competence to be effective in their present assignments, for 61 of the 66 specific subject matter topics investigated.

2. Agents possess greater levels of competence in the areas of Entomology, Animal Science, Horticulture, and Agronomy, which are the areas used most frequently in their present assignments.

3. Specific subject matter topics used most frequently are those for which agents perceive the need for most additional training. Agents therefore recognize the need to remain competent and up-to-date in areas which comprise the major portion of their county agricultural programs.

4. County agricultural agents' highest priorities for training were in the general subject areas of Entomology, Horticulture, and Animal Science. However, it should be noted that some specific topics in all eight general areas were of high training priority for some agents.

5. Agents with less experience perceive their levels of competence as being slightly less and their needs for training slightly greater than did more experienced agents. However, there was no relationship between agents' years of experience and their perceived priority for training needs.

6. Since agents with over 20 years of experience were similar to agents in other experience groups in the manner in which they perceived their training needs, continued professional improvement is viewed as important by all county agricultural agents.

7. There were no perceived differences in training needs among agents in the four supervisory districts except for those subject matter topics which were geographic-specific, i.e., cotton, soybeans, peanuts, forestry products, and oil and gas lease management.

8. Since only 2 of 20 agents in this study who were of the less experienced group possessed master's degrees, most county Extension agricultural agents are currently being hired with only bachelor's degrees.

Recommendations

As a result of analysis of the data and major findings of the research, it is recommended:

1. That the findings of this study be communicated to appropriate Extension administrators, department heads, faculty, and state specialists so that these data might be utilized to strengthen the Extension in-service training program in Oklahoma.

2. That immediate consideration be given to planning and conducting statewide in-service training in: weed and brush control, pasture management and forage production, I.D. and control of horticultural insects, I.D. and control of field crop insects, home vegetable gardening, care and maintenance of fruit trees, and horticultural crop diseases.

3. That training needs in geographic-specific subject areas such as peanuts, soybeans, cotton, forestry products, and oil and gas lease management be re-evaluated for each respective district and that necessary training be conducted on a district basis.

4. That experienced county agricultural agents and area specialized agents be utilized as resources to conduct district in-service training, especially for those topics which were geographic-specific.

5. That, as soon as possible after employment, new county Extension agricultural agents receive training in the areas of Horticulture, Entomology, Animal Science, and Agronomy concerning those specific subject matter topics relevant to their county.

6. That all county agricultural agents be encouraged to participate in technical subject matter training activities relevant to their assignment, regardless of the years of experience.

7. That at the pre-service level, students desiring to pursue a career in Cooperative Extension in Oklahoma be encouraged to participate in a variety of practical courses in the general subject matter areas of Horticulture, Entomology, Animal Science, and Agronomy.

8. Based on the fact that few new county agricultural agents possess master degrees, it is recommended that in-service training in technical agricultural competency areas be offered both on and off campus and that, when appropriate, such training be offered for graduate credit.

9. That a systematic method of annually assessing the training needs of county agricultural agents in Oklahoma be developed and implemented.

Recommendations for Additional Research

The following recommendations are made by the author in regard to additional research. The recommendations are judgments based on the findings and suggestions resulting from the study. It is recommended that:

1. Research be conducted to determine the "Professional Competencies" needed by county Extension agricultural agents in Oklahoma. Professional competencies are those knowledge, skills, and attitudes agents

should possess to adequately perform their job, exclusive of technical agriculture competencies.

2. Research be conducted to determine and compare county agricultural agents possessed and desired level of competence in the 66 specific topics of the study, as perceived by the county Extension agricultural agents and their supervisors.

3. Similar research be conducted to determine the training needs of Oklahoma Cooperative Extension County Home Economists and County Extension 4-H Agents.

4. That research be conducted to identify minimum technical agricultural knowledge and skills necessary for a county Extension agricultural agent.

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APPENDIX A

SAMPLE OF AGENT QUESTIONNAIRE

Please answer the following statements as they apply to your situation.

1. In which district and county do you presently work?

   District: (circle) NW SW NE SE

   County: (specify) _____

2. Years of experience with the Cooperative Extension Service:

   _____ 0-5
   _____ 6-10
   _____ 11-15
   _____ 16-20
   _____ 21 plus

3. What is the highest degree you have completed?

   _____ Bachelor's Degree
   _____ Master's Degree
   _____ Other (please specify) _____

4. What was the major area of your undergraduate study?

   _____ Agriculture Economics
   _____ Agriculture Education
   _____ Agriculture Engineering
   _____ Agronomy
   _____ Animal Science
   _____ Entomology
   _____ Horticulture
   _____ Other (please specify) _____

5. Do you plan to actively work toward an advanced degree?

   _____ Yes

   _____ No

6. In your opinion, how effective is our present in-service training program in providing you the agriculture subject matter information necessary to perform the duties of your present position?

   _____ Extremely effective
   _____ Considerably effective
   _____ Moderately effective
   _____ Of limited effect
   _____ Not effective

For each of the following areas, consider competence as an ability to discuss subject matter intelligently and answer the majority of questions received.

Indicate your answer by checking (✓) the appropriate blocks for each subject.

	Rate your competence in this area:					How often are these competencies needed in PRESENT county assignment:					Priority for additional training:				
	None	Below Average	Average	Above Average	Outstanding	Never	Seldom	Occasionally	Frequently	Constantly	None	Low	Medium	High	Critical
AGRICULTURE ECONOMICS															
Basic Income Tax Management															
Outlook: Futures Market & Hedging															
Farm Records and Record Keeping Systems															
Basic Estate and Financial Planning															
Oil and Gas Lease Management															
Machinery Management-Ownership vs Leasing															
Father and Son Agreements															
AGRICULTURE ENGINEERING															
Crop Storage															
Animal Housing & Handling Facilities															
Farm Safety															
Irrigation Systems															
Soil and Water Conservation															
Rural Water and Waste Disposal															
Alternate Farm Fuels															
Heating with Wood															
Tractor and Machinery Management															
Sprayer Calibration & Operation															
Forage Harvesting & Handling															
AGRONOMY															
Soil, Water & Forage Testing and Interpret.															
Small Grain Production															
Sorghum Production															
Peanut Production															
Soybean Production															
Cotton Production															
Soil Management and Conservation															
Weed and Brush Control															
Soil Fertility and Management															
Pasture Management and Forage Production															
Turf Management															
Reduced Tillage and Energy Conservation															
ANIMAL SCIENCE															
Animal Selection															
Animal Reproduction															
Animal Nutrition															
Livestock Management															
Animal Health, Disease Prevention and Parasite Control															
Meat Animal and Carcass Evaluation															
Pasture and Forage Utilization															
Livestock Skills (Fitting and Showing)															

For each of the following areas, consider competence as an ability to discuss subject matter intelligently and answer the majority of questions received.

Indicate your answer by checking (✓) the appropriate blocks for each subject.

	Rate your competence in this area:					How often are these competencies needed in PRESENT county assignment:					Priority for additional training:				
	None	Below Average	Average	Above Average	Outstanding	Never	Seldom	Occasionally	Frequently	Constantly	None	Low	Medium	High	Critical
ENTOMOLOGY															
I.D. and Control of Turf Insects															
I.D. and Control of Horticultural Insects															
I.D. and Control of Field Crop Insects															
I.D. and Control of Rangeland & Pasture Insects															
I.D. and Control of Household Pests															
I.D. and Control of Animal Insects															
Proper Use of Insecticides & Miticides															
FORESTRY AND WILDLIFE															
Forestry Management															
Farm Windbreaks															
Marketing Forest Products															
Wood Selection for Heating															
Wildlife Conservation															
Animal and Bird Control															
Fish and Pond Management															
HORTICULTURE															
Soil Fertility for Horticultural Crops															
Identification of Horticultural Plants															
Pruning Trees and Shrubs															
Basic Landscaping-Types & Placement of Plants															
Landscaping for Energy															
Home Vegetable Gardening															
Care and Maintenance of Fruit Trees															
PLANT PATHOLOGY															
Turfgrass Diseases															
Horticultural Crop Diseases															
Field Crop Diseases															
Soybean Diseases															
Peanut Diseases															
Alfalfa and Forage Crop Diseases															
Cotton Diseases															

Return to:

Roy R. Lessly
Extension Staff Development
Specialist
459 Ag. Hall
Stillwater, OK 74078

APPENDIX B

CORRESPONDENCE

COOPERATIVE EXTENSION SERVICE

OKLAHOMA STATE UNIVERSITY
OFFICE OF THE DEAN DIRECTOR

DIVISION OF AGRICULTURE
STILLWATER, OKLAHOMA 74074
405-624-5400

August 17, 1981

As we plan for the future, we feel it is important that you be involved in the development of programs and activities which will affect you. This is especially true as we look at our in-service training program.

Roy Lessly is presently conducting a study to identify perceived competencies and training needs of County Extension Agricultural Agents. Information from this study should indicate the importance you place on specific technical agriculture subject matter knowledge as well as your priority for future in-service training.

Your response to each statement on the enclosed questionnaire is greatly needed.

We certainly appreciate your interest in conducting effective agricultural programs and solicit your time and cooperation in responding to this questionnaire.

Sincerely,

William F. Taggart

William F. Taggart
Associate Director

WFT:dr
Enclosure

COOPERATIVE EXTENSION SERVICE

OKLAHOMA STATE UNIVERSITY
AGRICULTURE AND
RURAL DEVELOPMENT PROGRAMS

DIVISION OF AGRICULTURE
STILLWATER, OKLAHOMA 74078

August 17, 1981

Dear Co-Worker:

As you know the primary purpose of our county agricultural program is to provide timely, relevant and up-to-date agricultural information for our county clientele. In order to help prepare agents for this important task, certain adjustments must be made in our training program from time to time.

To develop and maintain the quality and quantity of training needed, we must constantly evaluate the needs of our staff. Therefore, I am presently conducting a study to determine agents perceived competence as well as their need for additional training in several areas of technical agriculture. There is no way to obtain this needed information without your response.

The questionnaire was designed to take as little of your time as possible and still obtain an indication of specific training needs. This information will be confidential and at no time will you be identified in the data reported. The name of your district and county will be used only for the purpose of categorizing returned questionnaires.

Your prompt attention to this matter will be greatly appreciated. If possible, I would appreciate your response by September 4. For your convenience, please return the questionnaire in the self-addressed, stamped envelope. Thank you for your assistance.

Sincerely,

Roy R. Lessly

Roy R. Lessly
Extension Staff Development
Specialist

RRL:dr
Enclosure

COOPERATIVE EXTENSION SERVICE

OKLAHOMA STATE UNIVERSITY
AGRICULTURE AND
RURAL DEVELOPMENT PROGRAMS

DIVISION OF AGRICULTURE
STILLWATER, OKLAHOMA 74078

September 2, 1981

A couple of weeks ago you received a questionnaire from me concerning perceived training needs of county Extension agents. If you have not completed the questionnaire, may I encourage you to take a few minutes from your busy schedule to complete and return it.

At the present time we have received responses from 71 counties, but in order for this study to be of greatest benefit, we need a response from all 77 counties. You, as the agent responsible for agriculture programs in your county, are the only person that can provide the needed information. In case you misplaced the first questionnaire, I am enclosing another one. If you have already mailed the questionnaire, please consider this letter as an appreciation for your prompt response.

If I can be of any assistance to you now or in the future, please let me know. Thank you for your cooperation and time in this matter.

Sincerely,

Roy R. Lessly
Extension Staff Development Specialist

RRL:mc
enclosure

VITA

Roy Roger Lessly

Candidate for the Degree of

Doctor of Education

Thesis: COUNTY EXTENSION AGRICULTURAL AGENTS' PERCEPTIONS OF COMPETENCIES AND NEEDS AS BASES FOR IN-SERVICE TRAINING PROGRAMS IN OKLAHOMA

Major Field: Agricultural Education

Biographical:

Personal Data: Born in Wynnewood, Oklahoma, November 20, 1943, the son of Maurice and Goldie Lessly.

Education: Graduated from Davis High School, Davis, Oklahoma, May, 1961; received the Bachelor of Science degree from Oklahoma State University, Stillwater, Oklahoma, in May, 1965, with a major in Agricultural Education; received the Master of Education degree from Central State University, Edmond, Oklahoma, May, 1975, with a major in School Administration-Secondary; completed requirements for the Doctor of Education degree at Oklahoma State University with a major in Agricultural Education in December, 1981.

Professional Experience: Beef cattle, swine, and wheat farming background; served as an officer in the U.S. Air Force from August, 1965, to September, 1970; O.S.U. Extension Agent--4-H, Pottawatomie County, Oklahoma, October, 1970, to October, 1971; O.S.U. Extension Agent--4-H, Oklahoma County, Oklahoma, October, 1971, to October, 1972; Coordinator--4-H and Youth Programs, Oklahoma County, Oklahoma, October, 1972, to July, 1977; Extension Staff Development Specialist, Oklahoma Cooperative Extension Service, Oklahoma State University, July, 1977, to present.

Organizations: Oklahoma Association of County Extension Agents and National Association of County Extension Agents; Oklahoma Association of Extension 4-H Agents and National Association of Extension 4-H Agents; Oklahoma Adult and Continuing Education Association; Oklahoma Vocational Association and American Vocational Association; Phi Delta Kappa.