

ASSESSMENT OF PROGRAM DELIVERY METHODS AND MEDIA
CONCERNING CHEMICAL REGULATIONS IN AGRICULTURE
AND LAWN AND GARDEN USES BY SELECTED
COOPERATIVE EXTENSION PERSONNEL
IN OKLAHOMA

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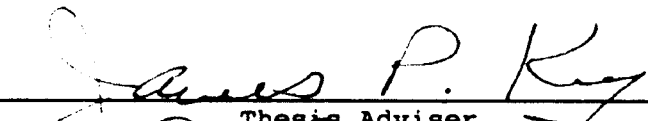
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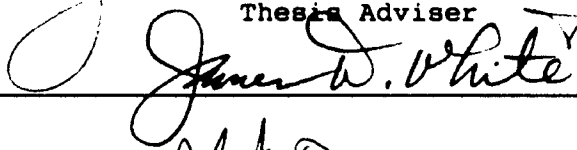
1993


Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirement for
the Degree of
MASTER OF SCIENCE
December, 1994

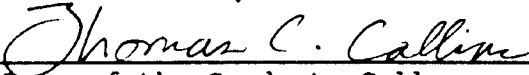
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ACKNOWLEDGMENTS

I would like to express my thanks and gratitude to all of the people who assisted me with this study. A special thanks to Dr. James Key, my major adviser, Dr. Robert Terry and Dr. James White who provided me with guidance and support.

I am grateful to the staff at the Office of University Research Services and the University Center for Water Research. You allowed me the time necessary to successfully complete this project.

I am thankful to Mr. James H. "Bud" Barnes who always believed in me and expressed his support for my continuing education.

I am grateful to my brothers, Troy and James Lindsey, who kept me going with gentle nudges toward the finish line.

I am most thankful to my parents, Roy L. and Judy Lindsey. Your support and encouragement was worth more to me than I can express in words. This is something that I never could have accomplished without your support.

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CHAPTER I

INTRODUCTION

One of the most unique facets of the educational system in the United States is the Cooperative Extension Service. This is a unique system due to its structure as a cooperative federal, state, and local effort.

The methods of program implementation and information dissemination used by members of the Cooperative Extension Service are also distinguishing characteristics. The Cooperative Extension Service has a role as a diversified education organization that works closely with people from many segments of society. Cooperative Extension is a people-oriented service. From Human Environmental Sciences to the 4-H programs to Integrated Pest Management, people, and the education of people, are the main focus of the Cooperative Extension Service.

Cooperative Extension is the lay person's education arm of the land-grant university located within each state. As the university develops new technologies or new methods for using old technology, Extension provides the means for disseminating these technologies or methods. This dissemination of information must be done in terms and methods the lay person, who is in fact the end user, can understand and apply (Sanders, 1966).

Dissemination is carried out through a variety of program delivery methods and media. The audience of the program will directly affect the delivery method or media used. An effective program delivery method for a 4-H club may not be an effective method for a pesticide-applicator program. The demographics of the group to which the program is being delivered are also important factors in selecting a program delivery method or media.

The amount of time the Extension professional has to invest in development of different program delivery methods and media is extremely limited. With reductions in budgets and personnel come changes in and additions to the responsibilities of the Extension professional. Due to these changes, most Extension professionals have focused on the development of selected program delivery methods.

Some research has been done to evaluate program delivery methods used by Extension professionals. The limited research that has been done, however, has focussed on the audience's perceptions of the program delivery methods. But what about the perceptions of the educator? What methods do Extension personnel prefer? What methods are perceived by Extension personnel to be the most effective? This study will identify the preferred delivery methods and the frequency of the use of these methods by Oklahoma Cooperative Extension personnel covering specific topics related to agriculture and lawn-care chemical regulations.

Statement of the Problem

As the disseminator of research information, the role of the Extension professional is very important and has many different facets. The agent must be able to help the public understand and implement the research as it is passed down from the university. Where to locate the information, how to deliver it, and how to apply it, are all important pieces of the information dissemination puzzle. Location and application of the information are the easiest of these three tasks. Delivery of the information to the audience is not only the most difficult of these tasks, it is also the most important. Many Extension agents have a limited background in education as a discipline. Behavioral education experience is also limited with most agents. Gerling (1982) reported that only 28 percent of the Oklahoma Extension Agriculture agents had degrees in Agricultural Education. Subject matter training and in-service workshops have not successfully determined the most effective delivery method for each audience.

In a 1989 study conducted in Washington County, Oklahoma, Pirtle examined audiences' perceptions of the effectiveness of Extension program delivery methods. No studies were found that had been done in Oklahoma to assess the Extension personnel's perception of the effectiveness of these same methods. While it is important to know which methods the audience find most effective, the Extension personnel's perceptions of effectiveness will have a more direct influence on the method selected for presenting programs and disseminating information.

One of the most controversial and most demanding areas of need for education has been in the area of chemical usage. The public has been demanding that local, state, and federal governmental agencies enact more stringent restrictions and regulations on the use of chemicals in agriculture and lawn and garden applications.

Agricultural officials and state legislators have been concerned that farmers, although certified (in pesticide application), have received inadequate training relative to the use of agricultural chemicals listed as being restricted by the United States Environmental Protection Agency (Creswell, 1990, p. 2).

As these regulations and restrictions are enacted, the users' need for education about alternative practices, chemical or natural, increases. The Cooperative Extension Service is, by definition, the public's main source of education about these alternative practices.

The selection of the proper program delivery method will greatly influence the effectiveness of these programs. This study will examine the methods currently being used, and the effectiveness of these methods as perceived by Extension personnel.

Purpose of the Study

The purpose of this study is to describe and assess selected program delivery methods and media used by Cooperative Extension personnel concerning topics relative to regulations in agricultural and lawn and garden uses of chemicals. This study will examine the Extension personnel's perceptions of the effectiveness and frequency of use of these methods and media.

Objectives

The specific objectives of the study were:

1. To identify and describe selected demographic characteristics of Cooperative Extension personnel surveyed.
2. To describe selected the program delivery methods and media used by Cooperative Extension personnel concerning agricultural and lawn and garden chemical regulations.
3. To examine the Cooperative Extension personnel's perceptions of the effectiveness of the selected methods and media.
4. To determine the frequency of use of the selected methods and media.

Assumptions

The following assumptions were made regarding this study:

1. The Cooperative Extension personnel understood the delivery methods and media addressed and how they are used.
2. The Extension personnel could respond and interpret the questionnaire uniformly.
3. Extension personnel could understand the relative importance of this study concerning future Extension program implementation.

Scope of the Study

The population of this study was comprised of all Cooperative Extension Service Agriculture, Horticulture, Agronomy, Entomology,

Plant Pathology, and Integrated Pest Management agents in the state of Oklahoma.

Definition of Terms

To add clarity and interpretation to the study, the following terms need to be defined:

Cooperative Extension Service - an organization created by the Smith-Lever Act of Congress in 1914 to translate and disseminate research-based information from the land-grant universities in agriculture, home economics, and related fields to the public. The terms "Extension," "Cooperative Extension," and "Cooperative Extension Service" will be used synonymously in this study.

Delivery Method - a tool of various types used by educators to deliver, distribute, or transfer related information to the audience seeking the information.

Extension Agent - refers to personnel employed by the Cooperative Extension Service to perform the tasks designated of the organization. The terms "County Agent," "Extension Agent," "Extension Personnel" and "Extension Professional" will be used synonymously in this study.

Perceptions - a behavioral understanding or value of observation from a particular situation.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this chapter is to present an overview of information relating to the topic of this study. The review is organized into five major areas as follows: 1. Cooperative Extension's role in Adult Education; 2. Changing Behavior in Agriculture with Education; 3. Program Delivery Methods; 4. Program Delivery Media; 5. Basis for Chemical Use Education.

The researcher was only able to locate a limited number of related studies on the subject of assessment of Extension program delivery methods. The author could locate only one other study conducted in Oklahoma on a similar subject. That study evaluated agriculture producers' perceptions of program delivery methods. The purpose of this study was to determine the Extension personnel's perceptions of program delivery methods.

Cooperative Extension's Role

in Adult Education

"The ultimate objective towards [sic] which Extension work is directed is more fruitful lives and better living for all people" (Sanders, 1966, p. 417).

The Cooperative Extension Service was created in 1914 by the Smith-Lever Act of Congress with the following purpose in mind.

Central to extension programming are the needs of the people. It is an extension responsibility to translate new technology or indigenous experience into information that can be understood and applied by a large number of clients (Swanson, 1984, p. 110).

The Cooperative Extension Service works toward this purpose by utilizing employees at the county level. These employees are known as county agents. These agents receive support from specialists, both area and state, and from experts at land-grant universities. One primary responsibility of the agent is to initiate the translation of research-based information to the lay person or end user. According to Blauch (1969), it is the county agent who is responsible for bringing the service to the people for which the system was organized.

The audience of Extension is mainly adults. Gerling (1982) referred to Extension as "the single largest program of adult education and learning" (p. 1). Extension programs are directed at adults, according to Gerling. Even in the 4-H program, much of the effort is directed to assist adult volunteers.

According to Smith and Swisher (1989), the first step in any successful Extension program is to identify the audience. Once the audience is identified, the needs of the audience must be sought. Extension determines audience needs by asking the people who comprise the audience for input. This input of needs and priorities is usually done through the "Program Planning Committee" or the

"County Advisory Council" (Pirtle, 1989). This helps the agents to emphasize topics of interest to their audience.

The specific role of Extension in the field of Agriculture is to promote change. Lionberger and Gwin referred to Extension personnel as 'change agents.' Their reasoning for this is the fact that these individuals' purpose is to help agriculturists apply new technology, newly discovered methods, and increase efficiency in production agriculture to benefit . . . (Pirtle, 1989, p. 9).

Changing Behavior in Agriculture with Education

As stated earlier, the role of Extension is to promote change. This is not, however, an easy process. Several factors affect the process of change.

What influences people to change? This is one of the first items to consider. These influences vary from person to person and are commonly called variables. According to Lionberger and Gwin (1982)

. . . variables include characteristics of individuals; the situation these individuals are in, both real and imagined; the kinds of help they get from outsiders; resources they have at their disposal; what their friends and relatives expect from them; what the friends and relatives will do if they make a change; the kind of education strategies they are exposed to; how they are treated; and the value they place on change (p. 5).

The "change agent" must consider whether family or individual goals will affect the process of change. In some cases, the goals of the individual will work to facilitate change. To meet these goals, the individual may need additional information, supplies, or services (Pirtle, 1989).

Another factor to be considered in the process of change is the Adoption Process itself. This is process by which new technology or information is absorbed by the end user. There are five stages to the adoption process. They are as follows:

1. Awareness Stage - the individual is exposed to the innovation, but lacks complete information about it.
2. Interest Stage - the individual develops an interest in the innovation and seeks additional information.
3. Evaluation - the individual mentally applies the innovation to the present and anticipated future situations and then decides whether to try it.
4. Trial Stage - the individual uses the innovation on a trial basis to determine its effectiveness.
5. Adoption Stage - the individual decides whether to adopt or reject the innovation (Rogers, 1963).

Program Delivery Methods

"Researchers have found it useful to categorize the information sources utilized by farmers and homemakers as (1) personal, in which there is a face-to-face exchange between the communicator and the receiver, and (2) impersonal" (Rogers, 1963, p. 19).

According to Rogers (1963), impersonal information sources are most important in the awareness stage of the adoption process and personal sources are most important in the adoption and evaluation stages. The need for different types of information at different

stages of adoption has clearly shown the need for different types of program delivery methods.

Individual contact program delivery methods have been widely utilized by the Extension Service. Swanson (1984) said:

Individual contact methods are time consuming but its importance cannot be stressed enough, because it is through working individually with the clientele that the extension worker learns about the people of the area, how they think, what their needs are, and how they carry on their work (p. 130).

Group teaching methods have been used by Extension agents because they reach more total people (Swanson, 1984). Group methods appeared to be utilized by Extension agents because of the efficient way they use time and personnel.

Pirtle (1989) referenced many different types of methods used to accomplish the individual and group contact strategies.

Farm and Home Visits

This individual contact method involves the Extension agent meeting the producer at his home or farm. Wilson and Gallup (1955) said the farm visit may accomplish a variety of purposes. They said the visit may be a service call made due to a request from the producer for advice or assistance. The visit simply could be for the purpose of information gathering, or the visit could be to promote good will.

Office Visits

This individual contact method involves the client visiting the Extension agent's office. The client may be seeking information,

advice, or assistance with a problem. Wilson and Gallup (1955) said there were two main differences between an office visit and a farm visit: (1) personal contact is removed from the farm setting, and (2) the learner is seeking the teacher when he visits the office, as opposed to the teacher seeking the learner when he visits the farm. Office visits are perceived to be a good use of the agent's time, because the visitor would not be there if he did not want to learn.

On-Farm Demonstration

The use of demonstrations on the farm dates back to the very beginnings of Extension. Dr. S. A. Knapp used the concept of on-farm demonstration in Terrell, Texas, in 1903. This was prior to the establishment of the Cooperative Extension Service, but Dr. Knapp was to play a significant role in Extension's adoption of the on-farm demonstration philosophy (Sanders, 1966). On-farm demonstrations help build the confidence of both the producer and the Extension agent. Wilson and Gallup (1955) found this method of program delivery was one of the most expensive methods due to the large amount of agent's time and travel required for the project. On-farm demonstrations can be an individual or group contact method.

Experiment Station Visits

As with on-farm demonstration, experiment station visits can be a group or an individual contact method. Experiment station visits allow the producer to view the latest research and experiment

plots. The land-grant university maintains these research stations and the producers may monitor the progress of experiments and stay informed about developments in technology.

Visits by University Specialists

Extension specialists are available at the area and state levels to assist the county agents in discussing highly technical topics with producers. These specialists have the extensive, specialized background needed to deal with complex issues that may arise.

Group Workshops

The workshop is a method in which the participants will be trained in a skill, practice, or procedure and have a finished project at the end of the session (Swanson, 1984). Workshops can be a very effective teaching method (Parrish, Lassoie, Goff, and Decker, 1988).

Tours or Field Trips

The tour or field trip allows agriculture producers an opportunity to view practices, skills, or projects personally. Waltz and Curry (1984) found that people are generally curious but will only go places to investigate if they are invited. The tour or field trip gives individuals an opportunity to satisfy these curiosities.

Seminars

A seminar is generally composed of a small group of people with a specialized area of interest. The seminar provides an opportunity for them to hear an expert and have an in-depth discussion.

Seminars are normally reserved for advanced study (Swanson, 1984).

Lecture

Warmbrod, Newcomb, and McCracken (1986) found that a lecture is a good group teaching technique for disseminating factual information. This program delivery method involves a teacher or speaker of authority delivering material to a group of people. The teacher/speaker must prepare the lecture prior to the meeting. The use of visual aids will help keep the program interesting and make it easier to understand.

Panel Discussions

This method involves at least two speakers participating in an information discussion on a topic for the benefit of the audience (Wilson and Gallup, 1955). Each speaker usually will give a short presentation on the topic and a discussion will follow the presentations.

Conferences

This is a procedure in which a group of people, each of whom has some experience in connection with the problem at hand, convene to discuss the situations (Swanson, 1984). This method generally

provides opportunities for motivational thinking from the input of other participants.

Program Delivery Media

The demand for information from the Extension staff is tremendous. The Extension staff is not capable of providing all the needed information with an individual or group contact method. For this reason, mass media methods are used to reach large numbers of people (Swanson, 1984). Mass media teaching loses some intensity when compared with personal contact, but the sheer numbers of people reached and the cost efficiency of these mass media methods more than offsets this loss of intensity (Wilson and Gallup, 1955). Mass media may even serve to stimulate greater interest in the subject and prompt the end user to seek more information from the Extension personnel (Swanson, 1984). There are many different types and variations of mass media delivery methods available for use by the Extension Service.

Slide Presentations

"The slide is one of the most popular and versatile visuals that can be used in extension education" (Swanson, 1984, p. 151). Among the advantages provided by slide presentations are low cost, easy transportation, the sequences can be changed before or during the presentation, and time for a specific slide can be extended if needed. Disadvantages include inability to show action (Swanson, 1984).

Video Tapes

The use of video has increased dramatically in recent years. This increase can be related to the popularity of video-cassette recorders in the home and the efficiency of this method (Swanson, 1984). Video tapes can also be used to reinforce other program delivery methods. Convenience of use by the audience is an advantage of video.

Satellite Teleconference

The satellite video conference is increasing in popularity. The biggest advantage of satellite video conference is the savings of time and money due to the lack of travel both by the specialist and the audience (Ullery, 1986).

Pamphlets and Fact Sheets

The agriculture bulletin was the primary means of disseminating information prior to the creation of the Cooperative Extension Service by the Smith-Lever Act in 1914 (Wilson and Gallup, 1955). Advantages of pamphlets and Extension Fact Sheets include the ability to retain and refer to printed material at a later date; people, in general, have faith in the printed page; and low cost. Disadvantages include the need for frequent revision (Wilson and Gallup, 1955).

Newsletters

The newsletter provides a cost-effective method for reaching a very specific audience (Swanson, 1984). Lionberger and Gwin (1982) found the newsletter to be an extremely useful tool to reach an audience with a specific, common interest. Extension personnel often write their own newsletters or they may submit articles to newsletters published by other sources.

Radio/Television Programs

Radio and television provide the quickest access to the greatest number of people. This makes radio/television a very effective tool for information dissemination. Television allows for action footage to be distributed to a vast population in a remarkably short amount of time (Swanson, 1984).

Basis for Chemical Use Education

People have become very concerned about pesticides, how they have been used, and their potential damage to human health, wildlife, and the environment. Since the early 1970's, "state Cooperative Extension Systems have provided educational programming on the safe handling, use, and storage of pesticides" (Creswell, 1990, p. 1).

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended in 1972, authorized the Administrator of the United States Environmental Protection Agency to enter into cooperative agreements with states to:

1. Delegate the authority to cooperate in the enforcement of this Act, and to assist states in implementing cooperative enforcement programs.
2. Assist state agencies in developing and administering state programs for training and certification of pesticide applicators.
3. Enter into contracts with Federal or state agencies for the purpose of encouraging the training of certified pesticide applicators.
4. Utilize the services (in conjunction with the United States Secretary of Agriculture) of state Cooperative Extension Services, for informing farmers of accepted pesticide uses and other regulations (Public Law 92-516, 1972).

"The initial intent of this training and education program was to provide information on pesticides that would enable participants to apply and handle them correctly and safely" (Creswell, 1990, p. 2).

Since the amendment of FIFRA, many other acts regulating or restricting the use of chemicals in agriculture or lawn-care practices have been passed down from Congress to the states. Changes in existing regulations and the introduction of new regulations have only increased the need for effective educational programs about the proper handling, use, and storage of these chemicals.

Summary

Literature reviewed in this chapter indicated that Extension education can stimulate changes in lawn-care and agricultural practices used by producers. Many factors may influence and contribute to changes in practices. These factors must be considered before any type of program can be developed.

The literature indicated that once the influencing factors had been identified, a program delivery method must be chosen that meets the needs of the audience to be served. These delivery methods can be individual or group methods. They may also involve use of a mass media tool.

The literature also indicated that the Federal Government, through legislation of chemical regulations, created a need for chemical use education.

CHAPTER III

METHODOLOGY

The procedures used in the development and implementation of this study were dictated by the primary purpose. The purpose of the study was to describe and assess the program delivery methods and media used by Cooperative Extension personnel on topics relating to agricultural and lawn and garden usages of chemicals. The study also examined the Extension personnel's perceptions of the effectiveness of these methods and media, and the frequency with which they were used. The specific objectives were:

1. To identify and describe selected demographic characteristics of Cooperative Extension personnel surveyed.
2. To identify and describe selected program delivery methods and media used by Cooperative Extension personnel concerning agricultural and lawn and garden chemical regulations.
3. To examine the Cooperative Extension personnel's perceptions of the effectiveness of the selected methods and media.
4. To determine the frequency of use of the selected methods and media.

Population

The population for this study included 91 Cooperative Extension Agriculture, Agronomy, Entomology, Plant Pathology, Horticulture, and Integrated Pest Management agents from the state of Oklahoma. This included county agents, and area and state specialists. These individuals were located on mail lists in the Oklahoma Cooperative Extension office as of July 1, 1994. This indicated they were actively involved in Extension programs and could evaluate the delivery methods included in the questionnaire for the study.

A total of 58 questionnaires were returned, a 62 percent response rate.

Instrument

The survey instrument was limited to a questionnaire. This questionnaire was distributed personally to 26 Extension Agriculture agents at the statewide Agriculture Agents Conference in Stillwater, Oklahoma, July 6 to 8, 1994. Those Agriculture agents not attending the conference, as well as all Agronomy, Entomology, Plant Pathology, Horticulture, and Integrated Pest Management agents, were mailed the questionnaire, along with a stamped, self-addressed, return envelope.

The instrument was approved by the Oklahoma State University Institutional Review Board to comply with all requirements for human subject research. The instrument and project did not violate the rights and welfare of any of the human subjects involved, thus, it

was approved for usage. The IRB Approval Number is AG-94-033 (See Appendix A).

The instrument was reviewed and its content verified by a panel of experts in agricultural and extension education who were familiar with adult education methodology.

The questionnaire asked the Extension personnel to rate the effectiveness of Extension program delivery methods on a Likert-type scale of 1 to 5 with 1 being Not Effective and 5 being Very Effective. The instrument also addressed the frequency with which each method was used. A Likert-type scale of 1 to 5 was again used, with 1 being Not Used and 5 being Heavily Used. Information was also requested regarding the effectiveness and frequency of use of program delivery media (i.e., slide presentations, video, etc.). The media were rated on the same 1 to 5 scale as were the delivery methods.

Extension personnel were given the opportunity to list the three delivery methods they thought were most effective and why when used for conducting programs concerning agricultural and lawn-care chemical regulations.

The questionnaire also asked the Extension personnel to indicate their specific function and area of specialty as well as the number of years employed by the Extension Service and how many, if any, years of formal teaching experience they had.

Data Collection

The data were collected by means of questionnaires administered in person to 26 agents at the Oklahoma Extension Agriculture Agents

Conference in Stillwater, Oklahoma. Any Agriculture agents who were not in attendance, as well as any other members of the study population, were mailed the questionnaire, along with a self-addressed, stamped, return envelope.

Analysis of Data

The analysis of data was completed by calculating frequency distributions, percentages, mean scores, and standard deviations. The mean score for each delivery method and medium was calculated and the methods and media were rated by using the calculated mean to determine the appropriate category of effectiveness and use. To allow a more accurate description and analysis of data, numerical values were assigned and real limits established for the program delivery methods. Those limits are as follows:

<u>Numerical Value</u>	<u>Range of Real Limits</u>	<u>Perception of Delivery Method/Media</u>
5	4.50 - 5.00	Very Effective
4	3.50 - 4.49	Effective
3	2.50 - 3.49	Somewhat Effective
2	1.50 - 2.49	Of Little Effectiveness
1	1.00 - 1.49	Not Effective

<u>Numerical Value</u>	<u>Range of Real Limits</u>	<u>Frequency of Use Method/Media</u>
5	4.50 - 5.00	Heavily Used
4	3.50 - 4.49	Frequently Used
3	2.50 - 3.49	Sometimes Used
2	1.50 - 2.49	Rarely Used
1	1.00 - 1.49	Not Used

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

The major purpose of the study was to identify and assess should program delivery methods and media used by Cooperative Extension personnel concerning topics relative to regulations in agricultural and lawn and garden uses of chemicals. The study also examined the Extension personnel's perceptions of the effectiveness and the frequency of use of these methods and media.

The data were collected from 58 Oklahoma State Cooperative Extension Agents. The objective of this chapter was to interpret and present information from the collection of data compiled in the study.

Population

The study population consisted of 91 Oklahoma State Cooperative Extension Agents. All county, area and state specialists in Agriculture, Agronomy, Entomology, Horticulture, Plant Pathology and Integrated Pest Management were included in the population. The population was selected using the 1994 Division of Agricultural Sciences and Natural Resources Personnel Directory for Oklahoma State University. Twenty-six questionnaires were hand delivered to members of the population attending the statewide Cooperative

Extension Agriculture Agents Association Conference in July, 1994. The remaining 65 questionnaires were delivered to the population by mail. There was a 62 percent response rate meaning 58 of the questionnaires were completed and returned. The respondents were divided into three areas of specialization. These areas are Agriculture, Entomology, and Plant Science. The Plant Science area is made up of Extension specialists in Agronomy, Horticulture and Plant Pathology. Table 1 is a population breakdown by area of specialization and the percentage of respondents within each area. The largest number of respondents were agriculture agents (44). Eight respondents were Entomology specialists and six respondents were Plant Science specialists. Table 2 contains a summary of the demographic data obtained by area of specialization. It includes area of specialization, age, gender, education, and years of extension experience.

Findings of the Study

The purpose of the remainder of this chapter was to present and interpret data that were collected in relation to the effectiveness and frequency of use of program delivery methods and media as perceived by Cooperative Extension personnel in Oklahoma.

The findings of this study are presented under the categories of program delivery methods and program delivery media for each specialized group within the Extension population (Agriculture, Entomology, and Plant Science), and comparisons are made between the groups. A response mean was calculated for each response and a

TABLE 1
DISTRIBUTION OF POPULATION AND RESPONDENTS BY AREA
OF SPECIALIZATION

Area of Specialization	N	n	Percent (%)
Agriculture			
County	66	44	66
Entomology			
County	2	1	50
Area	6	3	50
State	4	4	100
Plant Science¹			
County	3	1	33
Area	8	4	50
State	4	1	25

N = Number of persons by area selected for the population

n = Number of persons by area responding

¹ = Plant Science is made up of Extension Agents with areas of specialty in Agronomy, Plant Pathology, or Horticulture

TABLE 2
DISTRIBUTION OF RESPONSES IN EXTENSION PROGRAM AREAS
BY SELECTED DEMOGRAPHIC CATEGORIES

Category	Number of Respondents by Area						
	Agriculture	Entomology			Plant Science ¹		
	County	County	Area	State	County	Area	State
<u>Age</u>							
21-25	3	0	0	0	0	0	0
26-30	1	1	0	0	0	0	0
31-35	7	0	1	0	0	0	1
36-40	14	0	1	1	0	1	0
41-45	5	0	1	1	0	2	0
46-50	9	0	0	0	0	1	0
51-55	1	0	1	1	1	0	0
<u>Gender</u>							
Male	41	0	4	3	1	4	1
Female	3	1	0	0	0	0	0
<u>Education</u>							
Bachelor's	11	0	0	0	0	0	0
Master's	33	1	2	1	1	4	1
Doctorate	0	0	1	3	0	0	0
<u>Years of Extension Experience</u>							
< 1	2	1	0	0	0	0	0
1- 5	5	0	0	1	0	0	0
6-10	11	0	1	0	0	1	0
11-20	19	0	2	3	0	2	1
20 +	7	0	0	0	1	1	0

¹ Plant Science is made up of Extension Agents with area of specialty in Agronomy, Plant Pathology, or Horticulture

rating assigned based on this mean. There was also a mean and rating established for the frequency with which these methods and media were used.

To permit a more accurate description and analysis of the data, numerical values were assigned and real limits established for the perceptions of delivery methods and media according to the following schemes:

<u>Numerical Value</u>	<u>Range of Real Limits</u>	<u>Perception of Delivery Method/Media</u>
5	4.50 - 5.00	Very Effective
4	3.50 - 4.49	Effective
3	2.50 - 3.49	Somewhat Effective
2	1.50 - 2.49	Of Little Effectiveness
1	1.00 - 1.49	Not Effective

<u>Numerical Value</u>	<u>Range of Real Limits</u>	<u>Frequency of Use of Delivery Method/Media</u>
5	4.50 - 5.00	Heavily Used
4	3.50 - 4.49	Frequently Used
3	2.50 - 3.49	Sometimes Used
2	1.50 - 2.49	Rarely Used
1	1.00 - 1.49	Not Used

Effectiveness of Program Delivery Methods

This study examined the perceived effectiveness of the following program delivery methods for delivering programs concerning chemical regulations in agriculture and lawn-care:

Individual Contact

Office Visits

Farm Visits

Visits to Experiment Stations

Visits by University Specialists

On-Farm Demonstration

Group Workshops

Tours/Field Trips

Group Seminars

Group Lectures

Panel Discussions

Conferences

Table 3 was developed to present the means and ratings for the effectiveness of program delivery methods according to the different specializations in Extension (Agriculture, Entomology, and Plant Science).

The most effective method as perceived by the Agriculture agents was Individual Contact. Individual Contact received an effectiveness rating of Very Effective as indicated by its mean of 4.60. Individual Contact was the only method to be rated Very Effective by the Agriculture agents. For this group, Farm Visits and Office Visits followed closely behind Individual Contact. These received Effective ratings and had means of 4.48 and 4.45 respectively. Other methods rated Effective by Agriculture agents included Visits by University Specialists (4.02), On-Farm Demonstrations (3.93), and Tours/Field Trips (3.63). The Agriculture agents perceived Panel Discussions as the least effective program delivery method. Panel Discussions were rated as Somewhat Effective with a mean of 2.76.

The Extension personnel in the Entomology area perceived Farm Visits to be the most effective program delivery method followed

TABLE 3
EFFECTIVENESS OF SELEGED PROGRAM DELIVERY METHODS

MEAN LEVEL OF EFFECTIVENESS AND STANDARD DEVIATIONS BY RESPONDENT GROUPS														
METHOD	AGRICULTURE				ENTOMOLOGY				PLANT SCIENCE				OVERALL	
	n	mean	sd	rating	n	mean	sd	rating	n	mean	sd	rating	mean	rating
Individual Contact	42	4.60	.59	VE	8	4.13	.95	E	6	3.67	1.21	E	4.43	E
Farm Visits	42	4.48	.63	E	7	4.14	.82	E	6	4.33	.82	E	4.42	E
Office Visits	42	4.45	.67	E	7	3.57	1.03	E	6	3.83	1.33	E	4.27	E
Visits by University Specialists	42	4.02	.75	E	7	3.43	1.21	SE	6	4.00	.63	E	3.95	E
On-Farm Demonstrations	42	3.93	.84	E	7	3.57	1.84	E	6	4.00	.63	E	3.89	E
Tours/Field Trips	41	3.63	.73	E	8	3.51	1.60	E	6	3.67	.82	E	3.65	E
Group Workshops	42	3.43	.77	SE	8	3.88	.82	E	6	3.50	.55	E	3.50	E
Groups Seminars	42	3.24	.69	SE	8	3.63	.95	E	6	3.67	.52	E	3.34	SE
Visits to Experiment Stations	42	3.24	.85	SE	8	3.00	1.35	SE	6	3.20	.84	SE	3.20	SE
Conferences	41	3.00	.87	SE	8	4.00	.82	E	5	3.18	.41	SE	3.16	SE
Groups Lectures	41	2.98	.82	SE	8	2.88	1.29	SE	6	3.33	.82	SE	3.00	SE
Panel Discussions	41	2.76	.94	SE	8	3.00	.95	SE	6	3.00	1.00	SE	2.81	SE

Legend for interpreting mean ratings: VE = Very Effective, E = Effective, SE = Somewhat Effective, LE = Of Little Effectiveness, NE = Not Effective

very closely by Individual Contact. Both were rated as Effective with means of 4.14 and 4.13 respectively. Other methods that agents in the Entomology area perceived to be Effective included Office Visits (3.57), On Farm Demonstrations (3.57), Group Workshops (3.88), Tours/Field Trips (3.51), Group Seminars (3.63), and Conferences (4.00). Group Lectures were perceived by the Entomology specialists as the least effective method with a mean of 2.88 and a rating of Somewhat Effective.

The Plant Science specialists also perceived Farm Visits to be the most effective program delivery method. Farm Visits were rated Effective with a mean of 4.33. Other methods rated Effective by the Plant Science specialists were Individual Contact (3.67), Office Visits (3.83), Visits by University Specialists (4.00), On-Farm Demonstrations (4.00), Group Workshops (3.50), Tours/Field Trips (3.67), and Group Seminars (3.67). Panel Discussions were perceived to be the least effective method. Plant Science specialists rated them Somewhat Effective with a mean of 3.00.

The Agriculture group was the only group to rate Individual Contact as the best method and were the only group to rate any method Very Effective. Entomology and Plant Science specialists found Farm Visits to be the best method and both rated the method Effective.

The least effective methods were Panel Discussions and Group Lectures. Plant Science and Entomology specialists both rated Panel Discussions as Somewhat Effective and it had the lowest mean rating of any method in both groups. Agriculture agents rated Group

Lectures as Somewhat Effective with the lowest mean of any method they evaluated.

Frequency of Use of Program Delivery Methods

Another area of focus for this study was the frequency of use of the different program delivery methods. Table 4 is a compilation of the ratings and means of the frequency of use of the methods by the different areas of specialization.

Agriculture agents use Individual Contact more than any other method. They rated it as Heavily Used with a mean of 4.68. This was the only method rated Heavily Used by any group. The Agriculture agents gave Frequently Used ratings to the following methods: Office Visits (4.32) and Farm Visits (3.68). The method with the least amount of use by Agriculture agents was Panel Discussions with a Rarely Used rating and a mean of 2.34.

Respondents in the Entomology area gave their highest rating to Individual Contact as well. They rated it Frequently Used with a mean of 3.88. Other methods rated Frequently Used by the Entomology specialists included Group Workshops (3.75), Group Seminars (3.63), and Group Lectures (3.50). The least used method as rated by the Entomology specialists was Office Visits with a rating of Sometimes Used and a mean of 2.63.

Plant Science specialists also use Individual Contact with the greatest frequency. They rated it Frequently Used with a mean of 3.83. Other methods Frequently Used by Plant Science specialists were Office Visits (3.67), Group Workshops (3.50), and Group

TABLE 4
FREQUENCY OF USE OF SELECTED PROGRAM DELIVERY METHODS

MEAN FREQUENCY OF USE AND STANDARD DEVIATIONS BY RESPONDENT GROUPS														
METHOD	AGRICULTURE				ENTOMOLOGY				PLANT SCIENCE				OVERALL	
	n	mean	sd	rating	n	mean	sd	rating	n	mean	sd	rating	mean	rating
Individual Contact	44	4.68	.52	HU	8	3.88	.35	FU	6	3.83	1.17	FU	4.48	FU
Office Visits	44	4.32	.67	FU	8	2.63	1.27	SU	6	3.67	1.21	FU	4.02	FU
Farm Visits	44	3.86	.82	FU	8	3.13	1.35	SU	6	3.00	.63	SU	3.67	FU
Groups Seminars	44	3.18	.82	SU	8	3.63	.76	FU	6	3.67	.82	FU	3.29	SU
Tours/Field Trips	43	3.30	.74	SU	8	3.13	1.35	SU	6	3.33	1.37	SU	3.28	SU
Group Workshops	44	3.11	.78	SU	8	3.75	.69	FU	6	3.50	1.38	FU	3.24	SU
On-Farm Demonstrations	44	3.27	.79	SU	8	3.00	1.53	SU	6	3.17	.75	SU	3.22	SU
Visits by University Specialists	44	3.21	.90	SU	7	2.86	.63	SU	6	3.00	0.00	SU	3.14	SU
Groups Lectures	44	3.02	.88	SU	8	3.50	.98	FU	6	3.33	1.03	SU	3.12	SU
Conferences	43	2.81	.88	SU	8	3.38	.98	SU	5	2.80	.45	SU	2.89	SU
Visits to Experiment Stations	44	2.64	.84	SU	8	2.75	1.11	SU	6	2.50	.84	SU	2.64	SU
Panel Discussions	44	2.34	.94	RU	8	2.75	.95	SU	6	2.00	1.27	RU	2.36	RU

Legend for interpreting mean ratings: HU = Heavily Used, FU = Frequently Used, SU = Sometimes Used, RU = Rarely Used, NU = Not Used

Seminars (3.67). Panel discussions were used the least and had a Rarely Used rating with a mean of 2.00.

Panel Discussions were given the lowest rating by mean in each of the three groups. Agriculture agents and Plant Science specialists both rated it Rarely Used, while the Entomology specialists rated it Sometimes Used.

Individual Contact was the method with the most use by all three groups. Agriculture agents rated it Heavily Used and Plant Science and Entomology specialists rated it Frequently Used.

Effectiveness of Program Delivery Media

The study also sought to evaluate the effectiveness of Program Delivery Media. The following media were evaluated as to their perceived effectiveness on a five-point Likert-type scale:

Lecture

Slide Presentation

Video

Satellite Teleconference

Pamphlets and Fact Sheets

On-Farm Demonstration

Newsletters

Computers

Radio/TV Programs

Exhibits and Displays

Table 5 was developed to reflect the data of the perceived effectiveness of the Program Delivery Media and to present both the categorical rating and the mean of each method by the area of specialization of the respondents.

On-Farm Demonstration was rated as Effective with a mean of 4.02 by the Agriculture agents. Several other media were also rated Effective by the Agriculture agents. They were Slide Presentation (3.58), Pamphlets and Fact Sheets (3.91), and Newsletters (3.81). Satellite teleconference had the lowest mean and rating of the methods as perceived by the Agriculture Agents. It was rated Of Little Effectiveness with a mean of 2.43. Agriculture agents also rated Computers to be Of Little Effectiveness (2.49).

The Entomology specialists rated Slide Presentations and Pamphlets and Fact Sheets as Effective and each had a mean score of 4.00. Video (3.50), Newsletters (3.88), Radio/TV Programs (3.50), and Exhibits and Displays (3.88) were also rated Effective by the Entomology specialists. Ratings of Somewhat Effective were given to Lecture (3.38), Satellite Teleconference (2.75), On-Farm Demonstration (2.80), and Computers (2.71) by the Entomology specialists. Computers (2.71), with a Somewhat Effective rating, had the lowest mean of the media.

On-Farm Demonstration was also the highest rated media according to the Plant Science specialists. They rated it Effective with a 3.83 mean. Lecture (3.67) and Slide Presentation (3.67) were also rated Effective. Computers and Exhibits and Displays had the lowest means (3.00) of the media and were rated Somewhat Effective.

TABLE 5
EFFECTIVENESS OF SELECTED PROGRAM DELIVERY MEDIA

MEAN LEVEL OF EFFECTIVENESS AND STANDARD DEVIATIONS BY RESPONDENT GROUPS														
MEDIA	AGRICULTURE				ENTOMOLOGY				PLANT SCIENCE				OVERALL	
	n	mean	sd	rating	n	mean	sd	rating	n	mean	sd	rating	mean	rating
On-Farm Demonstration	43	4.02	.67	E	5	2.80	1.79	SE	6	3.83	.75	E	3.89	E
Pamphlets and Fact Sheets	43	3.91	.68	E	8	4.00	.90	E	5	3.40	.55	SE	3.88	E
Newsletters	43	3.81	.76	E	8	3.88	.58	E	6	3.33	.82	SE	3.77	E
Slide Presentation	43	3.58	.79	E	8	4.00	.69	E	6	3.67	.52	E	3.65	E
Video	43	3.35	.82	SE	8	3.50	.79	E	4	3.25	.50	SE	3.36	SE
Exhibits and Displays	41	3.02	.85	SE	8	3.88	.82	E	5	3.00	1.00	SE	3.15	SE
Lecture	42	3.02	.81	SE	8	3.38	.69	SE	6	3.67	.82	E	3.14	SE
Radio/TV Programs	41	3.02	1.08	SE	8	3.50	.79	E	4	3.25	.96	SE	3.11	SE
Computers	41	2.49	.90	LE	7	2.71	1.11	SE	3	3.00	1.00	SE	2.55	SE
Satellite Teleconference	42	2.43	.77	LE	8	2.75	1.27	SE	4	3.25	.50	SE	2.54	SE

Legend for interpreting mean ratings: VE = Very Effective, E = Effective, SE = Somewhat Effective, LE = Of Little Effectiveness, NE = Not Effective

Video (3.25), Satellite Teleconference (3.25), Pamphlets and Fact Sheets (3.40), Newsletters (3.33), and Radio/TV Programs (3.25) were also rated Somewhat Effective.

The Agriculture Agents and the Plant Science specialists both gave their highest rating (by mean) to On-Farm Demonstration. This was an Effective rating. The Entomology specialists rated Slide Presentations and Pamphlets and Fact Sheets the highest by mean. They were both rated Effective.

The Plant Science specialists rated Computers and Exhibits and Displays the lowest by mean. Both were rated Somewhat Effective. Entomology specialists also rated Computers the lowest by mean. It was given a Somewhat Effective rating. Satellite Teleconference was rated the lowest by the Agriculture agents. It was rated Of Little Effectiveness.

Frequency of Use of Program Delivery Media

The respondents were asked to rate the frequency of use of the different Program Delivery Media. Table 6 is a compilation of the data on frequency of use of the different Media. It provides information on the mean, categorical rating, and number of respondents for each area of specialization.

Agriculture agents use Pamphlets and Fact Sheets more than any other Media. It was given a rating of Frequently Used with a mean of 4.32. Slide Presentation (3.57) and Newsletters (4.05) were also rated Frequently Used. Computers were the lowest rated media by the

TABLE 6
FREQUENCY OF USE OF SELECTED PROGRAM DELIVERY MEDIA

MEAN FREQUENCY OF USE AND STANDARD DEVIATIONS BY RESPONDENT GROUPS														
MEDIA	AGRICULTURE				ENTOMOLOGY				PLANT SCIENCE				OVERALL	
	n	mean	sd	rating	n	mean	sd	rating	n	mean	sd	rating	mean	rating
Pamphlets and Fact Sheets	44	4.32	.60	FU	8	4.50	.79	HU	5	3.60	1.52	FU	4.28	FU
Newsletters	44	4.05	.89	FU	8	4.13	.90	FU	6	3.33	1.37	SU	3.98	FU
Slide Presentation	44	3.57	.82	FU	8	4.50	.49	HU	6	3.83	.75	FU	3.72	FU
On-Farm Demonstration	44	3.41	.73	SU	6	2.00	.84	RU	6	3.67	.82	FU	3.29	SU
Lecture	43	3.09	.92	SU	8	4.00	1.00	FU	6	3.50	.55	FU	3.26	SU
Video	44	3.02	.73	SU	8	3.00	1.46	SU	6	1.83	.98	RU	2.90	SU
Exhibits and Displays	43	2.77	.95	SU	8	3.38	.79	SU	6	2.67	1.03	SU	2.84	SU
Radio/TV Programs	43	2.72	1.30	SU	8	2.88	.38	SU	6	2.33	1.63	RU	2.70	SU
Computers	44	2.30	.90	RU	7	2.43	1.27	RU	6	2.00	1.27	RU	2.28	RU
Satellite Teleconference	44	2.32	.67	RU	8	2.13	.69	RU	6	2.00	1.10	RU	2.26	RU

Legend for interpreting mean ratings: HU = Heavily Used, FU = Frequently Used, SU = Sometimes Used, RU = Rarely Used, NU = Not Used

Agriculture agents receiving a 2.30 mean and a rarely used rating. Satellite Teleconferences (2.32) were also rated Rarely Used.

Pamphlets and Facts Sheets and Slide Presentations were both rated Heavily Used by the Entomology specialists. Both had means of 4.50. No other medium was rated Heavily Used by the Entomology specialists. On-Farm Demonstration was the lowest rated medium by this group. It had a mean of 2.00 and a frequency rating of Rarely Used. Two additional media were rated Rarely Used by this group. Those media were Satellite Teleconference (2.13) and Computers (2.43).

The Plant Science specialists also gave Slide Presentations the highest rating (by mean). It was found to be Frequently Used with a mean of 3.83. Other media rated Frequently Used by the Plant Science specialists were Lecture (3.50), Pamphlets and Fact Sheets (3.60), and On-Farm Demonstration (3.67). Video was the lowest rated medium (by mean) with a mean of 1.83 and a Rarely Used rating. Three other media were also rated Rarely Used by the Plant Science specialists. Those media were Satellite Teleconference (2.00), Computer (2.00), and Radio/TV Programs (2.33).

Pamphlets and Fact Sheets were rated the most used method by the Agriculture agents (Frequently Used). The Entomology specialists gave both Pamphlets and Fact Sheets and Slide Presentations the same ratings (Heavily Used, 4.50). The Plant Science specialists gave their highest rating to Slide Presentations (Frequently Used). Computers were rated the least used media by the Agriculture agents. Entomology specialists gave their lowest rating

to Satellite Teleconference. Video was the media used least by the Plant Science specialists. All three methods were rated as Rarely Used.

Respondent Comments

The respondents were asked to list the three Program Delivery Methods they found most effective and why. The following comments include those methods mentioned most and why.

Group sessions (includes workshops, lecture, and seminars) were listed most often. One advantage to group sessions listed was the ability to answer many clients' questions at one time. Many of the clients may have the same question and group sessions allow agents to answer the question only once. Another advantage was that group sessions allow agents to make effective use of representatives from the Environmental Protection Agency, Oklahoma Cooperative Extension Service, and the Department of Environmental Quality.

The next method referred to by the agents was one-on-one or individual contact. The agents reported that individual contact allowed them to answer specific questions the client might have. It was also noted that if the individual client seeks out the agent for advice then the client is truly interested in the information. One interesting forum for individual contact was coffee shops and cafes.

Farm visits and on-farm demonstrations were also popular methods. "Problems that are specific to one farm can be best addressed on that farm." The fact that both methods allow hands-on

learning contributed to the agents perceptions of the effectiveness of these methods.

Other methods listed included field days/tours, newsletters, and university specialists.

The respondents were asked if delivering programs about chemical regulations was more difficult than other types of programs and if so, why. The following are selected comments from these responses.

The agents said that many of the clientele found the information to be boring or dry, of no great importance to them, that the information was too difficult to understand, and that many of the clientele really don't care about the regulations.

The following are quotes from the respondents:

The difficulties include producer attitudes toward perceived over-regulations, wordiness and length of most chemical labels (getting the client to read the label thoroughly), and frequency of change and revision in chemical labelling and regulations.

People do not feel that enforcement of the laws will take place.

Chemical regulations limit the freedoms of rugged individualist farmers.

It doesn't make them (clients) money.

Other problems or difficulties included delay in dissemination of information from governmental agencies to agents and clients, simply and overwhelming amount of information, and the regulation and labels are not written in plain, everyday English.

The respondents were asked to list any special methods that may be required to deliver information on chemical regulations. The following are quotes from the respondents:

Showing damage and consequences of non-compliance with regulations is a good method of convincing the clientele of the importance of compliance.

It is important to involve regulatory personnel, such as State Department of Agriculture officials, when giving information or regulations because they are the final authority.

The regulation must be presented clearly, not simply read.

(The agent) must understand the regulations before you present it. You should have answers to the common or expected questions.

Respond definitely to each question. "I don't know" is a good answer, but it requires a follow-up and the follow-up must be done.

Other comments included sympathize with the producer, maintain a positive attitude about the subject, summarize the information as much as possible, and add humor to the presentation.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter was to present a summary review of the study problem, the design and methodology, and major findings. Also presented are conclusions and recommendations resulting from analysis and interpretation of the data.

Summary of the Study

Purpose of the Study

The purpose of the study was to describe and assess the program delivery methods and media used by Cooperative Extension personnel concerning topics relative to regulations in agricultural and lawn and garden uses of chemicals. The study also examined the Extension personnel's perceptions of the effectiveness and frequency of use of these methods and media.

Objectives of the Study

The specific objectives were:

1. To identify and describe selected demographic characteristics of Cooperative Extension personnel surveyed.
2. To identify and describe selected program delivery methods and media used by Cooperative Extension personnel concerning agricultural and lawn and garden chemical regulations.

3. To examine the Cooperative Extension personnel's perceptions of the effectiveness of the selected methods and media.

4. To determine the frequency of use of the selected methods and media.

Population

The population for this study included 91 Cooperative Extension Agriculture, Agronomy, Entomology, Plant Pathology, Horticulture, and Integrated Pest Management agents from the state of Oklahoma. This included county agents, and area and state specialists. These individuals were located on mail lists in the Oklahoma Cooperative Extension office as of July 1, 1994.

A total of 58 questionnaires were returned, a 62 percent response rate.

Instrument

The survey instrument was limited to a questionnaire. The questionnaire asked the Extension personnel to rate the effectiveness of Extension program delivery methods on a Likert-type scale of 1 to 5 with 1 being Note Effective and 5 being Very Effective. The instrument also addressed the frequency with which each method was used. A scale of 1 to 5 was again used, with 1 being Not Used and 5 being Heavily Used. Information was also requested regarding the effectiveness and frequency of use of program delivery media. The media were rated on the same 1 to 5 scale as were the delivery methods.

Data Collection

The data were collected by means of questionnaires delivered in person to 26 agents at the Oklahoma Extension Agriculture Agents conference in Stillwater, Oklahoma. Any Agriculture agents who were not in attendance, as well as the remaining members of the population, were mailed the questionnaire, along with a self-addressed, stamped, return envelope.

Findings of the Study

As previously stated, the major focus of this study was to determine the perceptions of Cooperative Extension personnel regarding program delivery methods and media used for delivery of information concerning chemical regulations in agriculture and lawn and garden usages. The study also examined the frequency of use of these methods and media.

Summary of Mean Responses Concerning the Effectiveness and Frequency of Selected Program Delivery Methods. Data in Table 7 are a summary of mean responses and ratings of the perceived effectiveness and frequency of use of selected program delivery methods. The Agriculture group was the only group to rate Individual Contact as the best method and were the only group to rate any method Very Effective. Entomology and Plant Science specialists found Farm Visits to be the best method and both rated the method Effective.

TABLE 7

OVERALL EFFECTIVENESS AND FREQUENCY OF USE
OF SELECTED PROGRAM DELIVERY METHODS

METHOD	EFFECTIVENESS		FREQUENCY	
	Mean	Rating	Mean	Rating
Individual Contact	4.43	Effective	4.48	Frequently Used
Farm Visits	4.42	Effective	4.02	Frequently Used
Office Visits	4.27	Effective	3.67	Frequently Used
Visits by University Specialists	3.95	Effective	3.29	Sometimes Used
On-Farm Demonstrations	3.89	Effective	3.28	Sometimes Used
Tours/Field Trips	3.65	Effective	3.24	Sometimes Used
Group Workshops	3.50	Effective	3.22	Sometimes Used
Groups Seminars	3.34	Somewhat Effective	3.14	Sometimes Used
Visits to Experiment Stations	3.20	Somewhat Effective	3.12	Sometimes Used
Conferences	3.16	Somewhat Effective	2.89	Sometimes Used
Groups Lectures	3.00	Somewhat Effective	2.64	Sometimes Used
Panel Discussions	2.81	Somewhat Effective	2.36	Rarely Used

The least effective methods were Panel Discussions and Group Lectures. Plant Science and Entomology specialist both rated Panel Discussions as Somewhat Effective and it had the lowest mean rating of any method in both groups. Agriculture agents rated Group Lectures as Somewhat Effective with the lowest mean of any method they evaluated.

Individual contact had the highest overall mean (4.43) and an Effective rating. Panel Discussions had the lowest overall mean (2.81) and were rate Somewhat Effective.

Individual contact was the method with the most use by all three groups. Agriculture agents rated it Heavily Used and Plant Science and Entomology specialists rated it Frequently Used. Panel Discussions were given the lowest rating by mean in each of the three groups. Agriculture agents and Plant Science specialists both rated it Rarely Used, while the Entomology specialists rated it Sometimes Used.

Individual Contact had the highest overall mean (4.48) and a Frequently Used rating. Panel Discussions had the lowest overall mean (2.36) and a Rarely Used rating.

Summary of Mean Responses Concerning the Effectiveness and Frequency of Selected Program Delivery Media. Data in Table 8 summarizes the mean responses and ratings for the effectiveness and frequency of use of selected program delivery media.

TABLE 8
OVERALL EFFECTIVENESS AND FREQUENCY OF USE
OF SELECTED PROGRAM DELIVERY MEDIA

MEDIA	EFFECTIVENESS		FREQUENCY	
	Mean	Rating	Mean	Rating
On-Farm Demonstration	3.89	Effective	4.28	Frequently Used
Pamphlets and Fact Sheets	3.88	Effective	3.98	Frequently Used
Newsletters	3.77	Effective	3.72	Frequently Used
Slide Presentation	3.65	Effective	3.29	Sometimes Used
Video	3.36	Somewhat Effective	3.26	Sometimes Used
Exhibits and Displays	3.15	Somewhat Effective	2.90	Sometimes Used
Lecture	3.14	Somewhat Effective	2.84	Sometimes Used
Radio/TV Programs	3.11	Somewhat Effective	2.70	Sometimes Used
Computers	2.55	Somewhat Effective	2.28	Rarely Used
Satellite Teleconference	2.54	Somewhat Effective	2.26	Rarely Used

The Agriculture Agents and the Plant Science specialists both gave their highest rating (by mean) to On-Farm Demonstration. This was an Effective rating. The Entomology specialists rated Slide Presentations and Pamphlets and Fact Sheets as Effective the highest by mean. They were both rated Effective.

The Plant Science specialists rated Computers and Exhibits and Displays the lowest by mean. Both were rated Somewhat Effective. Entomology specialists also rated Computers the lowest by mean. It was given a Somewhat Effective rating. Satellite Teleconference was rated the lowest by the Agriculture agents. It was rated Of Little Effectiveness.

On-Farm Demonstration had the highest overall mean (3.89) and a rating of Effective. Satellite Teleconference had the lowest overall mean (2.54) and a Somewhat Effective rating.

Pamphlets and Fact Sheets were rated the most used method by the Agriculture agents (Frequently Used). The Entomology specialists gave both Pamphlets and Fact Sheets and Slide Presentations the same ratings (Heavily Used, 4.50). The Plant Science specialists gave their highest rating to Slide Presentations (Frequently Used).

Computers were rated the least used media by the Agriculture agents. Entomology specialists gave their lowest rating to Satellite Teleconference. Video was the media used least by the Plant Science specialists. All three methods were rated as Rarely Used.

Pamphlets and Fact Sheets had the highest overall mean (4.28) and a Frequently Used rating. Satellite Teleconference had the lowest overall mean (2.26) and a Rarely Used rating.

Conclusions

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

1. The most effective forms of program delivery methods and media involved personal contact between the agent and the client.
2. The more effective a delivery media or method was perceived to be, the more frequently it was used by Extension agents.
3. The principle difficulty in delivering information about chemical regulations to the clients was the nature of the information itself. The information is dry, boring, difficult to understand, and apathy of the clientele exists toward the subject.
4. Understanding the information by the Cooperative Extension personnel before presentation to the clientele is essential for a successful program.
5. There was little discernable difference between the three groups' perceptions of effectiveness or frequency of use of the selected program delivery methods and media.

Recommendations

The following recommendations were based on the findings of this study and the conclusions that were reached:

1. That the findings of this study be communicated to the Cooperative Extension Service of the State of Oklahoma, department heads and faculty in Agronomy, Horticulture, Plant Pathology, and Entomology at Oklahoma State University so that the results of this study may serve as a guide for development and further use of selected program delivery methods and media.

2. That the Oklahoma Cooperative Extension Service develop a training program to better educate Extension personnel about chemical regulations for agriculture and lawn and garden usages.

3. That the Oklahoma Cooperative Extension Service develop a method of translating chemical regulations and information into a format which is easy to understand for both the Extension personnel and the clientele.

4. That Extension personnel be made aware of difficulties other agents encounter when presenting programs regarding chemical regulations.

Recommendations for Further Study

Further study which could provide helpful insight into related aspects of this research include:

1. Determine the perception of the Extension clients and compared them with the perceptions of the Extension personnel as to the effectiveness of program delivery methods and media concerning chemical regulations.

2. Determine what changes need to be made in the development of the wording of chemical regulations so that the regulations would be easier for all parties to understand.

3. Determine the attitudes of Cooperative Extension personnel toward chemical regulations.

4. Determine the attitudes of Cooperative Extension clientele toward chemical regulations.

5. Determine what influences the attitudes of Extension personnel and clients toward chemical regulations.

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APPENDIXES

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL FORM

**OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW**

Date: 06-28-94

IRB#: AG-94-033

**Proposal Title: OKLAHOMA COOPERATIVE EXTENSION PERSONNEL'S
PERCEPTIONS OF THE EFFECTIVENESS OF PROGRAM DELIVERY METHODS ON
CHEMICAL RESTRICTIONS IN AGRICULTURE AND LAWN-CARE**

Principal Investigator(s): James P. Key, Roy Lee Lindsey, Jr.

Reviewed and Processed as: Exempt

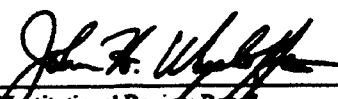
Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.

APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

Signature:


Chair of Institutional Review Board

Date: June 28, 1994

APPENDIX B

COVER LETTERS



COOPERATIVE EXTENSION SERVICE

DIVISION of AGRICULTURAL SCIENCES and NATURAL RESOURCES
 OKLAHOMA STATE UNIVERSITY • (405) 744-5398 • FAX (405) 744-5339
 Office of the Dean and Director • 139 Agricultural Hall • Stillwater, Oklahoma 74078-0500

July 6, 1994

Dear Extension personnel,

We are conducting a research study about the perceived effectiveness of program delivery methods for Extension programs covering chemical regulations in agriculture and lawn-care. Studies have been done in the past to assess the perceptions of the participants of Extension programs, but nothing has been done in Oklahoma to assess the Extension personnel's perceptions of these methods.

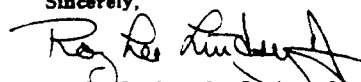
This study should provide valuable information about the program delivery methods Extension personnel prefer to use and why. While participation in this study is voluntary, we ask that you take a few minutes and fill out the enclosed questionnaire and place it in the collection box located at the back of the meeting room before you leave today. All responses will be confidential. Individual responses will not be singled out for use.

If you have any questions, please feel free to contact me at:

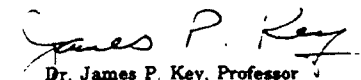
Roy Lee Lindsey, Jr.
 University Center for Water Research
 005 LSE
 Oklahoma State University
 Stillwater, OK 74078
 (405) 744-9256

Thank you for your time. Your cooperation is greatly appreciated.

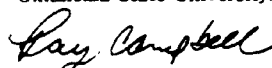
Sincerely,



Roy Lee Lindsey, Jr., Graduate Student
 Dept. of Agricultural Education
 Oklahoma State University.




Dr. James P. Key, Professor
 Dept. of Agricultural Education
 Oklahoma State University.



Dr. Ray Campbell, Interim Associate Director,
 Oklahoma Cooperative Extension Service
 Oklahoma State University.

cc: Dr. James White
 Dr. Robert Terry



COOPERATIVE EXTENSION SERVICE

DIVISION of AGRICULTURAL SCIENCES and NATURAL RESOURCES
 OKLAHOMA STATE UNIVERSITY • (405) 744-5338 • FAX (405) 744-5339
 Office of the Dean and Director • 139 Agricultural Hall • Stillwater, Oklahoma 74078-0500

July 6, 1994

Dear Extension personnel,

We are conducting a research study about the perceived effectiveness of program delivery methods for Extension programs covering chemical regulations in agriculture and lawn-care. Studies have been done in the past to assess the perceptions of the participants of Extension programs, but nothing has been done in Oklahoma to assess the Extension personnel's perceptions of these methods.

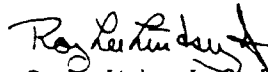
This study should provide valuable information about the program delivery methods Extension personnel prefer to use and why. While participation in this study is voluntary, we ask that you take a few minutes and fill out the enclosed questionnaire and return it in the self-addressed, stamped envelope provided by August 1, 1994. All responses will be confidential. Individual responses will not be singled out for use.

If you have any questions, please feel free to contact me at:


Roy Lee Lindsey, Jr.
 University Center for Water Research
 005 LSE
 Oklahoma State University
 Stillwater, OK 74078
 (405) 744-9256

Thank you for your time. Your cooperation is greatly appreciated.

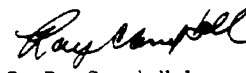
Sincerely,



Roy Lee Lindsey, Jr., Graduate Student
 Dept. of Agricultural Education
 Oklahoma State University.



Dr. James P. Key, Professor
 Dept. of Agricultural Education
 Oklahoma State University.




Dr. Ray Campbell, Interim Associate Director,
 Oklahoma Cooperative Extension Service
 Oklahoma State University.

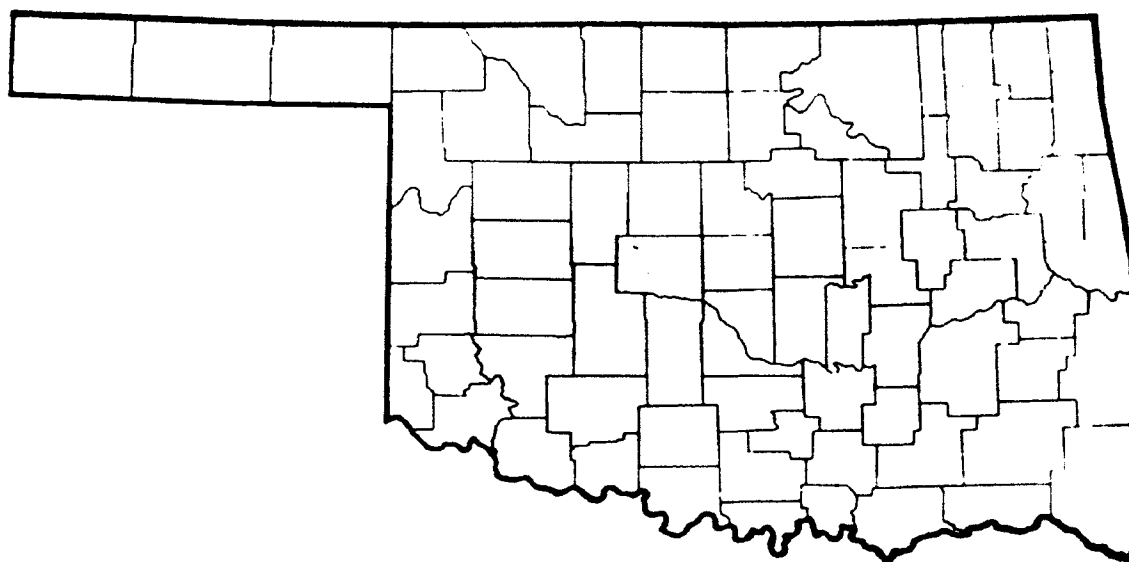
cc: Dr. James White
 Dr. Robert Terry

APPENDIX C

QUESTIONNAIRE



Oklahoma Cooperative Extension Service
Division of Agricultural Sciences and Natural Resources
Oklahoma State University



**OKLAHOMA COOPERATIVE EXTENSION PERSONNEL'S
PERCEPTIONS OF THE EFFECTIVENESS OF PROGRAM
DELIVERY METHODS ON CHEMICAL REGULATIONS IN
AGRICULTURE AND LAWN-CARE.**

Research Conducted by
Dr. James Key, Professor of Agricultural Education
and
Roy Lee Lindsey, Jr., M.S. Candidate in Agricultural Education
Department of Agricultural Education
Oklahoma State University
Summer 1994

Please complete and return by August 1, 1994.

The purpose of this study is to describe and evaluate the program delivery methods used by cooperative extension personnel concerning topics relating to agricultural and lawn-care chemicals. This study will also examine the extension personnel's perceptions of the effectiveness of these methods.

Please circle the response that best indicates your perception of the following program delivery methods and the frequency of use in teaching about agricultural or lawn-care chemical regulations. The column on the left identifies frequency of use and the column on the right identifies perceived effectiveness.

Frequency of Use					Program delivery method	Perceived Effectiveness				
Not Used	Rarely Used	Sometimes Used	Frequently Used	Heavily Used		Not effective	Of Little Effectiveness	Somewhat Effective	Effective	Very Effective
1	2	3	4	5	Individual contact	1	2	3	4	5
1	2	3	4	5	Office visits by producers	1	2	3	4	5
1	2	3	4	5	Farm visits	1	2	3	4	5
1	2	3	4	5	Visits to Experiment Stations	1	2	3	4	5
1	2	3	4	5	Visits by University Specialists	1	2	3	4	5
1	2	3	4	5	On-Farm Demonstration	1	2	3	4	5
1	2	3	4	5	Groups Workshops	1	2	3	4	5
1	2	3	4	5	Tours or Field Trips	1	2	3	4	5
1	2	3	4	5	Group Seminars	1	2	3	4	5
1	2	3	4	5	Groups Lecture	1	2	3	4	5
1	2	3	4	5	Panel Discussion	1	2	3	4	5
1	2	3	4	5	Conferences	1	2	3	4	5
1	2	3	4	5	Other _____	1	2	3	4	5

Please list the three most effective delivery methods you use when conducting chemical regulation education programs and why?

1. _____

2. _____

3. _____

Please circle the response that best indicates the effectiveness of the following media for delivering the message concerning chemical regulations. The column on the left indicates the frequency of use for each type of medium. The column on the right indicates your perceived effectiveness of each medium.

Frequency of Use					Program Delivery Media	Perceived Effectiveness				
Not Used	Rarely Used	Sometimes Used	Frequently Used	Heavily Used		Not effective	Of Little Effectiveness	Somewhat Effective	Effective	Very Effective
1	2	3	4	5	Lecture	1	2	3	4	5
1	2	3	4	5	Slide presentation	1	2	3	4	5
1	2	3	4	5	Video	1	2	3	4	5
1	2	3	4	5	Satellite Teleconference	1	2	3	4	5
1	2	3	4	5	Pamphlets and Fact Sheets	1	2	3	4	5
1	2	3	4	5	On-Farm Demonstration	1	2	3	4	5
1	2	3	4	5	Newsletters	1	2	3	4	5
1	2	3	4	5	Computers	1	2	3	4	5
1	2	3	4	5	Radio/ TV Programs	1	2	3	4	5
1	2	3	4	5	Exhibits and Displays	1	2	3	4	5

If delivering information on chemical regulations has been more difficult than other subjects please indicate why.

If delivering information on chemical regulations requires special delivery techniques or methods please indicate what these techniques or methods are.

Please **check** the appropriate box

- 1 I am the
 county agriculture agent other county (please specify)
 county horticulture agent area specialist in (area of specialty)
 state specialist in (area of specialty)
- 2 I have been employed by Cooperative Extension for
 less than 1 year more than 1 year, but less than 5 years
 more than 5 years, but less than 10 years more than 10 years, but less than 20 years
 more than 20 years
- 3 I am
 male female
- 4 My age is
 21 - 25 41 - 45
 26 - 30 46 - 50
 31 - 35 51 - 55
 36 - 40 55 +
- 5 The highest level of education I have completed is
(Please indicate area of specialty for each degree obtained)
 Bachelor's degree
 Master's degree
 Doctorate Degree
- 6 I have _____ years of formal teaching experience

Your input on this research study is greatly appreciated. Please feel free to make any additional comments which might be helpful for the researcher. Please return this form in the self addressed stamped envelope provided by August 15, 1994

THANK YOU!!

VITA

Roy Lee Lindsey, Jr.

Candidate for the Degree of
Master of Science

Thesis: ASSESSMENT OF PROGRAM DELIVERY METHODS AND MEDIA CONCERNING
CHEMICAL REGULATIONS IN AGRICULTURE AND LAWN AND GARDEN
USES BY SELECTED COOPERATIVE EXTENSION PERSONNEL IN
OKLAHOMA

Major Field: Agricultural Education

Biographical:

Personal Data: Born in Stillwater, Oklahoma, on August 14,
1967, the son of Roy L. and Judith G. Lindsey.

Education: Graduated from Cordell High School, Cordell,
Oklahoma in May 1985; received a Bachelor of Science
degree in Agricultural Communications from Oklahoma State
University, Stillwater, Oklahoma in July 1993; Completed
the requirements for the Master of Science degree with a
major in Agricultural Education at Oklahoma State
University in December 1994.

Experience: Reared in rural Cordell, Oklahoma; employed as
parts and equipment salesman during summers; employed as a
customer service coordinator for three years by AGCO Parts
Division, Batavia, Illinois; employed by Oklahoma State
University, University Center for Water Research as a
graduate assistant responsible for publication of bi-
monthly newsletter, 1993 to present.