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EVALUATION OF HOME HORTICULTURE/SMALL FARMS
PROGRAM THROUGH INDIVIDUAL CONSULTATION

A Thesis Presented

By

Tina Marie Smith

Submitted to the Graduate School of the
University of Massachusetts in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE

May 1987

Plant and Soil Sciences

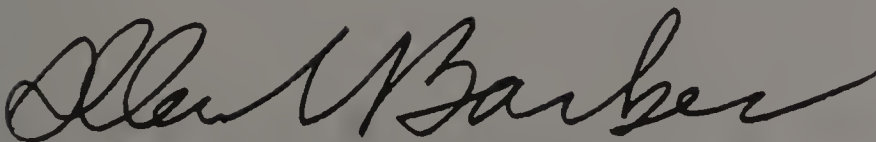
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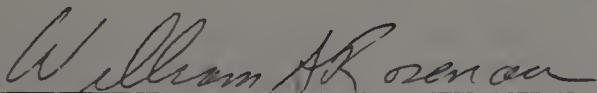
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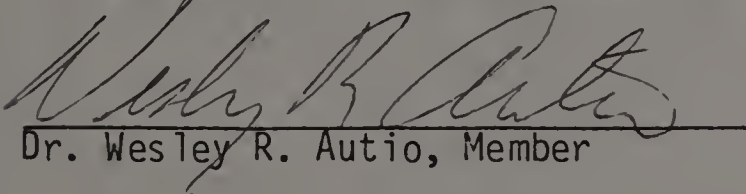
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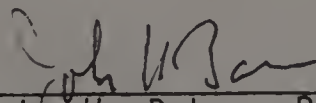
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C H A P T E R I

Previous Research and Justification

Introduction

The first section of this chapter reviews reasons for evaluations, and for accountability and the interrelationship between the two. This section also includes the definitions of summative and formative evaluations and how each are used. The second part describes the objectives and the type of evaluation chosen for the study.

The third part of this chapter focuses on the methods of delivery of information through office visits, telephone calls, and printed publications. This part also conveys the use of these methods for the purpose of education of the public by Extension Agents.

The fourth section identifies written resources used most often by Horticultural Agents in the United States. The final phase of this chapter focuses on current evaluations conducted by Home Horticultural Agents in Massachusetts. Home Horticultural Agents were asked for information regarding assessments of programs and their responses are summarized in this last section.

Theory and Design of Evaluation

The purpose of this section is to review concepts of evaluations of programs in Cooperative Extension.

There is an increasing need for evaluation of educational programs in Cooperative Extension (Smith and Lincoln 1984; Rivera, Bennett, and Walker, 1983). Evaluation is a process used to collect data about a

program. Data are then analyzed and interpreted in written reports which are the documentation used for accountability (McKenna, 1983). The placement of emphasis on accountability has resulted in the necessity for evaluation (Anderson, 1978). Policy makers and administrators need evidence to decide whether or not to initiate or to continue a given program and whether to commit resources to that program (Rivera, Bennett, and Walker, 1983). Program leaders and staff need practical evidence to make decisions for management of programs (Anderson, 1978; McKenna, 1983; Rivera, Bennett, and Walker, 1983).

Generally, studies of evaluation have been associated either with summative evaluations or formative evaluations (Anderson, 1978; Patton, 1982). Summative evaluations summarize the accomplishments of a program and are used to appraise the impact of the program for policy decisions (Anderson, 1978; Patton, 1982; Fitz-Gibbon and Morris, 1978). Summative reports describe something that already has happened and seldom are used to describe the effects of programs for future planning (Fitz-Gibbon and Morris, 1978).

Formative evaluations are used by planners of programs to identify potential problems and to monitor programmatic activities (Cronbach, 1982; Fitz-Gibbon and Morris, 1978). Formative evaluations give the opportunity to review the effectiveness of an entire program or of segments of the program and to improve the program.

Objectives

The purpose of this research was to study subcomponents of the Home Horticulture / Small Farm Program through personal consultations. Results of this study will be used to improve an existing program;

therefore, a formative approach was the basis for this study. The objectives of this study were:

- 1) To assess existing resources used to answer the questions of clientele.
- 2) To determine effectiveness of methods used to obtain information from clientele.
- 3) To determine the educational effectiveness of the delivery of information.
- 4) To determine if the clientele feel that the information given was accurate and useful.
- 5) To identify the programmatic needs of clientele.

Prior Methods of Information Delivery

Home and community gardens were promoted by Cooperative Extension as early as 1914, the year in which the Extension Service commenced operation under the Smith Lever Act (Brunner and Hsin Pao Yang, 1949). Assistance to clientele was provided by Horticultural Specialists with responsibilities for commercial growers or local agents with multidisciplinary responsibilities. Only in recent years have efforts been made to employ Home Horticultural Agents to work specifically with home-oriented clientele (Utzinger and Williams, 1984). During the 1950's Home Horticultural Agents were added to the staff in several counties in Massachusetts (Cooperative Extension Service, 1973). Tools used to reach individuals included written and printed materials, radio, television, film strips, tape recordings, and individual discussions through telephone, and office, farm, and home visits (Brunner and Hsin Pao Yang, 1949; Stavis, 1979). These means have been used

interchangeably to accomplish the same goal, i.e. bring about some change in farming or in home or community living. No one method meets all needs (Brunner and Hsin Pao Yang, 1949; Krisham, 1965; Perraton, Jamison, Jenkins, Orivel and Wolff, 1983). The more methods that are used the higher the percent of persons changing their practice (Perraton, Jamison, Jenkins, Orivel and Wolff, 1983). In this study, attention was given to personal consultations through, office visits, telephone calls, printed publications, and letters.

An office visit occurs as a result of an individual seeking information. The result is assistance or information given by the agent. Office visits are an effective means of communication, since individuals go to the office for a specific purpose and are ready to accept advice. The telephone call is also an important means of personal communication, linking the Extension Agent to the people in the county. The number of telephone calls made to and from all county Extension Agents in the United States exceeds 11 million annually and makes up over 40% of all personal contacts (Sanders, Arbour, Bourg, Clark, Frutchey, and Jones, 1966). Some advantages in selecting the telephone as an educational medium are: (a) it can reach isolated individuals; (b) it is available to the majority of residents, and (c) it can save time and money. A limitation for using the telephone as a medium is the potential misunderstandings of terms or ideas (Williams, 1978).

When communicating verbally it is important that the idea be understood easily and the amount of information be limited to few important points. Simplicity, precision and repetition of different items are the keys to successful oral instruction (Krisham, 1965).

Printed publications in the form of folders, leaflets, and pamphlets are used widely (Krisham, 1965). Besides the advantages of low cost and short preparation time, written publications take less time than oral communication to get their message across and are semi-permanent (Maunder, 1974). The effectiveness of printed publications, however, depends on the extent of literacy and the communicative nature or quality of the clientele (Krisham, 1965).

The basic purpose of education is more than the transfer of particular information. Proper communication can create an interactive process through which the recipient develops new thought processes and new patterns of social interaction (Stavis, 1979). A thought-out decision results from the following process. First an individual is made aware of an idea; then the individual becomes informed about it and mentally evaluates the suitability of the idea; and finally, a favorable decision is made before accepting it (Lionberger and Gwin, 1982). This process of education can be achieved through the proper combination of communication media (Stavis, 1979). Methods used to deliver information and the availability of adequate resources to answer questions from clientele will be evaluated in this study.

Resources Used by Horticultural Agents

Fact sheets, state extension bulletins, and USDA home and garden bulletins are the most popular references used by Home Horticultural Agents (Utzinger and Williams, 1984). Diseases of Pests and Ornamental Plants (Pirone, 1978), Insects That Feed on Trees and Shrubs (Johnson and Lyon, 1976) and Wyman's Gardening Encyclopedia (Wyman, 1977) are the reference books of most value to Home Horticultural Agents in the

United States (Utzinger and Williams, 1984). According to a national survey of Extension professionals relative to their needs for inservice education in home horticulture, Home Horticultural Agents have adequate references for use in working with clientele; however, the agents are unaware of the availability and contents of some references (Utzinger and Williams, 1984).

Current Evaluations

This section will focus on evaluations conducted by agents in Massachusetts with responsibilities in the areas of home horticulture and small scale farming. A letter was mailed to these agents requesting information on their assessments of programs (Figure 1). The letter stated the objectives of the evaluation and one basic question which was: To the best of your knowledge, has an evaluation similar to this been conducted for the Home Horticulture or Small Farms program in your county? ___Yes ___No. If yes, agents were asked to send an existing report, summarizing their procedures and results or to reply by telephone.

Of 13 letters mailed, 12 were returned. Ten of 12 agents replied that there had not been an evaluation with similar objectives conducted in their counties. One replied yes to the question and enclosed results of an evaluation conducted for a small farms conference. The questionnaire that the agent sent did not relate to the objectives of this study. The evaluation focused on a conference and did not reflect feedback using a personal approach. Another agent did not reply yes or no to the question asked but stated that the three home horticultural agents in her county were planning to make several calls back to



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Cooperative Extension Service

COLLEGE OF FOOD AND NATURAL RESOURCES
University of Massachusetts and U.S. Department of Agriculture cooperating

Franklin County Extension Station
Court House
425 Main Street
Greenfield, Massachusetts 01302
Tel. (413) 774-2902, 774-2903

July 10, 1985

Sent to:

Roberta Clark
Dick Boyce
Pardon Cornell
Bill Wilcox
Donna Scanlon
Ron Kujawski
Thurston Handley

Paul Lopes
Deborah Swanson
Linda Bowman
Mary Owen
Elsie Cox
Kathleen Carroll

Dear

I am currently conducting an evaluation of my Home Horticulture/Small Farm Program and would appreciate your help. The objectives of this evaluation are: (1) to assess my existing resources (Extension publications, reference books, Extension Specialists, etc.); (2) to determine the effectiveness of my methods to receive information from clientele; (3) to determine the educational effectiveness of delivery of information to my clientele; (4) to determine if my clientele feels that the information was accurate and useful; and (5) to help identify programmatic needs of clientele. I'm doing this by collecting a diary of information from clientele one day a week throughout the summer then sending a questionnaire to those same people this fall. I am collecting data from personal contacts only.

To help me with this evaluation please answer the following questions and return to me by the end of August. I would appreciate any information you could send me regarding an evaluation of this sort. Thank you for your time and energy and I look forward to hearing from you.

Sincerely,

Tina M. Smith
County Agricultural Agent
S/h

Name _____ County _____

To the best of your knowledge, has an evaluation similar to this been conducted for Home Horticulture or Small Farms in your county? ___ yes ___ no

If yes, please send me an existing report or summarize your procedure and results or give me a call.

If you don't know, please give me the name of an agent who might know.

clientele in the near future to determine if the information was utilized by clientele, if the clientele was satisfied with the service, and if clientele would call again with a similar question. The agent also wrote that she evaluates every program and asks for programmatic ideas at the same time. This type of feedback addresses objectives 4 and 5 in the study which determine how clientele feel about the information they receive and which programmatic needs to identify. However, the method used by the agent represents an informal evaluation using a small sample that is not defined clearly. Although this approach may be beneficial for program feedback, it would not be reliable for accountability.

C H A P T E R I I

Procedure

Introduction

A diary of information collected by the agent and a mail questionnaire to clientele were used to gather data to meet the objectives of the study.

Data were collected for two consecutive years 1985 and 1986 (Table 2.1). Records were kept of personal contacts with clientele through telephone calls, office visits, and letters. The record-keeping period was May 1 through September 30, in each year. This five-month period is the most active time for requests for home horticultural information.

A random sample was taken by collecting data from all individual contacts one day per week. A cover letter and a questionnaire containing 11 items were mailed to the sample of clientele during October 1985 and October 1986 (Figure 2.1, Table 2.2).

Objective I. To assess existing resources.

The source of information used to provide information to clientele was recorded in the diary. The sources listed in the diary were Cooperative Extension publications, reference books, Cooperative Extension Specialists, magazines, knowledge and experience, and newsletters. The frequency of the sources of information was tabulated. These frequencies were cross-tabulated with the topics for which information was requested, with geographic areas, and with the response to the statement, "The recommendation helped to solve the

Table 2.1. Diary.

Date _____
 Name _____
 Mailing Address _____
 _____ Zip Code _____
 Question Asked _____

Problem solving procedure _____ Personal Expectations
 _____ Situation described over telephone 1--2--3--4--5--6--7--8--9--10
 _____ Sample requested Low High
 _____ Visit _____ Subject Matter Difficulty
 _____ Letter 1--2--3--4--5--6--7--8--9--10
 _____ Other, explain Low High

Source of information recommended
 _____ Cooperative Extension Service publication
 Publication Name _____

_____ Reference Book
 Name _____

_____ Cooperative Extension Service Specialist
 Name _____

_____ Magazine
 Name _____

_____ Knowledge and experience
 _____ Other, explain _____

Recommendation to Client

Delivery of information - check all that apply
 _____ Extension Service publication
 _____ Duplicated information from text or magazine
 _____ Other printed publications, explain _____

_____ Personal letter
 _____ Telephone conversation
 _____ Face-to-face consultation
 _____ Other, explain _____



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Franklin County Extension Service
Court House
425 Main Street
Greenfield, Massachusetts 01301
Tel. (413) 774-2902, 774-2903

August 6, 1985

Dear Friend,

We talked earlier this season on the telephone regarding a question you had in the areas of home horticulture or small farm.

You have been selected from the many people who called me during the summer months to fill out the enclosed questionnaire. Your participation is voluntary. However, it would be helpful to me to receive your reactions to the service. Please take a few minutes of your time to complete the enclosed questionnaire. A postage-free, self-addressed envelope has been included for its return.

Your answers along with others will provide valuable information to help me to improve my service to you.

Your help by completing and returning the questionnaire as soon as possible will be appreciated.

Sincerely,

Tina M. Smith
County Agricultural Agent
S/h
Enc. 2

Table 2.2. Mail Survey Sent to Sample of Clientele.

Please help me to improve programs by answering the following questions and returning it in the postage-free, self-addressed envelope.

Place an X in the most appropriate box.

1. We talked earlier this season about a question you had regarding _____

2. I gave the following recommendation:

3. Did you follow the recommendation? Yes No

If no, why not?

- a. No action recommended
- b. I forgot
- c. Didn't understand
- d. Too much trouble
- e. No longer a problem
- f. Plants already died
- g. Didn't want to use pesticides
- h. Didn't think recommendation would work
- i. Found a better idea. State idea: _____

j. Other reason not mentioned _____

4. If you answered YES, we would like to know if the recommendation was useful. Would you check whether you agree or disagree with the following statements:

	Agree	Disagree	Does not Apply
a. The recommendation helped to solve the problem
b. The information received has been used more than once
c. I would suggest a friend call the Franklin County Extension Service with a similar problem
e. I was satisfied with the service
f. I would call again if I had a similar question
g. Anything else you would like to say about it			

Comments:

Table 2.2. Continued.

5. If the recommendation is NOT helpful how could it be improved:

- Better explanation over phone
 Written materials could be more easily understood
 Quality of written material could be more easily read
 Letter could have been better written
 Need more easily understood explanation
 Need better information
 Other, please explain _____

6. How often have you called the Franklin County Extension Service with a horticulture question?

- Once Fewer than five times More than five times

7. Place a dollar value on the information you received:

- Under \$10 \$20 - \$30 \$40 - \$50
 \$10 - \$20 \$30 - \$40 Over \$50, estimate \$ _____

8. My age group is:

- 19 years or less 40 - 50
 20 - 30 50 - 60
 30 - 40 Over 60

9. The formal education I have received:

- Grade School Some college
 Some high school College graduate
 High School graduate Advanced university degree
 Vocational school Other _____

10. Estimate how much you spend on home horticulture activities* in a year?

(NOTE: *Home horticulture activities include vegetables and flower gardening, controlling household pests, planting and maintaining ornamental trees and shrubs, growing fruits, lawn care and growing houseplants.)

- Under \$10 \$30 - \$50
 \$10 - \$30 \$50 - \$70 Over \$70, estimate \$ _____

11. Is there anything I haven't asked that you would like to tell me about Home Horticulture/Small Farms Programming?

Thank you for your time in completing the questionnaire. Your response is most important to us. Please return the questionnaire in the postage-free, self-addressed envelope as soon as possible.

problem." This information will be used to identify the strengths of existing resources and the need for additional resources.

Objective 2. To determine the effectiveness of methods to receive information from clientele.

The problem solving procedure used by the agent was recorded in the diary. The procedure used to collect information from clientele included telephone consultation, office visit, sample requested by the agent, and letter. By first tabulating the frequency of each procedure used to collect information, then cross-tabulating these frequencies with the frequencies of whether or not clientele followed the recommendation, and with the geographic areas, the effectiveness of methods to receive information can be determined.

Objective 3. To determine the educational effectiveness of delivery of information to clientele.

The diary contained the system of delivery of information by the agent to clientele. The delivery of information included Cooperative Extension publications, duplicated information from texts, other sources of printed information, personal letters, telephone calls, return office visits and newsletters. Each of these categories were tabulated by frequency, then cross tabulated with whether or not clientele followed the recommendation and with response to the statement, "The recommendation helped to solve the problem". This information determines the effectiveness of the delivery of the information to clientele.

Objective 4. To determine if the clientele feels that information was accurate and useful.

The diary and the questionnaire contained the questions asked by the individual and the recommendation given to clientele by the agent. The questionnaire contained questions regarding the value of the information given by the agent (Table 2.2, sections 4 and 7). This information was tabulated to determine if clientele felt that the information was accurate and useful.

Objective 5. To identify programmatic needs of clientele.

The questions asked by clientele were recorded in the diary and were grouped together by topic and tabulated. The topics included vegetables, fruits, insects, animals, trees/shrubs, lawns, houseplants, flower gardens, small farms and pesticides. This information was used to identify the subject matters most often asked about by clientele, and to help to direct future programming. Demographic information collected in the questionnaire also will be used for program planning (Table 2.2). Cross tabulating demographic information with the topics addressed by clientele identifies the age group to whom specific programs might be directed in the future.

The complete names and addresses of individuals were recorded for mailing of the questionnaire at a later date. The population of the town in the address was used to categorize clientele into rural and nonrural groups. Rural areas were defined as towns with a population of less than 4000. The populations of towns were obtained from the 1980 United States Census. Identifying the areas of Franklin County that use the horticultural services most often will emphasize the areas

where programs might be held in the future to expand services. Cross tabulating the geographic areas of clientele with the level of education of clientele will help to plan programs with appropriate technical levels.

Tabulating Data

The Statistical Package for the Social Sciences (SPSS) was used to tabulate frequency distribution of variables in the diary and questionnaire for year one and for year two (SPSS Inc., 1986). Chi-Square comparisons were made between year one and year two on geographic area (rural and nonrural) and subject matters.

Chi-square comparisons on geographic area and subject matters were insignificant, years one and two were combined, and SPSS was used to determine frequency distribution. Chi-Square comparisons were used to cross tabulate the geographic area of clientele, subject matters of the requests, whether or not clientele followed recommendations, and whether or not the recommendation helped to solve the problem with all other variables in the diary and questionnaire.

C H A P T E R III

Results

Introduction

The diary and mail questionnaire provided data for the study. Between May 1 and September 30, in 1985 and 1986, 805 clientele contacted the Horticultural Agent in Franklin County. A random sample of 122 in 1985 and 105 in 1986 was taken for mailing of the questionnaire. Of 227 questionnaires mailed, 141 (62%) were returned.

Chi-square comparisons showed no significant difference between year one (1985) and year two (1986) based on geographic areas (Table 3.1) and subject matters, (Table 3.2). Years one and two were combined to tabulate data. Frequency distribution on all variables was determined, and Chi-square comparisons were used to cross tabulate data that relate to the objectives of the study.

Objective 1. To assess existing resources used to answer questions from clientele.

Of 260 times that resources were used for the sample of 227 requests for information (Table 3.3) 57% were answered using previous knowledge and experience 22% were answered using Cooperative Extension publications, and 12% were answered using reference books. Diseases and Pests of Ornamental Plants (Pirone, 1978) was used for 26% of requests answered using reference books (Table 3.4). Ortho Problem Solver (Smith, 1984), Wyman's Encyclopedia of Gardening (Wyman, 1978), and Farm Chemical Handbook, (Meister, 1983), were each used for 13% of the requests answered using reference books.

Table 3.1. Comparison of May to September 1985 (year 1) and May to September 1986 (year 2) based on geographic areas.

Geographic Areas	Number of Clientele in Survey			%
	Year 1 Frequency	Year 2 Frequency	Total Frequency	
Rural	66	49	115	51
Nonrural	56	56	112	49
Column Total	122	105	227	100

Comparing: Year 1 versus Year 2
 Chi-square = 0.96731 with 1 degree of freedom
 Significance = 0.3254

Table 3.2. Comparison of May to September 1985 (year 1) and May to September 1986 (year 2) based on topic of inquiry.

Topic of Inquiry	Number of Clientele in Survey			%
	Year 1 Frequency	Year 2 Frequency	Total Frequency	
Vegetable	19	7	26	12
Fruit	16	19	35	15
Insects	22	19	41	18
Animals	18	10	28	12
Trees/Shrubs	16	18	34	15
Lawns	6	8	14	6
Houseplants	1	1	2	1
Flower Gardens	10	8	18	8
Small Farms	5	3	8	4
Pesticides	7	4	11	5
Other	2	8	10	4
Column Totals	122	105	227	100

Comparing: Year 1 versus Year 2
 Chi-square = 12.64237 with 10 degrees of freedom
 Significance = 0.2444

Table 3.3. Resources used by the Horticultural Agent to answer inquiries from clientele.

Resource	Usage	
	Frequency	%
Cooperative Extension Publications	56	22
Reference Books	31	12
Cooperative Extension Specialists	8	3
University Specialists	11	4
Magazines	2	1
Knowledge and Experience	147	57
Newsletter	5	2
Column Totals	260*	101

*In some cases more than 1 reference was used to answer 1 inquiry.

Table 3.4. Reference books used by the Horticultural Agent to answer inquiries from clientele.

Book	Number of Clientele		
	Author	Frequency	%
<u>The Common Insects of North America</u>	Swan and Papp, 1972	2	7
<u>Insects and Diseases of Ornamental Plants</u>	Pirone, 1978	8	26
<u>The Ortho Problem Solver</u>	Smith, 1984	4	13
<u>Wyman's Encyclopedia of Gardening</u>	Wyman, 1977	4	13
<u>Weeds</u>	Muenschler, 1955	3	10
<u>Perennials</u>	Crockett, 1977	2	7
<u>Wescott's Plant Disease Handbook</u>	Horst, 1979	2	7
<u>Farm Chemical Handbook</u>	Meister, 1983	4	13
<u>10,000 Garden Questions</u>	Rockwell, 1959	2	7
Column Total		31	103

Of the 28 requests for information regarding animals, 26 were answered using knowledge and experience (Table 3.5). Of 8 questions regarding small farms, 2 were answered using knowledge and experience. The majority of requests for information on lawns and vegetables also were answered using knowledge and experience.

Of requests from clientele, 55% from rural areas and 45% from nonrural areas were answered using previous knowledge and experience (Table 3.6).

There was no significant relationship between the use of publications, reference books, specialists, magazines, newsletters and knowledge and experience relative to the response of agree and disagree the statement, "The recommendation helped to solve the problem". Of respondents for which knowledge and experience were used, 80% agreed that the recommendation helped to solve the problem, and 3% disagreed (Table 3.7). Of respondents for which other references were used, 90% agreed that the recommendation helped to solve the problem, and 10% disagreed. Of respondents for which publications were used as a reference by the agent, 96% agreed the recommendation helped to solve the problem, and 4% replied "does not apply."

Objective 2. To determine the effectiveness of methods to receive information from clientele.

Telephone was used to receive information from 82% of the clientele (Table 3.8). Office visits were used by 9% of the clientele, and samples were requested from 7% of the clientele.

Table 3.5. Frequency of the use of knowledge and experience and other references based on areas on inquiry.

Area of Inquiry	Resources Used by the Agent					
	Knowledge and Experience		Other References		Total Inquiries	
	Frequency	%	Frequency	%	Frequency	%
Vegetable	19	8	7	3	26	12
Fruit	22	10	13	6	35	15
Insects	24	11	17	7	41	18
Animals	26	11	2	1	28	12
Trees/Shrubs	22	10	12	5	34	15
Lawns	12	5	2	1	14	6
Houseplants	1	1	1	1	2	1
Flower Gardens	9	4	9	4	18	8
Small Farms	2	1	6	3	8	4
Pesticides	5	2	6	3	11	5
Other	5	2	5	2	10	4
Column Totals	147	65	80	36	227	100

Table 3.6. Frequency of the use of knowledge and experience and other references for rural and nonrural clientele.

Geographic Area	Resources Used by the Agent				Total Frequency
	Knowledge and Experience		Other References		
	Frequency	%	Frequency	%	
Rural	81	55	34	43	115
Nonrural	66	45	46	57	112
Column Total	147	100	80	100	227

Table 3.7. Frequency of the use of knowledge and experience and other references based on response to the statement "The recommendation helped to solve the problem."

Response to Statement	Resources Used by the Agent				Total Frequency
	Knowledge and Experience		Other References		
	Frequency	%	Frequency	%	
Agree	50	60	34	40	84
Disagree	2	33	4	66	6
Does not apply	11	100	0	0	11
Column Total	63		38		101

Table 3.8. Methods used to receive information from clientele.

Method	Number of Clientele	
	Frequency	%
Telephone	183	82
Office visit	21	9
Sample requested	15	7
Home or farm visit	1	1
Letter	3	1
Column Total	223*	100

*4 missing observations

There was no significant difference between the actions on the recommendation by clientele based on the methods used to receive information (Table 3.9).

There was not a significant difference between rural and nonrural clientele with respect to the methods used to receive information (Table 3.10). Telephone was the most popular method for both rural and nonrural clientele to receive information from clientele.

The majority of rural and nonrural clientele followed the recommendation given by the agent. Of 141 respondents, 56 from rural areas and 54 from nonrural areas followed the recommendation.

There was no relationship between the problem solving procedure and clientele's response to the statement, "The recommendation helped to solve the problem". Of 100 respondents, 83 agreed that the recommendation helped to solve the problem and 11 responded with "Does not apply".

Objective 3. To determine the effectiveness of the delivery of information to clientele.

Cooperative Extension publications were used to deliver information 57% of the time followed by telephone 26%, duplicated information from text 5%, and Fish and Wildlife publications 4% (Table 3.11). There was no relationship between the actions on the recommendation relative to the individual methods of delivery of information to clientele. Seventy-nine percent of clientele followed the recommendation regardless of the method used to deliver information (Table 3.12).

Table 3.9. Comparison between the actions on the recommendation by clientele based on the methods used to receive information from clientele.

Action on Recommendation	Methods				Frequency	%
	Number of Clientele					
	Telephone	Office Visits	Sample Requested	Letter		
Followed Recommendation	88	9	9	1	107	77
Did not follow recommendation	24	4	3	0	31	23
Column Totals	100	13	12	1	138	100

Comparing: Actions on the Recommendation
 Chi-square = .91780 with 3 degrees of freedom
 Significance = .8211

Table 3.10. Comparison of geographic areas with respect to the methods used to receive information from clientele.

Geographic Area	Methods					Total	
	Number of Clientele					Frequency	%
	Telephone	Office Visits	Sample Requested	Visit	Letter		
Rural	99	7	4	1	1	112	50
Nonrural	84	14	11	0	2	111	50
Column Totals	183	21	15	1	3	223	100

Comparing: Geographic areas
 Chi-square = 8.15852 with 4 degrees of freedom
 Significance = 0.0859

Table 3.11. Frequencies of the use of methods to deliver information to clientele.

Method	Number of Clientele	
	Frequency	% of Total
Cooperative extension publications	155	57
Duplicated information	13	5
Fish and wildlife publications	10	4
Other printed publications	9	3
Personal letter	8	3
Telephone	72	26
Return office visit	4	1
Other	1	>1
Column Total	272*	99

*In some cases more than 1 method was used to deliver information to clientele.

Table 3.12. Frequencies of the actions on the recommendation based on the methods of delivery of information.

Method	Number of Clientele				Total Frequency
	Followed Recommendation		Did not follow Recommendation		
	Frequency	%	Frequency	%	
Cooperative Extension Publications	74	43	20	12	94
Telephone	38	22	11	6	49
Other printed publications and Fish and Wildlife Publications	10	6	3	2	13
Duplicated Information	8	5	1	1	9
Other Methods	5	3	2	1	7
Column Totals	135	79	37	22	171

Eighty-four percent of clientele for which Cooperative Extension publications were used as a method of delivery agreed that the recommendation helped to solve the problem (Table 3.13). Eighty-one percent of the clientele for which other methods of delivery were used agreed that the recommendation helped to solve the problem. Fifteen percent of the clientele for which Cooperative Extension publications were used responded, "does not apply" versus 3% for which other methods of delivery were used.

Objective 4. To determine if clientele feel that information from the Horticultural Agent is accurate and useful.

There was no significant difference between rural and nonrural clientele and the response to the statement, "The recommendation helped to solve the problem" (Table 3.14). Of those clientele that returned evaluations, 78% followed the recommendation (Table 3.15). Eighty-three percent of respondents agreed that the recommendation helped to solve the problem (Table 3.16). The recommendation was used more than once by 53%, and 38% responded, "does not apply" to the statement (Table 3.17). The information was shared with others by 79% (Table 3.18). All respondents except one would tell a friend to call with a similar question (Table 3.19). All but two respondents were satisfied with the service (Table 3.20). All but one respondent would call again with a similar question (Table 3.21). Seventy percent of respondents valued the horticultural service at \$1 - \$40 and 30% valued the service over \$40 (Table 3.22).

Table 3.13. Frequencies of methods of delivery of information relative to the response by clientele to the statement, "The recommendation helped to solve the problem."

Response	Method of Delivery				Total Frequencies
	Cooperative Extension Publications		Other Methods		
	Frequencies	%	Frequencies	%	
Agree	58	84	26	81	84
Disagree	1	<1	5	16	6
Does not apply	10	15	1	3	11
Column Totals	69	99	32	100	101

Table 3.14. Response to the statement "The recommendation helped to solve the problem" by rural and nonrural clientele.

Geographic Area	<u>Agree</u> Frequency	<u>Disagree</u> Frequency	<u>Does Not Apply</u> Frequency	<u>Total</u> Frequency	%
Rural	43	2	8	53	52
Nonrural	41	4	3	48	48
Column Totals	84	6	11	101	100

Comparing: Rural versus nonrural

Chi-square = 2.74622 with 2 degrees of freedom

Significance = 0.2533

Table 3.15. Action to recommendation by clientele responding to questionnaire.

Action Taken by Clientele	Number of Respondents	
	Frequency	%
Followed recommendation	110	78
Did not follow	31	22
Column Totals	141	100

Table 3.16. Response by clientele to the statement, "The recommendation helped to solve the problem."

Response to Statement	Number of Respondents	
	Frequency	%
Agree	84	83
Disagree	6	6
Does not apply	11	11
Column Totals	101	100

Table 3.17. Response by clientele to the statement, "The recommendation was used more than once."

Response to Statement	Number of Respondents	
	Frequency	%
Agree	40	53
Disagree	7	9
Does not apply	29	38
Column Totals	76	100

Table 3.18. Response by clientele to the statement, "The information was shared with others".

Response to Statement	Number of Respondents	
	Frequency	%
Agree	75	79
Disagree	8	8
Does not apply	12	13
Column Totals	95	100

Table 3.19. Response by clientele to the statement, "Would tell a friend to call with a similar question."

Response to Statement	Number of Respondents	
	Frequency	%
Agree	101	99
Disagree	1	1
Column Totals	102	100

Table 3.20. Response by clientele to the statement, "Satisfied with the service."

Response to Statement	Number of Respondents	
	Frequency	%
Agree	116	98
Disagree	1	1
Does not apply	1	1
Column Totals	118	100

Table 3.21. Response by clientele to the statement, "Would call again with a similar question".

Response to Statement	Number of Respondents	
	Frequency	%
Agree	117	99
Disagree	1	1
Column Totals	118	100

Table 3.22. Monetary value of the horticultural service as assessed by clientele.

Monetary Value (\$)	Number of Respondents	
	Frequency	%
Under 10	30	31
10-20	17	17
20-30	15	15
30-40	7	7
40-50	11	11
Over 50	9	9
Over 100	4	4
Over 1000	5	5
Column Totals	98	99

Objective 5. To identify programmatic needs of clientele.

Of the sample of requests for information, 18% related to insects, 15% to fruit, 15% to trees and shrubs, 12% to animals, and 12% to vegetables (Table 3.23). The subject matter insects is defined as any insect indoors or outdoors that clientele did not relate to plant damage.

Nonrural clientele requested information more often about trees and shrubs, and flower gardens than rural clientele, whereas rural clientele requested information more often about vegetables, small farms and pesticides (Table 3.23).

Of the respondents, 36% were over 60 years of age, and 34% were 30-40 years of age (Table 3.24). Only 6% were 20-30 years of age. There was no relationship among the age groups within the geographic areas (Table 3.25).

There was a difference between the educational levels of clientele in rural and nonrural areas (Table 3.26). Rural areas tended to have more college educated clientele than nonrural areas, i.e. 39% in rural areas attended college, whereas 25% in nonrural areas attended college.

Although 110 clientele of 141 followed the recommendation, 31 did not (Table 3.15). Of 31 clientele that did not follow the recommendation, 10 wrote in "wrong time of year", 4 clientele checked "didn't want to use pesticides", and 3 checked "the recommendation was too much trouble" (Table 3.27).

There was not a significant difference between the geographic areas with respect to the number of times clientele contacted the Cooperative Extension (Table 3.28). Of 30 clientele that contacted

Table 3.23. Frequencies of areas of inquiry from rural and nonrural clientele.

Area of Inquiry	Geographic Area			%
	Rural Frequency	Nonrural Frequency	Total Frequency	
Vegetable	16	10	26	11
Fruit	17	18	35	15
Insects	20	21	41	18
Animals	10	18	28	12
Trees/Shrubs	14	20	34	15
Lawns	8	6	14	6
Houseplants	0	2	2	1
Flower Gardens	6	12	18	8
Small Farms	7	1	8	4
Pesticides	8	3	11	5
Other	9	1	10	4
Column Totals	115	112	227	99

Comparing: rural versus nonrural
 Chi-square = 22.20479 with 10 degrees of freedom
 Significance = .0141

Tables 3.24. Ages of respondents.

Age	Number of Respondents	
	Frequency	%
20-30	8	6
30-40	47	34
40-50	13	9
50-60	21	15
Over 60	50	36
Column Totals	139	100

Table 3.25. Ages of respondents within rural and nonrural areas.

Geographic Area	Number of Respondents in Each Age Group					Total Frequency
	20-30	30-40	40-50	50-60	over 60	
Rural	5	30	5	10	22	72
Nonrural	3	17	8	11	28	67
Column Totals	8	47	13	21	50	139

Table 3.26. Level of education completed by clientele within rural and nonrural areas.

Level of Education	Number of Respondents within Geographic Areas					
	Rural		Nonrural		Total	
	Frequency	%	Frequency	%	Frequency	%
Grade School	0	0	1	1	1	1
Some High School	1	1	4	3	5	4
High School Graduate	15	11	27	19	42	30
Vocational School	1	1	1	1	2	1
Some College	14	10	8	6	22	16
College Graduate	26	18	19	13	45	32
Advance University	15	11	8	6	23	16
Other	1	1	0	0	1	1
Column Totals	73	53	68	49	141	101

Comparing: Rural versus nonrural

Chi-square = 13.49723 with 7 degrees of freedom

Significance = 0.0609

Table 3.27. Reasons why clientele did not follow the recommendation.

Reasons	Number of Respondents	
	Frequency	%
No recommendation given	3	10
Forgot	1	3
Too much trouble	3	10
No longer a problem	5	16
Plant died	2	6
Didn't want to use pesticides	4	13
Better idea	2	6
Wrong time of year	10	31
Other	2	3
Column Totals	28	100

Table 3.28. Frequency of clientele contacting Cooperative Extension within rural and nonrural areas.

Geographic Area	Number of Contacts by Clientele			Total	
	Once	Fewer than 5 times	More than 5 times	Frequency	%
Rural	14	31	26	71	53
Nonrural	16	34	14	64	47
Column Total	26	65	40	135	100

Comparing: Rural versus Nonrural

Chi-square = 3.51829 with 2 degrees of freedom

Significance = .1722

the Cooperative Extension once, 14 were from rural areas and 16 were from nonrural areas. Of 40 clientele that contacted the Cooperative Extension more than 5 times, 26 were from rural areas, and 14 were from nonrural areas.

C H A P T E R I V

Discussion

Introduction

The response from clientele toward the Home Horticultural Small Farm Program has been positive. The return of 62% of questionnaires gives a representation of clientele who request information from the Home Horticultural Department at the Franklin County Cooperative Extension. Results of the research have led to the following summary of the objectives.

Objective 1. To assess existing resources.

Knowledge and experience is used most often as a resource by the Horticultural Agent followed by Cooperative Extension publications and reference books. The large percentage (57%) of requests answered using knowledge and experience may be attributed to repeated questions asked seasonally. Responses to these questions may have been researched previously, but the answers were not verified by using reference material each time the question was asked. Results showing no difference between the subject matters for 1985 and 1986 indicates that questions are similar from year to year.

This research indicates that the inquiries regarding animals are answered using knowledge and experience more often than for any other subject area. Of the 28 inquiries regarding animals, 26 were answered using knowledge and experience. Of those inquiries, 18 were received during year 1 (1985) and 10 were received during year 2 (1986).

Cooperative Extension publications were used 22% of the time as resource material by the agent. Of the 26 respondents for which

Cooperative Extension publications were used as a resource, 96% agreed that the recommendation helped to solve the problem. This indicates that the existing publications are adequate as resource materials for use by the agent.

Similar inquiries each year for which knowledge and experience are used may best be answered by direct distribution of Cooperative Extension publications rather than taking time from the Extension agent. Printed publications are inexpensive to produce and are semi-permanent making them available for future reference (Mauder, 1974).

The results showed no relationship between the types of resource materials used by the agent and the perception of the clientele regarding the usefulness of the information given. The majority of respondents followed the recommendation regardless of the resource. These results suggest that publications used are adequate as resources for the Home Horticultural Agent.

The book used most often as a resource by the Horticultural Agent in Franklin County was Insects and Diseases of Ornamental Plants (Pirone, 1978). Although magazines and newsletters were used least often as a resource, they were an important, indirect resource. Knowledge is acquired while reading magazines and newsletters and this knowledge may be used at a later date.

Objective 2. To determine effectiveness of methods to receive information from clientele.

All methods used by the Agent to obtain requests for information were equally effective based on the percent of recommendations followed. Seventy-seven percent followed the recommendation regardless

of the method used by the agent to receive information. The majority of requests for information were received by telephone. Information was gathered more often by telephone from rural clientele than from nonrural clientele. Nonrural clientele visited the office more often than rural clientele which may be attributed to the convenience of the location of the office, i.e. the Franklin County Cooperative Extension office is located in Greenfield, and Greenfield has the largest population of people in Franklin County. The majority of rural and nonrural clientele followed the recommendation and the majority of respondents agreed that the recommendation helped solve the problem regardless of the method used to collect information.

The telephone is a method that is most cost-effective, and can reach individuals in isolated areas, and should continue to be used to obtain information from clientele whenever possible.

Objective 3. To determine the educational effectiveness of information delivery.

All methods of delivery of information were effective based on the percentage of the recommendation followed. The majority of respondents (79%) followed the recommendation regardless of the method used to deliver information.

Cooperative Extension publications were used most often to deliver information. For some requests, a combination of methods were used. There was a relationship between the use of Cooperative Extension publications for information delivery and the percent usefulness of the recommendation. This relationship may be attributed to the 10 responses of "does not apply" by clientele receiving information from

Cooperative Extension publications versus 1 response from clientele that did not receive information from Cooperative Extension publications. Perhaps the 10 responses were requests for general information rather than a specific problem. This ambiguity is an indication that the series of questions containing the responses, agree, disagree and does not apply, should have been clarified so that the responses would better fit the statement.

Cooperative Extension publications are cost-effective, are semi-permanent, and should continue to be a primary method of delivery. Of 69 respondents for which Cooperative Extension publications were used as the delivery method, 84% agreed that the recommendation helped to solve the problem. And of 94 respondents, 79% followed the recommendation. These results indicate that the information in current Cooperative Extension publications is adequate. Duplicated information was the method of delivery for 5%, and other printed publications accounted for another 3% of requests covering all topics. These methods of delivery indicate a need for additional Cooperative Extension publications. Of 19 requests for which other printed publications were used, 53% were Fish and Wildlife publications and 47% were requests for information not covered in current Cooperative Extension publications. This use of Fish & Wildlife publications and other publications suggests that a supply of Fish and Wildlife publications, and additional Cooperative Extension publications could be useful to this program.

Objective 4. To determine if the clientele feel that information was accurate and useful.

According to clientele, the information received from the agent was accurate and useful. The majority of rural and nonrural clientele agreed that the recommendation helped solve the problem. The recommendation was used more than once by over 50% of the respondents. Over 75% of the respondents shared the information with others. The majority of respondents would refer the service to a friend, were satisfied with the service and would call again with a similar question.

Although clientele were satisfied with the service and perceived the information as useful, most placed a low monetary value on the information. It may have been difficult to estimate the value of educational material on disciplines in which they have little expertise. It is difficult to determine whether clientele placed their personal, monetary value to the service or an actual market value of the specific plant. For example, if the client called about a problem with a tomato plant. Would the clientele base the monetary value on the cost of replacing one plant, or the cost of the tomatoes that the plant has the potential to produce? This question should have been written more clearly.

Objective 5. To identify programmatic needs of clientele.

Clientele of the Home Horticulture Department can be described as living in rural and nonrural areas and being between the ages of 30-40 and over 60. Clientele from rural areas have attended college more

often than nonrural clientele. Clientele from nonrural areas have attended high school as their highest level of education.

Both nonrural and rural clientele request information on insects most often. Aside from insects, requests from clientele in rural areas most often relate to fruits and vegetables, and nonrural clientele most often request information on trees and shrubs, fruits, and animals. The majority of clientele from rural and nonrural areas contacted Franklin County Cooperative Extension fewer than 5 times.

Clientele stated that the greatest reason for not following the recommendation was due to the wrong time of year. This response may be related to questions regarding insect and disease management. The Horticultural Agent is frequently contacted for advice after symptoms appear. It may be too late to implement management practices that same year. Educational programs that are preventive might help clientele to manage better their pest problems. Of clientele that did not follow the recommendation, 4 stated the reason as not wanting to use pesticides. Of those clientele, 2 felt that the problem was not worth the cost and risk of using pesticides and the other 2 did not elaborate on their answer. Offering alternatives to pesticides whenever possible may help to alleviate their concern.

Future Evaluations

Extension staff need data about a program to identify potential problems and to monitor programmatic activities (Rivera, Bennett and Walker, 1983). In this research a diary and mail questionnaire were used to gather data. These data were analyzed and interpreted to be used to monitor programmatic activities. The objectives were stated

clearly in this research, and the questionnaire developed to meet those objectives. The return of 62% of questionnaires in this study indicates that questionnaires are a reliable tool to use in evaluations of Extension programs. The high return rate also indicates a strong interest in the Home Horticulture/Small Farm Program.

The wording of the questions is important for collecting data (Cavendish, 1983). In this research, the number of responses to individual questions indicated that there were some questions that may not have been asked clearly. The section in the questionnaire that included the responses, agree, disagree, and does not apply had few respondents indicating a potential misunderstanding. Also, the question in the questionnaire asking clientele to place a monetary value on the information received was difficult to interpret.

This research did not take nonrespondents into consideration and is therefore biased. Questions can be raised such as; did only those that liked the service respond, and are the 141 respondents representative of the 227 to whom the questionnaire was mailed or representative of the 805 participants.

Future evaluations should take nonrespondents into consideration. By comparing late respondents with early respondents the nature of replies of nonrespondents could be obtained. Another way to obtain evaluative data is to interview a random sample of nonrespondents. These data would then be compared statistically with the data from the respondents.

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