



Perceptions of 4-H members, leaders and county agents toward the Montana 4-H vegetable gardening projects

by Susan Lynn McMaster

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in
Agricultural Education

Montana State University

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Abstract:

This study determined the perceptions of 4-H members, leaders and county agents toward the Montana 4-H vegetable gardening projects. Data for the study was gathered through the use of mailed questionnaires sent to a population of 35 county agents, 60 4-H leaders and 145 4-H members. Information from the returned questionnaires was coded, entered into the CP6 Honeywell Computer and statistically analyzed with the use of the Statistical Package for the Social Sciences.

Based on the results of the study, it was concluded that skills that could be acquired through participation in a 4-H vegetable gardening project were important, use of specific vegetable gardening bulletins was low, the bulletins that had been used by the respondents were rated as being very helpful or helpful, participation in certain 4-H activities was low and goals established at the state and national level were accomplished by 4-H members. Acquiring the knowledge and developing the skills needed to care for and manage a well planned vegetable garden project were strengths of the gardening projects and too little emphasis on the basics of vegetable gardening were weaknesses of the Montana vegetable gardening projects.

Recommendations for improvement of the gardening projects included: detailed project manuals should be developed, 4-H members, leaders and county agents need to be made more aware of the vegetable gardening bulletins available and 4-H members need to become aware of the experiences in gardening projects and related activities: demonstrations, judging, tours and exhibits.

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APPROVAL

of a thesis submitted by

Susan Lynn McMaster

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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ABSTRACT

This study determined the perceptions of 4-H members, leaders and county agents toward the Montana 4-H vegetable gardening projects. Data for the study was gathered through the use of mailed questionnaires sent to a population of 35 county agents, 60 4-H leaders and 145 4-H members. Information from the returned questionnaires was coded, entered into the CP6 Honeywell Computer and statistically analyzed with the use of the Statistical Package for the Social Sciences.

Based on the results of the study, it was concluded that skills that could be acquired through participation in a 4-H vegetable gardening project were important, use of specific vegetable gardening bulletins was low, the bulletins that had been used by the respondents were rated as being very helpful or helpful, participation in certain 4-H activities was low and goals established at the state and national level were accomplished by 4-H members. Acquiring the knowledge and developing the skills needed to care for and manage a well planned vegetable garden project were strengths of the gardening projects and too little emphasis on the basics of vegetable gardening were weaknesses of the Montana vegetable gardening projects.

Recommendations for improvement of the gardening projects included: detailed project manuals should be developed, 4-H members, leaders and county agents need to be made more aware of the vegetable gardening bulletins available and 4-H members need to become aware of the experiences in gardening projects and related activities: demonstrations, judging, tours and exhibits.

CHAPTER 1

THE PROBLEM AND ITS SETTING

Four-H is a voluntary educational organization operating under the U.S. Department of Agriculture and Land Grant University System, specifically within the Cooperative Extension Service. Membership in 4-H is open to all boys and girls nine to nineteen years of age. Four-H is one of the largest voluntary youth organizations in the world. Since 1945, over 82 other countries have adopted the 4-H program. Currently, Montana has 10,100 members enrolled in nearly 700 clubs, (Montana Cooperative Extension Service, 1985).

The purpose of 4-H is to provide educational opportunities through project work and activities. When a 4-H member takes a project, he or she assumes responsibility for its completion. The 4-H program is designed to be flexible to meet the needs of the members of various age groups.

The main emphasis of project work is to "learn by doing", to have real life experiences, and to become a better adult. Throughout the project, members are

acquiring skills, knowledge, attitudes and experiences that will be of value to them throughout their lives.

After enrolling in a project, 4-H members receive materials outlined in the Montana Clover, a project guidelines bulletin, along with guidance from leaders, agents and family members to assist them in completing their project.

The Horticulture Program was initiated by the state 4-H staff in an attempt to provide experiences for today's youth. The Horticulture Program consists of ten projects, three of which deal directly with vegetable gardening. These three projects are project numbers 510 Vegetable Garden, 511 Experimental Garden and 512 Family/Production Garden. For purposes of this study, only these three projects were investigated. Initially, the Vegetable Gardening projects begin with planning and planting a small garden of 1000 square feet or less. The 4-H members are required to include at least six species of vegetables. In future years, they will increase the size of the garden, and the number of species grown, so that they will produce the family's needs of particular vegetables or so that they can sell their produce on the local market. The 4-H members are encouraged to learn what is best for their garden situation so they can

produce the highest quality vegetables possible. This is done, for example, by changing cultural practices, comparing varieties, using various planting dates, to mention a few.

Providing educational programs that meet the needs and interests of all 4-H youth has been a major concern of Cooperative Extension Service workers. A constant upgrading of the quality of 4-H programs is required not only to meet the needs and interest of the 4-H youth, but to satisfy public demands that benefits result from the Extension Service's efforts.

Evaluation is becoming increasingly important to the Cooperative Extension Service's program development and public relations. Evaluations help create concrete evidence of how individuals or groups are benefiting from the Cooperative Extension Service's efforts, or of where changes need to be made to improve programs. The key message is that the Cooperative Extension Service is making a conscientious effort to become more accountable by conducting and using evaluation results.

The Montana 4-H Vegetable Gardening projects have not been reviewed in depth since their creation in 1975. In order to provide an accountable educational program and to

let the public know that the Montana 4-H Vegetable Gardening projects are making a difference in the lives of people and communities, a study should be made to determine what direction the State 4-H Office should take. It is important to know how those directly involved with Vegetable Gardening projects feel about them. This study will help the State 4-H Office gain insight into the strengths and weaknesses of the project, in order to provide a viable educational program for the youth of Montana.

Statement of the Problem

This study was designed to investigate the perceptions of 4-H members, 4-H leaders and county agents toward the Montana 4-H Vegetable Gardening projects with respect to experiences and skills they feel are important to the projects, instructional materials, weaknesses and strengths of the projects, and recommendations for change or improvement of the projects.

Objectives

The objectives of this study were to:

1. Determine the importance of those skills that were acquired through participation in a Montana 4-H Vegetable Gardening project.

2. Determine those activities 4-H members became involved in while taking a Montana 4-H Vegetable Gardening project.
3. Determine whether or specific instructional materials are being used by 4-H members, 4-H leaders and county agents, and the adequacy of those instructional materials.
4. Determine the degree to which Montana 4-H members, 4-H leaders and county agents accomplish goals established at the state, and national level for the Vegetable Gardening projects.
5. Determine the strengths and weaknesses of the Montana 4-H Vegetable Gardening projects.
6. Formulate recommendations for the improvement of the Montana 4-H Vegetable Gardening projects.

Need for the Study

Paul Warner concluded in his report, "Looking Beyond Extension Stereotypes" (1983), that it is vital to include program participants in the Extension Service evaluation process. "There's a vast and profound neglect of the perceptions, experiences and reactions of the people who themselves are supposedly being served." Including program participants in evaluations should be done to

insure that the views of the public are truly being represented in the results of evaluations designed to assess the performance of the Extension Service.

It was determined, after a comprehensive computer search, that no current studies have been made regarding the 4-H Horticulture program, at the national or state level. This study not only gathered information to be used as a basis for analyzing 4-H Horticulture programs at the national and state levels, but it also included perceptions of program participants to insure that the performance of the Cooperative Extension Service is being accurately evaluated.

Efforts have been made to formulate goals and objectives for 4-H club work with the possibility that such an approach could aid Extension in its attempts to evaluate its efforts in youth work, and to formulate programs for the future.

Extension workers should be concerned about evaluating these goals and objectives set for the 4-H vegetable gardening projects. Interest in vegetable gardening is at its highest level since World War II. The U.S. Department of Agriculture reports that nearly half of

the households surveyed either had a garden or intended to have one, (Spittoesser, 1979).

Adequacy of instructional materials for 4-H programs is becoming increasingly important. In many states, 4-H projects account for almost one-third of the Extension publication budget. The printing of the bulletins is not the only cost involved. Time spent by the specialists, editors and artists must also be included.

Instructional materials from 4-H programs are not only used by the 4-H members, but also by 4-H leaders and county agents. Four-H members must be able to read and understand the instructional materials. In addition to being able to read and understand the instructional materials, the 4-H leader must be able to pass on the contents to the 4-H members. The county agents depend on the instructional materials for information to present to leaders participating in leader training programs or seeking information, (Reyburn, 1979).

This study should provide information on the adequacy of selective instructional materials used by 4-H members, 4-H leaders and county agents involved with the Montana 4-H vegetable gardening projects.

Definitions

Terms used consistently throughout the study are defined here in order to provide for an understanding of the terms for consistent interpretation.

4-H: A Cooperative Extension Service program designed to be an educational opportunity for the development of youth.

4-H Members: For the purpose of this study, 4-H members will be defined as those 4-H members, who enrolled in a Montana 4-H Vegetable Gardening Project in 1984.

4-H Leaders: Any adult who has given a majority of the advice and guidance concerning the Montana 4-H Vegetable Gardening project to 4-H members.

Montana 4-H Vegetable Gardening Projects: Three 4-H projects, (510 Vegetable Gardening, 511 Experimental Vegetable Gardening, and 512 Family/Production Garden), designed to teach 4-H members how to plan and plant a small garden, identify garden crops, develop skills for caring and using garden plants, grow garden plants, grow garden crops properly, and how to harvest and process garden crops.

Selective Instructional Materials: Literature dispursed by the Montana Cooperative Extension Service related to Vegetable Gardening.

Limitations

1. Only 4-H members, who in 1984, enrolled in a Montana 4-H vegetable gardening project were surveyed.
2. Only 4-H leaders who had given the majority of the advice and guidance concerning the Montana 4-H vegetable gardening projects to 4-H members were surveyed.

Assumptions

1. 4-H members, leaders and county agents are best qualified to determine the importance of the Montana vegetable gardening projects.

CHAPTER II

METHODOLOGY

Population and Sample

The total population of county agents for the study was determined by figuring out how many of the 56 counties in Montana had county agents. There were 49 counties with agents. These counties were listed alphabetically and then numbered from one to forty-nine.

The size of the sample was determined by figuring a confidence level of .90. This meant that 35 counties had to be sampled, (Vockell, 1983). Thirty-five numbers, ranging from one to forty-nine were randomly selected with the aid of the program, "Sample", taken from the Montana State University Statistical Package, (Lund, 1983). These numbers were then matched to the forty-nine numbers assigned to the counties, in order to determine which counties would be surveyed.

A representative group of 4-H members was identified from the State 4-H Office's records of enrollment. The population consisted of 4-H members, from the 35 counties chosen, who were enrolled in the Montana vegetable gardening projects in 1984. The total number of 4-H

members (429) enrolled in the Montana 4-H vegetable gardening projects, along with specific demographic data identifying each member was obtained from Bob Neely, Programmer Analyst, Extension Service, 107 Taylor Hall, Montana State University, Bozeman, MT 59717. The demographic data identifying each member contained information regarding club number, sex, residence, years in 4-H, year of birth, race and projects. This information was listed alphabetically by county and numbered from one to 429.

In order to obtain a .90 confidence level, 80 member surveys had to be returned. Based on a 55% return rate, the program, "Sample", was then used to randomly generate 145 numbers ranging from one to 429. These numbers were then matched to the numbers assigned to the demographic data. The demographic data was then compared with state enrollment sheets to obtain the names of 4-H members to be used in the survey.

A letter was sent to county agents asking them for the addresses of these 4-H members, along with the names and addresses of the 4-H vegetable gardening leaders who would have given the majority of advice and guidance regarding vegetable gardening to the 4-H members. Seventy-five leaders' names and addresses were returned.

The list of leaders was numbered one to 75. "Sample" was once again used to randomly generate 60 numbers, ranging from one to 75. The 60 numbers were based on a return rate of 80%, and a confidence level of .95. These numbers were then assigned to the list of leaders, in order to obtain the names of the leaders to be used in the survey.

Instrument Design

The questionnaires were designed to gather demographic information to aid in identifying and characterizing the respondents, and information about the perceptions of the respondents toward the Montana 4-H Vegetable Gardening projects with respect to activities and skills they felt were important to the project, instructional materials, projects, weaknesses and strengths of the projects, and recommendations for change or improvement of the program.

Questions for the study were generated by reviewing national and state publications related to 4-H vegetable gardening projects. National publications identified goals, skills, and activities that 4-H members should work toward while enrolled in a vegetable gardening project. State publications, specific to the vegetable gardening projects, identified goals, skills and activities 4-H

members should work toward at the state level. Jim Sargent, State Program Coordinator for 4-H and Youth, helped in formulating questions regarding skills, activities and demographic information. A list of vegetable gardening publications, available to 4-H members, leaders and county agents was obtained from the Extension Service mailing room at MSU. All of the work done in formulating the questionnaire was done under the advisement of the researcher's graduate committee members, and major advisor.

The closed form was used to gather information about activities, skills, instructional and projects, while the open-ended form was used to gather information related to weaknesses and strengths of the projects, and recommendations for change or improvement of the program. Portions of the questionnaires for the three groups were identical. These included the importance of skills obtained through 4-H Vegetable Gardening project work, importance of instructional materials, projects to be offered in future years, strengths and weaknesses of the the projects. Demographic questions were designed to relate to each of the respondent groups being surveyed.

Validity and reliability of the instrument were strengthened in two ways. First, the questionnaires were

as similar as was possible and secondly, the 4-H member instrument were pre-tested on a representative group of Gallatin County 4-H members. None of the 4-H members involved in the pre-test were included in the survey. The 4-H member instrument was also reviewed for readability and validity by June Welch, an elementary school teacher, the researcher's graduate committee members, and major advisor. Revisions to the questionnaires were made in accordance with information from the pre-test and the advice of the individuals listed above.

A cover letter including a brief explanation of the study and directions, along with the questionnaires were mailed out to the respondents during December of 1984. Non-respondents were sent a follow-up letter in January of 1985, describing the study and asking them to help improve the 4-H program by participating in the study. The same questionnaires used in the initial mailing was included in the follow-up mailing. No further follow-up procedures had to be taken, as an adequate rate of return had been received.

Analysis

The CP6 Honeywell Computer and "Yledit" Program were used to create a data file containing all of the information from the returned questionnaires.

Frequencies, percentages and general statistics were obtained through the Statistical Package for the Social Sciences. Tables were then developed to portray the statistical analysis in a descriptive form.

CHAPTER III

REVIEW OF RELATED LITERATURE

A review of the related literature does not identify investigations made on the "effectiveness" of the 4-H Vegetable Gardening Program, nationally or at the state level. However, other studies have been made which are relevant to this paper.

4-H and Today's Youth

As a result of 4-H being an integral part of the Cooperative Extension Service, the 4-H Program has developed and matured along with Extension. These two programs have moved from being primarily based on rural agricultural needs to programs that serve the needs of many people in many walks of life. The important areas of emphasis not only include agriculture, but home economics, public affairs and community development.

Expansion into urban areas has imposed new demands for the Extension and 4-H programs. As Oliver, (1977) stated, "The development for both rural and urban clientele has become essential".

Urbanization is not the only challenge to the 4-H Youth program. Today's youth are experiencing new levels of technology, new information and communications systems, new family structures, new values and attitudes, and new life styles. It is the responsibility of the 4-H program to help youth adapt to the changing environment and find ways to meet their needs.

To understand the purpose of the 4-H program, we must first understand the youth for which the program is designed. Youth need a voice in decisions that affect them, (Travis, 1980). Youth who choose to join 4-H do not choose to enroll in 4-H or undertake a project and do good or poorly for no reason at all, (Isaacs, 1978). When 4-H members were asked to relate why they joined 4-H, many said they thought it would be fun, they were interested in the projects, and they wanted to learn things. A motivational factor is involved to make them act in a fashion that will help them to achieve these goals. Understanding these motivational factors is essential to those involved with the educational interests of youth. Martin (1984), states: "Experience has shown that rural boys and girls remain in 4-H Club work longer if the program is based on their interests and needs". Many 4-H dropouts lose interest in club activities because they

feel they are left out of the workings of the club, (Petroff, 1983). It is essential that leaders learn to recognize youth's needs and concerns in order to develop programs that will help young people to become actively involved in 4-H and to address today's situations.

Toward Program Improvement

In order for Extension to obtain its goal of helping youth of our nation grow and develop, it must first establish the interests and concerns of youth, and it must realize the level of development of these youth.

Older youth, (16 to 18 year olds), may find 4-H less attractive because they feel they are a bit too old for 4-H. At this age they are becoming attracted to other activities, such as sports or music, (Wu, 1968). The 4-H program is designed to appeal to younger adolescents, the average age being 13.2 years old, (Stinson, 1981).

Four-H program planning must also be concerned with what the learner is expected to do after he/she has achieved an educational objective he/she could not do at the start. This ideal is the basis for 4-H project work. Extension workers must be able to guide youth to a higher level of learning, relating the objectives of the project to the objectives of the total 4-H program.

In transforming program planning efforts to educational objectives, Extension workers must realize the degree at which they wish to achieve these objectives. This realization may come about through creating an awareness of or changes in attitudes, values, goals and teaching skills.

Program Accountability

Evaluation has become an increasingly important tool in determining the accountability of the Extension and 4-H programs. The inevitable concern of taxpayers, politicians, and the federal government has been the driving force for evaluation. These people are concerned with why Extension should be supported with public funding.

Over the years, there has been a change in the focus of evaluation. During the 1960's, the primary focus was on objectives. "Does the program meet its stated objectives?" More recently "impact evaluations", evaluations of the overall program under consideration, have become important. Many Extension workers feel that because individuals acquire knowledge and skills, or because they have changes in attitudes and behaviors, there has been a definite impact made, (Pigg, 1980). Does the Extension Service have documented evidence that these

impacts actually occur, and to what degree do these impacts credit the program for federal funding? At present, the Extension Service has limited documented evidence of these impacts actually occurring. This is why there is an ever increasing need for evaluation research in this area. In order for the 4-H program to continue, it must be demonstrably effective. This can be accomplished through evaluations.

All of those people involved in 4-H are challenged to think through the program strengths and weaknesses, what changes are needed to fit the environment, and how they can most effectively and efficiently serve the needs of youth.

The Evaluation Process

In some ways, the purpose and philosophies of the Extension Service relate to the evaluation process; both center on getting useful information to people, (Patton, 1983). Providing useful information to the public will result in more accountability and worth for the Extension Service. Evaluations can prove that benefits result from Extension programs.

In order to have effective educational programs in Extension and useful evaluations, many of the same questions must be answered. Getting useful information

out to people by Extension, has essentially become an evaluation process.

The following summary of the Extension Evaluation Process has been compiled from three separate reports published in the Journal of Extension. All of these reports identified the following steps to follow as being the most important in evaluating Extension programs.

"Deciding the exact purpose of the evaluation may be the most important part in planning an evaluation. In deciding the purpose of an evaluation, one must consider whose needs are to be met by the evaluation, who will decide what the evaluation means, who will use this information and how will the results of the evaluation be used", (Smith, 1984).

The objectives of the program should be determined. These objectives should be a means of accomplishment and procedures for obtaining these objectives should be established. The objectives should relate to the program - do they reflect the purpose of the program?

In order to determine how well objectives are being met, performance standards should be set for each objective. Identifying these standards isn't easy; it often involves value judgements, (Smith, 1984).

A plan for obtaining evaluation information should be formed. It is important to identify how you can get the information, who can help get the information, from whom

data will be collected and when these duties should be performed.

Finally, the results should be reported to those who had been identified as the ones to use the information. This should be done in a timely manner. The report should explain the results of the study, indicate if standards were met and provide suggestions for redesign of the program.

Through evaluations, the Extension Service can provide useful information to the public. "Planning, implementing and reporting evaluations can have many practical benefits if the process produces credible results", (Smith, 1984). These results can be presented as useful information, increase citizen interest and awareness of programs and indicate to the public resources are being used wisely.

CHAPTER IV

RESULTS AND ANALYSIS

The results of this study are presented in seven sections, as follows:

Demographic Data
Skills Acquired through Participation in 4-H
Vegetable Gardening Projects
Use and Helpfulness of Bulletins
Activities Participated by 4-H Members
Montana 4-H Vegetable Gardening Projects to be
Offered in Future Years
Strengths and Weaknesses of the Gardening Projects
Recommendations for Improvement

Demographic Data

Data presented in this section describe each of the three respondent groups, county agents, 4-H leaders, and 4-H members. Data in Table 1 shows that a total of 240 individuals were sent questionnaires with 157 being returned for a response rate of 65.4%. The 240 individuals consisted of 35 county agents, 60 leaders and 145 members. The county agents were most responsive, with a response rate of 85.7%.

An 85.7% return rate from county agents resulted in a confidence level of 88.5%. A response of 73.3% from 4-H leaders resulted in a 91.8% confidence level. A

confidence level of 90.2% was obtained for a 57.2% return from 4-H members.

Table 1. Summary of Response by Group

Respondents	Number Sent	Number Received	Percent Return
Agents	35	30	85.7
Leaders	60	44	73.3
Members	145	83	57.2
Total	240	157	65.4

Data in Table 2 indicate that the average number of years of experience for county agents was 13 years. One hundred percent of the agents responded positively to the question, "Have you ever raised a vegetable garden?" A mean of 7.3 4-H members were helped by the county agents, while the average number of 4-H leaders assisted by the county agents was 3.2. The average number of years experience as a 4-H leader was 5.2. The percent of leaders responding positively to the question, "Have you ever raised a vegetable gardening project?" was 90.5. A mean of 2.6 4-H members were assisted by a 4-H leader.

The questionnaire provided information regarding the sex of the 4-H members. Of the 4-H members who responded, 42% were male, while 41% were female.

TABLE 2. LEADERS AND AGENTS EXPERIENCE

Group	Years Experience With Extension Service $\bar{X}$	N	Raise Garden		No %	Members Helped $\bar{X}$	Leaders Helped $\bar{X}$
			Yes %	N			
Agent	13.0	29	100	0	0.0	7.3	3.2
4-H Leader	5.2	38	90.5	9	9.5	2.6	NA

A review of the data in Table 3 indicate that 47 (58.8%) 4-H members responding were residing on a farm or ranch, with a total of 23 (28.8%) living in towns under 10,000.

TABLE 3. RESIDENCY OF 4-H MEMBERS (N=83)

Location	N	%
Farm or ranch	47	58.8
Town under 10,000, rural area	23	28.8
City 10,000 to 50,000	3	3.8
Suburb of city of 50,000	4	5.0
Central city over 50,000	3	3.8

A previous study done by Stintson in 1981, indicated the mean age of 4-H members was 13.2 years old. The data presented in Table 4 show the average age of 4-H members was 13.8 years old, with 50.7% (13.3 + 14.5 + 22.9) of the 4-H members between the ages of 12 and 14 years old.

Information in Table 5 indicates that 59 (25 + 34) of the 4-H members responding had been in 4-H for a period ranging from 1 to 4 years, with a mean of 3.8 years.

TABLE 4. AGE OF RESPONDENTS (N=83)

Age	N	%
9	1	1.2
10	4	4.8
11	8	9.6
12	11	13.3
13	12	14.5
14	19	22.9
15	7	8.4
16	11	13.3
17	5	6.0
18	3	3.6
19	2	2.4

Note: The mean age = 13.8 years old.

TABLE 5. 4-H MEMBERS' YEARS OF EXPERIENCE IN 4-H. (N=83)

Years	N	%
1-2	25	30.1
3-4	34	40.9
5-6	12	14.5
7-8	8	9.6
9	3	3.6

Note: The mean years = 3.8.

Data shown in Table 6 depict the enrollment of 4-H members involved in this study for the six year period of 1979 through 1984. The 510 Vegetable Gardening Project has had the largest percentage of 4-H members enrolled in it over the six-year period with an enrollment of 60% or more each year. The 511 Experimental Garden Project had the smallest percentage of 4-H members enrolled over the six-year period, with a "zero" enrollment for four out of the six years.

TABLE 6. VEGETABLE GARDENING PROJECT ENROLLMENT BY YEAR OF INVOLVEMENT. (N=83)

Year	Project 510 Vegetable Garden		511 Experiment Vegetable Garden		512 Farm/ Production	
	N	%	N	%	N	%
1984	59	81.9	0	0.0	13	18.1
1983	41	77.4	2	3.8	10	18.9
1982	23	67.6	2	5.9	9	10.8
1981	17	68.0	0	0.0	8	32.0
1980	12	75.0	0	0.0	4	75.0
1979	3	60.0	0	0.0	2	40.0

Skills Acquired Through Participation in 4-H Vegetable Gardening Projects

Data in Table 7 indicate that the four skills most frequently acquired by 4-H members were:

1. Recognizing weed problems (93.2%),
2. Planning the garden (91.9%),
3. Learning when to water (91.9%),
4. Filling out the record book (91.9%).

Data shown in Table 8 illustrate the skills taught by 4-H leaders. The three skills most frequently taught were:

1. Preparing vegetables for the fair (93.8%),
2. Planning the garden (90.9%),
3. Filling out the record book (90.9%).

Data in Tables 9, 10, and 11 illustrate ratings of the importance of vegetable gardening skills and also mean scores for these ratings. The ratings ranged from very

TABLE 7. SKILLS LEARNED BY 4-H MEMBERS

Skill	Yes		No	
	N	%	N	%
Recognize weed problems	69	93.2	5	6.8
Plan the garden	68	91.9	6	8.1
Learn when to water	68	91.9	6	8.1
Fill out record book	67	90.5	7	9.5
Control weed problems	65	87.8	9	12.2
Care for garden equipment	65	87.8	9	12.2
Prepare vegetable for fair	62	86.1	10	13.9
Identify root crop	60	81.1	14	18.9
Recognize insect problems	60	81.1	14	18.9
Learn when to thin	54	74.0	19	26.0
Identify fruit or seed crop	54	73.0	20	27.0
Control insect problems	53	73.6	19	26.4
Identify leafy vegetable	53	71.6	21	28.4
Select seed for Montana	51	68.9	23	31.1
Transplant vegetables	50	67.6	24	32.4
Budget time for project	49	66.2	25	33.8
Apply fertilizers	46	62.2	28	37.8
Keep records of costs	43	58.1	31	41.9
Plant successive crops	42	56.8	32	43.2
Recognize disease problems	40	54.1	34	45.9
Compute value of garden produce	39	52.7	35	47.3
Control disease problems	37	50.0	37	50.0
Compare yields	36	48.6	38	51.4
Make compost	34	45.9	40	54.1
Read fertilizer labels	32	43.2	42	56.8
Mulch the garden	30	40.5	44	59.5

important to not important. To average these ratings, responses were coded as very important = 1, important = 2, somewhat important = 3 and not important = 4.

The data in Table 9 present the ratings of importance of the vegetable gardening skills by 4-H members. In every case, 55% or more of the 4-H members responding

TABLE 8. SKILLS TAUGHT BY 4-H LEADERS (N=44)

Skill	Yes		No	
	N	%	N	%
Prepare vegetables for fair	30	93.8	2	6.3
Plan the garden	30	90.9	3	9.1
Fill out recordbook	30	90.9	3	9.1
Recognize weed problems	28	84.8	5	15.2
Keep records of costs of projects	28	84.8	5	15.2
Select seed for Montana	27	84.4	5	15.6
Control weed problems	27	81.8	6	18.2
Learn when to thin	25	78.1	7	21.9
Recognize insect problems	25	75.8	18	24.2
Transplant vegetables	23	74.2	8	25.8
Learn when to water	23	71.9	9	28.1
Control insect problems	23	69.7	10	30.3
Identify leafy vegetables	22	68.8	10	31.2
Compute value of garden produce	22	68.8	10	31.2
Identify root crop	21	65.6	11	34.4
Care for garden equipment	19	61.3	12	38.7
Apply fertilizers	19	57.6	14	42.4
Recognize disease problems	18	56.3	14	43.7
Control disease problems	18	56.3	14	43.7
Budget time for project	17	53.1	15	46.9
Identify fruit or seed crop	16	50.0	16	50.0
Mulch the garden	14	45.2	17	54.8
Plant successive crops	14	43.8	18	56.2
Read fertilizer labels	13	40.6	19	59.4
Compare yields	11	34.4	21	65.6
Make compost	9	29.0	22	71.0

Note: Percentages may vary because of nonresponses.

stated that the skills available were very important or important. Controlling weed problems ($\bar{X} = 1.47$), controlling disease problems ($\bar{X} = 1.55$), learning when to water ($\bar{X} = 1.55$) and recognizing weed problems ($\bar{X} = 1.56$) were on the average, more important to 4-H members than the other skills listed. (Based on $\bar{X}$'s). Although the

following skills were related as being important, learning how to mulch a garden ($\bar{X} = 2.33$), and identifying fruit or seed crops ($\bar{X} = 2.33$), root crops ($\bar{X} = 2.28$) and leafy vegetables ($\bar{X} = 2.27$) were the four skills, on the average, that were less important than the other skills listed.

The information in Table 10 illustrate the ratings of importance as received by 4-H leaders. The majority (17 out of 26) of the skills had at least 50% or more of the respondents listing them as important. On the average, selecting seed for Montana ($\bar{X} = 1.32$), controlling insect problems ($\bar{X} = 1.52$), recognizing insect problems ($\bar{X} = 1.55$), and preparing vegetables for the fair ($\bar{X} = 1.55$) were the more important skills identified by 4-H leaders. Identifying leafy vegetables ($\bar{X} = 2.43$), making compost ($\bar{X} = 2.31$), comparing yields ($\bar{X} = 2.27$) and identify fruit or seed crops ($\bar{X} = 2.25$) were the four skills, on the average, that were less important than the other skills listed.

The ratings of importance of vegetable gardening skills by county agents are shown in Table 11. Selecting seed for Montana ($\bar{X} = 1.35$), learning when to water ($\bar{X} = 1.48$), reading fertilizer labels ($\bar{X} = 1.62$) and planning the garden ($\bar{X} = 1.66$) were the four skills, on the

TABLE 9. IMPORTANCE OF SKILLS RATED BY 4-H MEMBERS

Skill	Ratings of Skills								$\bar{X}$	SD
	Very		Important		Somewhat		Not			
	Important		Important		Important		Important			
	N	%	N	%	N	%	N	%		
Control weed problems	42	58.3	26	36.1	4	5.6	0	0.0	1.47	.604
Control disease problems	38	59.4	21	32.8	1	1.6	4	6.3	1.55	.815
Learn when to water	40	54.8	26	35.6	7	9.6	0	0.0	1.55	.668
Recognize weed problems	34	47.9	34	47.9	3	4.2	0	0.0	1.56	.579
Prepare vegetables for fair	38	52.8	26	36.1	8	11.1	0	0.0	1.58	.687
Recognize disease problems	34	54.0	25	39.7	0	0.0	4	6.3	1.59	.796
Select seed for Montana	35	49.3	29	40.8	6	8.5	1	1.4	1.62	.704
Recognize insect problems	33	47.8	32	46.4	1	1.4	3	4.3	1.62	.730
Control insect problems	35	48.6	29	40.3	6	8.3	2	2.8	1.65	.754
Fill out record book	31	44.9	25	36.2	13	18.8	0	0.0	1.74	.760
Apply fertilizers	26	38.8	31	46.3	8	11.9	2	3.0	1.79	.769
Plan the garden	27	37.5	31	43.1	13	18.1	1	1.4	1.83	.769
Care for garden equipment	21	30.4	36	52.2	9	13.0	3	4.3	1.91	.781
Learn when to thin	23	32.4	30	42.3	16	22.5	2	2.8	1.96	.818
Transplant vegetables	21	29.6	32	45.1	14	19.7	4	5.6	2.01	.853
Plant successive crops	21	33.9	24	38.7	12	19.4	5	8.1	2.02	.932
Compute value of garden produce	22	34.9	21	33.3	17	27.0	3	4.8	2.02	.907
Read fertilizer labels	10	16.4	37	60.7	11	18.8	3	4.9	2.12	.733
Budget time for project	11	17.2	35	54.7	17	26.6	1	1.6	2.13	.701
Make compost	17	27.9	21	34.4	20	32.8	3	4.9	2.15	.891
Keep records of cost of project	15	22.1	28	41.2	21	30.9	4	5.9	2.21	.856
Compare yields	15	25.9	20	34.5	18	31.0	5	8.6	2.22	.937
Identify leafy vegetables	12	17.9	27	40.3	26	38.8	2	3.0	2.27	.790
Identify root crop	11	16.2	28	41.2	28	41.2	1	1.5	2.28	.750
Identify fruit or seed crop	9	13.4	31	46.3	23	34.3	4	6.0	2.33	.786
Mulch a garden	11	17.5	29	46.0	14	22.2	9	14.3	2.33	.933

Note: Mean response was coded as very important = 1, important = 2, somewhat important = 3 and not important = 4.

TABLE 10. IMPORTANCE OF SKILLS, RATED BY 4-H LEADERS (N=44)

Skill	Very Important		Important		Somewhat Important		Not Important		$\bar{X}$	SD
	N	%	N	%	N	%	N	%		
Select seed for Montana	22	71.0	8	25.8	1	3.2	0	0.0	1.32	.541
Control insect problems	15	51.7	13	44.8	1	3.4	0	0.0	1.52	.574
Recognize insect problems	16	55.2	10	34.5	3	10.3	0	0.0	1.55	.686
Prepare vegetables for fair	15	51.7	12	41.4	2	6.9	0	0.0	1.55	.632
Control disease problems	13	44.8	15	51.7	1	3.4	0	0.0	1.59	.568
Learn when to water	13	44.8	15	51.7	1	3.4	0	0.0	1.59	.568
Control weed problems	11	37.9	18	62.1	0	0.0	0	0.0	1.62	.494
Fill our Record Book	10	35.7	17	60.7	1	3.6	0	0.0	1.68	.548
Recognize disease problems	12	40.0	15	50.0	3	10.0	0	0.0	1.70	.651
Apply fertilizers	9	32.1	17	60.7	2	7.1	0	0.0	1.75	.585
Recognize weed problems	10	33.3	17	56.7	3	10.0	0	0.0	1.77	.626
Keep records of cost of project	10	32.3	18	58.1	3	9.7	0	0.0	1.77	.617
Transplant vegetables	11	36.7	14	46.7	5	16.7	0	0.0	1.80	.714
Compute value of garden produce	10	31.3	18	56.3	4	12.5	0	0.0	1.81	.644
Read fertilizer labels	9	31.0	16	55.2	4	13.8	0	0.0	1.83	.658
Learn when to thin	7	25.0	17	60.7	4	14.3	0	0.0	1.90	.629
Plan the garden	9	28.1	17	53.1	6	18.8	0	0.0	1.91	.689
Budget time for project	7	23.3	16	53.3	7	23.3	0	0.0	2.00	.695
Care for garden equipment	7	24.1	16	55.2	5	17.2	1	3.4	2.00	.756
Mulch the garden	4	14.8	16	59.3	7	25.9	0	0.0	2.11	.641
Plant successive crops	6	23.1	10	38.5	10	38.5	0	0.0	2.15	.784
Identify root crop	4	14.3	14	50.0	10	35.7	0	0.0	2.21	.686
Identify fruit or seed crop	4	14.3	13	46.4	11	39.3	0	0.0	2.25	.701
Compare yields	3	11.5	13	50.0	10	38.5	0	0.0	2.27	.667
Make compost	3	11.5	12	46.2	11	42.3	0	0.0	2.308	.679
Identify leafy vegetable	3	10.7	12	42.9	11	39.3	2	7.1	2.43	.790

Note: Mean response was coded as very important = 1, important = 2, somewhat important = 3, and not important = 4.

average, that were rated as being more important than the other skills listed. Mulching the garden ($\bar{X} = 3.01$), making compost ($\bar{X} = 2.76$), comparing yields ($\bar{X} = 2.71$) and identifying leafy vegetables ($\bar{X} = 2.55$) were rated as being less important than the other skills listed.

Use and Helpfulness of Bulletins

Table 12 contains information which indicates the use of vegetable gardening bulletins by 4-H members. In all but one case, over fifty percent of the 4-H members responded negatively to the statement "please check ($\checkmark$) whether or not you have used the bulletin". The bulletin 510 Vegetable Garden was the most frequently used bulletin, with 49 (74.2%) of the 4-H members indicating they had used it. Only six (10.3%) of the 4-H members indicated they had used the bulletin 511 Experimental Vegetable Garden.

Data in Table 13 illustrate the use of vegetable gardening bulletins by 4-H leaders. There were four out of fourteen bulletins in which 50% or more of the 4-H leaders had indicated that they had used the bulletins. These bulletins were:

1. 510 Vegetable Garden (78.1%),
2. Vegetables at fairs (74.1%),

TABLE 11. IMPORTANCE OF SKILLS RATED BY COUNTY AGENTS (N=30)

Skill	Very Important		Important		Somewhat Important		Not Important		$\bar{X}$	SD
	N	%	N	%	N	%	N	%		
Select seed for Montana	20	69.0	8	27.6	1	3.4	0	0.0	1.35	.553
Learn when to water	17	58.6	10	34.5	2	6.9	0	0.0	1.48	.634
Read fertilizer labels	15	51.7	10	34.5	4	13.8	0	0.0	1.62	.728
Plan the garden	12	41.4	15	51.7	2	6.9	0	0.0	1.66	.614
Recognize insect problems	13	44.8	12	41.4	4	13.8	0	0.0	1.69	.712
Learn when to water	11	37.9	16	55.2	2	6.9	0	0.0	1.69	.604
Apply fertilizers	12	41.4	13	44.8	4	13.8	0	0.0	1.72	.702
Control insect problems	12	41.4	12	41.4	5	17.2	0	0.0	1.76	.739
Recognize disease problems	10	34.5	15	51.7	4	13.8	0	0.0	1.79	.675
Control weed problems	12	41.4	10	34.5	7	24.1	0	0.0	1.83	.805
Recognize weed problems	10	34.5	14	48.3	4	13.8	1	3.4	1.86	.789
Control disease problems	10	34.5	13	44.8	5	17.3	1	3.4	1.90	.817
Transplant vegetables	8	27.6	15	51.7	6	20.7	0	0.0	1.93	.704
Keep records of cost of project	6	21.4	14	50.0	8	28.6	0	0.0	2.07	.716
Fill out record book	7	24.1	14	48.3	6	20.7	2	6.9	2.10	.860
Budget time for project	5	17.2	14	48.3	8	27.6	2	6.9	2.24	.830
Care for garden equipment	2	6.9	18	62.1	8	27.6	1	3.4	2.27	.649
Prepare vegetables for fair	9	22.2	10	37.0	2	7.4	0	0.0	2.30	.912
Compute value of garden produce	4	13.8	12	41.4	12	41.4	1	3.4	2.35	.769
Plant successive crops	2	7.1	12	42.9	14	50.0	0	0.0	2.43	.634
Identify fruit or seed crop	2	6.9	13	44.8	12	41.4	2	6.9	2.48	.783
Identify root crop	2	6.9	13	44.8	11	37.9	3	10.4	2.52	.785
Identify leafy vegetable	1	3.4	14	48.4	11	37.9	3	10.3	2.55	.736
Compare yields	2	7.1	9	32.1	12	42.9	5	17.9	2.71	.854
Make compost	1	3.5	10	34.5	13	44.8	5	17.2	2.76	.786
Mulch the garden	4	13.8	10	34.5	15	51.7	0	0.0	3.01	.961

Note: Mean response was coded as very important = 1, important = 2, somewhat important = 3 and not important = 4.

TABLE 12. USE OF BULLETINS BY 4-H MEMBERS (N=83)

Bulletin	Yes		No	
	N	%	N	%
510 Vegetable Garden	49	74.2	17	25.8
Vegetables at fairs	25	47.2	28	52.8
Growing vegetables in home garden	21	36.2	37	63.8
Planting dates for vegetables	16	27.6	42	72.4
512 Family/Production garden	16	26.7	44	73.3
Potatoes in home garden	14	25.0	42	75.0
Grow your own transplants at home	13	23.2	43	76.8
Vegetable charts	13	23.2	43	76.8
Strawberries in home garden	12	20.7	46	79.3
Suggested vegetable varieties for Montana	10	17.5	47	82.5
Composting	8	14.3	48	85.7
Growing raspberries in Montana	8	13.8	50	86.2
Gardening with chemical fertilizers	7	12.5	49	87.5
511 Experimental Vegetable Garden	6	10.3	52	89.7

Note: Project bulletin 510, 511 and 512 are routinely given to 4-H members when they enroll in each individual project. The other bulletins listed are given to the members on request.

3. Suggested vegetable varieties for Montana (51.7%).

4. Planting dates for vegetables (50.0%).

Three (11.5%) of the 4-H leaders indicated they had used the bulletin gardening with chemical fertilizers.

Data given in Table 14 illustrate the ratings of the helpfulness of vegetable gardening bulletins by 4-H members who indicated that they had used these bulletins. The majority of bulletins were rated as very helpful or

TABLE 13. USE OF BULLETINS BY 4-H LEADERS (N=44)

Bulletin	Yes		No	
	N	%	N	%
510 Vegetable Garden	25	78.1	7	21.9
Vegetables at fairs	20	74.1	7	25.9
Suggested vegetable varieties for Montana	15	51.7	14	48.3
Planting dates for vegetables	14	50.0	14	50.0
Growing vegetables in home garden	11	44.0	14	56.0
512 Family/Production garden	11	39.3	17	60.7
511 Experimental	9	34.6	17	65.4
Vegetable charts	7	28.0	18	72.0
Grow your own transplants at home	7	28.0	18	72.0
Potatoes in the home garden	6	25.0	18	75.0
Strawberries in home garden	6	23.1	20	76.9
Growing raspberries in Montana	6	22.2	21	77.8
Composting	5	20.0	20	80.0
Gardening with chemical fertilizers	3	11.5	23	88.5

helpful, with Composting, Growing Raspberries in Montana and Vegetable Charts rated as the most helpful. Composting ($\bar{X}=1.33$), 511 Experimental Vegetable Garden ($\bar{X}=1.40$), and Growing Raspberries in Montana ($\bar{X}=1.42$) were on the average more helpful than the other bulletins listed. The bulletin 510 Vegetable Garden ($\bar{X}=1.87$), on the average, was rated less important than all of the other bulletins listed.

Information shown in Table 15 illustrates the ratings of the helpfulness of vegetable gardening by 4-H leaders who indicated they had used these bulletins. Most

TABLE 14. HELPFULNESS OF BULLETINS RATED BY 4-H MEMBERS (N=83)

Bulletin	Rating of Bulletin								$\bar{X}$	SD
	Very Helpful		Helpful		Somewhat Helpful		Not Helpful			
	N	%	N	%	N	%	N	%		
Composting	6	66.7	3	33.3	0	0.0	0	0.0	1.33	.500
511 Experimental Vegetable Garden	3	60.0	2	40.0	0	0.0	0	0.0	1.40	.548
Growing Raspberries in Montana	8	66.7	3	25.0	1	8.3	0	0.0	1.42	.669
Vegetable Charts	7	58.3	5	41.7	0	0.0	0	0.0	1.42	.515
Strawberries in home garden	6	54.5	5	45.5	0	0.0	0	0.0	1.46	.522
Gardening with chemical fertilizers	2	50.0	2	50.0	0	0.0	0	0.0	1.50	.577
Growing vegetables in home garden	9	50.0	9	50.0	0	0.0	0	0.0	1.50	.514
Vegetables at fairs	15	60.0	7	28.0	3	12.0	0	0.0	1.52	.714
Potatoes in the Home garden	8	61.5	4	30.8	0	0.0	1	7.7	1.54	.877
Planting dates for vegetables	6	42.9	8	57.1	0	0.0	0	0.0	1.57	.514
Suggested vegetables varieties for Montana	8	50.0	6	37.5	1	6.3	1	6.3	1.69	.873
512 Family Production Garden	6	40.0	7	46.7	2	13.3	0	0.0	1.73	.704
Grow your own transplants at Home	5	45.5	3	27.3	3	27.3	0	0.0	1.82	.877
510 Vegetable Garden	16	35.6	20	44.4	8	17.8	1	2.2	1.87	.786

Note: Mean response was coded as very important = 1, important = 2, somewhat important + 3 and not important = 4.

respondents indicated that the bulletins were very helpful or helpful, with no respondents indicating bulletins as being not helpful. The three bulletins 510 Vegetable Garden ($\bar{X}=1.22$), Vegetables at Fairs ($\bar{X}=1.26$) and Suggested Vegetable Varieties for Montana ($\bar{X}=1.48$) were rated as being more helpful than the other bulletins listed, while Growing Raspberries in Montana ($\bar{X}=1.78$), Composting ($\bar{X}=1.80$), and Gardening with Chemical Fertilizers ($\bar{X}=1.89$) were rated as being less helpful than the other bulletins listed.

Ratings of the helpfulness Vegetable Gardening Bulletins by County Agents is shown in Table 16. Suggested Vegetable varieties for Montana ($\bar{X}=1.44$), Planting Dates for Vegetables ($\bar{X}=1.50$) and Vegetable Charts ($\bar{X}=1.55$) were the three bulletins rated as being more helpful than the other bulletins listed. The bulletins 510 Vegetable Garden ($\bar{X}=2.58$), 512 Family Production Garden ($\bar{X}=2.67$), and 511 Experimental Vegetable Garden were the three bulletins rated as being less helpful than the other bulletins listed.

Noteable comparisons of the mean scores of the helpfulness of Vegetable Gardening bulletins as rated by 4-H members, 4-H leaders and county agents are shown in Table 17. (Noteable comparisons were based on a .50 or

TABLE 15. HELPFULNESS OF BULLETINS RATED BY 4-H LEADERS (N=44)

Bulletin	Ratings of Bulletins								$\bar{X}$	SD
	Very Helpful		Helpful		Somewhat Helpful		Not Helpful			
	N	%	N	%	N	%	N	%		
510 Vegetable Garden	6	28.6	10	47.6	5	23.8	0	0.0	1.22	.420
Vegetable at Fairs	8	53.3	7	46.7	0	0.0	0	0.0	1.26	.447
Suggested Vegetable varieties for Montana	5	45.5	6	54.5	0	0.0	0	0.0	1.48	.509
Planting dates for vegetables	6	54.5	4	36.4	1	9.1	0	0.0	1.50	.509
Growing vegetables in the home garden	3	27.3	8	72.7	0	0.0	0	0.0	1.56	.507
512 Family Production Garden	2	22.2	3	33.3	4	44.4	0	0.0	1.61	.497
511 Experimental Vegetable Garden	2	22.2	5	55.6	2	22.2	0	0.0	1.65	.485
Grow your own transplants at Home	4	66.7	2	33.3	0	0.0	0	0.0	1.72	.458
Vegetable Charts	3	42.9	4	57.1	0	0.0	0	0.0	1.72	.458
Potatoes in home garden	1	12.5	6	75.0	1	12.5	0	0.0	1.75	.442
Strawberries in home garden	4	66.7	2	33.3	0	0.0	0	0.0	1.77	.430
Growing raspberries in Montana	5	83.3	1	16.7	0	0.0	0	0.0	1.78	.424
Composting	1	20.0	3	60.0	1	20.0	0	0.0	1.80	.408
Gardening with chemical fertilizers	0	0.0	0	0.0	1	0.0	0	0.0	1.89	.326

Note: Mean response was coded as very important = 1, important = 2, somewhat important = 3 and not important = 4.

TABLE 16. HELPFULNESS OF BULLETINS RATED BY 4-H AGENTS

Bulletin	Ratings of Bulletins								$\bar{X}$	SD
	Very Helpful		Helpful		Somewhat Helpful		Not Helpful			
	N	%	N	%	N	%	N	%		
Suggested vegetable varieties for Montana	17	63.0	9	33.3	0	0.0	1	3.7	1.44	.698
Planting dates for vegetables	16	61.6	7	26.9	3	11.5	0	0.0	1.50	.707
Vegetable charts	13	48.1	13	48.1	1	3.8	0	0.0	1.55	.577
Growing vegetables in home garden	13	48.1	11	40.8	3	11.1	0	0.0	1.63	.687
Vegetables at fairs	10	41.7	8	33.3	6	25.0	0	0.0	1.83	.816
Potatoes in home garden	7	25.9	17	63.0	3	11.1	0	0.0	1.85	.601
Grow your own transplants at home	7	26.9	15	57.7	4	15.4	0	0.0	1.88	.653
Growing raspberries in home garden	9	34.6	9	34.6	8	30.8	0	0.0	2.04	.898
Strawberries in home garden	10	37.0	6	22.2	11	40.8	0	0.0	2.04	.898
Composting	4	15.4	14	53.8	6	23.1	2	7.7	2.23	.815
Gardening with chemical fertilizers	2	7.7	15	57.7	7	26.9	2	7.7	2.35	.754
510 Vegetable Garden	2	7.7	11	42.3	9	34.6	4	15.4	2.58	.857
512 Family Production Garden	1	4.2	10	41.7	9	37.5	4	16.6	2.67	.816
511 Experimental Vegetable Garden	0	0.0	11	44.0	10	40.0	4	16.0	2.72	.737

Note: Mean response was coded as very important = 1, important = 2, somewhat important = 3 and not important = 4.

more difference in the mean scores.) Four-H members and leaders rated the bulletins 510 Vegetable Garden, 511 Experimental Vegetable Garden and 512 Family/Production Garden as being more helpful than did the county agents. In all three cases, mean scores for 4-H members and leaders were .50 or more lower than the mean scores for county agents. Four-H leaders rated the bulletin composting ($\bar{X}=1.61$) as being much more helpful than the 4-H members ($\bar{X}=1.72$) and county agents, ($\bar{X}=2.67$).

TABLE 17. COMPARISON OF HELPFULNESS OF BULLETINS.

Bulletin	Mean and Standard Deviation of Each Group					
	Members		Leaders		Agents	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
510 Vegetable Garden	1.87	.786	1.22	.420	2.58	.857
511 Experimental Vegetable Garden	1.40	.584	1.65	.485	2.72	.737
512 Family/Production Garden	1.73	.704	1.61	.497	2.67	.816
Composting	1.33	.500	1.80	.408	2.23	.815

Activities Participated by 4-H Members

The activities that the 4-H members participated in, while taking a Vegetable Gardening Project are listed below in Table 18. The activities in which the largest percentage of 4-H members participated were: receiving

help with their gardening project from their parents, (92.1%), exhibiting vegetables at a summer fair (90.4%), and receiving help with their garden project from leaders (60.8%). The activities in which the smallest percentage of 4-H members participated were: county training or help sessions on vegetable gardening (6.8%), 4-H vegetable gardening tours (18.4%), and 4-H club work meetings on vegetable gardening (28.0%).

TABLE 18. PARTICIPATION IN 4-H ACTIVITIES BY 4-H MEMBERS (N=83)

Activity	Yes		No	
	N	%	N	%
Help with garden project from parents	70	92.1	6	7.9
Exhibited vegetables at summer fair	66	90.4	7	9.6
Help with garden project from leaders	45	60.8	29	39.2
Demonstration on vegetable gardening	34	44.7	42	55.3
4-H vegetable judging contest	26	34.2	50	65.8
Talk on vegetable gardening	23	31.1	51	68.9
4-H club work meeting on vegetable gardening	21	28.0	54	72.0
4-H vegetable gardening tour	14	18.4	62	81.6
County training or help sessions on vegetable gardening	5	6.8	69	93.2

Montana Vegetable Gardening Projects
to be Offered in Future Years

Information in Table 19 indicates the Vegetable Gardening projects that 4-H members, leaders and county

agents would like to have offered in future years. The two projects which had the greatest number of responses to the question "Which project(s) should Montana offer in Vegetable Gardening in future years?" were 510 Vegetable Garden (total = 122) and 512 Family/Production Garden (total = 104). The project with the smallest number of responses was 513 container garden (total = 58).

TABLE 19. PROJECTS TO BE OFFERED IN FUTURE YEARS.

Project	Group Agents N	Leaders N	Members N	Total
510 Vegetable Garden	25	27	70	122
512 Family/Production Garden	22	25	57	104
514 Experimental Container Garden	6	31	51	88
511 Experimental Vegetable Garden	14	14	43	71
515 Container Production Garden	7	34	24	65
513 Container Garden	11	13	34	58

Strengths and Weaknesses of the Gardening Projects

The strengths and weaknesses presented in this section were summarized from the open responses found in Appendix G.

Strengths of the Vegetable Gardening Projects

In order to determine the strengths of the vegetable gardening projects, 4-H leaders and agents were asked to

list what they perceived were strengths of the project while 4-H members were asked to list what they liked most about the vegetable gardening projects.

In general, the main strengths of the projects were that the projects provide a good learning opportunity for the 4-H members that can be shared with their families. The 4-H members enjoyed growing and eating the vegetables and exhibiting them at the fair. County agents felt that gardening was a project that was an inexpensive project for members.

Weaknesses of the Vegetable Gardening Projects

Weaknesses of the vegetable gardening projects were determined by asking the 4-H leaders and county agents what the weaknesses of the projects were, and by asking the 4-H members what they did not like about the projects.

The one weakness that all three groups felt strongly about was that the projects needed to provide more information to the members and leaders in order for them to complete the project(s). County agents and leaders were concerned that although the projects left room for family members to be involved, the 4-H members may take advantage of this and let family members absorb too many of the 4-H responsibilities. The 4-H members in general did not like all of the work required to maintain a

garden, especially weeding. Recordkeeping and not having enough help were also problems.

Recommendations for Improvement

Recommendations for improvement were also summarized from the open responses found in Appendix G. County agents, 4-H leaders and members were asked to list suggestions they may have had for improving the Montana Vegetable Gardening Projects.

The majority of responses from all three groups included ideas for providing more information for the projects, developing creative activities and making the projects more fun. Four-H members were concerned with fair preparations and getting the leaders involved with their projects.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations presented in this section are organized and presented as they pertain to the objectives of this evaluation.

Conclusions

Based on the analysis and summarization of the data presented in this study, it was concluded that:

1. 4-H members, leaders and county agents felt all of the skills listed that could be acquired through participation in vegetable gardening projects were important. Identifying fruit or seed crops, root crops and leafy vegetables were skills that were less important to all three groups than the other skills.
2. Use of the specific vegetable gardening bulletins was low. However, the majority of the respondents who had used the bulletins rated the bulletins as being very helpful.
3. Participation by 4-H members in activities related to vegetable gardening was low. A majority (50% or more) of the 4-H members did not participate in 67% of the activities listed. Exhibiting vegetables at a summer

fair, and getting help with the garden project from parents were the two activities the largest number of 4-H members participated in.

4. Goals established at the state and national level for the vegetable gardening projects were accomplished by 4-H members.
5. Acquiring the knowledge and developing the skills needed to care for and manage a well planned vegetable garden project were strengths of the Montana vegetable gardening projects.
6. Lack of information related to vegetable gardening projects and too little emphasis on the basics of vegetable gardening were weaknesses of the Montana Vegetable Gardening Projects.

Recommendations

As a result of the study's findings, the following recommendations were made:

1. Detailed project manuals should be developed for beginner, intermediate and advanced vegetable gardeners. These project manuals should contain clearly defined objectives for the project, suggestions for carrying out the objectives, how to plan a garden, citizenship responsibility, information on plant growth and develop a list of references and information on

gardening products on the market. More information should be provided in order to place emphasis on identifying groups as being either fruit or seed, root or leafy vegetables.

2. 4-H members, leaders and county agents need to be made more aware of the vegetable gardening bulletins available through the Cooperative Extension Service.
3. 4-H members need to become familiar with learning experiences in gardening projects and related activities: demonstrations, judging, tours and exhibits.

Summary

The data presented in this study show the perception of 4-H members, leaders and county agents toward the Montana 4-H vegetable gardening projects. These perceptions can be examined by the State 4-H Office and any one interested in the 4-H program to gain insight into how those involved in the Montana 4-H vegetable projects feel about the projects. These perceptions should help provide information to the State 4-H Office to guide them in the improvement of the Montana 4-H vegetable gardening projects.

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REFERENCES CITED

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APPENDICES

APPENDIX A

4-H AGENT SURVEY
VEGETABLE GARDENING PROJECTS

DIRECTIONS: Please answer the following questions by placing a check mark (✓) in the appropriate space or by placing the correct number in the space provided.

1. Number of years that you have been a county agent? _____
2. Have you ever raised a vegetable garden? (previously or currently?)
yes _____
no. _____
3. On the average how many 4-H members per year will you assist with a 4-H vegetable gardening project? _____
4. On the average, how many 4-H leaders per year will you assist with a 4-H vegetable gardening project? _____

(OVER)

DIRECTIONS: Listed below are skills that could have been acquired from a 4-H vegetable gardening project. Please rate the importance of the skill in regard to the success of a 4-H vegetable gardening project. Use the scale shown.

Very Important	Important	Somewhat Important	Not Important
-------------------	-----------	-----------------------	------------------

EXAMPLE: Learning how to read seed labels.	☒	☐	☐	☐
1. Learning how to make a plan for their garden . .	☐	☐	☐	☐
2. Learning how to identify a vegetable classified as leafy	☐	☐	☐	☐
3. Learning how to identify a vegetable classified as a root crop	☐	☐	☐	☐
4. Learning how to identify a vegetable classified as a fruit or seed crop.	☐	☐	☐	☐
5. Learning how to select proper seed varieties for their area of Montana.	☐	☐	☐	☐
6. Learning how to read fertilizer labels	☐	☐	☐	☐
7. Learning how to apply fertilizers.	☐	☐	☐	☐
8. Learning how to budget time for their gardening project.	☐	☐	☐	☐
9. Learning how to keep records of all costs of their gardening project.	☐	☐	☐	☐
10. Learning how to fill out a recordbook.	☐	☐	☐	☐
11. Learning how to compute the value of their garden produce	☐	☐	☐	☐
12. Learning how to recognize disease problems in their vegetable garden	☐	☐	☐	☐
13. Learning how to recognize insect problems in their vegetable garden	☐	☐	☐	☐
14. Learning how to recognize weed problems in their vegetable garden	☐	☐	☐	☐
15. Learning how to control disease problems in their vegetable garden	☐	☐	☐	☐
16. Learning how to control insect problems in their vegetable garden	☐	☐	☐	☐
17. Learning how to control weed problems in their vegetable garden	☐	☐	☐	☐
18. Learning when to water the garden.	☐	☐	☐	☐
19. Learning when to thin the garden	☐	☐	☐	☐
20. Learning how to take care of garden equipment. .	☐	☐	☐	☐
21. Learning how to transplant vegetables.	☐	☐	☐	☐
22. Learning how to mulch a garden	☐	☐	☐	☐
23. Learning how to make compost	☐	☐	☐	☐
24. Learning how to plant successive crops	☐	☐	☐	☐
25. Learning how to compare the yields of unthinned crops to thinned crops	☐	☐	☐	☐
26. Learning how to prepare vegetables for exhibit at the fair.	☐	☐	☐	☐

DIRECTIONS: Below is a list of bulletins available from the Extension Service that you may have used in assisting 4-H members or 4-H leaders with their vegetable gardening projects. Please indicate how helpful this bulletin is for the vegetable gardening projects. Use the scale shown for the answers on the right-hand side.

Very Helpful	Helpful	Somewhat Helpful	Not Helpful
-----------------	---------	---------------------	----------------

EXAMPLE: Home Vegetable Gardening.	_____	_____	_____ ☒	_____
1. Project sheet for 510 Vegetable Garden	_____	_____	_____	_____
2. Project sheet for 511 Experimental Vegetable Garden	_____	_____	_____	_____
3. Project sheet for 512 Family/Production Garden . .	_____	_____	_____	_____
4. Strawberries in Home Gardens	_____	_____	_____	_____
5. Growing Raspberries in Montana	_____	_____	_____	_____
6. Potatoes in the Home Garden.	_____	_____	_____	_____
7. Grow Your Own Transplants at Home and Save	_____	_____	_____	_____
8. Gardening With Chemical Fertilizers.	_____	_____	_____	_____
9. Composting	_____	_____	_____	_____
10. Planting Dates for Vegetables.	_____	_____	_____	_____
11. Vegetable Charts	_____	_____	_____	_____
12. Growing Vegetables in the Home Garden.	_____	_____	_____	_____
13. Suggested Vegetables Varieties for Montana Gardens.	_____	_____	_____	_____
14. Vegetable at Fairs	_____	_____	_____	_____
15. Others _____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

(OVER)

DIRECTIONS: Please answer the following question by placing a check (✓) in the appropriate space.

Which project(s) should Montana 4-H offer in Vegetable Gardening in future years?

510 Vegetable Garden. _____
511 Experimental Vegetable Garden _____
512 Family/Production Garden. _____
513 Container Garden. _____
514 Experimental Container Garden _____
515 Container Production Garden _____
Others (list) _____

1. Please list the strengths of the Montana 4-H vegetable gardening projects.
2. Please list the weaknesses of the Montana 4-H vegetable gardening projects.
3. Please list any suggestions you may have for improving the Montana 4-H vegetable gardening projects.

APPENDIX B

4-H LEADER SURVEY
VEGETABLE GARDENING PROJECTS

DIRECTIONS: Please answer the following questions by placing a check (✓) in the appropriate box, or by placing the correct number in the space provided.

1. How many years have you assisted 4-H members with their 4-H vegetable gardening projects? _____
2. Have you ever raised a vegetable garden? (previously or currently?)
Yes _____
No _____
3. On the average, how many 4-H members per year will you assist with a 4-H vegetable gardening project? _____

(OVER)

DIRECTIONS: Listed below are skills that could have been acquired from a 4-H vegetable gardening project. On the left-hand side, please check (✓) whether or not you assisted a 4-H member in learning this skill. On the right-hand side, please rate the importance of the skill in regard to the success of a 4-H vegetable gardening project. Use the scale shown for the answers on the right-hand side.

Did you assist a 4-H member in:

YES NO

Very Important
Important
Somewhat Important
Not Important

✓	EXAMPLE: Learning how to read seed labels.	✓		
	1. Learning how to make a plan for their garden . . .			
	2. Learning how to identify a vegetable classified as leafy			
	3. Learning how to identify a vegetable classified as a root crop			
	4. Learning how to identify a vegetable classified as a fruit or seed crop			
	5. Learning how to select proper seed varieties for their area of Montana			
	6. Learning how to read fertilizer labels			
	7. Learning how to apply fertilizers			
	8. Learning how to budget time for their gardening project			
	9. Learning how to keep records of all costs of their gardening project			
	10. Learning how to fill out a recordbook			
	11. Learning how to compute the value of their garden produce			
	12. Learning how to recognize disease problems in their vegetable garden			
	13. Learning how to recognize insect problems in their vegetable garden			
	14. Learning how to recognize weed problems in their vegetable garden			
	15. Learning how to control disease problems in their vegetable garden			
	16. Learning how to control insect problems in their vegetable garden			
	17. Learning how to control weed problems in their vegetable garden			
	18. Learning when to water the garden			
	19. Learning when to thin the garden			
	20. Learning how to take care of garden equipment . . .			
	21. Learning how to transplant vegetables			
	22. Learning how to mulch a garden			
	23. Learning how to make compost			
	24. Learning how to plant successive crops			
	25. Learning how to compare the yields of unthinned crops to thinned crops			
	26. Learning how to prepare vegetables for exhibit at the fair			

DIRECTIONS: Below is a list of bulletins available from the Extension Service that you may have used in assisting 4-H members with their vegetable gardening projects. On the left-hand side, please check (✓) whether or not you have used the bulletin. On the right-hand side, please indicate how helpful this bulletin is for the vegetable gardening projects. Use the scale shown for the answers on the right-hand side. If you have not used the bulletin, do not answer the right-hand side.

YES	NO		Very Helpful	Helpful	Somewhat Helpful	Not Helpful
—	✓	EXAMPLE: Home Vegetable Gardening.	—	—	—	—
—	—	1. Project sheet for 510 Vegetable Garden	—	—	—	—
—	—	2. Project sheet for 511 Experimental Vegetable Garden	—	—	—	—
—	—	3. Project sheet for 512 Family/Production Garden . .	—	—	—	—
—	—	4. Strawberries in Home Gardens	—	—	—	—
—	—	5. Growing Raspberries in Montana	—	—	—	—
—	—	6. Potatoes in the Home Garden.	—	—	—	—
—	—	7. Grow Your Own Transplants at Home and Save . . .	—	—	—	—
—	—	8. Gardening With Chemical Fertilizers.	—	—	—	—
—	—	9. Composting	—	—	—	—
—	—	10. Planting Dates for Vegetables.	—	—	—	—
—	—	11. Vegetable Charts	—	—	—	—
—	—	12. Growing Vegetables in the Home Garden.	—	—	—	—
—	—	13. Suggested Vegetables Varieties for Montana Gardens.	—	—	—	—
—	—	14. Vegetable at Fairs	—	—	—	—
—	—	15. Others _____	—	—	—	—
		_____	—	—	—	—
		_____	—	—	—	—

(OVER)

DIRECTIONS: Please answer the following question by placing a check (✓) in the appropriate space.

Which project(s) should Montana 4-H offer in Vegetable Gardening in future years?

510 Vegetable Garden	_____
511 Experimental Vegetable Garden	_____
512 Family/Production Garden	_____
513 Container Garden	_____
514 Experimental Container Garden	_____
515 Container Production Garden	_____
Others (list)	_____

Others (list) _____

1. Please list the strengths of the Montana 4-H vegetable gardening projects.
2. Please list the weaknesses of the Montana 4-H vegetable gardening projects.
3. Please list any suggestions you may have for improving the Montana 4-H vegetable gardening projects.

APPENDIX C

1. Are you male or female?
male.....
female.....

2. What is your home location?
farm or ranch.....
town under 10,000 or rural area.....
city 10,000 to 50,000.....
suburb of city of 50,000.....
central city over 50,000.....

3. What is your date of birth?.....
month day year

4. Years of 4-H you had completed by September 30, 1984?.....

EXAMPLE:

1984 (510 Veg. Garden) (511 Experiment. Garden) (512 Family Prod. Garden)

1984	(510 Veg. Garden)	(511 Experiment. Garden)	(512 Family Prod. Garden)
1983	(510 Veg. Garden)	(511 Experiment. Garden)	(512 Family Prod. Garden)
1982	(510 Veg. Garden)	(511 Experiment. Garden)	(512 Family Prod. Garden)
1981	(510 Veg. Garden)	(511 Experiment. Garden)	(512 Family Prod. Garden)
1980	(510 Veg. Garden)	(511 Experiment. Garden)	(512 Family Prod. Garden)
1979	(510 Veg. Garden)	(511 Experiment. Garden)	(512 Family Prod. Garden)

(OVER)

DIRECTIONS: Listed below are skills that you could have acquired from a 4-H vegetable gardening project. On the left-hand side, please check (✓) whether or not you have acquired the skill. On the right-hand side, please rate the importance of the skill in regard to the success of your project. Use the scale listed for the answers on the right-hand side.

YES NO

Very Important
Important
Somewhat Important
Not Important

☒	EXAMPLE: Did you learn how to read seed labels?	☒		
☐	1. Did you learn how to make a plan for your garden?	☐		
☐	2. Did you learn how to identify a vegetable classified as leafy?	☐		
☐	3. Did you learn how to identify a vegetable classified as a root crop?	☐		
☐	4. Did you learn how to identify a vegetable classified as a fruit or seed crop?	☐		
☐	5. Did you learn how to select proper seed varieties for your area of Montana?	☐		
☐	6. Did you learn how to read fertilizer labels?	☐		
☐	7. Did you learn how to apply fertilizers?	☐		
☐	8. Did you learn how to budget time for your gardening project?	☐		
☐	9. Did you learn how to keep records of all costs of your gardening project?	☐		
☐	10. Did you learn how to fill out your recordbook?	☐		
☐	11. Did you learn how to compute the value of your garden produce?	☐		
☐	12. Did you learn to recognize disease problems in your vegetable garden?	☐		
☐	13. Did you learn to recognize insect problems in your vegetable garden?	☐		
☐	14. Did you learn to recognize weed problems in your vegetable garden?	☐		
☐	15. Did you learn how to control disease problems in your vegetable garden?	☐		
☐	16. Did you learn how to control insect problems in your vegetable garden?	☐		
☐	17. Did you learn how to control weed problems in your vegetable garden?	☐		
☐	18. Did you learn when to water the garden?	☐		
☐	19. Did you learn when to thin the garden?	☐		
☐	20. Did you learn how to take care of your garden equipment?	☐		
☐	21. Did you learn how to transplant vegetables?	☐		
☐	22. Did you learn how to mulch your garden?	☐		
☐	23. Did you learn how to make compost?	☐		
☐	24. Did you learn how to plant successive crops?	☐		
☐	25. Did you learn how to compare the yields of unthinned crops to thinned crops?	☐		
☐	26. Did you learn how to prepare vegetables for exhibit at the fair?	☐		

DIRECTIONS: Below is a list of bulletins available from the Extension Service that you may have used for your 4-H vegetable gardening project. On the left-hand side, please check (✓) whether or not you have used the bulletin. On the right-hand side, please indicate how helpful this bulletin was to you for your project. Use the scale shown for the answers on the right-hand side. If you have not used the bulletin, do not answer the right-hand side.

YES NO

		<i>Very Helpful</i>	<i>Helpful</i>	<i>Somewhat Helpful</i>	<i>Not Helpful</i>
—	✓ EXAMPLE: Home Vegetable Gardening.	—	—	—	—
—	1. Project sheet for 510 Vegetable Garden	—	—	—	—
—	2. Project sheet for 511 Experimental Vegetable Garden	—	—	—	—
—	3. Project sheet for 512 Family/Production Garden	—	—	—	—
—	4. Strawberries in Home Gardens	—	—	—	—
—	5. Growing Raspberries in Montana	—	—	—	—
—	6. Potatoes in the Home Garden.	—	—	—	—
—	7. Grow Your Own Transplants at Home and Save	—	—	—	—
—	8. Gardening With Chemical Fertilizers.	—	—	—	—
—	9. Composting	—	—	—	—
—	10. Planting Dates for Vegetables.	—	—	—	—
—	11. Vegetable Charts	—	—	—	—
—	12. Growing Vegetables in the Home Garden.	—	—	—	—
—	13. Suggested Vegetables Varieties for Montana Gardens	—	—	—	—
—	14. Vegetables at Fairs.	—	—	—	—
—	15. Others _____	—	—	—	—
—	_____	—	—	—	—
—	_____	—	—	—	—
—	_____	—	—	—	—

DIRECTIONS: Below is a list of possible activities you could have been involved in during the time you were enrolled in a 4-H vegetable gardening project. If you were involved in the activity, check (✓) the "yes" space. If you were not involved in the activity, check (✓) the "no" space.

	<u>YES</u>	<u>NO</u>
1. Received help at a 4-H club work meeting on vegetable gardening.	—	—
2. Attended a 4-H vegetable gardening tour.	—	—
3. Participated in 4-H vegetable judging contests	—	—
4. Discussed your garden project with your parents for ideas or help.	—	—
5. Discussed your garden project with your 4-H leaders for ideas/help	—	—
6. Gave a demonstration on vegetable gardening.	—	—
7. Gave a talk on vegetable gardening	—	—
8. Went to county training or help sessions on 4-H vegetable gardening.	—	—
9. Exhibited vegetables at summer fair.	—	—
10. Other (list) _____	—	—
_____	—	—
_____	—	—

(OVER)

DIRECTIONS: Please answer the following question by placing a check (✓) in the appropriate space.

Which project(s) should Montana 4-H offer in Vegetable Gardening in future years?

510 Vegetable Garden.....
511 Experimental Vegetable Garden.....
512 Family/Production Garden.....
513 Container Garden.....
514 Experimental Container Garden.....
515 Container Production Garden.....
Others (list) _____

1. Please list what you liked most about your 4-H vegetable gardening project(s).
2. Please list what you did not like about your 4-H vegetable gardening project(s).
3. Please list any suggestions you may have for improving the Montana 4-H vegetable gardening projects.

APPENDIX D



Montana State University
Bozeman, Montana 59717

Department of Agricultural and Industrial Education
College of Agriculture

December 10, 1984

Dear 4-H Member:

You have been selected to be a part of a study on the Montana 4-H vegetable gardening projects. Your feelings as a 4-H member, who has participated in one or more of the 4-H vegetable gardening projects, will be very important in gathering information for updating and improving 4-H vegetable gardening projects in the future.

The enclosed survey is designed to determine your feelings about the 4-H vegetable gardening projects. Please take time to carefully answer each question with only your feelings.

Please return your completed survey in the self-addressed, stamped envelope provided. Due to the time frame of this study, your cooperation in returning your survey by December 21, 1984 would be greatly appreciated.

Sincerely,

Susan L. McMaster

Susan L. McMaster
Graduate Student



Montana State University
Bozeman, Montana 59717

Department of Agricultural and Industrial Education
College of Agriculture

December 10, 1984

Dear 4-H Leader:

As a graduate student in Agriculture Education, Extension option, I need your assistance in completing my masters thesis. The purpose of my thesis is to determine the perceptions of a random sample of 4-H members, 4-H leaders and county agents toward the Montana 4-H vegetable gardening projects.

This research will provide information that can be used by the state 4-H office for improvement of the Montana 4-H vegetable gardening projects. The results of this survey will be provided to you through the state 4-H office.

Enclosed is a questionnaire that will help determine 4-H leaders' perceptions toward the Montana 4-H vegetable gardening projects. Your input is important in gathering information for updating and improving the 4-H vegetable gardening projects.

Please help us improve the 4-H program by taking time to fill out the questionnaire and return it in the self-addressed, stamped envelope provided. Due to the time frame of this study, your cooperation in returning this questionnaire by December 21, 1984 would be greatly appreciated.

Sincerely,

Susan L. McMaster

Susan L. McMaster
Graduate Student

Telephone (406) 994-3201
Amberson Poteffe Bruwelheide Roter Wheatley
(406) 994-3691
Bishop Shephard

APPENDIX E



Montana State University
Bozeman, Montana 59717

Department of Agricultural and Industrial Education
College of Agriculture

January 14, 1985

Dear 4-H Member:

As you may know, you have been selected to be a part of a study on the Montana 4-H vegetable gardening projects. You should have received a letter and questionnaire that dealt with the gardening projects sometime during mid December. I am enclosing another copy of the questionnaire in case you misplaced it or it was lost in the Christmas mail.

Your feelings as a 4-H member, who has participated in one or more of the 4-H vegetable gardening projects, is very important in gathering information for updating and improving the 4-H vegetable gardening projects in the future.

In order to update the program, I need more information. I am asking you to please fill out the enclosed questionnaire and return it by January 28, 1985. A self-addressed, stamped envelope has been provided for the return.

Please help us to improve the 4-H program.

Sincerely,

Susan L. McMaster

Susan L. McMaster
Graduate Student

Telephone (406) 994-3201
Amberson Polette Bruwe/hede Roter Wheatley
(406) 994-3691
Bishop Shelburne



Montana State University
Bozeman, Montana 59717

Department of Agricultural and Industrial Education
College of Agriculture

January 14, 1985

Dear 4-H Leader:

As you may know, you have been selected to be a part of a study on the Montana 4-H vegetable gardening projects. You should have received a letter and questionnaire that dealt with the gardening projects sometime during mid December. I am enclosing another copy of the questionnaire in case you misplaced it or it was lost in the Christmas mail.

Your feelings as a 4-H leader, who has participated in one or more of the 4-H vegetable gardening projects, is very important in gathering information for updating and improving the 4-H vegetable gardening projects in the future.

In order to update the program, I need more information. I am asking you to please fill out the enclosed questionnaire and return it by January 28, 1985. A self-addressed, stamped envelope has been provided for the return.

Please help us to improve the 4-H program.

Sincerely,

Susan L. McMaster

Susan L. McMaster
Graduate Student

Telephone (406) 994-3201
Author: Polette Bruwell-Roter Whealley
(406) 994-3691
Bishop Shelhamer

APPENDIX F



Montana State University
Bozeman, Montana 59717

Department of Agricultural and Industrial Education
College of Agriculture

November 19, 1984

Dear County Agent:

As a graduate student in Agriculture Education, Extension option, I need your assistance in completing my masters thesis. The purpose of my thesis is to determine the perceptions of a random sample of 4-H members, 4-H leaders and county agents toward the Montana 4-H vegetable gardening projects.

This research will provide data that can be used by the state 4-H office for improvement of the vegetable gardening projects. The results of this survey will be provided to you through the state 4-H office.

Your county has been randomly selected to be a part of my masters study. I have enclosed a questionnaire that will help me determine your perceptions toward the Montana 4-H vegetable gardening projects. I am also providing you with a copy of the questionnaires I will be sending to the 4-H members and 4-H leaders in your county. Please take time to fill out your questionnaire and return it in the self-addressed, stamped envelope.

I will also need your cooperation in identifying the addresses and telephone numbers of those 4-H members who have been involved with vegetable gardening projects in 1984. I have enclosed a list of the 4-H members in your county for whom I need the addresses and telephone numbers. I will also need the names and addresses of those Organizational leaders who represent these 4-H members. I have enclosed a self-addressed, stamped envelope for the return of this information.

Due to the time frame of this study, your cooperation in returning these names and addresses of the 4-H members and Organizational leaders by November 28, 1984 would be appreciated.

Sincerely,

Susan L. McMaster

Susan L. McMaster
Graduate Student

Telephone (406) 994-3201
Amberston Pallette Brucethede Roder Wheatley
(406) 994-3691
Roder Wheatley

MEMBERS AND LEADERS INVOLVED IN VEGETABLE GARDENING PROJECTS

A list of those 4-H members who will be involved in this study is given below. In addition, space has been provided for the names and addresses of the Organizational leaders who represent these 4-H members.

Please fill in the first and last name, address, and telephone number according to the format shown below.

FORMAT:

First, last name:
Address:
City, State, Zip:
Telephone:



Montana State University
Bozeman, Montana 59717

Department of Agricultural and Industrial Education
College of Agriculture

November 19, 1984

Dear County Agent:

As a graduate student in Agriculture Education, Extension option, I need your assistance in completing my masters thesis. The purpose of my thesis is to determine the perceptions of a random sample of 4-H members, 4-H leaders, and county agents toward the Montana 4-H vegetable gardening projects.

This research will provide data that can be used by the state 4-H office for improvement of the vegetable gardening projects. The results of this survey will be provided to you through the state 4-H office.

Your county has been randomly selected to be a part of my masters study. I have enclosed a questionnaire that will help me determine your perceptions toward the Montana 4-H vegetable gardening projects. Please take time to fill out your questionnaire and return it in the self-addressed, stamped envelope.

Due to the time frame of this study, your cooperation in returning your questionnaire by December 3, 1984 would be greatly appreciated.

Sincerely,

Susan L. McMaster

Susan L. McMaster
Graduate Student

Telephone (406) 994-3201
Amberson Polette Bruwelheide Roiter Wheatley
(406) 994-3691
Bozeman, Montana

APPENDIX G

LEADER RESPONSE TO QUESTION NO. 1

Please list the strengths of the Montana 4-H Vegetable Gardening Projects.

- * For 4-Her's to work willingly with parents in growing a family garden - its value and production worth.
- * Many options are available.
- * It's great for kids who have never planted seeds or had a family garden.
- * Teaches kids the responsibility of planting, weeding, and marketing their gardens. Also how to display their vegetables at the fair.
- * It shows the 4-H member the large amount of money a family can save by raising their own vegetables.
- * The project book outlines basics well for beginners.
- * Ideal for children to learn about gardening, plants, etc., but even more important to me is that they can learn to work alongside their parents or with them. An important step in growth, communication, cooperation and understanding. Can be developed and carried through with little cost to the member or their family.
- * It is easy for 4-Her's and parents to understand and advise them how much work it takes to care for a garden.
- * Kids can do it on their own.
- * I think the program is a good one.
- * All areas are important in learning to grow and maintain a garden.
- * It has taught our members to be more aware of nature, to appreciate fresh vegetables and to develop many friends, especially older people.

LEADER RESPONSE TO QUESTION NO. 2

Please list the weaknesses of the Montana 4-H Vegetable Gardening Projects.

- * 1. Information is not available at the county level.
- 2. More information is needed about preparation for vegetable exhibits.
- * Can't think of any.
- * Not much outside help as far as judging or knowing what does grow in our valley.
- * A reference for fair exhibits which could be standard and followed at the fair would really help out.
- * Not enough information.
- * Time consuming. Influenced by weather/drought.
- * Lack of bulletins available on county level on how to prepare for the fair. Lack of good judges.
- * Too often kids do not do any of the work and "borrow" vegetables to display at the fair. Not enough emphasis on the pride and sense of accomplishment that they should be getting from something they have done themselves. (Perhaps here blame lies with parents and leaders though).
- * None.
- * Our growing season is too short.
- * Not all families have garden space.
 - 1. It doesn't seem popular with youth. Working in the garden is left to mom or dad. 4-Her's will help, but not take full responsibility.
 - 2. The season is so unpredictable. Many vegetables are not ready by fair time, or past their prime.
- * No weaknesses. All are basic gardening procedures.
- * I feel the record sheets become very repetitious after a member has been in this project for 4 or 5 years and there should perhaps be some options suggested as they do in the Beef Project.

LEADER RESPONSE TO QUESTIONS NO. 3

Please list any suggestions you may have for improving the Montana 4-H Vegetable Gardening Projects.

- * In the Fresh Vegetable Garden Fair Exhibit Book they ask for a podded dry pea. This can only happen if you are a second year student. Really it is deceiving if you are a first year student and listing as a Fresh Garden Project.
- * More colorful paper on the bulletins to make them more glamorous. Other projects seem to be a lot more colorful in subject matter. Literature and printed material.
- * Make the project fun, not all work as we know a garden can be. Cost of gardening can be expensive and rewards small. Time should be allowed, but it doesn't have to be scheduled nor should all costs be computed. Pleasure and learning experience have no monetary value.
- * Younger kids just starting need more help. They need better books showing how to get vegetables ready for the fair. Our county project sheet is good. Many start with too much and don't know how much work is involved and lose interest in the project.
- * I was unaware of #512 and have not noticed its availability here in Kalispell.
- * Don't have any.
- * I haven't had enough experience or opportunity to look into the entire set of Vegetable Gardening Projects.
- * None.
- * In our club there is not too much interest in gardening.
- * In some states they have (are) judged on showmanship. I think 4-Hers should be taught this in Montana.

- * Develop methods to encourage more 4-H members to become involved with gardening.
- * Give options and goals to be met by more advanced members.

MEMBER RESPONSE TO QUESTIONS NO. 1

Please list what you liked most about your 4-H Vegetable Gardening Project(s).

- * Planting them, exhibiting at the fair.
- * I liked picking them out for the fair.
- * The joy of growing vegetables.
- * The part that I liked most about my 4-H Vegetable Gardening Project was the part during the planting of and growing of the vegetables.
- * I liked the opportunity to watch the vegetables grow over the summer and to take care of them. I liked to try different varieties of vegetables.
- * It's lots of fun and I have my own garden to work in.
- * Eating the vegetables from the garden.
- * Driving our pickup to fertilize the garden.
- * I really like planting, hoeing, and watering the vegetables. I especially liked eating them when they were ready.
- * What I liked most about 4-H Vegetable Gardening Projects was how to take care of the garden and watering the garden. Another was cultivating the garden and planting it.
- * I enjoy plants very much. The time spent in my garden was relaxing. The plants and flowers give a peaceful look and feeling to the landscape. I could share produce with family and friends. I enjoy working with and arranging flowers. I like to experiment with different types of vegetables to see what grows best and what vegetables I like to eat.
- * Growing the vegetable garden and eating the fresh vegetables.
- * I liked what you learned about the vegetables and how they grow and what kind of sun rays each vegetable needs.

- * You can have your whole family working on the same garden. And you don't have to have a different garden for each member in your family when you take the same projects.
- * Eating the vegetables, learning to fix the garden for planting, helping my mom.
- * It's an easy project to take to the fair. I like eating the veggies that came from the delicious garden. It was useful in keeping bunnies healthy.
- * I enjoyed growing the vegetables.
- * Learning and getting ribbons for doing it.
- * I like working with my family. I like eating fresh vegetables.
- * The prize money.
- * Taking the vegetables to the fair.
- * I like competing with other people and to see what kind of ribbon I get.
- * The most things I liked about it was watching it grow and taking care of it.
- * I liked the food I got out of my garden and I liked to see the results. I also liked the money my garden brought in.
- * The results at the fair.
- * Mom helping me, eating what I grew, watching things grow.
- * Watching my garden grow, picking vegetables, going to the fair and winning.
- * I liked learning about gardening. I liked having my own garden. I enjoyed raising many different kinds of crops.
- * Producing my family's own food.

- * To eat the produce.
- * I think it is pretty good.
- * Having my vegetables with other people.
- * I enjoyed watching things I planted grow into beautiful plants. I enjoy being outdoors, horticulture.
- * Picking and eating the vegetables.
- * You get to take them to the fair and show them.
- * It's lots of fun and I have my own garden to work in.
- * I learned to care a lot for my garden and had a good year raising it.
- * I liked growing and planting vegetables, mainly planting and watching it grow.
- * Showing them at summer fair.
- * Watching it grow.
- * Planting the seeds, watering, watching them grow.
- * Nothing because there was no help from sheets or even the Vegetable Gardening Book. I knew only the stuff I learned from the family garden.
- * Being able to work in my garden.
- * It was fun to do except for all the work.
- * Enjoyed planting the garden, watering and watching the plants grow.
- * Eating the things I grew, I liked watching them grow. It was fun getting them ready for the fair.
- * Watering, growing and thinning it.
- * I liked to see them grow and let other people see them.
- * It was fun to raise a garden.
- * I grew the kinds of vegetables that my family used the most. Eating the fresh vegetables out of the garden.

MEMBER RESPONSE TO QUESTION NO. 2

Please list what you did not like about your 4-H Vegetable Gardening Project(s).

- * The most things I did not like was watering because everything would be a mess.
- * I didn't like to weed, plant, or till my garden.
- * All the weeding.
- * All the hard work, running out of water because it was so dry.
- * Weeding my garden, watching out for bugs.
- * I did not like the recordkeeping involved in this project. I hated keeping track of everything I planted and harvested.
- * The time it takes to take care of a garden.
- * I did not receive any help from the leaders - only from my parents and neighbors.
- * I didn't take it to the fair.
- * Nothing I didn't like, but my club could give me more help.
- * I didn't receive very much help.
- * Did not like the preparation for fair - too confusing!
- * Weeding.
- * Throwing the weeds away.
- * Recordbooks.
- * Weeding it.
- * Sometimes weeding.
- * Maintenance, preparing.

- * Hoeing the weeds.
- * Everything.
- * I did not like the fact that my 4-H Club doesn't have any meetings to learn all the helpful hints.
- * What I didn't like about my vegetable garden project is that most of the time when fair time comes, none of what I signed up to take is ready. It's usually overripe or not ready.
- * Weeding and picking the beans.
- * I did not like hoeing the garden. I don't like digging potatoes.
- * My carrots were tasteless.
- * Pulling the weeds out.
- * It is hard work sometimes, having to hoe and weed it every week.
- * That you had to take so many of one type of vegetables to the fair.
- * Weeding.
- * Having to write a project sheet.
- * Having to hoe weeds and water.
- * I did not like pulling the weeds.
- * I didn't like all the work that needed to be done in growing a good healthy garden.
- * Weeding, taking old glass out of the garden, taking rocks out of the garden.
- * Getting up the morning of the fair and picking and cleaning the vegetables you are going to exhibit in the fair.
- * Weeding.
- * I think I should be doing more expanding on my project.

- * Some things that I did not like about my 4-H Vegetable Gardening Project was to work on it constantly.
- * Weeding for sure. It was hard work to weed the garden, but it made the plants grow healthier.
- * The work of weeding.
- * Weeding.
- * I did not like to keep records on them. I spent more time on my recordbook than in my garden.
- * Weeding and cleaning vegetables.
- * Controlling weeds.
- * Planting the seeds and hoeing weeds.
- * Hoeing.

MEMBER RESPONSE TO QUESTION NO. 3

Please list any suggestions you may have for improving the Montana 4-H Vegetable Projects.

- * Add more information along with the papers for your record book, (recommended seeds for specific areas).
- * Have an indoor (greenhouse) gardening project.
- * I liked it the way it was.
- * Give out more information on chemical and organic fertilizers.
- * Having workshops on gardening.
- * Getting my leaders more involved.
- * Make changes in fair preparation.
- * Have a booklet or papers for the kids in the group, like the cooking book.
- * Help members with project more.
- * The literature could be more informative.
- * I would have liked to have better instructions on the sizes and preparations for judging at the fair.
- * I think they should hand out little booklets so new people know what they should do and how to cut the vegetables from the plant.
- * Cutting down on the amount of vegetables to take to the fair. It was a waste.
- * Have the judges all want the same thing.
- * A booklet which tells the vegetables that can be by each other and ones that can't.
- * Don't make the long records.
- * Explain things better. Tell where to buy the seeds and which brands are best.

- * Maybe they could be a little more exciting, or maybe the projects could be a little more selective.
- * Different recordbook forms after you've taken more than one year. You have to answer the same questions every year you take the same project.
- * The questions they ask on your recordbook have improved what I've learned.
- * Smaller garden and less vegetables.
- * Several different techniques for such things as planting, growing, thinning and cooking would be helpful.
- * That they would take a lot more time into talking and sharing more about it.
- * Greenhouse gardening (advantages and disadvantages) artificial light gardening (advantages and disadvantages).
- * See that the people enrolled get the advice and bulletins from the Extension Office, so that people have better luck with planting of gardens. Also, judges at fair shouldn't be so hard in judging first year people, because it takes a while to get the hang of the responsibility and getting the plants to grow.
- * I feel that the garden project should be broken down into different areas for different years instead of just increasing the garden size and number of optional activities done. Example: first year - certain size - experiment with several different varieties of one vegetable. Second year - certain size - experiment with different types of fertilizers.

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