

1-1-1998

Perceptions of Iowa beginning farmers toward beginning farmer education

Bryan Scott Whitaker
Iowa State University

Follow this and additional works at: <https://lib.dr.iastate.edu/rtd>

 Part of the [Agriculture Commons](#), and the [Education Commons](#)

Recommended Citation

Whitaker, Bryan Scott, "Perceptions of Iowa beginning farmers toward beginning farmer education" (1998). *Retrospective Theses and Dissertations*. 17780.
<https://lib.dr.iastate.edu/rtd/17780>

This Thesis is brought to you for free and open access by the Iowa State University Capstones, Theses and Dissertations at Iowa State University Digital Repository. It has been accepted for inclusion in Retrospective Theses and Dissertations by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.

Perceptions of Iowa beginning farmers toward beginning farmer education

ISU
1998
WSS
C. J.

by

Bryan Scott Whitaker

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Agricultural Education

Major Professor: Dr. Larry Trede

Iowa State University

Ames, Iowa

1998

Graduate College
Iowa State University

This is to certify that the Master's thesis of

Bryan Scott Whitaker

has met the thesis requirements of Iowa State University

Signatures have been redacted for privacy

TABLE OF CONTENTS

| | |
|--|------|
| LIST OF TABLES | v |
| ABSTRACT | viii |
| CHAPTER 1. INTRODUCTION | 1 |
| Statement of the Problem | 3 |
| Rationale | 3 |
| Purpose of the Study | 7 |
| Assumptions of the Research | 8 |
| Limitations of the Research | 8 |
| Implications of the Research | 9 |
| Definition of Terms | 9 |
| CHAPTER 2. LITERATURE REVIEW | 11 |
| Adult Education and Adult Learning Theory | 11 |
| Program Planning | 16 |
| Needs Assessment | 18 |
| Adult Education in Agriculture | 23 |
| Summary | 29 |
| CHAPTER 3. METHODOLOGY | 31 |
| Research Design | 31 |
| Population and Sample | 31 |
| Instrumentation | 33 |
| Validity | 34 |
| Reliability | 35 |
| Data Collection | 35 |
| Analysis of Data | 36 |
| CHAPTER 4. FINDINGS | 38 |
| Demographic Characteristics | 39 |
| Age | 39 |
| Level of education | 42 |
| Time engaged in farming | 42 |
| Time engaged working off the farm | 43 |
| Farming experience | 43 |
| Present farming status | 44 |
| Parent's farming background and farming status | 44 |
| Farming characteristics | 44 |
| Size of farming operation | 45 |

| | |
|--|---------|
| Percentage of total farm sales | 48 |
| Distribution of business arrangement of farming operation | 48 |
| Access to technology | 49 |
| Perceptions of Iowa Beginning Farmers Regarding Selected Issues in Beginning Farmer Education | 52 |
| Analysis of Variance of Beginning Farmer Education and Selected Demographic Variables | 58 |
| Future Importance of Educational Providers and Educational Media | 69 |
| Current and Future Importance of Topic Areas | 72 |
| CHAPTER 5. DISCUSSION, SUMMARY, CONCLUSIONS AND RECOMMENDATIONS | 78 |
| Discussion of the Major Findings | 79 |
| Statement of the Problem | 86 |
| Purpose | 86 |
| Procedures | 87 |
| Conclusions | 88 |
| Recommendations | 90 |
| Implications to Agricultural Education | 93 |
| APPENDIX A. HUMAN SUBJECTS APPROVAL | 95 |
| APPENDIX B. CORRESPONDENCE WITH IADA | 97 |
| APPENDIX C. COVER LETTER AND SURVEY INSTRUMENT | 99 |
| APPENDIX D. FOLLOW-UP POST CARD | 108 |
| APPENDIX E. FOLLOW-UP LETTER | 110 |
| REFERENCES | 112 |
| ACKNOWLEDGMENTS | 118 |

LIST OF TABLES

| | | |
|----------|--|----|
| Table 1 | Results of reliability tests | 35 |
| Table 2 | Selected demographic characteristics of the respondents | 40 |
| Table 3 | Gross family income, farm sales, and farming characteristics of the respondents | 46 |
| Table 4 | Distribution of respondents by size of farming operation | 47 |
| Table 5 | Distribution of respondents by percentage of farm sales | 49 |
| Table 6 | Distribution of respondents by business arrangement of farming operation | 50 |
| Table 7 | Distribution of respondents by access to technology | 51 |
| Table 8 | Means and standard deviations of the perceptions of respondents toward beginning farmer education | 53 |
| Table 9 | Means and standard deviations of the perceptions of respondents toward adequacy of beginning farmer education programs | 54 |
| Table 10 | Means and standard deviations of the perceptions of respondents toward the delivery of beginning farmer education | 55 |
| Table 11 | Analysis of variance regarding beginning farmer education when grouped by age | 59 |
| Table 12 | Analysis of variance regarding adequacy of beginning farmer education programs when grouped by age | 60 |
| Table 13 | Analysis of variance regarding delivery of beginning farmer education programs when grouped by age | 60 |
| Table 14 | Analysis of variance regarding beginning farmer education when grouped by level of education | 61 |
| Table 15 | Analysis of variance regarding adequacy of beginning farmer education programs when grouped by level of education | 61 |

| | | |
|----------|---|----|
| Table 16 | Analysis of variance regarding delivery of beginning farmer education programs when grouped by level of education | 62 |
| Table 17 | Analysis of variance regarding beginning farmer education when grouped by number of hours worked on the farm | 63 |
| Table 18 | Analysis of variance regarding adequacy of beginning farmer education programs when grouped by number of hours worked on the farm | 64 |
| Table 19 | Analysis of variance regarding delivery of beginning farmer education programs when grouped by number of hours worked on the farm | 64 |
| Table 20 | Analysis of variance regarding beginning farmer education when grouped by number of hours worked off the farm | 65 |
| Table 21 | Analysis of variance regarding adequacy of beginning farmer education programs when grouped by number of hours worked off the farm | 65 |
| Table 22 | Analysis of variance regarding delivery of beginning farmer education programs when grouped by number of hours worked off the farm | 66 |
| Table 23 | Analysis of variance regarding beginning farmer education when grouped by years of actual farming experience | 66 |
| Table 24 | Analysis of variance regarding adequacy of beginning farmer education programs when grouped by years of actual farming experience | 67 |
| Table 25 | Analysis of variance regarding delivery of beginning farmer education programs when grouped by years of actual farming experience | 68 |
| Table 26 | T-test results for respondents' perceptions regarding beginning farmer education when grouped by past farming experience | 68 |
| Table 27 | T-test results for respondents' perceptions regarding adequacy of beginning farmer programs when grouped by past farming experience | 68 |

| | | |
|----------|---|----|
| Table 28 | T-test results for respondents' perceptions regarding delivery of beginning farmer education programs when grouped by past farming experience | 69 |
| Table 29 | Means and standard deviations regarding the future usefulness of educational providers | 70 |
| Table 30 | Means and standard deviations regarding the future usefulness of educational media | 71 |
| Table 31 | Means and standard deviations for the current importance of agricultural topics and subject matter | 73 |
| Table 32 | Means and standard deviations for the future importance of agricultural topics and subject matter | 76 |

ABSTRACT

The primary purpose of this study was to identify the educational needs of beginning farmers in Iowa. Secondly, to identify the perceptions regarding information sources and to identify the importance of major topic areas. A final purpose of the study was to determine demographic characteristics of beginning farmers in Iowa.

Beginning farmers who had received a loan from the Iowa Agricultural Development Authority served as the population for this study. A random set of farmers was selected and used as the sample. The survey instrument was developed by the researcher and tested for validity and reliability. Data were collected using a mailed, self-administered questionnaire. Descriptive statistics were used to analyze the data.

Beginning farmers in this study believed that experiential learning and production agriculture skills were important in beginning farmer education. Also, beginning farmers embraced the concept of lifelong learning. Parents, siblings, and relatives were considered to be the major source of information in the future, whereas radio was considered to be important media outlet to farmers in the future. Topic areas that dealt with operating the farm as a business and future farm planning were all considered to be important now and in the future.

According to the findings in this study, agricultural educators should work collaboratively with other adult education groups to effectively deliver educational

programming for beginning farmers in Iowa. Efforts should continue to be made to work with beginning farmers and not just for them. Program topic areas should focus on areas that involve operating the farm as a business, such as marketing, record keeping, and retirement planning.

The results of this research may provide the basis for agricultural education and University Extension for improving educational programs for beginning farmers in Iowa. This study may also generate more interest in research on beginning farmer education. Agricultural educators have an opportunity to develop partnerships and expand educational services to beginning farmers to enhance their learning opportunities.

CHAPTER 1. INTRODUCTION

Food and fiber produced by farmers in the United States has been done efficiently and competitively for many years. At this point in time, consumers spend less of their disposable income for food than most other industrialized nations of the world. In order for this trend to continue and as world population expands, farmers will need to produce food and fiber in increasing amounts. New practices in production agriculture and agribusiness marketing have increased efficiency in food production. Clearly, this efficiency has had a lasting impact on agricultural research and adult farmer education in agriculture during the last century. This continuing demand placed upon efficiency requires research in adult education programs in agriculture.

Iowa farmers have always been major contributors to the production of food and fiber in the United States. Iowa continually ranks in the top five states in the production of corn, soybeans, and hogs. Additionally, Iowa ranks in the top ten states in the production of beef cattle, dairy cattle, and poultry. Approximately 96,000 farmers in Iowa carry out the production of these commodities (Bureau of the Census, 1994).

The agricultural industry of the twenty-first century will be composed of two major parts: (1) commercial farms producing 95% of the total agricultural output and (2) noncommercial farms (part-time farmers) contributing very little to the total agricultural commodity output. Educational programs for farmers must be planned

to provide instruction to both groups. Because these groups are different, different program goals must be established (Robinson, 1983).

Lasley (1995) has studied young farmers for many years. Based upon his findings using long-term census data, he cited a need of approximately 16,000 new farmers between 1992 and 2002 to replace retiring farmers and those exiting Iowa agriculture. Educational programs must be developed to meet the demands of this large group.

The number of adult programs in agriculture has dropped in recent years, but the need for such programs is needed now more than ever. Advanced technology, new agricultural and environmental laws, and innovative marketing strategies are just some of the reasons for adult programs in agriculture (Chizari & Taylor, 1991). Although the number of adults enrolled in agricultural education programs across the United States has declined, the need to direct attention to educational programs for adults has increased (Nur et al., 1989; Birkenholz et al., 1990; Birkenholz & Maricle, 1991).

Thus far, few studies have actually addressed the educational needs of beginning farmers by including them in the research process. In recent years, nearly all studies have focused on the leadership of such organizations as the National Young Farmer Educational Association, as well as teachers and administrators of young farmer programs. The results of this study will help to improve existing programs for adults in agriculture. Findings from this study can aid agricultural

educators and University Extension develop programs that adapt to farmer's specific needs. Based upon the educational needs expressed by beginning farmers in this study, more appropriate educational programs could be developed by agricultural educators.

Statement of the Problem

The problem addressed by this study was to determine the educational needs of beginning farmers in Iowa. Specifically, the study focused on how agricultural educators could develop programs based upon the expressed needs of beginning farmers. How can we prepare farmers for the increased demands placed upon them at the turn of the century? What are the problems that beginning farmers face in today's fast paced society? What needs should be addressed in order for beginning farmers to survive in the coming years?

Rationale

The knowledge explosion and the information age have created a need for continuing education for beginning farmers. Over the past two decades, limited research has been conducted on young farmer education programs. Previous research has focused on the educational needs of young farmers, particularly those who had actively participated in a young farmer organization, and teachers and administrators involved in those organizations. In addressing the educational needs of beginning farmers, several factors need to be addressed.

Lifelong learning is the basis for adult education. It is not a new concept and several studies have documented the importance of adult education. Gordon and Souza (1980) found there has always been a need for some type of post-secondary education. In today's society, there is an even greater need for continuing studies because of the increasing demands of technology.

Knowles (1980) expressed concern over the educational methods that are used to teach adults. He stated adults have more experiences and a larger base of knowledge on which to learn. Therefore, teaching adults in the same manner as children presented a great disservice to adults. According to Kidd (1973), adults learn best when they are actively involved in the learning process. He also stated a key factor in effective adult learning was determining their educational needs.

A great deal of knowledge about beginning farmer education was generated in the 1970's and 1980's. Most of the knowledge focused on educational programming and program content. However, there seemed to be a void of information in the last decade that dealt specifically with current educational needs and appropriate strategies for delivering information. If agricultural educators were to meet the needs of beginning farmers for the next century, research must be done in order for beginning farmers to prepare for the future.

Chizari and Taylor (1991) found that few states have conducted research to identify the educational needs of adults involved in production agriculture.

Dramatic changes in agriculture have made adult education in agriculture a

necessary component of agricultural education (Nur et al., 1989). Cano and Miller (1987), in their research, found that approximately seventy-five percent of the farmers responding to their study expressed a need for adult education. Hillyard (1979) said educators must do a better job of identifying the agricultural education needs of beginning farmers.

Showman (1970) suggested that specific and immediate needs of beginning farmers must be made known when planning educational programs for adult farmers. Needs such as educational providers, adequacy of programs, and subject content should be addressed. He also stated that these are difficult problem areas to identify because most farmers are not fully aware of their problems.

It is clear that beginning farmers needs are very important in the planning and delivery of educational programs; however, when research has been conducted, the needs were generally determined by beginning farmers participating in young farmer groups, supervisors of those programs, and agricultural educators. What about the educational needs of beginning farmers not active in these groups? Most research studies have surveyed farmers that are active in young farmer groups and have access to information that is not readily available to other farmers. Do those farmers not participating in those educational or professional groups have a disadvantage due to money, time, or other constraints?

Bode (1967) determined that beginning farmers were interested in topics that were related to running the farm as a business. Siegreest (1974) reported beginning

farmers in Ohio expressed a desire to assist in planning more in-depth educational programming. Rawson (1970) reported the need for young farmers to participate in the planning of educational programs and become involved in the actual operation of the course or the learning experience. It was evident in the literature that beginning farmer needs dealing with program planning must be made a top priority by agricultural educators. Albracht (1982) also mentioned the importance of beginning farmers having input in identifying instructional needs and topics for adult classes. Smith (1970) expressed similar needs in his study, saying "being a part of the identification process is vital to the success of a beginning farmer in obtaining educational information." Beginning farmers also expressed identifying specific needs was very important in the learning process. It was evident that beginning farmers should be asked for input dealing with educational needs, but what about the increasing dependence on technology? How will farmers be able to utilize equipment such as global positioning systems, advanced computer software, or similar advances in technology?

In a more recent article, Anderson (1985) reported that the future use of computers was evident and agriculture will move toward becoming more international. Beginning farmer programs must be based upon the needs of farmers in order to compete with the changing face of agriculture. Martin (1987) assessed educational needs and determined that young farmers rated educational programs as having high quality if they focused on marketing, credit, and financial planning.

Martin also reported that most farmers received their information primarily from magazines, friends, neighbors, and other farmers.

Therefore, it was evident that there exists a need to understand beginning farmer's educational needs. There was a strong desire for beginning farmers to become involved in the identification of needs. With the changing nature of agriculture and technology, it was clear that a farmer's needs are considerably different than twenty years ago. The literature supported a need for current research on beginning farmer education and also showed the importance of involving beginning farmers in establishing current needs and proper educational methods.

Purpose of the Study

The primary purpose of this study was to identify the educational needs of beginning farmers in Iowa regarding educational programs. A secondary purpose of the study was to determine the extent to which selected educational providers and educational media were useful to beginning farmers. The current and future importance of selected program topics was also determined. Specific objectives of this study were:

1. To identify relevant demographic characteristics of beginning farmers in Iowa
2. To identify perceptions of beginning farmers regarding selected educational programs, adequacy of programs, and delivery systems

3. To identify the extent to which selected providers of education and educational media are important to beginning farmers
4. To determine the importance of selected subject matter to beginning farmers in Iowa

Assumptions of the Research

Some basic assumptions were determined prior to this study. It was assumed that:

1. The respondents would provide honest and accurate responses to the questions in the study.
2. The random sample of beginning farmers in the study may be representative of beginning farmers in Iowa.

Limitations of the Research

This research study also had limitations that could influence some of the findings in this study. The following is a list of those limitations:

1. This study was limited to beginning farmers in Iowa who had received a loan from the Iowa Agricultural Development Authority. The results may not be generalizable to all beginning farmers in Iowa.
2. Low response rates were expected due to the fact that farmers traditionally do not respond well to surveys (Lasley, 1985; Howe, 1977). However, the actual response rate for this study was similar to other studies.

Implications of the Research

The study had the following implications to agricultural education:

1. This research will update the body of knowledge regarding beginning farmer education and will provide information to providers of educational programs.
2. Program planning concerns for University Extension and other agricultural educators will be addressed.
3. The needs assessment will provide vital information that can be used to develop new and effective programs for adults in agriculture.

Definition of Terms

The following terms were defined as they were used in the study:

Beginning farmer: An individual who is actively involved in production agriculture and is in an early stage of his/her farming career.

Adult education: "A process whereby persons whose major social roles are characteristic of adult status undertake systematic and sustained learning activities for the purpose of bringing about changes in knowledge, attitudes, values, or skills" (Darkenwald & Merriam, 1982, p. 9).

Adult education in agriculture: Refers to the organized instruction in agriculture for persons beyond the age of compulsory school attendance to increase knowledge and skills. Adult classes usually have flexibility in scheduling and related content according to the needs and interests of adults. (Bia, 1986; Brookfield, 1990).

Adult learner: "A participant in any adult learning opportunity, whether special or regular, to develop new skills or qualifications, or to improve existing skills and qualifications, or to acquire information" (Boone, 1985, p. 14).

Cognitive map: Set of concepts that are formed and organized by adult educators to guide the program planning process (Boone, 1985).

Educational needs: The gap that lies between the current situation of learners and the standard that can be identified by society (Boone, 1985).

Program: The result of planned activities in which educators and learners are actively involved in the assessment of needs, planning, instruction, promotion, and evaluation (Boyle, 1981).

Needs assessment: A systematic approach used to set priorities for future actions (Witkin, 1984); A formal analysis to determine the gaps that exist between current and desired outcomes (Kaufman, 1982).

Educational provider: Those institutions and organizations that are actively involved in providing educational programs to beginning farmers.

Educational media: Refers to the outlets that educational providers can use to disseminate information to beginning farmers using printed materials, video, and other technological advances.

Subject matter needs: Specific agricultural or agriculturally related program topics that address the educational needs of beginning farmers.

CHAPTER 2. LITERATURE REVIEW

The purpose of this study was to identify the perceptions of beginning farmers in Iowa toward beginning farmer education. In chapter one, the importance of a needs assessment and its role in the development of an adult educational program was discussed. According to Kidd (1973), to develop effective programs for adults, learner's needs are determined by identifying their current interests and then letting them explore their own needs.

In this chapter, the theoretical framework of adult education will be reviewed providing a theoretical basis for the research. Also included in this chapter is a section on the development and the importance of a needs assessment. Finally, the third section will review some of the major studies of adult education in agriculture and how they relate to the purpose of this study.

Adult Education and Adult Learning Theory

In order to fully understand beginning farmers and their educational needs, a comprehensive review of research on the theory of adult education and how it relates to agriculture must be performed. The need for lifelong learning opportunities is related to the knowledge explosion, which has created a demand for people to know more and more (Gordon & Souza, 1980). In turn, this demand has increased the growth of organized competitive learning options (Gordon & Souza, 1980). Additionally, Cross (1978) and Gordon and Souza (1980) have concluded that adults have changed their perspectives of education to accommodate the idea of

lifelong learning as a vital part of adult education. Lifelong learning and adult education are not new concepts and have been well documented. According to Gardner (1968), continuing education is an integral part of the lifelong learning process after an individual completes their formal education and there will always be a need for continuing education.

“Adults have been learning since the first inhabitants of earth developed hunger and thirst” (Moore & Waldron, 1981, p.7). Adults learned to survive and passed those survival techniques from generation to generation. To our ancestors, learning was a part of surviving, development, and realization. In a sense, adult education has been around since the beginning of mankind (Moore and Waldron, 1981).

In recent years, many educators have tried to develop a definition for adult education. It is a term that conjures up ideas of adults trying to catch-up with adult basic education courses. Education is considered to be divided into two different areas: learning for children and learning for adults. Many researchers see adult education as a means of education that occurs after the secondary level (Moore & Waldron, 1981). Houle (1972) said adult education is a process in which people (alone, in groups, or in institutional settings) seek to improve themselves or the society in which they live by increasing their skills, knowledge, or sensitiveness. Darkenwald & Merriam (1982, p. 9) said that adult education is “a process whereby persons...of adult status undertake systematic and sustained learning activities for

the purpose of bringing about changes in knowledge, attitudes, values, or skills.”

Courtney (1989) argued for a broad definition rather than a single, concise sentence.

While defining adult education has been a problem for many educators in recent years, how adults learn is well documented. This section deals with the learning theories educators use to effectively teach adults. Most educational researchers agree that adults bring a variety of experiences to education. These experiences give them a better sense of direction and a unique outlook on life and education (Slotnick et al., 1993). Adult education learning theories are found in many of the major writings in adult education. One of the earliest known theorists in adult education was Eduard Lindeman. His book, *The Meaning of Adult Education*, was one of the first to apply progressive ideals to the field of adult education (Elias & Merriam, 1980). Lindeman (1926) believed in the idea that the reform of society was the goal and aim of education. When adults find themselves in situations that call for adaptation, that is when adult education begins. Subject matter and educators play a lesser role and give way to the learner (Lindeman, 1926).

Adult educators are interested in educational outcomes with those outcomes being learning. The educational outcomes that surround adult learning are useful for developing effective educational programs for adults (Heimlich & Norland, 1994).

Smith and Haverkamp (1977) stated that adult learning includes acquiring the knowledge and skills that are essential in learning for a particular situation.

Smith (1982) defined learning as a process of learning how to learn. Adult educational activities include personal effects that deal with an inquiring mind, change, and a better understanding of the learner and the learning process. Adults are more likely to see these effects if a good understanding of the characteristics of the adult learner and the environment under which they learn best are understood (Rollins & Yoder, 1993).

Experts agree that adults bring to the learning environment needs that are completely different than needs of children. They also possess a unique understanding of life and the responsibilities associated with it. It is these needs that serve as the central theme of adult learning theory (Apps, 1988). The issue about which learning theory best facilitates adult learning has been debated for some time. Most adult educators advocate the androgogical model or humanistic learning theory as being the most agreeable with adults and the environment in which they learn best. Malcolm Knowles, who popularized the term andragogy, has come closest to defining the differences between adults and younger learners. Knowles (1970, p. 39) lists four features that distinguish adults from children in learning: self-directedness, a rich experience base, the need to address real-life problems, and the need to apply learning immediately. He stresses the need to approach adult learners differently than the traditional ways of teaching children. Knowles' (1984) model assumed that the adult learning environment draws upon many resources other than the teacher. These resources include peers, members of

the community, materials and media resources. The andragogical classroom design consists of seven elements: climate setting, mutual planning, involving participants in diagnosing needs, involve learners in formulating learning objectives, involve learners in learning plans, importance of the teacher in helping learners carry out their learning plans and involving learners in evaluating their learning. Darkenwald and Merriam (1982, pp. 110-111) stated in a presentation of “principles of learning relevant to adult education” that learning is affected by the amount of past learning of the learner, intrinsic motivation of the learner, positive reinforcement by the teacher, and organized presentation of material.

While the Knowles' model is very comprehensive, most adult educators agree that no one model fits all educational situations. The adult learning environment must incorporate many conditions. For example, communication is key in understanding adult learners and their needs (Thomson, 1994). Backus (1984) concluded that few studies have tested the validity of androgogical models defined by theorists.

A study by Beder and Darkenwald (1982, p. 142) found results that supported Knowles' theory that adults learn differently and have distinctive learning characteristics. Their findings suggested that adults are “more motivated, pragmatic, self-directed, and task oriented than pre-adults”.

Increasing numbers of adults are beginning to seek educational opportunities and adult educators are beginning to realize that adult education and adult learning

is emerging into a new frontier (Moore and Waldron, 1981). Technological and social change has sparked interest and concern for the future. The aging of the United States' population, influence of technology, the information era, and the struggle for power are just some of the trends that people of the world will begin to experience in the future. Adult educators are beginning to realize that they need to direct action toward grasping ideas and working toward specific goals in order to ensure the future of adult education (Spear & Mocker, 1989).

Schroeder (1980, p. 42) summarized adult education "as a developmental process used to link various agent and client systems for the purpose of establishing directions and procedures for adult learning programs." In his view, adult educators should be concerned with needs, objectives, learner experiences, teaching strategies, and evaluation—in one word, programming. In order to effectively design programs, a better understanding of program planning and needs of adult learners must be understood (Boone, 1985).

Program Planning

In the context of programming, several basic assumptions describe the process. Programming is first and foremost about change. In referring to the adult learner, a change is usually seen in knowledge, skills, or attitudes. Secondly, programming involves the decision-making process. Third, programming should be a collaborative effort involving all parties: adults, organizations, and teachers. Fourth, programming in adult education is a system whereby all parts relevant to

the adult education process should come together as a whole. Finally, programming is the prevalent way that educators receive feedback and evaluation from adult learners (Boone, 1985).

Adult educators assume several roles in programming. Since programming involves educational change, adult educators need a framework as a basis for their decisions and actions that they take (Boone, 1985). Lazlo (1972) referred to a cognitive map in reference to a conceptual framework for adult educators to follow. Systems, culture, change, decision making, and needs are among those concepts that are very important in an educator's cognitive map (Boone, 1985, p. 8).

Boyle (1981) carefully linked programming to the concepts of lifelong learning and continuing education. He concluded that programming combined theory, analysis, and practice. In Boyles' program planning model, analyzing problems and needs of people and communities is one of the first steps to effectively plan an adult education program. Kidd (1973) displayed a more mathematical approach to program planning. Kidd's model was very learner centered and defined. In the first stage of programming, identifying learner's needs, he suggested beginning with the learner's needs and current interests and letting them explore their own desires and needs. He also advocated investigating their needs through standard needs assessment methods. Knowles (1970) structured his programming model around the premise that adults use experience as a learning resource. This

assumption implies the use of self-diagnoses of the learner needs and self-evaluation of the learner.

In the program planning process, “promoting collaborative identification, assessment, and analysis of the learning needs of the target publics” is considered to be one of the most important steps in the process (Boone, 1985, p. 111). The adult educator should be actively involved in the planning process by identifying, assessing, and analyzing the educational needs of the people involved in the program (Boone, 1985).

Needs Assessment

Tyler (1971) defined a need as the difference between the present condition of the individual learner or the learner groups and a social norm that can be identified. The gap that lies between the learner and the social norm can be identified as a need (Tyler, 1971).

Often, needs are obvious. For example, in order for humans to live, they need food, oxygen, and water (McClelland, 1995). Maslow (1970), often cited when discussing needs, stated that needs are arranged from the lowest (most fundamental) to the highest. One must understand and complete each level of the need before moving on to the next level. Maslow’s hierarchy (lowest to highest) is: (1) physiological or survival, (2) safety, (3) belongingness and love, (4) esteem: (a) achievement and (b) recognition, and (5) self-actualization. Maslow also stressed the importance of three principles in the operation of these basic needs: (1) gratification

must be achieved at each level starting at the lowest level before anyone can move on to the next level, (2) when needs are satisfied, that person is better able to deal with a loss of those needs, and (3) healthy individuals are more motivated and better able to actualize their potential.

Needs can be defined as a gap between the present situation and a set of societal norms believed to be more desirable. "Needs imply a gap between what ought to be and what is" (Boone, 1985, p. 115). Needs are perceived gaps between what is and what should be or between existing levels and the required levels of people's abilities for active accomplishment (Kaufman & English, 1979; Caffarella, 1982). Needs are those items, etc., which, if people do not have, their lives will be more difficult. Wants are what people like or choose. Without their wants being met, people can still survive (McKillip, 1987). The identification of educational needs of participants is an important component in designing educational programs. It is necessary to identify client needs during the planning process (Caffarella, 1982).

Witkin (1984, p. ix) said a "needs assessment is a generic term for any systematic approach to setting priorities for future action". A needs assessment is a systematic way to identify gaps between present outputs and those desired outputs by the target audience. Needs assessments allow educators the opportunity to prioritize these gaps and select the most important ways in which to focus their research and develop educational programs (Kaufman & English, 1979).

A needs assessment can be used in a variety of situations. For example, a needs assessment could be used in an organization to justify costs. Information that is acquired from a needs assessment gives managers an opportunity to identify needs of employees. Furthermore, it can be used to identify activities and resources needed to meet the needs of the workers (McClelland, 1995). In another example, Roe (1990) conducted a needs assessment of extension personnel related to the educational delivery methods used to convey ornamental grass studies.

In doing a needs assessment, there is nothing more important than outlining a clear, specific purpose. The purpose of conducting a needs assessment is to produce information (Hobbs, 1987).

There are two approaches to needs assessments: social surveys and secondary analysis. Social surveys are those that collect information when no existing data exists on the subject. Secondary analysis involves using already collected data and forming objectives from them (Rothman & Gant, 1987).

Kamis (1981) believed that there is no one method for needs assessment, but rather a variety of strategies. Which approach should an educator use? The purposes and the context of the assessment and the decisions that are to be made after the analysis should guide the choice of a model. Witkin (1984, pp. 33-36) employed the educational decision model. It addressed nine key questions:

1. Who wants a needs assessment?
2. Why is a needs assessment wanted?

3. What should be the scope of the assessment?
4. On whose needs will you focus and at what level?
5. What kinds and amounts of data should be collected for your purposes?
6. What sources and methods might you use for data collection?
7. What are your constraints on data collection?
8. What can you invest in people, money, and time?
9. What needs assessment products meet your purposes, constraints, and resources?

The process of conducting a needs assessment consists of six sets of activities, with ten steps, as follows (Stufflebeam et al., 1985; Caffarella, 1982):

1. Identifying the clientele
 - Step 1: Communicating a decision to complete a needs assessment with a commitment to planning
 - Step 2: Identifying persons who will be involved in the planning and overseeing of the needs assessment
 - Step 3: Developing specific objectives for the needs assessment
 - Step 4: Determining budget and time frame
4. Gathering desired information
 - Step 5: Selecting survey methods and designing data collection techniques
 - Step 6: Collecting data

5. Analyzing the information

Step 7: Analyzing data and determining points of agreement and disagreement

6. Setting priorities and planning action

Step 8: Ranking the needs from most critical to least critical

Step 9: Selecting those needs for immediate attention

Step 10: Developing specific objectives, plan of action, and evaluation procedures for the selected problems

These steps do not necessarily follow any particular order. Many times they will be used and then recycled and at other times, they will be completed all at once (Stufflebeam et al., 1985).

When conducting a needs assessment, surveys are probably the most widely used instrument. The term *survey* denotes collecting many kinds of information from a variety of information sources. When used with a needs assessment, surveys usually involve gathering opinions and preferences by means of written questionnaires or interviews. Needs surveys are most commonly used to obtain facts, attitudes, and opinions at one time. Many times, needs surveys are compared to public opinion surveys, but they are quite different. Their main purpose is to provide data and information for specific questions about planning and resources. The most effective needs surveys ask respondents for opinions that are based upon previous experiences and knowledge about themselves (Witkin, 1984).

Needs assessments are all about distinguishing between means and ends and determining what is worth doing. More attention should be directed toward effective needs assessments that are concerned with long-range goals, quality of life, and interaction between the learner and the organization (Witkin, 1984). In designing a needs assessment, it is important to ensure that the educational needs of both the individual and organizational needs are addressed. By considering both needs, a more effective and beneficial educational program will be obtained (Cafarella, 1982). Program planning is important to adult education as evident by the literature. Program planning for adults in agriculture is of particular interest in the areas of program planning.

Adult Education in Agriculture

Adult education in agriculture is not restricted to people established in farming, but has the prospect of being applicable to the whole of the agricultural industry. However, adult education has primarily been for young and adult farmers. Since 1965, in both agriculture and all vocational programs, there has been a reduction in the proportion of adults served by vocational education relative to other levels of vocational instruction. After an examination of the current status of adult young farmer programs, Persons (1980) revealed that there are two types of programs under adult education:

1. The intense management programs that incorporate attention to the details of farm business and analysis and

2. The programs aimed at skills and technology transfer.

Adult education in the 1980's required a major commitment of money and manpower for research, teacher education, supervision, curriculum support, and local program support. In the 1990's, agricultural educators must decide if they will work in the confines of the problems of agricultural production and entrepreneurship by addressing only the problems of practices, technology, and technology transfer, or if they will shift focus to deal with the problems of greatest concern – management of the total resources of the farm and the adult learner (Persons, 1980).

Recent changes in education have contributed to the need to direct attention toward the issues and concerns that relate to adult education in agriculture. Emphasis on life-long learning implies that that adjustments must be made in educational programs for adults involved in agriculture (Zemsky & Meyerson, 1985). Life-long learning as it relates to agriculture is extremely important and cannot be denied according to Martin (1990). Recent changes in the agriculture industry during the 1980's caused a stir in the agricultural education field to develop new systems of research. Information that was required in the formal and the nonformal settings quickly became outdated and educators began to question their research priorities. These recent changes prompted educators to direct their attention toward issues and problems relating to adult education in agriculture. Emphasis is now directed toward lifelong learning and the principles behind

continuing education. Adjustments must be made in order to keep up with the changes that are occurring in the field of adult agricultural education (Birkenholz et al., 1990).

Birkenholz et al.. (1990) conducted a research study to evaluate the research priorities in adult education in agriculture in the North Central Region. The objectives developed were to validate the research issues related to adult education, to prioritize the research issues related to adult education in agriculture, and to determine if there were any differences that existed between the two (Birkenholz et al., 1990).

They concluded that teacher educators and state supervisors perceived the research questions included in the study to be important issues that should be investigated. Teacher educators reported that evaluation of adult programs and determination of the focus of adult education programs in agriculture were the two most important research issues to address. State supervisors reported that determining who needs adult education and identifying the competencies needed by adult agricultural educators were the two most important issues. The teacher educators' placed significantly less importance on three research questions which state supervisors rated highly. Their research showed that establishing research priorities is a very important issue in adult education in agriculture. Adult educators need to understand the needs of adult farmers and adult learners before they begin to establish learning programs for them (Birkenholz et al., 1990).

Birkenholz and Maricle (1991) also studied the status of adult education in agriculture. The purpose of the study was to ascertain the status of adult education in agriculture in the United States. The population for the study was department heads of teacher education programs in all fifty states and state teacher supervisors for all states. They concluded that adult education is an important concept of agricultural education and teachers who are not full-time adult educators conduct most adult education programs. They also determined there is a wide variety of funding support for adult agricultural education programs and courses in adult education should be required for pre-service teachers. Finally, state leaders should be more proactive in the support of adult education in agriculture programs (Birkenholz & Maricle, 1991).

Burhoe and Stewart (1983) conducted a study to determine if there were any differences in perceptions of future educational needs of adults enrolled in agriculture as viewed by state supervisors, teacher educators and instructors at universities and to develop a prioritized list of perceived educational needs. They found that farm business management ranked highest among all groups. There were no significant differences among the rankings of Missouri secondary teachers of vocational agriculture, Missouri teachers of agriculture, central region teachers of adults in agriculture, state supervisors, and teacher educators as measured by the adult technical needs form. There was a consensus of opinion on the future needs of adults. Instruction in the area of farm business management was perceived to be the

most critical area in the coming years. The technical needs of adults in agriculture have important implications for the planning and delivery of relevant instructional programs. There are also related implications for planning the pre- and in-service preparation program for teachers of vocational agriculture that will be working with adults (Burhoe & Stewart, 1983).

Determining the needs of adults in agriculture is obviously important. For adult education to be effective, the following items must be considered as the basic guiding principles for adult agricultural education: (1) knowledge and skills should be used in practical settings as soon as possible after learning, (2) learning processes should be practical and applied, (3) instructors should be competent and possess superior communication skills, (4) instruction should have clear objectives and possess an evaluation component, (5) positive reinforcement is critical, and (6) interaction between participants should be stressed (Bruening & Martin, 1991).

Cano and Miller (1987) found some interesting characteristics about adult education in agriculture in their study. Farmers perceived the Cooperative Extension Service as the purveyor of their educational needs. Agribusiness owners and managers perceived product line companies as the deliverer of their educational needs. They also found that agribusiness employee educational needs should be delivered by joint vocational schools and the primary reason some public schools did not offer adult agricultural education programs was because the courses were being offered by other agencies. Respondents perceived that benefits were a result

to all those who attended adult education classes and participation in adult education classes was perceived to enhance job advancement possibilities. Finally, they concluded agribusiness employers indicated most employees need new knowledge and skills in agriculture and the majority of the farmers, agribusiness owners and managers, and agribusiness employees will participate in adult agricultural education classes during the coming year.

Dormody et al. (1996) determined that goals for adult education programs should be determined by a local needs assessment. They also reported that most teachers had difficulty in assessing the needs of their adult learners because they had two, and sometimes three, different adult education groups to contend with. Most teachers would prefer to see fewer groups and more emphasis put into program planning and accomplishing local goals.

Martin and Omer (1990) researched the methods of delivering agriculturally related educational programs to adults as perceived by extension personnel and post-secondary agriculture instructors. They found that post-secondary agricultural instructors tended to have a high level of regard for the principles of teaching and learning and placed a high priority on using a variety of teaching methods. Extension personnel considered radio to be very important and that presentation style and competence of instructors needed to be enhanced. The findings in this study indicated that adult educators need updated information regarding teaching

and learning and should try to match instructional methods with the subject matter and the learner's needs.

In recent years the number of adult education programs has dropped, but there still exists a need for some type of adult education (Chizari & Taylor, 1991). Chizari and Taylor (1991) found in their research that the most critical educational needs of adults involved farm management and farm technology. Insufficient time was the number one obstacle in conducting adult education programs. Many types of financial and other support from a variety of outside sources were expressed as a need for quality programs.

In a study conducted by Martin (1987), respondents rated young farmer education programs high on a quality scale with a high priority for programs that focused on marketing, credit, and financial planning. This same group of farmers relied primarily on magazines, friends, neighbors, other farmers, and radio for their information. From this study, Martin (1987) recommended that agricultural educators, at all levels, should learn to become facilitators of the educational process by planning and conducting educational programs with farmers and not merely for farmers.

Summary

The review of literature provided a solid framework for adult education. The importance of a needs assessment in planning programs for adults was revealed.

Finally, a profile of adult education in agriculture was presented.

Beginning farmers have continually sought solutions to the complex problems that surround production agriculture. Adult and young farmer educational programs have always been an important part of agricultural education (Kahler et al., 1985). Miller et al. (1983) concluded that adult education programs in agriculture present the greatest challenge to adult education and vocational agriculture. However, in recent years, many questions have been posed about the needs of beginning farmers.

The review of literature provided enough evidence that a needs assessment of adult beginning farmers is very important. It was determined from the review that few studies have determined the needs of beginning farmers by questioning the farmers and involving them in the research process. Agricultural educators have an opportunity to establish quality adult programs that will lead agriculture into the future. With the decline of adult programs in agriculture in secondary schools, there is a need to establish solid adult education programs for the future of agricultural education.

CHAPTER 3. METHODS AND PROCEDURES

Chapter one of this study described the purpose and objectives of this study. Chapter two provided a theoretical framework of adult education and needs assessment. Program planning for adults was also addressed in this chapter. Relevant research studies regarding adult education in agriculture and, more specifically, young and/or beginning farmer education programs were reviewed in terms of their results, conclusions, and implications to this study.

In this chapter, the methods used to conduct this research will be discussed. Specifically, the research design, population and sample, instrumentation, pilot study, data collection procedures and data analysis will be discussed in detail.

Research Design

Funded by the Iowa Agriculture and Home Economics Experiment Station, this study was conducted to address the objectives stated earlier. This study is descriptive in nature based upon survey research. The descriptive nature of this study provides a solid framework for future program planning based upon needs expressed by the beginning farmers.

Population and Sample

This study was limited to the state of Iowa to fit within the parameters of Project 3374, Iowa Agricultural and Home Economics Experiment Station. Contact was made with the Iowa Agricultural Development Authority (IADA), in Des Moines, Iowa, to solicit their cooperation and to secure a database of beginning

farmer participating in their program. IADA was founded in 1986 and began providing loans to beginning farmers meeting specified criteria. A list of beginning farmers who received a loan from IADA over the past five years was obtained. These loan participants (1992-1996) served as the population frame of the study (N=1117).

A sample was determined using Krejcie and Morgan's (1970) formula:

$$S = \frac{\chi^2 NP (1-P)}{d^2 (N-1) + \chi^2 P (1-P)}$$

where, S = required sample size

χ^2 = the table value of chi-square for one degree of freedom at the desired confidence level,

N = the population size

P = the population proportion (assumed to be .50, this would provide the maximum sample size,

d = the degree of accuracy expressed as a proportion (.05 for this study).

The appropriate sample size needed for the 5% degree of accuracy and 95% confidence level was 286 beginning farmers. The sample represented 26% of the population. Numbers were randomly generated by the computer and then matched with corresponding numbers identifying the beginning farmers. Farmers were listed in chronological order by the data that they received a loan.

Instrumentation

Data were collected using a self-administered mail questionnaire. The survey instrument was developed by the researcher based upon the literature review, previous studies, and the experience of the researcher.

The primary goal of the instrument was to identify the perceptions held by beginning farmers participating in the IADA loan program regarding beginning farmer education and the delivery methods associated with it. The instrument also contained questions regarding the future usefulness of educational providers and educational media. Other questions in the survey were designed to identify major subject matter topics perceived to be of current and future importance. A final section of the survey gathered demographic information from responding farmers.

The survey instrument was composed of 123 items divided into five different sections and subsections. Section A asked respondents to rate the future usefulness of educational providers and educational media in their farming careers. A five point, Likert-type scale (1-5) measured the responses. The following scale was used: 1 = not useful, 2 = limited usefulness, 3 = no opinion, 4 = useful, 5 = extremely useful.

Section B asked responding farmers to indicate their level of agreement regarding educational needs and was divided into three subsections: (1) beginning farmer education, (2) adequacy of beginning farmer educational programs, and (3) delivery of beginning farmers educational programs. Again, a five-point, Likert-

type scale (1-5) was used to measure their level of agreement. The following scale was used: 1 = strongly disagree, 2 = disagree, 3 = no opinion, 4 = agree, 5 = strongly agree.

Section C asked respondents to indicate the degree of current and future importance of selected subject matter topics. Both current and future importance scales were five-point, Likert-type scales. The following scale was used: 1 = not important, 2 = little importance, 3 = no opinion, 4 = important, 5 = extremely important.

Sections D and E of the survey were used to collect demographic data about the beginning farmers and their farming operations.

Validity

The instrument was reviewed for content validity by a panel of experts consisting of faculty members in the Agricultural Education and Studies Department at Iowa State University, the researcher's Program of Study Committee, The Iowa State University Beginning Farmer Center, and the Iowa Agricultural Development Authority. They concluded that the questionnaire possessed content validity. Revisions were made as per their recommendations. The committee on human subjects research at Iowa State University reviewed and approved the data collection instrument and research process.

Reliability

The questionnaire was pilot-tested by several agricultural professionals in Iowa and ten beginning farmers that were not included in the sample. A reliability coefficient was determined for each section of the survey using Cronbach's alpha. The results of the reliability tests are presented in Table 1.

Data Collection

The instrument was mailed to each of the 286 farmers sampled. The instrument was included in a packet consisting of a coded questionnaire; self-addressed, stamped envelope and a cover letter attached to the front of the instrument. The cover letter explained the study and asked for assistance from the

Table 1. Results of reliability tests

| Instrument section | Number of items in section | Cronbach's alpha coefficient |
|---------------------------------|----------------------------|------------------------------|
| Educational providers and media | 24 | .85 |
| Beginning farmer education | | |
| Education | 11 | .71 |
| Adequacy of programs | 12 | .36 |
| Delivery methods | 11 | .77 |
| Subject matter topics | | |
| Current importance | 47 | .93 |
| Future importance | 47 | .94 |
| Total | 152 | .96 |

beginning farmers. The packet of was mailed on March 3, 1997. Approximately four weeks after the initial mailing, a reminder postcard was mailed to those farmers that had not completed the questionnaire. Two weeks later, a replacement questionnaire and packet was mailed to the remaining farmers who had not yet responded to the survey.

Response issues regarding nonrespondents were handled using Miller and Smith's (1983) article regarding nonresponse issues. Telephoning a random sample of ten percent of the nonrespondents controlled nonresponse error. These nonrespondents were then compared to the respondents using a t-test. There were no significant differences found between the two groups.

Data collection was completed by May 5, 1997 with 138 responses. The total response rate for this research totaled 48%

Analysis of Data

Completed questionnaires were coded and then entered into the Statistical Package for the Social Sciences (SPSS), version 7.5. Questions with no responses were entered as missing data. The coded data were analyzed using this statistical package with an alpha level set at .05.

Descriptive procedures were used to determine frequencies, means, standard deviations, and percentages of the data. One way ANOVA was used to determine if any significant differences existed by using selected demographic characteristics.

Finally, Scheffe' test was used to determine differences in means between pairs using the selected demographic characteristics. A t-test was used to determine differences in the previous background of the beginning farmers. A 95% confidence level was determined a priori to control for sampling error.

CHAPTER 4. FINDINGS

Chapter one described the importance of assessing needs for developing effective programs for adult beginning farmers. The purpose of this study was to assess the needs of beginning farmers pertaining to issues dealing with beginning farmer education. A secondary purpose of the study was to determine where farmers get their information and what program topics would most interest beginning farmers in future educational programs.

Chapter two provided a theoretical framework of adult education and needs assessments. Program planning for adults was also addressed in this chapter. Research studies regarding adult education in agriculture and young farmer programs completed the review of literature. In summary, the review of literature showed a lack of research regarding beginning farmer education in the last decade.

Chapter three included the methods used to conduct the needs assessment survey. Specifically, the research design, population and sample, instrumentation, pilot study, data collection procedures, and data analysis were discussed.

This chapter presents the results and findings of the study. The findings are based on data obtained from the mailed survey. The data addresses the specific study objectives and will be presented and discussed in the following areas:

1. demographic characteristics of the respondents
2. perceptions of beginning farmers regarding beginning farmer education, adequacy of programs, and delivery methods

3. future importance of educational providers and educational media
4. current and future importance of selected agricultural program topics

Demographic Characteristics

As previously reported, 138 responses were received and 128 usable questionnaires were included in the final data analysis. This section provides a description of the respondents in terms of age, formal education, hours per week engaged in farming, hours per week working off the farm, years of actual farming experience, previous and current farming status, and farming status of their parents. In addition, characteristics of the farming operation were identified using gross family income, acres farmed, livestock inventories, farm sales, and the business arrangement used. Finally, respondents' access to technology was reported.

Age

Table 2 indicates the distribution of the respondents by age along with other selected demographic data. Sixteen respondents (12.5%) were under 25 while six (4.8%) were over the age of 45. Twenty-five respondents (19.4%) were between the ages of 25 and 30. Twenty-seven respondents (21.1%) were between the ages of 31 and 35 while thirty-one respondents (24.2%) fell between the ages of 36 and 40. Between the ages of 41 and 45, six respondents (4.8%) were reported. Five respondents (3.9%) did not report their age in the survey. Sixty-eight of the respondents (53.0%) were age 35 and below. The average age for all the respondents was 33.9 years.

Table 2. Selected demographic characteristics of the respondents

| Characteristic | n | % |
|--|----|------|
| Age | | |
| <25 | 16 | 12.5 |
| 25-30 | 25 | 19.4 |
| 31-35 | 27 | 21.1 |
| 36-40 | 31 | 24.2 |
| 41-45 | 18 | 14.1 |
| >45 | 6 | 4.8 |
| Missing | 5 | 3.9 |
| Educational level achieved | | |
| <12 years | 3 | 2.3 |
| 12 | 43 | 33.6 |
| 13 to 14 | 41 | 32.1 |
| 15 to 16 | 37 | 28.9 |
| 17 or more | 4 | 3.1 |
| Hours per week farming | | |
| <20 | 9 | 7.1 |
| 20-40 | 43 | 33.6 |
| 41-60 | 37 | 29.0 |
| >60 | 35 | 27.3 |
| Missing | 4 | 3.1 |
| Hours per week working off the farm | | |
| <20 | 14 | 10.9 |
| 20-40 | 33 | 25.8 |
| 41-60 | 14 | 10.9 |
| >60 | 1 | 0.8 |
| Missing | 66 | 51.6 |
| Years of actual farming experience | | |
| <5 | 19 | 14.8 |
| 5-15 | 48 | 37.5 |
| 16-25 | 39 | 30.5 |
| >25 | 18 | 14.1 |
| Missing | 4 | 3.1 |

Table 2. (continued)

| Characteristic | f | % |
|---------------------------|-----|------|
| Raised on a farm | | |
| Yes | 121 | 94.5 |
| No | 7 | 5.5 |
| Present farming status | | |
| Yes | 127 | 99.2 |
| No | 0 | 0.0 |
| Missing | 1 | 0.8 |
| Parents | 73 | 57.0 |
| In-laws | 2 | 1.6 |
| Other relative | 2 | 1.6 |
| Alone | 49 | 38.2 |
| Missing | 2 | 1.6 |
| Parents were farmers | | |
| Yes | 116 | 90.6 |
| No | 12 | 9.4 |
| Present status of parents | | |
| Presently farming | 73 | 57.0 |
| Retired | 43 | 33.6 |
| Other | 1 | 0.8 |
| Missing | 11 | 8.6 |

Level of education

Educational level of the respondents can be found in Table 2. Slightly more than one-third of the respondents reported having a high school diploma, while 64.1% reported having at least some college education. Three respondents (2.3%) had less than twelve years of education while forty-three respondents (33.6%) had completed a high school diploma. Forty-one respondents (32.1%) were reported as having 13 to 14 years of education while thirty-seven respondents (28.9%) reported having 15 to 16 years of education completed. Four respondents (3.1%) indicated that they had completed some type of graduate work (17 or more years) in college. The average number of years of education was 13.97 years.

Time engaged in farming

Respondents were asked to indicate the amount of time engaged in farming activities for the week (Table 2). The average amount of time spent working on the farm was 50.71 hours. A small percentage (7.1%) stated they worked less than 20 hours per week on the farm while approximately 34% of the respondents (43) spent between 20 and 40 hours per week farming. Thirty-seven respondents (29.0%) were working on the farm between 41 and 60 hours per week while thirty-five respondents (27.3%) were working over 60 hours per week on the farm. Four respondents (3.1%) did not respond to this question.

Time engaged working off the farm

Respondents were also asked to indicate the amount of time spent working off the farm (Table 2). The mean time spent working off the farm by the respondents was 32.5 hours. About one-fourth of the respondents (25.8%) indicated working between 20 and 40 hours per week off the farm while slightly more than 10% stated they worked less than 20 hours per week off the farm. Likewise, approximately the same number of respondents indicated they worked between 41 and 60 hours per week. One respondent (0.8%) stated he worked over 60 hours per week off the farm. Sixty-six respondents (51.6%) did not indicate the amount of time spent working off the farm.

Farming experience

The respondents indicated the number of years of actual farming experience as shown in Table 2. Over two-thirds of the respondents indicated having between 5 and 25 years of actual farming experience. Nineteen respondents (14.8%) had less than 5 years of actual farming experience compared to eighteen respondents (14.1%) who had more than 25 years of experience. Respondents indicated they had an average of 15.06 years of actual farming experience. Four respondents (3.1%) did not indicate the amount of actual experience. One hundred twenty-one respondents (94.5%) were raised on a farm while seven respondents (5.5%) were not.

Present farming status

Respondents indicated their present farming status using four different criteria. Data is shown in Table 2. Over 99% indicated that they were presently engaged in farming. Of those reporting that they were farming, approximately 57% of them were farming with their parents while close to 40% stated that they were farming on their own. In-laws and other relatives accounted for the remainder..

Parent's farming background and farming status

Respondents were asked to indicate the farming background of their parents. Table 2 shows the distribution of the findings. Just over ninety percent of them indicated their parents were farmers. Twelve respondents (9.4%) said their parents were not farmers. The present farming status of the respondents' parents indicated that the majority of the respondents' parents were still engaged in farming. While approximately one-third indicated that their parents had retired. Eleven respondents did not indicate their parent's present status.

Farming characteristics

Respondents were asked to report their gross family income from all sources before taxes. The findings are shown in Table 3. Six families (4.7%) reported having less than \$20,000 of gross income compared to fifty-three families (41.4%) reporting gross incomes over \$60,000 annually. Over 37% of the respondents reported gross family incomes between \$30,000 and \$59,999 annually. Eight respondents (6.2%) did not report their gross family income.

Data in Table 3 shows the respondents' size of farming operation using gross farm sales. Twenty respondents (15.6%) reported gross sales of less than \$40,000, whereas sixteen respondents (12.5%) reported gross sales of more than \$300,000. Forty-three percent of the respondents reported gross sales between \$40,000 and \$199,999. Twelve respondents (9.4%) did not answer the question.

Respondents were asked to indicate the number of acres that they were farming. These responses are found Table 3. Twenty-three respondents (18.0%) were farming up to 160 acres compared to twenty-nine respondents (22.6%) who were farming more than 560 acres of land. Over half of the respondents were farming 161 to 560 acres of land. Four respondents (3.1%) did not respond.

Size of farming operation

Livestock inventories were also used as a measure of farm size. Respondents were asked to record the number of head of livestock upon inventory in their farming operations. The results for this question can be found in Table 4. Only thirty-two respondents indicated having beef cows and calves as a livestock enterprise while thirty-one indicated that feeder cattle was one of their livestock activities. Twenty-eight respondents indicated they were farrowing sows for hog production whereas forty-five respondents were actively involved in market hogs. Four respondents recorded sheep as one of their farming enterprises. Ten respondents were involved in dairy production. Finally, three respondents indicated that a poultry enterprise was a part of their farming operation.

Table 3. Gross family income, farm sales, and farming characteristics of the respondents

| Characteristic | n | % |
|-------------------------------|----|------|
| Gross family income | | |
| <\$20,000 | 6 | 4.7 |
| \$20,000-\$29,999 | 12 | 9.4 |
| \$30,000-\$39,999 | 16 | 12.5 |
| \$40,000-\$49,999 | 18 | 14.1 |
| \$50,000-\$59,999 | 15 | 11.7 |
| >\$60,000 | 53 | 41.4 |
| Missing | 8 | 6.2 |
| Gross farm sales | | |
| <\$40,000 | 20 | 15.6 |
| \$40,000-\$99,999 | 29 | 22.6 |
| \$100,000-\$199,999 | 28 | 21.9 |
| \$200,000-\$299,999 | 23 | 18.0 |
| >\$300,000 | 16 | 12.5 |
| Missing | 12 | 9.4 |
| Number of acres farmed | | |
| 0-160 | 23 | 18.0 |
| 161-320 | 38 | 29.7 |
| 321-480 | 21 | 16.4 |
| 481-560 | 13 | 10.2 |
| >560 | 29 | 22.6 |
| Missing | 4 | 3.1 |

Table 4. Distribution of respondents by size of farming operation

| Enterprise | n |
|-------------------------------|----|
| Beef cattle (cows and calves) | |
| <50 | 19 |
| 50-100 | 9 |
| >100 | 4 |
| Beef cattle (feeder) | |
| <100 | 24 |
| 100-500 | 6 |
| >500 | 1 |
| Swine (number of sows) | |
| <100 | 12 |
| 100-500 | 12 |
| >500 | 4 |
| Swine (market hogs) | |
| <500 | 12 |
| 500-1000 | 16 |
| >1000 | 17 |
| Sheep (ewes and lambs) | |
| <50 | 2 |
| >50 | 1 |
| Sheep (market lambs) | |
| 100 | 1 |
| Dairy (cows and calves) | |
| <50 | 2 |
| 50-100 | 2 |
| >100 | 6 |
| Poultry | |
| 50 | 1 |
| 75 | 1 |
| 120,000 | 1 |

Percentage of total farm sales

Results in Table 5 represent the frequencies of respondents' percentage of total farm sales. Crops, swine, and beef cattle were all large percentages of total farm sales. One hundred seven respondents (83.6%) said that crops were a portion of their farm sales. Fifty-three respondents (41.1%) indicated that swine was part of their farm sales, while forty-eight respondents (37.5%) said that a percentage of their farm sales came from beef cattle.

Distribution of business arrangement of farming operation

The respondents were asked to best describe the type of business arrangement for their farming operation. The responses are listed in Table 6. A majority of the respondents (53.9%) described their operation as operating their own farm through owning some land and leasing some land and/or facilities from others. Fifteen respondents (11.7%) operated their own farm and owned all the land that they operated. Fourteen respondents (10.9%) operated their own farm but leased land and/or facilities from others. Sixteen respondents (12.5%) said they operate their own farm but have a business arrangement with a relative while two respondents (1.6%) had a business arrangement with a non-relative. Seven respondents (5.5%) indicated other types of business arrangements. Five respondents (3.9%) gave no response.

Table 5. Distribution of respondents by percentage of farm sales

| Enterprise | n | % |
|-----------------------|-----|------|
| Crops | 107 | 83.6 |
| Swine | 53 | 41.1 |
| Beef Cattle | 48 | 37.5 |
| Dairy | 7 | 5.5 |
| Sheep | 4 | 3.1 |
| Poultry | 1 | 0.8 |
| Fruits and Vegetables | 0 | 0.0 |
| Equipment | 2 | 1.6 |
| Other | 7 | 5.5 |

Access to technology

Respondents were asked if they access to a selected list of technological equipment or services in their home or farm business. Their responses are listed in Table 7. Almost two-thirds of the respondents (64.8%) indicated having access to a computer while access to a modem was split between yes (43.8%) and no (49.2%) responses. Forty respondents (31.3%) did not have access to a computer in their home or farm business. Thirty-five respondents (27.3%) indicated having access to a

fax machine. Over half of the respondents (56.2%) did not have access to a satellite dish. About one-fourth of the respondents had access to electronic mail (25.8%) and an on-line service (20.3%), such as AOL or CompuServe. Fifty respondents (39.1%) had access to information services such as DTN, while sixty-eight respondents (53.8%) indicated they did not have access to this type of service.

Table 6. Distribution of respondents by business arrangement of farming operation

| Business arrangement | n | % |
|--|----|------|
| Operate my own farm and own all land that I operate | 15 | 11.7 |
| Operate own farm, own some land and lease some land and/ or facilities from others | 69 | 53.9 |
| Operate my own farm, but lease land and/or facilities from others | 14 | 10.9 |
| Operate a farm and have "business arrangement" with relative | 16 | 12.5 |
| Operate a farm and have "business arrangement" with non-relative | 2 | 1.6 |
| Other | 7 | 5.5 |
| Missing | 5 | 3.9 |

Table 7. Distribution of respondents by access to technology

| Technology | n | % |
|---|----|------|
| Computer | | |
| Yes | 83 | 64.8 |
| No | 40 | 31.3 |
| Missing | 5 | 3.9 |
| Modem | | |
| Yes | 56 | 43.8 |
| No | 63 | 49.2 |
| Missing | 9 | 7.0 |
| Fax machine | | |
| Yes | 35 | 27.3 |
| No | 82 | 64.1 |
| Missing | 11 | 8.6 |
| Satellite dish | | |
| Yes | 45 | 35.2 |
| No | 72 | 56.2 |
| Missing | 11 | 8.6 |
| Electronic mail (e-mail) | | |
| Yes | 33 | 25.8 |
| No | 83 | 64.8 |
| Missing | 12 | 9.4 |
| Information services (Farm Dayta, DTN) | | |
| Yes | 50 | 39.1 |
| No | 68 | 53.1 |
| Missing | 10 | 7.8 |
| On-line service (AOL, Compuserve) | | |
| Yes | 26 | 20.3 |
| No | 88 | 68.8 |
| Missing | 14 | 10.9 |

Perceptions of Iowa Beginning Farmers Regarding Selected Issues in Beginning Farmer Education

Respondents were asked to respond to thirty-four statements and indicate their level of agreement regarding educational needs. This section was divided into three subsections: (1) beginning farmer education, (2) adequacy of beginning farmer educational programs, and (3) delivery of beginning farmers educational programs. A five-point, Likert-type scale (1-5) was used to measure their level of agreement. The following scale was used: (1) = strongly disagree, (2) = disagree, (3) = no opinion, (4) = agree, (5) = strongly agree.

It was established a priori that those statements that with means of 4.0 and above indicated a tendency toward a high level of agreement. Means of 3.5 but less than 4.0 were established as having a tendency toward agreement. Means of 3.0 and less than 3.5 indicated a no opinion. Finally, means less than 3.0 indicated a level of disagreement. Statement means and standard deviations are given (Tables 8, 9, 10).

The statement receiving the highest mean score (4.18) for beginning farmer education was "should emphasize learning by experience in agriculture" (Table 8). Other statements with means above 4.0 were "should emphasize production agricultural skill development" (4.10) and "should emphasize problem-solving situations which involve primarily physical activity (hands-on) of the client" (4.03). All these statements showed a tendency toward a high level of agreement.

Table 8. Means and standard deviations of the perceptions of respondents toward beginning farmer education

| Statement | Mean | SD |
|--|------|-----|
| Should emphasize learning by experience in agriculture | 4.18 | .86 |
| Should emphasize production agriculture skill development | 4.10 | .72 |
| Should emphasize problem-solving situations which involve primarily physical activity (hands-on) of the client | 4.03 | .86 |
| Should emphasize problem-solving situations which involve primarily mental activity (thinking process) of the client | 3.96 | .76 |
| Should be taught using a variety of instructional methods | 3.94 | .60 |
| Should emphasize the adoption of agricultural technology | 3.88 | .69 |
| Should emphasize individualized instruction (site visits, etc) | 3.79 | .83 |
| Should emphasize leadership development in agriculture | 3.78 | .81 |
| Should develop programs for education in connection with beginning farmers | 3.77 | .78 |
| Should be taught primarily using nonformal rather than formal educational methods | 3.53 | .96 |
| Should emphasize distance education as a means of educational delivery | 3.02 | .68 |
| Composite mean score | 3.82 | |

Table 9. Means and standard deviations of the perceptions of respondents toward adequacy of beginning farmer education programs

| Statement | Mean | SD |
|--|------|-----|
| Local high schools need to do more in beginning farmer education | 3.62 | .98 |
| Commodity groups and farm organizations need to do more in beginning farmer education | 3.52 | .76 |
| Agribusiness and Commercial firms need to do more in beginning farmer education | 3.52 | .80 |
| Iowa State University needs to do more in beginning farmer education | 3.41 | .79 |
| The Iowa Extension Service needs to do more in beginning farmer education | 3.39 | .86 |
| Community Colleges need to do more in beginning farmer education | 3.36 | .78 |
| Iowa State University is doing an adequate job of beginning farmer education | 3.24 | .76 |
| Community Colleges are doing an adequate job of beginning farmer education | 3.19 | .83 |
| The Iowa Extension Service is doing an adequate job of beginning farmer education | 3.17 | .84 |
| Agribusiness and Commercial firms are doing an adequate job of beginning farmer education | 2.87 | .85 |
| Commodity group and farm organizations are doing an adequate job of beginning farmer education | 2.65 | .76 |
| Local high schools are doing an adequate job of beginning farmer education | 2.64 | .99 |
| Composite mean score | 3.21 | |

Table 10. Means and standard deviations of the perceptions of respondents toward the delivery of beginning farmer education

| Statement | Mean | SD |
|--|------|------|
| I am never too old to learn | 4.59 | 0.57 |
| Farming is more complex today requiring more time to keep up-to-date | 4.27 | 0.73 |
| Beginning farmers need to consult a variety of information sources to make competent farming decisions | 4.17 | 0.78 |
| On-site educational instruction (face-to-face) is my preferred method of receiving beginning farmer education | 3.63 | 0.92 |
| Single meetings on specific topics should be emphasized | 3.62 | 0.77 |
| Beginning farmers should consult with public institutions (schools, colleges, and universities) for unbiased agricultural information | 3.61 | 0.92 |
| Series of meetings or workshops with in-depth analysis of a topic should be emphasized | 3.38 | 0.89 |
| To keep up-to-date, beginning farmers should participate in educational programs on a year-around basis | 3.33 | 0.98 |
| I am willing to pay tuition and fees to attend beginning farmer education classes | 3.09 | 1.04 |
| I would prefer to attend beginning farmer educational meetings taught by fiber optic, satellite, or a similar statewide communication system | 2.85 | 0.96 |
| I am willing to travel up to one hour to attend beginning farmer education classes | 2.74 | 1.00 |
| Composite mean score | 3.57 | |

Seven statements had means of between 3.5 and less than 4.0, indicating agreement with the statement. These statements were “should emphasize problem-solving situations which involve primarily mental activity (thinking process) of the client” (3.96), “should be taught using a variety of instructional methods”(3.94), “should emphasize the adoption of agricultural technology” (3.88), “should emphasize individualized instruction (site visits, etc.)” (3.79), “should emphasize leadership development in agriculture” (3.78), “should develop programs for education in connection with beginning farmers” (3.77), and “should be taught primarily using nonformal rather than formal educational methods” (3.53). The statement “should emphasize distance education as a means of educational delivery “ (3.02) was expressed by respondents as having “no opinion”.

Subsection two of beginning farmer education perceptions dealt with adequacy of beginning farmer education programs (Table 9). The statement with the highest mean (3.62) was “local high schools need to do more in beginning farmer education”. Respondents agreed with the statements that commodity groups and farm organizations (3.52) and agribusiness and commercial firms (3.52) need to do more in beginning farmer education.

Respondents expressed “no opinion” regarding the following statements about the adequacy of beginning farmer education: “Iowa State University needs to do more in beginning farmer education “ (3.41), “the Iowa Extension Service needs to do more in beginning farmer education” (3.39), “community colleges need to do

more in beginning farmer education" (3.36), "Iowa State University is doing an adequate job of beginning farmer education" (3.24), "community colleges are doing an adequate job in beginning farmer education" (3.19), and "the Iowa Extension Service is doing an adequate job of beginning farmer education" (3.17).

Three statements indicated a level of disagreement. These statements were "agribusiness and commercial firms are doing an adequate job of beginning farmer education" (2.87) "commodity groups and farm organizations are doing an adequate job of beginning farmer education" (2.65), and "local high schools are doing an adequate job of beginning farmer education" (2.64).

Respondents were asked to indicate their level of agreement or disagreement regarding the delivery of beginning farmer education programs. The results are found in Table 10. Respondents indicated a high level of agreement on three statements. They were: "I am never too old to learn" (4.59), "farming is more complex today requiring more time to keep up to date" (4.27), and "beginning farmers need to consult a variety of information sources to make competent farming decisions" (4.17).

Respondents indicated agreement with "on-site educational instruction" (3.63), "single meetings on specific topics" (3.62), and "beginning farmers should consult public institutions for unbiased information" (3.61).

Respondents expressed no opinion on three statements regarding the delivery of beginning farmer education. They were: "Series of meetings or

workshops" (3.38), "participation in educational programs on a year-around basis" (3.33), and "paying tuition and fees to attend classes" (3.09).

Respondents indicated disagreement with "educational meetings taught by fiber optics, satellite, or similar statewide communication systems" (2.85).

Respondents also indicated disagreement with "willingness to travel up to one hour for education classes" (2.74).

Analysis of Variance of Beginning Farmer Education and Selected Demographic Variables

To determine if significant differences existed in the level of agreement with the composite mean scores regarding beginning farmer education, adequacy of programs, and the delivery of beginning farmer programs, a one-way analysis of variance was used. The respondents were grouped by selected demographic variables. Those variables were age, level of education, number of hours worked on the farm, number of hours worked off the farm, and years of actual farming experience.

Composite means scores were computed for each subsection of the survey. These composite mean scores were determined for the eleven statements regarding beginning farmer education, the twelve statements regarding the adequacy of beginning farmer programs, and the eleven statements regarding the delivery of beginning farmer programs. The composite mean scores are reported in Tables 8, 9, and 10.

When grouped by age and analyzed by the composite mean scores, no significant differences were found. These results are listed in Tables 11, 12, and 13. The analysis of variance shows that age did not influence the respondents' answers to the statements regarding beginning farmer education, the adequacy of beginning farmer programs, and the delivery of beginning farmer programs.

Table 11. Analysis of variance regarding beginning farmer education when grouped by age

| Age | n | Mean | SD | F | Sig. |
|-------|----|------|-----|-------|------|
| <25 | 16 | 3.91 | .37 | 1.890 | .101 |
| 25-30 | 25 | 3.96 | .35 | | |
| 31-35 | 27 | 3.89 | .51 | | |
| 36-40 | 31 | 3.73 | .37 | | |
| 41-45 | 18 | 3.75 | .30 | | |
| >45 | 6 | 3.60 | .22 | | |

The one-way analysis of variance found no significant differences among respondents when grouped by their level of education and the composite mean score regarding beginning farmer education (Table 14). However, significant differences were found when the composite mean score for the adequacy of beginning farmer programs was compared to the educational level of the respondents.

Table 12. Analysis of variance regarding adequacy of beginning farmer education programs when grouped by age

| Age | n | Mean | SD | F | Sig. |
|-------|----|------|-----|-------|------|
| <25 | 16 | 3.25 | .37 | 1.079 | .376 |
| 25-30 | 25 | 3.25 | .38 | | |
| 31-35 | 27 | 3.30 | .30 | | |
| 36-40 | 31 | 3.15 | .21 | | |
| 41-45 | 18 | 3.19 | .21 | | |
| >45 | 6 | 3.08 | .18 | | |

Table 13. Analysis of variance regarding delivery of beginning farmer education programs when grouped by age

| Age | n | Mean | SD | F | Sig. |
|-------|----|------|-----|------|------|
| <25 | 16 | 3.50 | .46 | .284 | .921 |
| 25-30 | 25 | 3.67 | .53 | | |
| 31-35 | 27 | 3.59 | .60 | | |
| 36-40 | 31 | 3.56 | .40 | | |
| 41-45 | 18 | 3.55 | .41 | | |
| >45 | 6 | 3.58 | .54 | | |

These results can be found in Table 15. A Scheffe' test was performed to locate the source of differences among the groups. It was determined that those respondents with thirteen to fourteen years of education responded significantly different than those respondents that had fifteen to sixteen years of education.

Table 14. Analysis of variance regarding beginning farmer education when grouped by level of education

| Educational level | n | Mean | SD | F | Sig. |
|-------------------|----|------|-----|-------|------|
| <12 years | 3 | 3.94 | .41 | 1.717 | .151 |
| 12 | 43 | 3.81 | .41 | | |
| 13 to 14 | 41 | 3.93 | .33 | | |
| 15 to 16 | 37 | 3.72 | .41 | | |
| 17 or more | 4 | 3.61 | .43 | | |

Table 15. Analysis of variance regarding adequacy of beginning farmer education programs when grouped by level of education

| Educational level | n | Mean | SD | F | Sig. |
|-------------------|----|------|-----|--------|------|
| <12 years | 3 | 3.25 | .30 | 4.726* | .001 |
| 12 | 43 | 3.18 | .18 | | |
| 13 to 14 | 41 | 3.36 | .30 | | |
| 15 to 16 | 37 | 3.12 | .33 | | |
| 17 or more | 4 | 2.98 | .28 | | |

*Significant at the .05 level

Therefore, those respondents with some college education responded significantly higher and agreed with the statements concerning the adequacy of programs more than other respondents.

Significant differences were also found when the composite mean for delivery methods was analyzed by education level (Table 16). A Scheffe' test was performed to determine if the significant F-ratio was due to differences between pairs of means. Respondents with twelve years of education responded significantly different than respondents with thirteen to fourteen years of education. The mean score for the latter group was significantly higher indicating that respondents with some college education felt positive about the delivery of beginning farmer education than those with a high school education or less.

The analysis of variance found a significant difference in the composite mean score for beginning farmer education when grouped by the number hours worked

Table 16. Analysis of variance regarding delivery of beginning farmer education programs when grouped by level of education

| Educational level | n | Mean | SD | F | Sig. |
|-------------------|----|------|-----|--------|------|
| <12 years | 3 | 3.61 | .41 | 2.869* | .026 |
| 12 | 43 | 3.42 | .55 | | |
| 13 to 14 | 41 | 3.73 | .42 | | |
| 15 to 16 | 37 | 3.54 | .45 | | |
| 17 or more | 4 | 3.93 | .26 | | |

*Significant at the .05 level

on the farm (Table 17). A Scheffe' test was performed to determine the source of difference. Respondents who worked less than twenty hours per week on the farm responded significantly different than respondents who worked more than sixty hours per week on the farm. Those respondents that worked more hours on the farm tended to agree more with the statements regarding beginning farmer education.

No significant differences were found when the data were grouped by the number of hours worked on the farm and the composite mean for the adequacy of programs and the delivery methods (Tables 18 and 19). It can then be concluded that the number of hours worked on the farm had no influence on the level of agreement with these statements.

Table 17. Analysis of variance regarding beginning farmer education when grouped by number of hours worked on the farm

| Hours worked on the farm | n | Mean | SD | F | Sig. |
|--------------------------|----|------|-----|--------|------|
| <20 | 9 | 3.53 | .29 | 3.383* | .020 |
| 20-40 | 43 | 3.75 | .44 | | |
| 41-60 | 37 | 3.92 | .36 | | |
| >60 | 35 | 3.88 | .35 | | |

*Significant at the .05 level

Table 18. Analysis of variance regarding adequacy of beginning farmer education programs when grouped by number of hours worked on the farm

| Hours worked on the farm | n | Mean | SD | F | Sig. |
|--------------------------|----|------|-----|-------|------|
| <20 | 9 | 3.06 | .29 | 1.417 | .241 |
| 20-40 | 43 | 3.18 | .30 | | |
| 41-60 | 37 | 3.27 | .30 | | |
| >60 | 35 | 3.23 | .30 | | |

Table 19. Analysis of variance regarding delivery of beginning farmer education programs when grouped by number of hours worked on the farm

| Hours worked on the farm | n | Mean | SD | F | Sig. |
|--------------------------|----|------|-----|------|------|
| <20 | 9 | 3.69 | .13 | .473 | .702 |
| 20-40 | 43 | 3.54 | .50 | | |
| 41-60 | 37 | 3.62 | .49 | | |
| >60 | 35 | 3.52 | .53 | | |

Analysis of variance indicated no significant differences among the respondents when they were grouped by hours per week worked off the farm and the composite mean scores. The results from these tests can be found in Tables 20, 21, and 22. From these analyses, it is apparent that the number of hours per week

Table 20. Analysis of variance regarding beginning farmer education when grouped by number of hours worked off the farm

| Hours worked off the farm | n | Mean | SD | F | Sig. |
|---------------------------|----|------|-----|-------|------|
| <20 | 14 | 3.86 | .25 | 1.106 | .354 |
| 20-40 | 33 | 3.71 | .43 | | |
| 41-60 | 14 | 3.62 | .49 | | |
| >60 | 1 | 4.09 | - | | |

Table 21. Analysis of variance regarding adequacy of beginning farmer education programs when grouped by number of hours worked off the farm

| Hours worked off the farm | n | Mean | SD | F | Sig. |
|---------------------------|----|------|-----|------|------|
| <20 | 14 | 3.26 | .32 | .684 | .565 |
| 20-40 | 33 | 3.14 | .28 | | |
| 41-60 | 14 | 3.14 | .30 | | |
| >60 | 1 | 3.33 | - | | |

worked off the farm had little influence on the respondents' views toward beginning farmer education, the adequacy of programs, and the delivery of programs.

The analysis of variance found no significant differences among respondents when grouped by the number of years of actual farming experience and the composite mean scores (Tables 23, 24, and 25). Therefore, it can be concluded that

Table 22. Analysis of variance regarding delivery of beginning farmer education programs when grouped by number of hours worked off the farm

| Hours worked off the farm | n | Mean | SD | F | Sig. |
|---------------------------|----|------|-----|------|------|
| <20 | 14 | 3.43 | .46 | .372 | .773 |
| 20-40 | 33 | 3.60 | .50 | | |
| 41-60 | 14 | 3.54 | .54 | | |
| >60 | 1 | 3.64 | - | | |

Table 23. Analysis of variance regarding beginning farmer education when grouped by years of actual farming experience

| Years of actual farming experience | n | Mean | SD | F | Sig. |
|------------------------------------|----|------|-----|-------|------|
| <5 | 19 | 3.79 | .32 | 1.137 | .337 |
| 5-15 | 48 | 3.90 | .45 | | |
| 16-25 | 39 | 3.75 | .37 | | |
| >26 | 18 | 3.81 | .29 | | |

the number of years of actual farming experience had no influence on the respondents' answers to the statements regarding beginning farmer education, adequacy of programs, and the delivery of programs.

A t-test was used to determine if any significant differences existed in the responses when grouped by past farming experience. Respondents were asked if they were raised on a farm. Tables 26, 27, and 28 show the comparisons for the statements regarding beginning farmer education, adequacy of programs, and delivery methods. No significant differences were found between those respondents that were raised on a farm and those that were not. It can be concluded then that regardless of the respondents past farming status, the responses to the statements were similar.

Table 24. Analysis of variance regarding adequacy of beginning farmer education programs when grouped by years of actual farming experience

| Years of actual farming experience | n | Mean | SD | F | Sig. |
|------------------------------------|----|------|-----|------|------|
| <5 | 19 | 3.14 | .32 | .976 | .406 |
| 5-15 | 48 | 3.26 | .32 | | |
| 16-25 | 39 | 3.21 | .22 | | |
| >26 | 18 | 3.17 | .25 | | |

Table 25. Analysis of variance regarding delivery of beginning farmer education programs when grouped by years of actual farming experience

| Years of actual farming experience | n | Mean | SD | F | Sig. |
|------------------------------------|----|------|-----|------|------|
| <5 | 19 | 3.66 | .46 | .695 | .557 |
| 5-15 | 48 | 3.62 | .49 | | |
| 16-25 | 39 | 3.50 | .53 | | |
| >26 | 18 | 3.54 | .47 | | |

Table 26. T-test results for respondents' perceptions regarding beginning farmer education when grouped by past farming experience

| Raised on a farm | n | Mean | SD | t-value | df | Sig. |
|------------------|-----|------|-----|---------|-----|------|
| Yes | 121 | 3.83 | .39 | .994 | 126 | .322 |
| No | 7 | 3.68 | .43 | | | |

Table 27. T-test results for respondents' perceptions regarding adequacy of beginning farmer programs when grouped by past farming experience

| Raised on a farm | n | Mean | SD | t-value | df | Sig. |
|------------------|-----|------|-----|---------|-----|------|
| Yes | 121 | 3.21 | .29 | -.335 | 126 | .738 |
| No | 7 | 3.25 | .42 | | | |

Table 28. T-test results for respondents' perceptions regarding delivery of beginning farmer education programs when grouped by past farming experience

| Raised on a farm | n | Mean | SD | t-value | df | Sig. |
|------------------|-----|------|-----|---------|-----|------|
| Yes | 121 | 3.57 | .49 | .210 | 126 | .834 |
| No | 7 | 3.53 | .42 | | | |

Future Importance of Educational Providers and Educational Media

This section of the questionnaire asked respondents to rate the future usefulness of educational providers and educational media in their farming careers. A five point, Likert-type scale (1-5) measured the responses. The following scale was used: 1 = not useful, 2 = limited usefulness, 3 = no opinion, 4 = useful, 5 = extremely useful.

It was established a priori that those statements with means of 4.0 and above indicated a tendency toward being extremely useful. Means of 3.5 but less than 4.0 were established as having a tendency toward being useful in the future and means of 3.0 and less than 3.5 indicated a no opinion. Finally, means less than 3.0 indicated a tendency toward not being useful in the future.

Means and standard deviations for the educational providers are found in Table 29. "Parents, siblings, and relatives" (4.11) received the highest mean score for educational providers, which indicated they would be extremely useful in the future. Extension (3.71), agricultural consultants (3.57), farm organizations (3.56),

and agribusiness and commercial firms (3.50) were all perceived as being useful in the future. All other educational providers received a no opinion rating for their future usefulness.

The future usefulness of educational media means and standard deviations are reported in Table 30. There were no educational media that were viewed as being extremely useful in the future, however radio (3.83) received the highest mean score for this section. This indicated that radio was viewed as being useful to the

Table 29. Means and standard deviation regarding the future usefulness of educational providers

| Educational provider | Mean | SD |
|-----------------------------------|------|------|
| Parents, siblings, and relatives | 4.11 | 0.97 |
| Extension | 3.71 | 1.01 |
| Agricultural consultants | 3.57 | 1.04 |
| Farm organizations | 3.56 | 0.91 |
| Agribusiness and commercial firms | 3.50 | 1.07 |
| Commodity organizations | 3.43 | 1.04 |
| Government agencies (FSA, NRCS) | 3.39 | 1.15 |
| Community colleges | 3.37 | 1.16 |
| High school agricultural programs | 3.10 | 1.27 |
| Iowa State credit courses | 3.08 | 1.10 |
| Iowa State non-credit courses | 3.05 | 0.99 |

respondents in the future. Information services (3.80), marketing services (3.63), and newspapers (3.63) all received ratings of being useful in the future. Audiotapes (2.80) had the lowest mean score. This mean indicated a tendency toward not being useful to the respondents in their farming careers.

Table 30. Means and standard deviations regarding the future usefulness of educational media

| Educational media | Mean | SD |
|-----------------------------------|------|------|
| Radio | 3.83 | 0.89 |
| Information services (Farm Dayta) | 3.80 | 1.02 |
| Marketing services | 3.68 | 0.97 |
| Newspaper | 3.63 | 0.99 |
| Television | 3.45 | 1.12 |
| Extension service pamphlets | 3.44 | 1.08 |
| Satellite dish | 3.39 | 0.99 |
| Internet-World Wide Web (WWW) | 3.23 | 1.19 |
| Video Tapes | 3.17 | 1.09 |
| Home study packets | 3.14 | 1.01 |
| Farm packets | 3.13 | 0.99 |
| Fiber optics network (ICN) | 3.08 | 0.99 |
| Audio tapes | 2.80 | 1.09 |

Current and Future Importance of Topic Areas

The final section of the questionnaire asked respondents to indicate the degree of importance of selected agricultural topics and subject matter.

Identification of these topics would be useful for providing beginning farmers with skills and knowledge that will meet their future needs. Respondents were asked to indicate the current and future importance of the selected topics. Both, current and future, importance scales were five-point, Likert-type scales. The following scale was used: 1 = not important, 2 = little importance, 3 = no opinion, 4 = important, 5 = extremely important.

It was established a priori that those statements with means of 4.0 and above indicated a tendency toward being extremely important. Means of 3.5 but less than 4.0 were established as having a tendency toward being important and means of 3.0 and less than 3.5 indicated a no opinion, that is, neither important nor not important. Finally, means less than 3.0 indicated a tendency toward having little to no importance.

The means and standard deviations of selected topics and subject matter by current importance are listed in Table 31. Nineteen topic areas were considered to be extremely important. The topic area that received the highest mean score for current importance was record keeping and management systems analysis (4.43). Other topics that were considered to be extremely important were financial and credit planning (4.35), farm markets and marketing strategies (4.33), organization

Table 31. Means and standard deviations for the current importance of agricultural topics and subject matter

| Subject matter | Mean | SD |
|--|------|------|
| Record keeping and management systems analysis | 4.43 | 0.60 |
| Soil fertility and tillage practices | 4.39 | 0.56 |
| Weed/pest/disease management | 4.38 | 0.56 |
| Financial and credit planning | 4.35 | 0.69 |
| Farm markets and Marketing strategies | 4.33 | 0.72 |
| Organization and business planning | 4.25 | 0.70 |
| Income tax planning | 4.24 | 0.72 |
| Soil and water conservation | 4.23 | 0.78 |
| Machinery selection/calibration and maintenance | 4.23 | 0.72 |
| Farm and family goal setting | 4.22 | 0.77 |
| Drying/storage/preservation systems of crops | 4.18 | 0.73 |
| Health/disease management | 4.18 | 0.91 |
| Estate planning and transferring assets | 4.14 | 0.94 |
| Retirement planning and transferring assets | 4.12 | 0.93 |
| Water, air, environmental, wildlife issues | 4.09 | 0.81 |
| Technology transfer and new innovations in agriculture | 4.09 | 0.72 |
| Farm assets acquisition | 4.05 | 0.84 |
| Feeds/feeding/nutrition | 4.04 | 0.97 |
| Livestock waste and odor management | 4.02 | 0.92 |
| Principles of investments | 3.98 | 0.77 |
| Agricultural power and safety | 3.97 | 0.88 |
| Government and legal issues in agriculture | 3.97 | 0.74 |
| Enterprise cost analysis | 3.97 | 0.88 |
| Facilities construction and management | 3.90 | 0.85 |
| Meats and meat quality | 3.90 | 1.00 |
| Computer applications in farm/business management | 3.90 | 0.88 |
| Agricultural marketing/food trade policies | 3.90 | 0.88 |
| Communications in a multi-generational farming unit | 3.90 | 0.93 |
| Teaching and learning in agriculture | 3.88 | 0.75 |
| Understanding multi-generational farm arrangements | 3.87 | 0.91 |
| Reproduction and breeding management | 3.86 | 1.12 |
| Stress and conflict management in the farming unit | 3.85 | 1.01 |
| Specialty crop/crop variety/crop breeding | 3.75 | 0.88 |
| Biotechnology in crop production | 3.74 | 0.88 |
| Agricultural energy conservation and use | 3.74 | 1.01 |

Table 31. (continued)

| Subject matter | Mean | SD |
|--|------|------|
| Sustainable agriculture and resource economics | 3.72 | 0.89 |
| Computer applications in crop production | 3.67 | 0.99 |
| Crops system analysis/precision farming | 3.64 | 0.92 |
| Computer applications in livestock production | 3.59 | 1.02 |
| Understanding rural institutions and organizations | 3.58 | 0.79 |
| Agricultural networking opportunities | 3.57 | 0.90 |
| Biotechnology in livestock production | 3.54 | 0.95 |
| Individual leadership, human resource development | 3.52 | 0.86 |
| Forage crops production and management | 3.44 | 1.05 |
| Community action and group leadership | 3.33 | 0.83 |
| Horticulture/fruit and vegetable production | 2.66 | 1.10 |

and business planning (4.25), income tax planning (4.24), and farm assets acquisition (4.05). Soil fertility and tillage practices (4.39), weed/pest/disease management (4.38), soil and water conservation (4.23), and drying/storage/preservation systems of crops (4.18) were also viewed as being extremely important. Livestock waste and odor management (4.02), feeds/feeding/nutrition (4.04), and health/disease management (4.18) were all considered to be extremely important issues in livestock production. Machinery selection/calibration and maintenance (4.23), technology transfer and new innovations in agriculture (4.09), and water, air, environmental, wildlife issues (4.09) were considered to be extremely important topic areas as well. Finally, farm and family goal setting (4.22), estate planning and transferring assets

(4.14), and retirement planning and transferring assets (4.12) were all extremely important topics in multi-generational farming.

One topic area was viewed as having little importance in the future farming careers of these beginning farmers. Horticulture, fruit, and vegetable production (2.66) received the lowest mean score in the current importance section.

The future importance of selected agricultural topics and subject matter means and standard deviations as perceived by the respondents are reported in Table 32. Thirty-four topic areas were viewed as being important in the future. The top mean score was record keeping and management systems analysis (4.52). Other topics that were viewed as being extremely important in the future were farm markets and market strategies (4.52), financial and credit planning (4.46), and organization and business planning (4.39). Topic areas concerning crops that were considered to be extremely important in the future were soil and water conservation (4.35), weed/pest/disease management (4.50), and soil fertility and tillage practices (4.50). Retirement planning and transferring assets (4.44), estate planning and transferring assets (4.40), and machinery selection/calibration and maintenance (4.38) round out the top ten mean scores for future emphasis in educational programs.

Again, only one topic received a score that indicated it had little importance in the future farming careers of these beginning farmers. Horticulture, fruit, and vegetable production (2.72) received the lowest mean score for this section.

Table 32. Means and standard deviations of the future importance of agricultural topics and subject matter

| Subject matter | Mean | SD |
|--|------|------|
| Record keeping and management systems analysis | 4.52 | 0.64 |
| Farm markets and Marketing strategies | 4.52 | 0.70 |
| Soil fertility and tillage practices | 4.50 | 0.55 |
| Weed/ pest/disease management | 4.50 | 0.56 |
| Financial and credit planning | 4.46 | 0.69 |
| Retirement planning and transferring assets | 4.44 | 0.64 |
| Estate planning and transferring assets | 4.40 | 0.72 |
| Organization and business planning | 4.39 | 0.72 |
| Machinery selection/calibration and maintenance | 4.38 | 0.71 |
| Soil and water conservation | 4.35 | 0.71 |
| Income tax planning | 4.34 | 0.67 |
| Farm and family goal setting | 4.32 | 0.78 |
| Technology transfer and new innovations in agriculture | 4.28 | 0.65 |
| Drying/storage/preservation systems of crops | 4.27 | 0.73 |
| Water, air, environmental, wildlife issues | 4.24 | 0.83 |
| Health/disease management | 4.24 | 0.94 |
| Livestock waste and odor management | 4.22 | 0.90 |
| Farm assets acquisition | 4.20 | 0.80 |
| Feeds/feeding/nutrition | 4.15 | 0.98 |
| Principles of investments | 4.15 | 0.77 |
| Computer applications in farm/business management | 4.14 | 0.86 |
| Agricultural power and safety | 4.10 | 0.85 |
| Government and legal issues in agriculture | 4.09 | 0.72 |
| Agricultural marketing/food trade policies | 4.09 | 0.87 |
| Facilities construction and management | 4.08 | 0.78 |
| Crops system analysis/precision farming | 4.06 | 0.94 |
| Enterprise cost analysis | 4.06 | 0.86 |
| Specialty crop/crop variety/crop breeding | 4.03 | 0.82 |
| Computer applications in crop production | 4.02 | 0.96 |
| Computer applications in facilities and equipment | 4.02 | 0.91 |
| Teaching and learning in agriculture | 4.00 | 0.78 |
| Biotechnology in crop production | 4.00 | 0.83 |
| Meats and meat quality | 4.00 | 1.00 |
| Communications in a multi-generational farming unit | 4.00 | 0.92 |
| Sustainable agriculture and resource economics | 3.97 | 0.79 |

Table 32. (continued)

| Subject matter | Mean | SD |
|--|------|------|
| Understanding multi-generational farm arrangements | 3.97 | 0.90 |
| Stress and conflict management in the farming unit | 3.94 | 0.98 |
| Agricultural energy conservation and use | 3.87 | 0.98 |
| Computer applications in livestock production | 3.86 | 1.00 |
| Agricultural networking opportunities | 3.81 | 0.91 |
| Biotechnology in livestock production | 3.75 | 0.98 |
| Understanding rural institutions and organizations | 3.64 | 0.82 |
| Individual leadership, human resource development | 3.63 | 0.92 |
| Forage crops production and management | 3.52 | 1.03 |
| Community action and group leadership | 3.50 | 0.82 |
| Horticulture/fruit and vegetable production | 2.72 | 1.11 |

CHAPTER 5. DISCUSSION, SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to identify the educational needs of beginning farmers in Iowa. In chapter one, the importance of assessing educational needs was addressed. A needs assessment is a key step that must be fulfilled before any other aspect of planning can take place. A secondary purpose of the study was to determine where farmers get their information and what program topics would most interest beginning farmers in developing future educational programs.

A review of literature was presented in chapter two. A theoretical framework of adult education and how adults learn was discussed in detail. Also, a needs assessment, as an integral part of programming, was discussed. Program planning for adults and the proper steps to establishing an effective educational program was explained. Research studies regarding adult education in agriculture and young farmer programs completed the review of literature. In summary, the review of literature showed a lack of research regarding beginning farmer education in the last decade.

Chapter three included the research methods used. Specifically, the research design, population and sample, instrumentation, pilot study, data collection procedures, and data analysis were discussed.

The results and findings of the study were presented in chapter four. The findings were based on data collected from a mailed questionnaire. The data

collected included demographic characteristics of the respondents, perceptions of beginning farmers regarding beginning farmer's education, the adequacy of programs, and the delivery methods used. Statistical tests were used to determine statistical differences. Lastly, the future importance of educational providers and educational media and current and future importance of selected agricultural program topics were identified.

This chapter will present a discussion of the findings as they relate to the previous literature and the author's observations, and a summary of the problem, purpose, and procedures of the study. Conclusions, recommendations, and implications to agricultural education were made based upon the findings of the study.

Discussion of the Major Findings

The analysis of the demographic data indicated that 100% of the respondents were male with an average age of almost 34 years. Nearly two-thirds (64.7%) of the respondents fell between 25 and 40 years of age. These findings are consistent with Martin's (1987) demographic findings.

One-third of the respondents had a high school diploma. Nearly two-thirds of the respondents had some post-secondary education (college or vocational school). These findings are consistent with Elbasher and Martin's (1993) study but contrasts the findings in Martin's (1987) study. Only thirty-six percent of the farmers in his study were found to have post high school education. The findings here

indicate that farmers are achieving a higher level of education and that farmers are becoming more educated and expect to participate in lifelong learning programs. Over half the respondents (56.7%) worked over 40 hours per week and over 32 hours per week working off the farm. Over 25% of the respondents worked between 25 and 40 hours per week off the farm. These findings might be difficult to understand simply because of the sheer number of hours worked on and off the farm. Working eighty hours per week on and off the farm probably indicates the seasonal aspect of farming. This questionnaire was mailed two months before planting season which might have influenced the farmers responses. If farmers are working this many hours per week year round, no wonder it is difficult for them to attend beginning farmer classes.

Over two-thirds of the respondents (68%) had between 5 and 25 years of actual farming experience and 94.5% were raised on a farm (Martin, 1987). Over half (57%) of the respondents were farming with their parents. Nine out of ten or the respondents' parents were farmers and over half were still farming.

The gross family income of the respondents was mostly greater than \$60,000 per year with over 41% responding. Most of the gross farm sales fell in the ranges of \$40,000 to \$99,999 (22.6%) and \$100,000 to \$199,999 (21.9%) which was similar to Martin (1987).

Almost 30% of the respondents were farming between 161 and 320 acres of land with a majority of the farm sales coming from crops, swine, and beef. Over half

the respondents (53.9%) operated their own farm but owned some land and leased some land and/or facilities from others.

Almost two-thirds of the respondents (64.8%) had access to a computer while less than half had access to a modem. Almost two-thirds (64.1%) did not have access to a fax machine or electronic mail. Almost 40% did have access to an information service such as Farm Dayta.

A second objective of the study was to determine the perceptions of beginning farmers toward beginning farmer education, adequacy of educational programs, and the delivery methods used in beginning farmer education. Overall, respondents were in agreement with most of the statements concerning beginning farmer education. They exhibited a high level of agreement with experiential learning, production agricultural skill development, and problem solving situations that involve hands-on activities. These findings were different from those found by Martin and Omer (1990). In this study, experiential learning and hands-on situations were rated higher in this research. Distance education rated the lowest as a delivery method. This may be explained by the lack of understanding and unfamiliarity with distance education.

Respondents all agreed that local high schools need to do more in beginning farmer education. Additionally, commodity groups and farm organizations as well as agribusiness and commercial firms could do more in beginning farmer education according the respondents. Respondents had "no opinion" on whether community

colleges, Iowa State University, or University Extension were doing an adequate job in beginning farmer education.

For the delivery of beginning farmer education, respondents highly agreed that lifelong learning was very important to them. They also believed that farming is much more complex today, and more time is required to keep up to date with the changes that are occurring. They also felt that a variety of information sources should be consulted when making decisions, which is consistent with Martin and Omer (1990) and Chizari and Taylor (1991). Respondents were not willing to travel up more than one hour to attend beginning farmer education classes nor were they willing to attend beginning farmer educational meetings that are taught by fiber optic, satellite, or a similar statewide communication system. These two statements were surprising given the fact that farmers agreed that lifelong learning is important to their future farming careers.

To better understand the findings of the research, statistical tests were used to analyze the data and find any significant differences. When the respondents were grouped by age, no significant differences were found regarding beginning farmer education, adequacy of programs, and delivery of programs. This indicates that age did not influence their responses. However, when the respondents were grouped by the level of education attained, significant differences were found in the adequacy of educational programs and the delivery methods used. Those respondents that had one to two years of college education were more in agreement

that beginning farmer educational programs were adequately meeting their needs as compared to those respondents who had three to four years of college education. When delivery methods were compared, significant differences were found in those respondents that had a high school diploma and those that had completed one to two years of college. Those respondents that had completed some college tended to agree more with statements regarding delivery of educational programs than those that only had a high school education. This may be explained by those attending college had a better understanding of the delivery methods than those who had no college experience, had not attended any beginning farmer education classes, or were not familiar with the delivery methods that were being used in those classes.

Significant differences were found when respondents were grouped by the number of hours worked on the farm. Those beginning farmers that worked more hours on the farm tended to agree more with the statements concerning beginning farmer education. Those that worked less hours on the farm might not have had as much interest in the financial success of the farm because of their off farm employment. However, no significant differences were found when the respondents were grouped by the number of hours worked off the farm. It can be concluded that the number of hours worked off the farm did not influence the respondents' answers to the questions dealing with beginning farmer education.

Finally, no significant differences were found when grouped by the number of years of actual farming experience and whether or not the respondents were

raised on a farm. Therefore, it can be concluded that past farming experience had no influence on the views expressed by the respondents.

When respondents were asked to identify which educational providers would be useful to them in the future, they overwhelmingly responded that parents, siblings, and relatives would be the most useful. One previous study has identified this trend as well (Martin, 1987). Respondents also stated that University Extension, agricultural consultants, farm organizations, and agribusiness and commercial firms would be helpful in their future farming careers. Cano and Miller (1987) found similar results in their research.

The educational media source that would be most useful to the respondents in the future was radio. Information services, marketing services, and newspapers were all viewed as being useful. These findings were consistent with Martin (1987) and Martin and Omer (1990). It was surprising to see radio rated so high; however, farmers tend to spend a lot of time working and listening to the radio for a variety of reasons. Moreover, no media source was viewed as being extremely useful to the beginning farmers.

The respondents rated selected agricultural topics and subject matter according to their importance now and in the future. It was interesting to note that many of the topics that were considered to be important now were also considered to be important in the future. At the same time, many of the topics were

viewed as being extremely important. Nineteen topics were identified as being extremely important.

Record keeping and management systems analysis were identified as the most important topic. At the same time, many of the topics considered to be most important dealt with the business side of farming. Other topics that were considered to be important were tax planning, farm markets and market strategies, financial and credit planning, and acquiring farm assets. All these topics were rated as being extremely important to the respondents. These results emphasize the fact that treating the farm as a business is an established norm for beginning farmers. These issues regarding treating the farm as a business have also been found in previous studies (Martin, 1987; Burhoe & Stewart, 1983; Chizari & Taylor, 1991). Issues dealing with crops were also viewed as being important. Soil fertility and tillage practices, soil and water conservation, and drying, storage, and preservation systems of crops were extremely important to the respondents. Livestock waste and odor management and health and disease management were important livestock issues to the respondents. Finally, respondents agreed that farm and family goal setting was important. They also said that estate planning and retirement planning were extremely important issues that should be stressed in beginning farmer education programs.

Not only were respondents asked to determine the current importance of these topics they were also asked to determine the future importance of these topics.

Thirty-four topics received ratings of being extremely important topics in the future. However, many of the topics that were rated the highest in terms of current importance also were viewed as being important in the future. Means were higher for future importance indicating that many of these same topics would be important in the future as compared to the present. In summary, topics related to the business side of farming rated the highest in terms of future importance.

Statement of the Problem

The problem addressed by this study specifically was to identify the educational needs of beginning farmers in Iowa. The study focused on how adult agricultural educators can develop effective and efficient educational programs for beginning farmers. Farmers will be expected to produce more food with less labor and less resources in the future. How can agricultural educators develop programs that address these needs? What problems will be experienced by beginning and established farmers in the next century? What specific educational needs should be addressed in the next century for beginning farmers?

Purpose

The primary purpose of this study was to identify the perceived educational needs of beginning farmers in Iowa. A secondary purpose of this study was to determine the future usefulness of selected educational providers and media. A final objective was to determine what program topics are and will be important for beginning farmers. The specific objectives are as follows:

1. To determine relevant demographic characteristics of beginning farmers in Iowa
2. To conduct an educational needs assessment of beginning farmers in Iowa including their perceptions toward beginning farmer education, the future importance of educational providers and educational media, and the current and future importance of subject matter needs
3. To determine the perceptions of beginning farmers toward beginning farmer education, delivery methods, and beginning farmer educational programs
4. To determine the current and future importance of educational providers and educational media in the delivery of beginning farmer education
5. To determine the current and future importance of subject matter needs of beginning farmers in Iowa

Procedures

This descriptive study was funded by the Iowa Agriculture and Home Economics Experiment Station. The Iowa Agricultural Development Authority in Des Moines, Iowa supplied the population for the study ($N = 1117$). Sample size for the study was randomly chosen and used a 95% confidence level ($n = 286$).

Data were collected using a mailed questionnaire developed by the researcher. A panel of experts reviewed the instrument and recommended changes.

The questionnaire was pilot tested for reliability by agricultural professionals and beginning farmers that were not included in the study.

Respondents were asked to respond to 123 items in five sections. Questions consisted of beginning farmer education, educational providers and media, and selected subject matter topics. Respondents were also asked to provide some demographic characteristics.

Responses were collected over a period of eight weeks and then coded and entered into the Statistical Package for the Social Sciences (SPSS). The response rate for this study totaled forty-eight percent. Descriptive procedures and one way analysis of variance tests were used in the analysis of data.

Conclusions

According to the results and findings in this study, the following conclusions were made:

1. Beginning farmers who participated in this study generally agreed with most of the statements regarding beginning farmer education, adequacy of beginning farmer education programs, and delivery methods used in beginning farmer education.
2. Beginning farmers in this study believed that experiential learning and production agricultural skills were very important in beginning farmer education.

3. Beginning farmers believed that beginning farmer education should emphasize problem-solving situations that involve primarily hands-on activities of the client.
4. Distance education was not rated highly in beginning farmer education. This may, in part, be explained by the lack of understanding of this concept and, consequently, expressed a lower level of agreement.
5. Beginning farmers stated that local high schools need to do more in beginning farmer education.
6. Overwhelmingly, beginning farmers in this study embraced the idea of lifelong learning by saying they were never too to learn.
7. Respondents believed that farming is more complex than it has been in the past, therefore it required more time to keep up-to-date and a variety of information sources must consulted in order to make competent farming decisions.
8. Beginning farmers were not willing to travel to get additional education, nor did they indicate a preference for or against distance education.
9. Beginning farmers believed that parents, siblings, and relatives, University Extension, agricultural consultants, farm organizations, and agribusiness and commercial firms were going to be major educational providers in the future.
10. Beginning farmers indicated that radio, information services, marketing services, and newspapers were going to be important educational media outlets in the future.

11. Beginning farmers who had one to two years of college tended to agree more with the statements about beginning farmer education than those with a high school diploma or those with three to four years of education.
12. Those respondents that spent more time working on the farm tended to agree more with the statements that dealt with beginning farmer education than those farmers who spent less time on the farm.
13. Most beginning farmers indicated that most of the subject matter topics were important now and in the future. Topics dealing with running the farm as a business and planning for the future of the farm were viewed as being extremely important currently and in future educational programming.

Recommendations

The following recommendations and implications can be made from the findings in this study:

1. Beginning farmers looked positively toward University Extension; it ranked high as a future educational provider. University Extension, therefore, has an opportunity to expand its educational services to beginning farmers and their parents, siblings, and relatives. University Extension and other agricultural educators should consider joint educational programming involving those groups.
2. Information services and marketing services ranked high as an educational provider in the future. Agricultural educators should develop educational

programming for beginning farmers through these services by establishing a strong relationship with these providers.

3. Agricultural educators should develop programs that involve a variety of instructional methods including problem-solving situations, hands-on activities, on-site instruction, and single meetings.
4. Agricultural educators should conduct more research on teaching at a distance and include beginning farmers in the planning process of educational programs that will be delivered using distance education technology. Beginning farmers were reluctant to indicate an opinion on distance education. This could be due to the fact that beginning farmers do not understand distance education, therefore, agricultural educators should strive to educate beginning farmers about distance education and include a variety of teaching methods when using this delivery method
5. Due to beginning farmers expressing no opinion on the future usefulness of cutting-edge technologies, agricultural educators should develop programs that explain the use of the Internet, World Wide Web, on-line computer services, and other instructional technologies.
6. It is recommended that agricultural educators develop programs that emphasize running the farm as a business and planning for the future of farming.

Educational programs such as record keeping, farm markets and marketing,

financial and credit planning, estate planning, retirement planning, and farm and family goal setting should be stressed.

7. Radio and information was rated as being an extremely important educational media in the future. Agricultural educators and University Extension have an to strengthen their relationship by working collaboratively to produce educational programming that can be delivered over the radio and through information services.
8. Beginning farmers in this study indicated they did not prefer to travel for educational programs nor did they prefer programs delivered via the Iowa Communications Network, satellite, or fiber optic system. It is recommended then, that further research be conducted on delivery methods used to teach beginning farmer educational programs.
9. Future studies should be conducted to enhance the use of community colleges, high school agriculture programs, and university credit courses as a means of future delivery of beginning farmer education. As this study indicated, it is very important that beginning farmers be included in the program planning stages of any educational program.
10. Future studies need to be conducted to see if the needs expressed in this research are being met in the future.
11. National studies should be initiated in order to generalize this research to a national audience.

Implications to Agricultural Education

The primary purpose of this study was to identify the perceived needs of beginning farmers and their perceptions regarding beginning farmer education, adequacy of educational programs, and delivery methods used. The educational providers and media associated with the delivery of beginning farmer education in Iowa were also determined. Education of adult beginning farmers in Iowa needs to be evaluated. With the loss of beginning farmer education programs at the high school level, fewer farms, and increasing farm size, there is a need for adult education now more than ever. Agricultural educators and University Extension has a real opportunity to develop lasting partnerships and expand its educational services to beginning farmers.

Results of this study may provide the basis for agricultural education departments and University Extension across the nation to develop programs for beginning farmers according to the findings in this study. It may also provide for more research interests in beginning farmer education. Experiential learning has been an important part of agricultural education. Therefore agricultural educators should take the lead role in developing educational programming that is based on the learning process.

Respondents in this study showed that they were taking opportunities to participate in lifelong learning, were more educated, and felt that they were never too old to learn. Adult educators need to recognize this demand and develop

programs that will enhance learning opportunities for adult beginning farmers.

Adults are attempting to enrich their knowledge and skills through lifelong learning and adult educators should fulfill those needs. Adult education in agriculture is so important in today's complex farming society. Agricultural education faculty and University Extension have an enormous responsibility to provide an education for beginning farmers so that they may provide food for the world's ever expanding population.

APPENDIX A. HUMAN SUBJECTS APPROVAL

Checklist for Attachments and Time Schedule

The following are attached (please check):

12. Letter or written statement to subjects indicating clearly:
- the purpose of the research
 - the use of any identifier codes (names, #'s), how they will be used, and when they will be removed (see item 17)
 - an estimate of time needed for participation in the research
 - if applicable, the location of the research activity
 - how you will ensure confidentiality
 - in a longitudinal study, when and how you will contact subjects later
 - that participation is voluntary; nonparticipation will not affect evaluations of the subject
13. Signed consent form (if applicable)
14. Letter of approval for research from cooperating organizations or institutions (if applicable)
15. Data-gathering instruments

16. Anticipated dates for contact with subjects:

First contact

Last contact

February 24, 1997

May 1, 1997

Month/Day/Year

Month/Day/Year

17. If applicable: anticipated date that identifiers will be removed from completed survey instruments and/or audio or visual tapes will be erased:

February 1, 1998

Month/Day/Year

18. Signature of Departmental Executive Officer

Date

Department or Administrative Unit

Richard H. Carter

2-17-97

Agricultural Education and Studies

19. Decision of the University Human Subjects Review Committee:

Project approved

Project not approved

No action required

Patricia M. Keith

Name of Committee Chairperson

2/19/97

Date

PM Keith

Signature of Committee Chairperson

APPENDIX B. CORRESPONDENCE WITH IADA

January 10, 1997

Mr. Steven K. Ferguson
Executive Director
Iowa Agricultural Development Authority
505 5th Avenue, Suite 327
Des Moines, IA 50309-2322

Dear Mr. Ferguson,

It was a pleasure meeting you at the first meeting of the Agriculture Transition Alliance. Your insight and leadership about beginning farmers are just what agricultural educators are looking for in their educational programs.

I am writing this letter to ask for your help in a research project that Dr. Larry Trede and I are conducting at Iowa State University regarding beginning farmer education in Iowa. Your list of beginning farmers who have received loans from the IADA would be very beneficial in our research. I would ask that the list be made available to us for use in our research project. Hopefully, by working together on this project, we will be able to enhance the educational programs that are currently being offered to beginning farmers across the state.

Thanks for your consideration. I can be reached at 515/294-4349 or via e-mail at <scottw@iastate.edu> if you have any further questions. I look forward to hearing from you in the near future.

Sincerely,

B. Scott Whitaker

APPENDIX C. COVER LETTER AND INSTRUMENT

March 3, 1997

Dear Beginning Farmer,

We are interested in your ideas about education of beginning farmers in Iowa. As a beginning farmer in Iowa, you possess the qualities and the knowledge to be beneficial to this research project. Your ideas will help educators plan better educational processes and specific areas of concerns of beginning farmers.

The survey should take you less than 20 minutes to complete. Please respond according to your beliefs and concerns for beginning farmers. All information will be **strictly confidential** and viewed only by the researchers. Surveys are coded for mailing purposes only and will be destroyed at the completion of the study.

Participation in this study is strictly voluntary. You were selected from a group of farmers whose names were obtained from the Iowa Agricultural Development Authority. Please complete and return the survey so as to provide us with a representative sample of beginning farmers in Iowa. Please return the survey by **April 5, 1997** in the enclosed postage paid envelope.

Thank you for your time. Your assistance is greatly appreciated and will help us to identify major concerns of beginning farmers. A copy of the survey results will be provided for you.

If you have any questions about the survey, please feel free to contact either of us at the numbers listed below.

Sincerely,

Larry Trede
Associate Professor
Iowa State University
Agricultural Education and Studies Department
Department
(515) 294-6924

Scott Whitaker
Graduate Assistant
Iowa State University
Agricultural Education and Studies
(515) 294-4349

Code # _____

A. Educational Providers and Educational Media

Beginning farmer education is being provided through a variety of educational providers using a diverse set of media. The purpose of this section is determine their future usefulness in your farming occupation and career. Please rate your future usefulness(next 3 to 5 years) of these providers and media. Future usefulness is defined as "I will use it or have the potential to use it".

Use the following scale: 1=not useful (n.u.) 2=limited usefulness (L.u.)
3=no opinion(n.o.) 4=useful(u.) 5=extremely useful (e.u.)

| <u>Educational Provider</u> | <u>Future Usefulness</u> | | | | |
|--|--------------------------|-------------|-------------|-----------|-------------|
| | <i>n.u.</i> | <i>L.u.</i> | <i>n.o.</i> | <i>u.</i> | <i>e.u.</i> |
| Commodity organizations..... | 1 | 2 | 3 | 4 | 5 |
| Farm organizations..... | 1 | 2 | 3 | 4 | 5 |
| Extension..... | 1 | 2 | 3 | 4 | 5 |
| High school agricultural programs..... | 1 | 2 | 3 | 4 | 5 |
| Community colleges..... | 1 | 2 | 3 | 4 | 5 |
| Iowa State credit courses..... | 1 | 2 | 3 | 4 | 5 |
| Iowa State non-credit courses..... | 1 | 2 | 3 | 4 | 5 |
| Agribusiness and commercial firms..... | 1 | 2 | 3 | 4 | 5 |
| Agricultural consultants..... | 1 | 2 | 3 | 4 | 5 |
| Parents, siblings, and relatives..... | 1 | 2 | 3 | 4 | 5 |
| Government agencies (FSA, NRCS)..... | 1 | 2 | 3 | 4 | 5 |

| <u>Media</u> | <u>Future Usefulness</u> | | | | |
|---------------------------------------|--------------------------|-------------|-------------|-----------|-------------|
| | <i>n.u.</i> | <i>L.u.</i> | <i>n.o.</i> | <i>u.</i> | <i>e.u.</i> |
| Newspaper..... | 1 | 2 | 3 | 4 | 5 |
| Radio..... | 1 | 2 | 3 | 4 | 5 |
| Television..... | 1 | 2 | 3 | 4 | 5 |
| Fiber optics network (ICN)..... | 1 | 2 | 3 | 4 | 5 |
| Satellite dish..... | 1 | 2 | 3 | 4 | 5 |
| Audio tapes..... | 1 | 2 | 3 | 4 | 5 |
| Video Tapes..... | 1 | 2 | 3 | 4 | 5 |
| Information services(Farm Dayta)..... | 1 | 2 | 3 | 4 | 5 |
| Home study packets..... | 1 | 2 | 3 | 4 | 5 |
| Farm packets..... | 1 | 2 | 3 | 4 | 5 |
| Extension service pamphlets..... | 1 | 2 | 3 | 4 | 5 |
| Marketing services..... | 1 | 2 | 3 | 4 | 5 |
| Internet-World Wide Web (WWW)..... | 1 | 2 | 3 | 4 | 5 |

B. Beginning Farmer Education

We are interested in your perceptions and ideas about beginning farmer education in Iowa. Read the following statements and indicate your level of agreement.

Use the following scale: 1=strongly disagree (s.d) 2=disagree (d)
3=no opinion (n.o.) 4=agree (a.) 5=strongly agree (s.a.)

Beginning Farmer Education**Level of Agreement**

| | <i>s.d.</i> | <i>d.</i> | <i>n.o.</i> | <i>a.</i> | <i>s.a.</i> |
|--|-------------|-----------|-------------|-----------|-------------|
| 1. Should be taught using a variety of instructional methods..... | 1 | 2 | 3 | 4 | 5 |
| 2. Should emphasize leadership development in agriculture..... | 1 | 2 | 3 | 4 | 5 |
| 3. Should emphasize production agriculture skill development..... | 1 | 2 | 3 | 4 | 5 |
| 4. Should emphasize learning by experience in agriculture..... | 1 | 2 | 3 | 4 | 5 |
| 5. Should be taught primarily using nonformal rather than formal educational methods..... | 1 | 2 | 3 | 4 | 5 |
| 6. Should emphasize the adoption of agricultural technology..... | 1 | 2 | 3 | 4 | 5 |
| 7. Should emphasize problem-solving situations which involve primarily mental activity (thinking process) of the client..... | 1 | 2 | 3 | 4 | 5 |
| 8. Should emphasize problem-solving situations which involve primarily physical activity (hands-on) of the client..... | 1 | 2 | 3 | 4 | 5 |
| 9. Should emphasize individualized instruction (site visits, etc.)..... | 1 | 2 | 3 | 4 | 5 |
| 10. Should emphasize distance education as a means of educational delivery..... | 1 | 2 | 3 | 4 | 5 |
| 11. Should develop programs for education in connection with beginning farmers..... | 1 | 2 | 3 | 4 | 5 |

Adequacy of Beginning Farmer Education Programs**s.d. d. n.o. a. s.a.**

| | <i>s.d.</i> | <i>d.</i> | <i>n.o.</i> | <i>a.</i> | <i>s.a.</i> |
|---|-------------|-----------|-------------|-----------|-------------|
| 1. Iowa State University is doing an adequate job of beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 2. Iowa State University needs to do more in beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 3. The Iowa Extension Service is doing an adequate job of beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 4. The Iowa Extension Service needs to do more in beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 5. Community Colleges are doing an adequate job of beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 6. Community Colleges need to do more in beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |

| | <u>Level of Agreement</u> | | | | |
|--|---------------------------|-----------|-------------|-----------|-------------|
| | <i>s.d.</i> | <i>d.</i> | <i>n.o.</i> | <i>a.</i> | <i>s.a.</i> |
| 7. Commodity group and farm organizations are doing an adequate job of beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 8. Commodity groups and farm organizations need to do more in beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 9. Agribusiness and Commercial firms are doing an adequate job of beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 10. Agribusiness and Commercial firms need to do more in beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 11. Local high schools are doing an adequate job of beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 12. Local high schools need to do more in beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| <u>Delivery of Beginning Farmer Education</u> | <i>s.d.</i> | <i>d.</i> | <i>n.o.</i> | <i>a.</i> | <i>s.a.</i> |
| 1. Farming is more complex today requiring more time to keep up-to-date..... | 1 | 2 | 3 | 4 | 5 |
| 2. Beginning farmers need to consult a variety of information sources to make competent farming decisions..... | 1 | 2 | 3 | 4 | 5 |
| 3. Beginning farmers should consult with public institutions (schools, colleges, and universities) for unbiased agricultural information | 1 | 2 | 3 | 4 | 5 |
| 4. To keep up-to-date, beginning farmers should participate in educational programs on a year-around basis..... | 1 | 2 | 3 | 4 | 5 |
| 5. I am never too old to learn..... | 1 | 2 | 3 | 4 | 5 |
| 6. I am willing to pay tuition and fees to attend beginning farmer education classes..... | 1 | 2 | 3 | 4 | 5 |
| 7. On-site educational instruction (face-to-face) is my preferred method of receiving beginning farmer education..... | 1 | 2 | 3 | 4 | 5 |
| 8. I would prefer to attend beginning farmer educational meetings taught by fiber optic, satellite, or a similar statewide communication system..... | 1 | 2 | 3 | 4 | 5 |
| 9. I am willing to travel up to one hour to attend beginning farmer education classes..... | 1 | 2 | 3 | 4 | 5 |
| 10. Single meetings on specific topics should be emphasized..... | 1 | 2 | 3 | 4 | 5 |
| 11. Series of meetings or workshops with in-depth analysis of a topic should be emphasized..... | 1 | 2 | 3 | 4 | 5 |

C. Agricultural Topics and Subject Matter

We are interested in your perceptions about a variety of agricultural topics and subject matter and their current and future importance (next 3 to 5 years). Current importance is defined as "How important is it to me today?". Future importance is defined as "How important will it be to me in 3 to 5 years?".

Use the following scale: 1=not important (n.i) 2=little importance (Li)
3=no opinion (n.o.) 4=important (i) 5=extremely important (e.i)

| <u>Topic and Subject Matter</u> | <u>Current Importance</u> | | | | | <u>Future Importance</u> | | | | |
|---|---------------------------|-----------|-----------|----------|-----------|--------------------------|-----------|-----------|----------|-----------|
| | <i>ni</i> | <i>li</i> | <i>no</i> | <i>i</i> | <i>ei</i> | <i>ni</i> | <i>li</i> | <i>no</i> | <i>i</i> | <i>ei</i> |
| <u>General Agriculture and Education</u> | | | | | | | | | | |
| Sustainable agriculture and resource economics..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Water, air, environmental, wildlife issues..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Individual leadership, human resource development..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Technology transfer and new innovations in agriculture | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Community action and group leadership..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Agricultural networking opportunities..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Understanding rural institutions and organizations..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Teaching and learning in agriculture..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| <u>Crop Production</u> | | | | | | | | | | |
| Weed/pest/disease management..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Soil fertility and tillage practices..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Soil and water conservation..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Specialty crop/crop variety/crop breeding..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Crops system analysis/precision farming..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Forage crops production and management..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Biotechnology in crop production..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Horticulture/fruit and vegetable production..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Computer applications in crop production..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| <u>Equipment and Buildings</u> | | | | | | | | | | |
| Machinery selection/calibration and maintenance..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Drying/storage/preservation systems of crops..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Agricultural power and safety..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Agricultural energy conservation and use..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Facilities construction and management..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Computer applications in facilities and equipment..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| <u>Livestock Production</u> | | | | | | | | | | |
| Feeds/feeding/nutrition..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Livestock waste and odor management..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Health/disease management..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Reproduction and breeding management..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Meats and meat quality..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Biotechnology in livestock production..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Computer applications in livestock production..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

| | Current Importance | | | | | Future Importance | | | | |
|--|-------------------------------|-----------|-----------|----------|-----------|------------------------------|-----------|-----------|----------|-----------|
| | <i>ni</i> | <i>li</i> | <i>no</i> | <i>i</i> | <i>ei</i> | <i>ni</i> | <i>li</i> | <i>no</i> | <i>i</i> | <i>ei</i> |
| <u>Farm and Business Management</u> | | | | | | | | | | |
| Financial and credit planning..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Organization and business planning..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Record keeping and management systems analysis..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Government and legal issues in agriculture..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Principles of investments..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Income tax planning..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Enterprise cost analysis..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Farm assets acquisition..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Computer applications in farm/business management..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Agricultural marketing/food trade policies..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Farm markets and Marketing strategies..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| <u>Multi-generational Farming</u> | | | | | | | | | | |
| Farm and family goal setting..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Communications in a multi-generational farming unit..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Stress and conflict management in the farming unit..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Understanding multi-generational farm arrangements..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Estate planning and transferring assets..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Retirement planning and transferring assets..... | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

What other concerns do you have about beginning farmer education and educational providers and media?

Are there any other or topics that you would like to see implemented or discussed in the future for beginning farmers?

D. Demographic Information and Farming Experience

We would like to know more about you and your farming experience. Please fill in the blank; check or circle the response that best describes you. This information will remain confidential.

| | <u>Farm Operator</u> | | <u>Spouse</u> | |
|--|-------------------------|-------------------------|---------------|--------|
| | Male | Female | Male | Female |
| 1. Gender | | | | |
| 2. Age | _____ | | _____ | |
| 3. Years of formal education example: 12=high school diploma 16=college graduate | _____ | | _____ | |
| 4. Hours per week engaged in farming | _____ | | _____ | |
| 5. Hours per week working off the farm | _____ | | _____ | |
| 6. Years of <i>actual</i> farming experience | _____ | | _____ | |
| 7. Were you raised on a farm? | Yes | No | Yes | No |
| 8. Are your parents farmers? | Yes | No | Yes | No |
| 9. If so, are they presently farming or retired? | _____ | | _____ | |
| 10. Are you farming with your parents, in-laws, or other relative? | _____ | | _____ | |
| 11. Are you presently farming? | Yes | No | Yes | No |
| If no, present occupation: | _____ | | _____ | |
| 12. <i>Gross</i> family income (from all sources before taxes): | | | | |
| _____ < \$20,000 | _____ \$30,000-\$39,999 | _____ \$50,000-\$59,999 | | |
| _____ \$20,000-\$29,999 | _____ \$40,000-\$49,999 | _____ >\$60,000 | | |

E. Farm Operation

We want to know more about your farm operation. Please fill in the blank; check or circle the response that best describes you. This information will remain confidential.

1. Acres farmed (include acres owned and leased)

| | | |
|---------------|---------------|---------------|
| _____ 0-160 | _____ 321-480 | _____ 641-720 |
| _____ 161-320 | _____ 481-560 | _____ >720 |

2. Size of farming operation (number of head on inventory)

| | |
|-------------------------------------|-------------------------------|
| _____ Beef Cattle (cows and calves) | _____ Sheep (ewes and lambs) |
| _____ Beef Cattle (feeder) | _____ Sheep (market lambs) |
| _____ Swine (no. sows) | _____ Dairy (cows and calves) |
| _____ Swine (market hogs) | _____ Poultry |

3. Percentage total farm sales (total should equal 100%)

| | | |
|-------------------|---------------|-------------------------|
| _____ Crops | _____ Dairy | _____ Fruits/Vegetables |
| _____ Swine | _____ Sheep | _____ Equipment |
| _____ Beef Cattle | _____ Poultry | _____ Other _____ |

4. Size of total farm operation (gross sales)

| | | |
|-------------------------|---------------------------|---------------------------|
| _____ <\$10,000 | _____ \$40,000-\$59,999 | _____ \$200,000-\$299,999 |
| _____ \$10,000-\$19,999 | _____ \$60,000-\$99,999 | _____ \$300,000-\$499,999 |
| _____ \$20,000-\$39,999 | _____ \$100,000-\$199,999 | _____ >\$500,000 |

5. Check the statement that describes the "business arrangement" for your farming operation

Operate my own farm and own all land that I operate
 Operate my own farm, own some land, lease some land and/or facilities from others
 Operate my own farm, but lease land and/or facilities from others
 Operate a farm and have "business arrangement" with relative
 Operate a farm and have "business arrangement" with non-relative
 Other (please describe) _____

6. In your home or farm business, do you have access to the following equipment or services? Please circle response.

| | | |
|-----|----|---|
| Yes | No | Computer |
| Yes | No | Modem in computer |
| Yes | No | Fax machine |
| Yes | No | Satellite dish |
| Yes | No | Electronic mail (e-mail) |
| Yes | No | Information service (ex. Farm Dayta, DTN) |
| Yes | No | On-line service (ex. AOL, CompuServe) |

APPENDIX D. FOLLOW-UP POST CARD

Dear Beginning Farmer,

A couple of weeks ago you should have received a survey dealing with beginning farmer research here at Iowa State University. We hope that you took the time to complete the survey because the answers will be very beneficial to the future success of beginning farmers. If you have already completed the survey, we thank you for your time, but if you have not completed the survey, we would like to ask you to take the time to complete the survey and return it to us here at the Agricultural Education department by **April 11, 1997**. Again, thank you for your interest in this research. If you have any questions, please feel free to call us at 515/294-4349.

Larry Trede and Scott Whitaker

APPENDIX E. FOLLOW-UP LETTER

May 2, 1997

Dear Beginning Farmer:

A few weeks ago, you received a letter and survey from Iowa State University and the Agricultural Education and Studies Department. This survey is a very important step in helping to establish quality educational programs for farmers in Iowa. You were picked from a list of individuals obtained from the Iowa Agricultural Development Authority as being a beginning farmer.

The research being conducted will be very beneficial to all Iowa farmers and your input is vital to the success of the program. If you have not completed the survey, I urge you to do so at this time. The survey should take **15 to 20 minutes** to complete. I understand that crop work and planting is well underway, but if you could take the time to give your opinion on educational programs for farmers, it would be greatly appreciated.

Receiving a loan from the Iowa Agricultural Development Authority places you among the state's primary target for dealing with beginning farmer education. Your opinions are important to us. If you have already completed the survey, thank you. If you have not, please take the time to complete the survey by **May 23, 1997**.

Please contact Scott Whitaker or Larry Trede, Ph. D., at Iowa State University, (515) 294-4349, if you have any questions.

Again, I urge you to complete the survey and let the educational process benefit your farming goals.

Sincerely,

Steven K. Ferguson
Executive Director

REFERENCES

- Albracht, J. (1982). The identification of instructional needs of small farmers in Kansas [Monograph]. Department of Adult and Occupational Education, Manhattan, Kansas State University.
- Anderson, G. A. (1985). Future young and adult farmer programs. Agricultural Education Magazine, 58(6), 14-15.
- Apps, J. W. (1988). Higher education in a learning society. San Francisco: Jossey-Bass.
- Backus, J. M. (1984). Adult student needs and university instructional practices. Journal of Teacher Education, 35(3) 11-15.
- Beder, H. W. & Darkenwald, G. G. (1982). Differences between teaching adults and pre-adults: Some propositions and findings. Adult Education, 32(3) 142-155.
- Bia, J. (1986). Analysis of needs: Adult and post-secondary agricultural education in the Eastern Navajo Agency. Doctoral dissertation. Ames: Iowa State University.
- Birkenholz, R. J., Harbstreit, S. R., & Law, D. A. (1990). Research priorities for adult education in agriculture in the north central region. Journal of Agricultural Education, 31(4), 32-38.
- Birkenholz, R. J. & Maricle, G. L. (1991). Adult education in agriculture: A national survey. Journal of Agricultural Education, 32(4) 19-24.
- Bode, J. C. (1967). Factors which influence attendance in an adult farmer class. Master's thesis. Ames: Iowa State University.
- Boone, E. J. (1985). Developing programs in adult education. Englewood Cliffs, New Jersey: Prentice Hall.
- Boyle, P. G. (1981). Planning better programs. New York: McGraw-Hill.
- Brookfield, S. D. (1990). Understanding and facilitating adult learning. San Francisco: Jossey-Bass Publishers.

Bruening, T. H. & Martin, R. A. (1991). A field based model for adult education in agriculture. Agricultural Education Magazine, 63(10), 8-9.

Bureau of the Census. (1994). 1992 Census of agriculture (USDC Publication No. AC92-A-15). Washington, D. C.: U.S. Government Printing Office.

Burhoe, S. A. & Stewart, B. R. (1983). The identification of instructional priorities for future programming in adult education in agriculture. Journal of the American Association of Teacher Educators in Agriculture, 24(1) 26-33.

Caffarella, R. S. (1982). Identifying client needs. Journal of Extension, 20(4), 5-11.

Cano, J. & Miller, L. E. (1987). Toward synergistic delivery of adult agricultural education. Paper presented at the annual meeting of the Southern Research Conference in Agricultural Education, Williamsburg, VA.

Chizari, M. & Taylor, W. N. (1991). Agriculture teachers' perceptions of adult education programs: an examination of critical educational needs, obstacles faced, and support needed. Journal of Agricultural Education, 32(2), 23-28.

Courtney, S. (1989). Defining adult and continuing education. In S. B. Merriam & P. M. Cunningham (Eds.), Handbook of Adult and Continuing Education (pp. 15-25). San Francisco: Jossey-Bass.

Cross, K. P. (1978). "The adult learner." Current Issues in Higher education, American Association for higher education, Washington, D.C.

Darkenwald, G. G. & Merriam, S. B. (1982). Adult Education: Foundations of Practice. New York: Harper & Row.

Dormody, T. J., Seevers, B. S., & Clason, D. L. (1996). Teacher perceptions of the goals achieved by adult organizations in agricultural education. Journal of Agricultural Education, 37(1), 37-40.

Elias, J. L. & Merriam, S. B. (1980). Philosophical foundations of adult education. Malabar, Florida: Krieger Publishing Company.

Elbasher, K. A. & Martin, R. A. (1993). Perceptions of young farmers regarding the role of international agriculture in agricultural education. Defining the Social Context through Agricultural Research. Proceedings of the 20th Annual National Agricultural Education Research Meeting, Nashville, Tennessee.

Gardner, J. W. (1968). Campus, 1980. The Delacorte Press, NY.

Gordon, S. & Souza, K. A. (1980). Who is the lifelong learner? New Directions for community colleges, 29.

Heimlich, J. E. & Norland, E. (1994). Developing teaching style in adult education. San Francisco: Jossey-Bass.

Hillyard, L. L. (1979). Educational needs of adult farmers in the West Liberty Community School District. Master's Thesis. Ames: Iowa State University.

Hobbs, D. (1987). Strategy for needs assessments. In D. E. Johnson, L. R. Meiller, L. C. Miller, and G. F. Summers (Eds.), Needs assessments: Theory and methods (pp.20-34). Ames: Iowa State University Press.

Houle, C. (1972). The design of education. San Francisco: Jossey-Bass.

Howe, M. J. A. (1977). Adult learning: Psychological research and applications. London: John Wiley and Sons.

The Iowa Agriculture Development Authority (1996). Agricultural loan programs [Brochure]. Des Moines, IA: Author.

Kahler, A., Morgan, B, Holmes, G., & Bundy, C. (1985). Methods in adult education. Danville, IL: The Interstate Printers and Publishers, Inc.

Kamis, E. (1981). Sound, targeted compassion: Assessing the needs of and planning services for deinstitutionalized clients. In I. D. Rutman (Ed.) Planning for deinstitutionalization: A review of principles, methods, and applications. Human Services Monograph Series, No. 28. Washington, D. C.: Project Share, Department of Health and Human Services.

Kaufman, R. (1982). Identifying and solving problems: A system approach (3rd ed.). San Diego, CA: University Associates.

Kaufman, R. & English, F. W. (1979). Needs assessment. Englewood Cliffs, NJ: Educational Technology Publications.

Kidd, J. R. (1973). How adults learn. New York: Association Press.

Knowles, M. S. (1970). The modern practice of adult education. Chicago: Follet.

- Knowles, M. S. (1980). The modern practice of adult education: From pedagogy to andragogy. Chicago: Follet .
- Knowles, M. S. (1984). Andragogy in action. San Francisco: Jossey-Bass.
- Knowles, M. S. (1984). The adult learner: A neglected species. 3rd ed. Houston: Gulf Publishing.
- Krejcie, R. V. & Morgan, D. W. (1970). Determining sample size for research. Educational and psychological measurement, 30, 607-610.
- Lasley, P. (1985). Iowa Farm Poll. Ames: Iowa State University.
- Lasley, P. (1995). An overview of the changing structure of Iowa agriculture. Ames: Iowa State University, Department of Sociology.
- Lazlo, E. (1972). Ed. The relevance of general systems theory. New York: George Braziller.
- Lindeman, E. (1926). The meaning of adult education. New York: New Republic.
- Martin, R. A. (1987). Analysis of needs: Educational programs for young and adult farmers. Journal of the American Association of Teacher Educators in Agriculture, 28(1), 56-64.
- Martin, R. A. (1990). Empowering adults: A new agenda for agriculture. A model for research collaboration in the North Central Region. Ames: Iowa State University.
- Martin, R. A. & Omer, M. H. (1990). Perceptions regarding instructional methods used in adult agricultural education programs. Journal of Agricultural Education, 31(2), 2-6.
- Maslow, A. H. (1970). Motivation and personality. New York: Harper & Row.
- McClelland, S. B. (1995). Organizational needs analysis: Design, facilitation, and analysis. Westport, CT: Quorum Books.

McKillip, J. (1987). Needs analysis: Tools for the human services and education. Newbury Park: Sage Publications.

Miller, L. E. & Smith, K. L. (1983). Handling non-response issues. Journal of Extension, 21(5), 45-50.

Miller, W., Scheid, C., & Pilgrim, D. (1983). Organizational and instructional problems of beginning teachers of vocational agriculture in Iowa. Proceedings of the 37th Annual Research Conference in Agricultural Education, Central States Region. St. Paul, MN: American Association of Teacher Educators in Agriculture.

Moore, G. A. B., & Waldron, M. (1981). Helping adults learn. Guelph, Ontario: University of Guelph.

Nur, A. M., Birkenholz, R. J., & Stewart, B. R. (1989). Superintendent and teacher perceptions of adult education programs in agriculture. Journal of Agricultural Education, 30(4), 47-51.

Persons, E. (1980). Adult education: A part of agricultural education. Proceedings of the 7th Annual National Agricultural Education Research Meeting. Kansas City, MO.

Rawson, W. (1970). Education for young farmers. Agricultural Education Magazine, 42(10), 248-249.

Robinson, B. H. (1983). Food and agriculture policy in the twenty-first century. Agriculture in the twenty-first century. New York: John Wiley and Sons.

Roe, R. G. (1990). A needs assessment of extension horticulture clients related to educational delivery methods and based on ornamental grass experimental studies. Master's thesis. Ames: Iowa State University.

Rollins, T. J. & Yoder, E. P. (1993). Adult learning preferences: A profile of extension educators. Journal of Agricultural Education, 34(1) 18-25.

Rothman, J. & Gant, L. M. (1987). Approaches and models of continuing intervention. In D. E. Johnson, L. R. Meiller, L. C. Miller, and G. F. Summers (Eds.), Needs assessments: Theory and methods (pp.35-44). Ames: Iowa State University Press.

Schroeder, W. (1980). Typology of adult learning systems. In J. M. Peters & Associates (Eds.), Building an effective adult education enterprise. San Francisco: Jossey-Bass Publishers.

Showman, B. T. (1973). Meeting farmers specific needs. Agricultural Education Magazine, 47(4), 91.

Siegest, H. J. (1974). What young farmers expect from education programs. Agricultural Education Magazine, 46(8), 179.

Slotnick, H. B., Pelton, M. H., Fuller, M. L., & Tabor, L. (1993). Adult learners on campus. Washington, D. C.: The Falmer Press.

Smith, J. F. (1970). Farmer's felt needs for adult education. Master's thesis. Fort Collins: Colorado State University.

Smith, R. M. (1982). Learning how to learn: Applied theory for adults. Chicago: Follet.

Smith, R. M. & Haverkamp, K. K. (1977). Toward a theory of learning how to learn. Journal of Agricultural Education, 28: 3-21.

Spear, G. E. & Mocker, D. W. (1989). The future of adult education. In S. B. Merriam & P. M. Cunningham (Eds.), Handbook of Adult and Continuing Education (pp. 640-649). San Francisco: Jossey-Bass Publishers.

Stufflebeam, D. L., McCormick, C. H., Brinkerhoff, R. O., & Nelson, C. O. (1985). Conducting educational needs assessments. Boston: Kluwer Nijhoff Publishing.

Thomson, L. K. (1994). Writing a needs assessment to determine the needs of the adult graduate student. Master's thesis. Ames: Iowa State University.

Tyler, R. W. (1971). Basic principles of curriculum and instruction. Chicago: University of Chicago Press.

Witkin, B. R. (1984). Assessing needs in educational and social programs. San Francisco: Jossey-Bass.

Zemsky, R. & Meyerson, M. (1985). Training practices: Education and training within the American firm. Philadelphia: University of Pennsylvania.

ACKNOWLEDGEMENTS

First, I would like thank God for all the wonderful things that he has blessed me with throughout my life. Through him all things are possible.

I would like a special thanks to go to my major professor, Larry Trede, for all the hard work and encouragement that he has given me over the last two years. A special thanks goes to Paul Lasley and Robert Martin, for serving on my committee. Their advice helped make this project a reality.

To my in-laws, Bill, Debbie, and Daniel Farnum. Thanks for giving me that special person that you call daughter and sister.

Mom and Dad (Carla and Bryant), thanks for never letting me settle for second best. You always pushed me to be true to myself and to value hard work. I will never forget your wisdom.

To my brother Cory. You are truly an inspiration to me. Thanks for all the memories. I pray that God gives you everything that you deserve in life. You will always be my little brother, no matter how big you get!

To Kathryn, my bride. You always push me to never settle and to always demand for excellence. You encourage me to live everyday with your positive attitude and outlook on life. Together we can accomplish anything. Our journey together has only begun...