

EDUCATIONAL NEEDS AND PERCEPTIONS OF IOWA BEGINNING FARMERS TOWARD THEIR EDUCATION

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Abstract

The primary purpose of this study was to identify the perceptions of beginning farmers in Iowa towards the content and delivery of beginning farmer education. A secondary purpose was to determine the usefulness of selected educational providers and media. Questionnaires were mailed to 286 beginning Iowa farmers in 1997. Responses were received from 48% of the sample. Beginning farmers showed preferences towards experiential learning, problem-solving, and critical thinking skills. They relied heavily on parents, siblings, and relatives, Extension, and consultants for educational information. They felt strongly that lifelong learning and continuing education were important in the development of their farming careers. Also, they preferred on-site educational instruction, single meetings on a specific topic, and consulting public institutions for unbiased information. At the same time, the beginning farmers indicated that radio, information services, marketing services, and newspapers are likely to be important educational media in the future. Cutting-edge educational technologies were not as highly rated as more conventional instructional technologies.

Introduction/Theoretical Framework

Life-long learning and adult education are concepts that have been well-documented. Cross (1978), Gardner (1968), Gordon and Souza (1980), and Moore and Waldron (1981) concluded that adult education has been around since the beginning of mankind and is an integral part of the learning process.

Knowles (1970) defined the differences between adult and younger learners; namely, self-directness, the adult experience base, the need to address real-life problems, and the need for immediate application. Knowles's model (1984) assumed that adult learning environment draws upon many resources, other than the teacher, including peers, the community, printed materials, and media resources. Smith and Haverkamp (1977) stressed that adult learning includes acquiring the knowledge and skills essential in

learning for a particular situation. Kidd (1973) suggested that adult programming begins with the learner's needs and interests and then explores their desires.

Adult education in agriculture relates to life-long learning and is extremely important and can not be denied, according to Martin (1990). Zemesky and Meyerson (1985) and Birkenholz, Harbstreit, and Law (1990) emphasized that adjustments must be made in adult agricultural education to accommodate the learning process.

Cano and Miller (1987) found that farmers perceive the Extension Service as the purveyor of their educational needs and agribusiness owners and managers as the deliverer of those needs. Martin and Omar (1990) found that Extension personnel considered radio to be very important and that presentation style and competence of instructors needed to be enhanced. Finally, Martin

(1987) recommended that agricultural educators, at all levels, should become facilitators of the educational process by planning and conducting educational programs with farmers and not just for farmers. Advancing technology, new agricultural and environmental laws, and innovative marketing strategies are just some of the reasons for adult programs in agriculture according to Chizari and Taylor (1991).

Rapid changes in agricultural technology, in planning and delivery of educational programs, and the changing structure of the farming industry clearly indicate that agricultural educators will need to reassess their role and responsibility in the planning and delivery of beginning farmer education. Educators need to plan educational programs to meet the demands of beginning farmers in the next century.

Purpose/Objectives

The primary purpose of this study was to identify the perceptions of beginning Iowa farmers regarding their education. Perceptions identified included the content and delivery of beginning farmer education programs and the usefulness of selected educational providers and media.

Methods/Procedures

Data for this study were collected by a self-administered, mailed questionnaire sent to a list of randomly selected Iowa beginning farmers. Beginning farmers were defined as farmers in the early stages of their farming careers. No restrictions were placed on age, farm size, or income. Those farmers who had received a beginning farmer loan from the Iowa Agricultural Development Authority (IADA) between 1992 and 1996 served as the population frame (N=1100). A 95% confidence level was used to determine the sample size of 286 farmers (Krejcie and Morgan, 1970):

The IADA exists to develop and implement programs that assist Iowa farmers in financing the purchase of agricultural land, depreciable machinery or equipment, breeding livestock, and buildings (Iowa Agriculture Development Authority, 1996). Its loans are financed by participating lending institutions or contract sales with the issuance of federal tax-exempt bonds. Loan applicants must be at least 18 years old, cannot own more than 30% of the county's median farm size, and have a net worth of not more than \$200,000.

The survey instrument was developed by the researchers and pilot tested by a panel of experts including beginning farmers (who were not included in the population frame), university Extension personnel, university faculty, agricultural finance representatives, and agribusinesses personnel. The survey contained four sections dealing with the current and future usefulness of educational providers and educational media, perceptions of beginning farmers towards the delivery of beginning farmer education, and perceptions toward the importance of selected educational topics. Cronbach's reliability coefficient was determined for each section of the survey. Cronbach's alpha coefficients were: .73, .80, .71, and .77, respectively. All sections were rated using a five-point Likert-type scale.

Questionnaires were received from 138 participants, a 48% response rate, and 128 of the returned questionnaires were considered usable. According to Lasley (1985) and Howe (1977) this response is considered to be satisfactory given the fact that farmers do not respond well to surveys. A T-test was conducted on a random selection of non-respondents (twelve farmers) and all respondents. No statistically significant differences were found between the two groups.

Results/Findings

Demographic characteristics for the respondents indicated that all farm operators were male, with an average age of 33.9 years and 14.02 years of formal education (high school plus 2 years of college). Over 50% of the beginning farmers were less than 34 years of age, only 6.5% were over 44 years old, and 64% had some college education. Additionally, 97% were raised on farms and over 90% of the respondent's parents were farmers. More than 60% of the beginning farmers were farming with their parents, in-laws, or other relatives.

Crops, swine, and beef cattle were the predominant farming enterprises. Nearly 50% of the farmers were farming less than 320 acres. The farm operators averaged 50.7 hours per week working on the farm and 32.5 hours per week working off the farm. The survey was mailed prior to spring planting season and the reported hours may reflect seasonal labor demands rather than year-around labor demands. The predominant business arrangement included owning some land and leasing some land and/or facilities from others (56%).

Just over two-thirds of the beginning farmers reported having access to computers. Less than 30% reported having a fax machine, electronic mail use, or on-line computer service.

Table 1 shows the perceptions of the respondents towards eleven statements on beginning farmer education in Iowa. Means and standard deviations are reported. Experiential learning in agriculture had the highest mean score followed by production agriculture skill development. Problem-solving situations involving physical activity (hands-on) and mental activity (critical thinking processes) were clustered together and were considered to be important. Respondents also expressed some level of agreement with statements regarding the use of a

variety of instructional methods, the adoption of agricultural technology, individualized instruction (on-site visits), leadership development, and program development. The beginning farmers were "neutral" (had no opinion) about emphasizing distance education as a means of educational delivery. It rated the lowest of the eleven statements. The composite mean score for all eleven statements was 3.82. Additionally, the beginning farmers were asked to respond to eleven statements about the delivery of beginning farmer education in Iowa (Table 2). Means and standard deviations are reported. Life-long learning had the highest mean. The beginning farmers also felt that farming is more complex today and that a variety of information sources should be consulted. Clustered together, as delivery systems, were on-site educational instruction, single mailings on specific topics, and consulting public institutions for unbiased agricultural information. The beginning farmers were "neutral" (had no opinion) about paying tuition and fees. These same farmers preferred not to attend meetings taught by fiber optic, satellite, or similar state wide communication systems. They, also, were not willing to travel up to one hour to attend beginning farmer classes. The composite score for those eleven statements was 3.57.

Beginning farmer education in Iowa is provided by a variety of educational providers using a very diverse set of media. Respondents were asked to determine the future usefulness of various educational providers and media technologies. Future usefulness was defined as, "I will use it or have the potential to use it." Educational providers were defined as those individuals, commercial companies or firms, government agencies, and/or public institutions providing education. Media included a widely diverse set of technologies available for the delivery of beginning farmer education. Means and standard deviations of the providers and media are reported in Table 3.

Table 1. Means and Standard Deviations of Perceptions of Iowa Beginning Farmers Toward Beginning Farmer Education

Perception Statement	Mean	SD
Should emphasize learning by experience in agriculture	4.18	0.86
Should emphasize production agriculture skill development	4.11	0.72
Should emphasize problem-solving situations which involve primarily physical activity (hands-on) of the client	4.03	0.86
Should emphasize problem-solving situations which involve primarily mental activity (thinking process) of the client	3.96	0.76
Should be taught using a variety of instructional methods	3.94	0.60
Should emphasize the adoption of agricultural technology	3.88	0.69
Should emphasize individualized instruction (site visits, etc.)	3.79	0.83
Should emphasize leadership development in agriculture	3.78	0.81
Should develop programs for education in connection with beginning farmers	3.77	0.78
Should be taught primarily using nonformal rather than formal educational methods	3.53	0.96
Should emphasize distance education as a means of educational delivery	3.02	0.68
Composite Mean Score	3.82	

Note. Response scale: 1=strongly disagree; 2=disagree; 3=no opinion; 4=agree; 5=strongly agree.

Respondents rated parents, siblings, and relatives as the most useful future educational provider followed by the Extension Service. Clustered together were several other educational providers including agricultural consultants, farm organizations, agribusiness and commercial firms, and commodity organizations.

For the thirteen educational media technologies identified, radio and information services rated the highest in terms of future usefulness. Marketing services and newspapers were considered to be useful in the future. Other educational media clustered together were television, Extension service pamphlets, and satellite dishes. Cutting-edge technologies rated lower than many conventional media technologies. Audio tapes rated the lowest in terms of future usefulness. For this study beginning farmers rated forty-seven selected agricultural program topics according to their current and future importance in

their farming careers. The program topics were divided into six general program areas. The composite mean score and standard deviation for each of the six categories along with the three highest rated topics within each category are shown in Table 4.

The composite mean score for program topics related to farm and business management rated the highest. In fact, many of these topics were the highest rated individual program topics. The most highly rated farm and business management topics were record-keeping and management systems analysis, financial and credit planning, and farm markets and marketing strategies. These topics rated as important to very important in terms of current and future importance. The program topics related to multi-generational farming were also highly rated in terms of their current and future importance. Among the more highest rated topics were family

Table 2. Means and Standard Deviations of Perceptions of Iowa Toward the Delivery of Beginning Farmer Education

Perception 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	

Note. Response scale: 1=strongly disagree; 2=disagree; 3=no opinion; 4=agree; 5=strongly disagree.

and farm goal setting, estate planning, retirement planning, and transferring assets. Program topics related to production agriculture including crop production, livestock production, and machinery, equipment, buildings management were rated as being somewhat important. Soil fertility, tillage practices, and weed/pest/disease management were very highly rated as important topics in the future whereas forage crops, horticulture, and vegetable production were not.

In livestock production, respondents rated health and disease management, nutrition, and odor management above 4.0 in terms of their current and future importance; however, the

composite mean score was lower. In the machinery, equipment, and buildings category, the two highest rated program topics, in terms of current and future importance, were machinery selection, calibration, and maintenance and the drying and storage of crops.

Considering all of the individual program topics collectively, the five highest rated program topics based upon future importance were record-keeping and management systems analysis, farm markets and marketing strategies, soil fertility and tillage practices, weed/pest/disease management, and financial and credit planning.

Table 3. Respondents Perceptions Regarding the Future Usefulness of Various Educational Providers and Media in Iowa

Provider/Media	SD	Mean
Educational Provider:		
Parents, siblings, and relatives	0.97	4.11
Extension	1.01	3.71
Agricultural consultants	1.04	3.57
Farm organizations	0.91	3.56
Agribusiness and commercial farms	1.07	3.50
Commodity organizations	1.04	3.43
Government agencies (FSA, NRCS)	1.15	3.39
Community colleges	1.16	3.37
High school agricultural programs	1.27	3.10
Iowa State credit courses	1.10	3.08
Iowa State non-credit courses	0.99	3.05
Educational Media:		
Radio	0.89	3.83
Informational services (Farm Dayta)	1.02	3.80
Marketing services	0.97	3.68
Newspaper	0.99	3.63
Television	1.12	3.45
Extension service pamphlets	1.08	3.44
Satellite dish	0.99	3.39
Internet-World Wide Web (WWW)	1.19	3.23
Video Tapes	1.09	3.17
Home study packets	1.01	3.14
Farm packets	0.99	3.13
Fiber optics network (ICN)	0.99	3.08
Audio Tapes	1.09	2.80

Note. Response scale: 1=not useful; 2=limited usefulness; 3=no opinion; 4=useful; 5=extremely useful

Conclusions, Recommendations, and Implications

According to the findings of this study, the following conclusions can be made:

1. Beginning farmers believed that experiential learning and production agriculture skills were very important in beginning farmer education.
2. Beginning farmers prefer education that involves hands-on experiences (physical activity) and problem-solving situations (critical thinking).
3. Beginning farmers do not want to travel to get additional education, not do they prefer distance education.
4. Beginning farmers believed that parents, siblings, and relatives, university Extension,

Table 4. Current and Future Importance of Selected Agricultural Topics As Perceived by Beginning Farmers.

Program Topic	<u>Current Importance</u>		<u>Future Importance</u>	
	M	SD	M	SD
<i>General Agriculture</i>				
Water/Air/Environmental/Wildlife issues	4.09	.81	4.24	.83
Technology transfer/new innovations	4.09	.72	4.28	.65
Teaching/Learning in agriculture	3.88	.75	4.00	.78
<i>Composite mean</i>	3.72	.49	3.88	.51
<i>Crop Production</i>				
Soil fertility and tillage practices	4.39	.56	4.50	.55
Weed/pest/disease management	4.38	.56	4.50	.56
Soil and water conservation	3.23	.78	4.35	.71
<i>Composite mean</i>	3.77	.48	3.97	.47
<i>Machinery, Equipment, Buildings Management</i>				
Machinery select/calibration/maintenance	4.23	.72	4.38	.71
Drying/storage of crops	4.18	.73	4.27	.73
Agricultural power and safety	3.97	.88	4.10	.85
<i>Composite mean</i>	3.95	.57	4.12	.57
<i>Livestock Production</i>				
Health/disease management	4.18	.91	4.24	.94
Feeds/feeding/nutrition	4.04	.97	4.15	.98
Livestock waste and odor management	4.02	.92	4.22	.90
<i>Composite mean</i>	3.87	.74	4.03	.77
<i>Farm and Business Management</i>				
Record keeping and management systems	4.43	.60	4.52	.64
Financial and credit planning	4.35	.69	4.46	.69
Farm markets and marketing strategies	4.33	.72	4.52	.70
<i>Composite mean</i>	4.11	.46	4.27	.48
<i>Multi-generational farming</i>				
Farm and family goal setting	4.22	.77	4.32	.78
Estate planning and transferring assets	4.14	.94	4.40	.72
Retirement planning and transferring assets	4.12	.93	4.44	.64
<i>Composite mean</i>	4.02	.70	4.19	.64

Note. Response scale: 1=not important, 2=little importance, 3=neutral (no opinion), 4=important, 5=extremely important.

agricultural consultants, farm organizations, and agribusiness and commercial firms are likely to be major educational providers in the future.

5. Beginning farmers indicated that radio, information services, marketing services, and newspapers are likely to be important educational media in the future.
6. Beginning farmers felt that emphasizing variety of instructional methods, agricultural technology, and on-site instruction were moderately important.
7. Beginning farmers felt strongly that continuing education and lifelong learning were important in the development of their farming careers. At the same time, they felt that a variety of information sources should be contacted to solve complex agricultural problems.
8. Regarding the delivery of education, the beginning farmers seemed to prefer on-site educational instruction, single meetings on specific topics, and using public institutions for unbiased agricultural information
9. Cutting-edge instructional technologies were not as highly rated as more conventional instructional technologies. The farmers rated the WWW, Internet, fiber optics networks, and satellite dishes lower than television, radio, newspapers, and information services.
10. The program topics related to the “business of farming” were rated as very important indicating a need to plan programs emphasizing these topics. This confirms previous research by Martin (1987), Burhoe and Stewart (1983), and Persons (1980).
11. Crop production technology topics were rated as important program topics.

Educational providers have an opportunity to expand their offerings through joint educational programming efforts with commercial and agribusiness firms who provide educational and technical support in these areas. Timely information is possible through radio and other mass media.

12. Even though swine and beef cattle were the predominate livestock enterprises on these farms, program topics related to livestock production were not rated nearly as high as those related to crop production and farm and business management. The livestock enterprises are still important for value-added production; therefore, educational providers need to find creative and innovative methodologies to educate beginning farmers on relevant livestock production technologies.

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

1. Beginning farmers looked positively towards university Extension; it rated high as a future educational provider. Extension, therefore, has an opportunity to expand its educational services to beginning farmers and their parents, siblings, and relatives and should consider joint educational programming involving those groups.
2. Information services and marketing services rated high as educational providers. Agricultural educators should develop strong linkages with these groups to provide programming for beginning farmers. Agricultural educators also have the opportunity to provide facilitation for beginning farmer education by working with agricultural consultants, agribusiness groups, commodity groups, and farm organizations.

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. Beginning farmers were “neutral” on their opinion of distance education. This could be due to the fact that beginning farmers do not understand distance education. Agricultural educators should strive to inform beginning farmers about distance education and include a variety of teaching methods when using distance education.
5. Due to the “neutral” (no opinion) of beginning farmers to cutting-edge technologies, agricultural educators should develop programs that explain the use of the Internet, World Wide Web, on-line computer services, fiber optics, and other newer instructional technologies.
6. Agricultural educators should conduct follow up studies that determine which production agriculture skills should be emphasized in beginning farmer education.
7. Further 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.

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