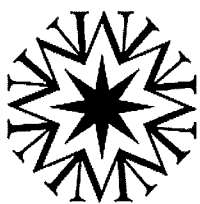


Business and Production Management Education Interests, Needs, and Learning Preferences of Minnesota Farmers

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Executive Summary

Background

The Farm Business Management (FBM) Education Program has invested nearly 60 years in delivering business management education to Minnesota producers. The FBM program is designed to provide business management knowledge and skills that enable producers to meet their business, family, and personal goals. Over 65 program faculty members currently teach the program to more than 2,700 producers annually using tailored individual and group instruction.

The 2010 FBM Task Force reviewed the FBM program and recommended changes to ensure it would be more financially sound and educationally effective in the future. The initial recommendation of the FBM Task Force was for program leaders to determine the educational interests, needs, and instructional preferences of Minnesota farmers. The findings are to be used for further development of current curricula and alternative course delivery methods.

A planning team assisted with the design of this study. The investigation sought to determine the preferred delivery approaches and the business management and production management education needs and interests of Minnesota farmers. The objectives of the study were to describe the needs, interests, and preferences of Minnesota farmers for: (a) farm business management education, (b) production management education, and (c) program delivery. An additional objective was to better understand barriers to participation in education programs. The sample of respondents was selected by the National Agricultural Statistics Service (NASS) staff of the United States Department of Agriculture (USDA) from 73,616 Minnesota farmers using nine average annual farm sales strata. The final sample resulted in 650 usable surveys, a response rate of 24% and a level of precision of +/- 3.9 percent. Expansion factors were applied to allow generalization of results to all Minnesota farmers based on their level of farm income. Findings are based on the results of the mail survey administered in September and October 2011.

Findings

Farmer and Farm Business Characteristics

Farm businesses were primarily operated by the survey respondents (89%), their spouses (15%) and/or a business partner (8%). The largest earnings group (32%) reported earning less than \$10,000 in total annual farm sales, compared to a very small group earning more than \$2.5 million annually in total farm sales. More than four fifths of respondents (82%) reported earning less than \$250,000 in average annual total farm sales.

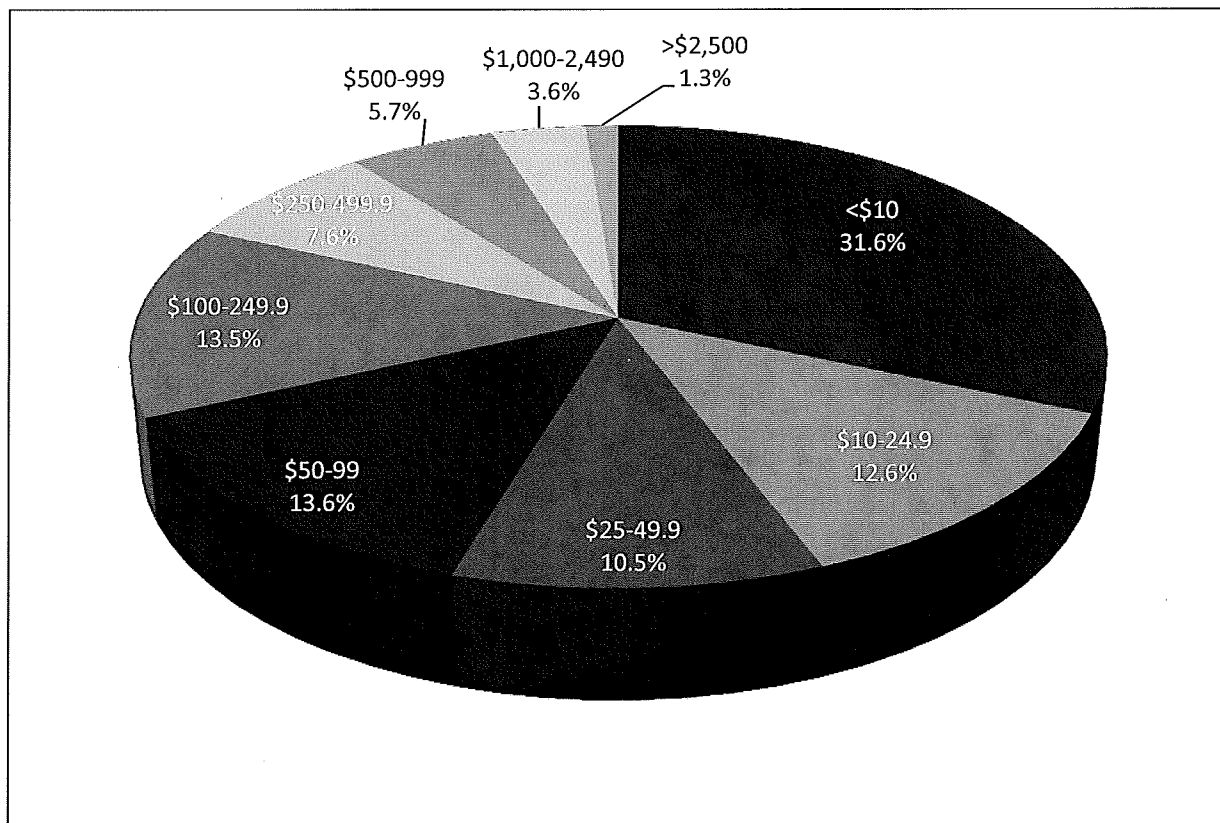


Figure 1. *Distribution of survey respondents by total farm sales categories (in \$1,000s).*

The mean age of respondents was 57.6 years, and approximately 83% of the respondents were 46 years of age or older. Most respondents (88%) were male. Over one-third of respondents (36%) completed high school, and over 60% completed one or more postsecondary degrees. Slightly less than half (44%) of farmers who completed the survey also worked part-time in off-farm employment.

Most farm operators (85%) operated their farm businesses as sole proprietors. Farmers in Minnesota represented by survey respondents have been farming for an average of 29 years. Approximately 40% of farmers described their farming operations as crop enterprises (41%), while one-quarter (25%) said they operated crop and livestock operations, and 19% operated livestock farms. Most (71%) described their farms as conventional farming operations.

Farmers were asked to identify vendors used to assist them in their farming operations. The vendors selected by the most farmers were tax preparation services (66%), veterinary services (36%), and bankers (35%). The most frequently selected marketing strategies used by farmers regardless of their annual farm sales income were cash sales of crops (53%), cash sales of livestock (35%), and crop contracts (27%).

Business Management Education Interests and Needs

Farmers rated their level of interest in education or training in 23 farm business management education topics by indicating if they wanted to learn foundational or advanced concepts and skills in each topic. The three topics that interested the greatest number of all farmers at a foundational level of instruction were estate planning, tax management strategies, and the impact of retirement planning on tax liability. However, as total farm income increased to between \$100,000 and \$1 million in total annual farm sales, more farmers were interested in marketing plans and commodity markets. More farmers in the highest level of farm sales (more than \$1 million) were interested in risk management assessment and commodity markets.

Farmers, regardless of income, were most interested in either foundational or advanced instruction in:

- Estate planning options (51%)
- Tax management strategies (49%)
- Retirement plans and tax liability (47%)
- New technologies (44%)

In regard to foundational instruction alone, high-income farmers were the most interested in:

- Marketing plans
- Commodity markets
- Risk management assessment

Crops Production Management Education Interests and Needs

The crops grown by the largest numbers of Minnesota farmers were corn (51%), soybeans (46%), and alfalfa or mixed hay (43%). Wheat and oats were grown by 13% and 11% of farmers, respectively, and only 3% or fewer reported growing vegetables, barley, fruits, sugar beets, or canola. Among those farmers who indicated they were interested in learning more about one of the top four crops (corn, soybeans, alfalfa/mixed hay, or wheat), the top six production topics indicated, in order from highest to lowest, were:

- Soil fertility and management (67%)
- Marketing (54%)
- Variety selection (47%)
- Planting (44%)
- Harvesting (41%)
- Pest management (41%)

Fewer than 20% of these farmers expressed an interest in facilities design, management, and maintenance (19%) and food safety (10%).

Livestock Production Management Education Interests and Needs

The livestock or poultry enterprises reported most frequently by Minnesota farmers (73,614) and the percentage of farmers who reported engaging in these livestock enterprises were beef (31%), horses (13%), chickens (9%), dairy (7%), hogs (6%), and sheep (5%). Fewer than 5% of farmers identified being involved in the production of goats, turkeys, geese or other livestock. The most frequently identified production topics of interest to farmers who were interested in learning more about cattle, sheep, horses, hogs, dairy, or poultry were:

- Feed selection, formulation and management
- Health and basic veterinary care and practices
- Nutrition
- Facilities selection, design, management and/or maintenance
- Breeding and selection
- Marketing

Employee Training Needs

The top subject of interest among Minnesota farmers indicating an interest in employee training was employability skills (communications, attention to detail, safety, punctuality, time management, cleanliness, and conflict resolution), regardless of annual total farm sales; 8.7% of Minnesota farmers (over 6,400) expressed an interest in employability training for their employees. Mechanical skills was the second most frequently identified topic of need for employee training, which was identified by 1,897 or 2.6% of all farmers. Smaller proportions of farmers expressed an interest in employee training in crop or soil topics (0.8%), livestock topics (0.4%), and business (0.2%).

Education and Training Delivery Preferences

Although none of the eight instructional delivery methods or sites offered as choices for farmers received high preference scores, the two most highly preferred options for training, based on mean scores using a scale of 1 (not preferred) to 7 (highly preferred) were:

- at an off campus location (3.6)
- at a host farm to a small group of farmers with similar educational needs (3.5)

The delivery methods or sites that received the lowest preference scores were training sessions delivered at a college or university campus (2.9), instruction delivered totally online (2.9), and individualized instruction using video conferencing such as Skype or similar technology (2.7).

Farmer Preferences for Selected Instructional Methods and Strategies

As a group, farmers' top five preferences for instructional methods based on mean scores using a scale of 1 (not preferred) to 7 (highly preferred) were:

- hands-on activities (4.3)
- demonstrations (4.2)
- one-to-one conversations with other farmers (4.1)
- events at a central location with featured speakers/industry experts (4.0)
- field trips (3.9)

Their least preferred methods were use of case studies guided by an instructor or other facilitator (3.3) and webinars with one or more featured speakers (2.9).

Instructional Media Preferences

Minnesota farmers prefer a variety of instructional media for learning. As a group, their top five preferences based on the mean score using a scale of 1 (not preferred) to 7 (highly preferred) were:

- print materials such as newsletters, research articles, market reports and fact sheets (4.8)
- farm demonstration plots (4.1)
- informative newspaper columns written by instructors (3.9)
- electronic or digital materials delivered by email or the Internet (3.8)
- the Internet for information and class instruction (3.5)

Their least preferred media included communication with an instructor by telephone (2.9) and email communications from the instructor (3.2).

Related Factors Influencing Program Participation

Barriers to Education

Nearly 50% (33,759) of farmers indicated they do not attend local college- and university-sponsored education events because they are too busy. Schedule conflicts were the second most common reason farmers provided for not attending (31%). Interestingly, 22,469 (30.5%) are unaware of college and university education and training opportunities. Distance to events was the fourth most frequent reason (29.3%) given for not attending. The average distance farmers were willing to drive to attend an education or training program was 58.1 miles. Those earning the least in farm sales were willing to travel the fewest miles, while those earning the most in total farm sales were willing to travel farthest. Nearly 25% (18,259) of Minnesota farmers believe they can learn what they need from their family, friends, and other farmers.

Financial Considerations

The cost of registration was cited as a barrier to participating in educational programs by relatively few farmers (16%). The average amount people were willing to pay for a year-round education program, such as the Minnesota Farm Business Management program, was \$295, with amounts ranging from \$95 to \$840 per year. The amount people were willing to spend increased with an increase in annual total farm sales. Farmers reported they were willing to pay an average of \$40 for a quality half-day (three-hour) workshop, with amounts ranging from \$22 to \$112 in registration fees. The amount people are willing to spend generally increased with an increase in annual total farms sales. Farmers reported they were willing to pay an average of \$64 for a full-day (six- to-eight hour) workshop. The amount people are willing to spend increased with increases in annual total farm sales, from a low of \$37 to a high of \$187 for registration fees.

Availability and Use of Communication Technology

Most people (72%) indicated they did use the Internet in their home or farm business office, and 62% indicated they have high-speed Internet in their home or farm business office. Access to high-speed Internet increased with an increase in farm income.

Primary Providers of Education

Farmers selected the institutions, agencies, or businesses they expected to receive their agricultural education and training from in the upcoming year. The two most frequently selected from a list of seven possible providers were:

- Agricultural suppliers such as credit, feed, seed, insurance, and equipment suppliers (34%)
- Extension Service (31%)

Other providers included government agencies such as USDA's Farm Service Agency and Natural Resources Conservation Service and the Minnesota Pollution Control Agency (17%), crop or livestock commodity organizations (14%), the University of Minnesota (14%), and Minnesota State Colleges and Universities (12%). Only 8% of farmers indicated they expected to use private agricultural consultants for their education and training needs.

Conclusions and Recommendations

A variety of factors are likely to influence the education and training needs and preferences of Minnesota farmers. While some factors are outside the control of education providers, many are within their area of influence. This study examined the preferences and needs of farmers in order to provide insight and guidance to educational professionals interested in designing and delivering high quality education to Minnesota farmers. Recommendations are based on the responses given by the greatest proportion of

farmers. However, due to the expansion factors applied to these survey data, even relatively small percentages represent a substantial number of farmers and should not be overlooked. For example, one might discount an educational topic or delivery method if only 2% of farmers indicated it was of interest. However, that 2% represents approximately 1,400 farmers statewide, a group whose education needs should not be disregarded. With that in mind, key recommendations include:

- Focus on topics farmers have identified as being of high interest:
 - Estate planning options, tax management strategies, retirement plans and tax liability, and new technologies among business management topics.
 - Soil fertility and management and marketing in corn, soybeans, alfalfa/mixed hay, and wheat.
 - Feed selection, formulation and management; health and basic veterinary care and practices; nutrition; facilities selection, design, management and/or maintenance; breeding and selection; and marketing among livestock producers.
 - Employee training topics that include employability skills, such as communications, attention to detail, safety, punctuality, time management, cleanliness, and conflict resolution.
- Since many different business management, crop production, and livestock production topics were identified as of interest to at least some farmers, continue to investigate which topics are of interest to farmers served by specific educational professionals and institutions.
- No strong preferences emerged for particular methods of instructional delivery, strategy, or media. However, farmers somewhat preferred hands-on activities or demonstrations and presentations by speakers or industry experts at centrally located farm sites using methods that rely on personal interaction among farmers and experts. Farmers rated the use of print materials (e.g., newspaper columns, newsletters, research articles, market reports) and farm demonstration plots slightly higher than electronic or digital media and the Internet.
- Since lack of time, scheduling conflicts, and distance to events were among the four most frequently given reasons for lack of participation in education programs, one might be tempted to recommend asynchronous Internet-based instruction to overcome these obstacles. However, farmers' preferences for in-person and on-farm instruction and the low preference scores they gave to Internet-based instruction methods would appear to undermine that solution. Additional investigation into these barriers and farmer resistance to Internet-based instruction is needed to gain additional insight into possible solutions.

- Additional publicity may overcome the barrier to participation posed by the lack of awareness of educational programs and events reported by almost one third of farmers.
- Partnering with the wide variety of available vendors and education providers may allow education professionals and institutions to provide high quality and cost-effective educational programs using the variety of instructional and delivery methods preferred by farmers.

SECTION I

Introduction

The agri-food industry is one of the largest economic sectors in Minnesota. The Minnesota food industry is complex, with thousands of meat and dairy herds, hundreds of manufacturers, processing plants and food distributors, thousands of retail stores, approximately 20,000 restaurants, schools, institutions and many other food facilities (Senf et al., 2008). Minnesota's agri-food industry is a leading global exporter. It affords significant added value and offers scope for growth within the United States, development of regional economies, and exploitation of cultural diversity and tradition. The agri-food industry is thus central to the wider economic development of Minnesota. "With a 22 percent share of the state's total exports, food and agricultural production adds more economic impact than any other single industry. In addition, food and agriculture accounts for nearly 14 percent of the state's value-added income, and 14 percent of the state's personal income and employment" (Senf et al., 2008).

The increasing demand by consumers for quality, convenience, diversity, and health, and their justifiable demand for safe, ethical, and sustainable food production underlie the need for innovation in all aspects of the agri-food system, including how farmers are trained. Adult agriculture education started formally in the United States after the American Revolution with the beginning of local and regional agricultural societies (National Research Council, 2009). The passage of the Smith-Hughes Act in 1917 sanctioned public school system involvement in the educational process for farmers. Specifically, the Smith-Hughes Act endorsed public school educational programs for current and prospective farmers. Subsequent vocational legislation has emphasized the importance of local adult agriculture education programs and thus has influenced curriculum development (NRC, 2009). Joerger and Murray (1999) suggested farm business management program administrators and instructors regularly assess the needs and preferences of farmers for the purpose of program improvement. Instructional technologies, producer characteristics, and program funding continue to change, resulting in opportunities to refine offerings and delivery options via the Minnesota Farm Business Management (FBM) Education Program.

The FBM Education Program has invested nearly 60 years in delivering business management education to Minnesota producers. The program is designed to provide education that assists producers in meeting their business goals. Over 65 program faculty members currently teach the program to more than 3,200 producers annually using tailored individual and group instruction. An FBM Task Force was convened from December 19, 2009, to April 9, 2010, to review the program and recommend changes that would improve its financial efficiencies and instructional effectiveness to ensure a strong and sustained future.

The initial recommendation of the FBM Task Force was to develop and implement alternative course delivery methods. Their primary strategy to address this recommendation was to develop and conduct an analysis of the educational needs of Minnesota farmers. Task Force members, producers, agri-industry leaders, FBM instructors, policy-makers, college administrators, and FBM program administrators have expressed the need to understand the business management and farm production management education interests, needs, and delivery preferences of producers. The same stakeholders desire to know the barriers and factors that promote participation in educational programs. This summary of findings from the assessment of producers' needs and preferences for business and production management education and forms of program delivery is a first step toward developing alternatively delivered curricula and instruction to meet the needs of Minnesota farmers.

Purpose and Objectives

Instructional technologies, producer characteristics, and program funding continue to change, resulting in opportunities to refine the Minnesota FBM Education Program. The purpose of this investigation was to determine the preferred delivery approaches and the business management and production management education needs of Minnesota farmers. The objectives of this study are to describe the needs, interests, and preferences of Minnesota farmers regarding: (a) farm business management education, (b) production management education, (c) program delivery preferences, and (d) barriers to participation in education programs.

Methodology

The purpose of this descriptive study is to describe the preferred farm business management and production management education needs and instructional delivery preferences of Minnesota producers. The population of the investigation consisted of 73,614 farmers included in the U.S. Department of Agriculture list of current Minnesota farmers (Table A). A stratified random sample of all strata of annual total farm sales was initially conducted using 2,000 cases. A total of 489 useable instruments were returned yielding a 2.2 percent level of precision with a 95 percent confidence level (Table A Column 2). A supplemental sample of 700 randomly selected cases from strata 8, 9, and 10 ($n=15,202$) were selected. The 161 returned usable instruments resulted in a level of precision of 3.8% with a 95 percent confidence interval. Responses to selected survey items that rated levels of preference for methods of delivering

Table A. *Sampling Information for the Random Selection of Minnesota Farmers*

Annual Total Sales (\$1,000s) (Column 1)	Usable Sample by Strata (Column 2)	Expansion Factor (Column 3)	Usable Sample Expanded (N) (Column 4)	% of Universe (N=73,614) (Column 5)
Strata 1: \$1-2.499	23	260.434	30,459	41.4%
Strata 2: \$2.5-4.999	38	179.315		
Strata 3: \$5.0-9.999	51	153.843		
Strata 4: \$10.0-24.999	74	139.673		
Strata 5: \$25.0-49.999	54	139.796	7,250	9.8%
Strata 6: \$50.0-99.999	53	151.792	9,364	12.7%
Strata 7: \$100.0-249.999	91	126.758	9,337	12.7%
Strata 8: \$250.0-499.999	144	58.263	5,230	7.1%
Strata 9: \$500.0-999.999	85	56.776	3,945	5.4%
Strata 10: >\$1,000.0	37	65.135	3,371	4.6%
Missing Information			4,688	
Total	650		73,614	

training, instructional approaches and methods, and instructional media and aids using t-tests were compared using t-tests to determine if respondents in strata 8, 9, and 10 from the initial sample were significantly different from respondents in corresponding strata from the supplemental sample. Since differences in responses were not statistically significant, the respondents from the first and second samples were combined. Combining samples resulted in 650 usable surveys, a response rate of 24% and a level of precision of +/- 3.9 percent and a 95 percent confidence level.

The principal investigators developed the data collection instrument based on a review of the literature. The face and content validity were reviewed and approved by a panel of experts consisting of regional deans of management education, FBM presidents, and agricultural education researchers. A pilot study was conducted to test the instrument and establish the internal consistency of selected measures. The respective Cronbach's alpha coefficients for the preferred educational delivery, instructional preference, and instructional media and aids scales were 0.72, 0.88, and 0.82. The survey instrument is included in the Appendix.

The data were collected in the fall of 2011. The survey instruments were initially sent through the United States Postal Service to the entire sample of 2,700 respondents on September 17, 2011. The second mailing to the non-respondents was sent on September 30, 2011. Telephone calls to non-respondents occurred from October 11 through October 24, 2011. A total of 650 useable instruments were returned from the 2,700 respondents, yielding a 24 percent response rate.

Versions 17 and 19 of the Statistical Program for the Social Sciences (SPSS) and Excel™ were used to calculate applicable descriptive statistics (i.e., means, standard deviation, percentages) for each item. T-tests and one-step ANOVAs with follow-up tests and measures of practical significance were used to compare the means of the responses.

SECTION II

Results

The results, starting with demographic and business characteristics of the respondents, are presented in this section. The findings for the farm business characteristics and business management education preferences are followed by results in sections for the crops production management education preferences; livestock production management education preferences; education methods, instructional media, and delivery priorities; and information related to the delivery of the program. Since the farmers were randomly selected by annual average farm sales, findings are provided for all producers and for each of the farm sales categories. In addition to pointing out some of the key findings in each table, the authors present unique findings that have special meanings. Readers are encouraged to review the survey instrument in the appendix when reviewing the items in the tables. Each table includes the respective question number (Q#) for the data summarized in the table. While of interest to some readers, findings relating to the influences of the type of farm, region of the state, and age of the producers are not presented in this report. Data presented in bold text in some tables indicate the top-ranked items for each farm sales category.

Demographic Characteristics of the Participants

The data in Figure 1 indicate that the largest group of respondents (31.6%) reported earning less than \$10,000 in total annual farms sales compared to a very small group (1.3%) who earned more than \$2.5 million annually in total farm sales. Over four fifths of respondents (81.8%) reported earning less than \$250,000 in average annual total farm sales (Table B).

The data in Table B indicate that the farm businesses were operated primarily by the respondents (89.1%), their spouses (14.7%) and/or a business partner (8.3%). The mean age of respondents was 57.6 (N= 71,779; SD = 13.0), and most survey respondents (88%) were male. Over 83% (83.3%) of the respondents were age 46 and older. Over one third of respondents (35.6%) completed high school and over 60% completed one or more postsecondary degrees. Slightly less than half (44%) of farmers who

completed the survey also worked part-time in off-farm employment. Almost all survey respondents (95%) identified themselves as White or Caucasian, and none of the respondents identified themselves as Asian. Fewer than 1% of respondents identified their race or ethnicity as Native Hawaiian or other Pacific Islander, American Indian or Alaskan Native, and Black or African American.

Table B. *Characteristics of the Minnesota Study Participants*

Demographic Characteristics	n	%
Primary Operators of the Farm (Q2)	73,614	
Respondent	65,574	89.1
Spouse	10,851	14.7
Business partner	6,090	8.3
Average Annual Farm Sales (Q7)		
< \$10,000	21,747	31.6
\$10,000-\$24,999	8,682	12.6
\$25,000-\$49,999	7,250	10.5
\$50,000 - \$99,999	9,364	13.6
\$100,000-\$249,999	9,337	13.5
\$250,000-\$499,999	5,230	7.6
\$500,000-\$999,999	3,945	5.7
\$1,000,000- \$2,499,999	2,500	3.6
>\$2,500,000	872	1.3
Age in years (Q42)		
20-35	5,054	7.0
36-45	6,904	9.6
46-55	18,631	26.0
56-65	23,045	32.1
66-75	11,726	16.3
76+	6,420	8.9
Mean age		57.6
Gender (Q43)	71,351	
Male	62,670	87.8
Female	8,681	12.2
Highest level of education completed (Q46)		
High School Graduate	25,652	35.6
2-Year College Degree	17,088	23.7
Bachelor's Degree	12,402	17.2
1-Year College Degree	6,191	8.6
Graduate Degree	4,689	6.5
Other	3,378	5.2
8 th grade	2,299	3.2
Work part-time off the farm (Q44)	29,707	44.0
Spanish, Hispanic or Latino background (Q47)	140	0.2
Race (Q48)		
White	69,842	94.9
Native Hawaiian or Other Pacific Islander	260	0.4
American Indian or Alaskan Native	140	0.2
Black or African American	140	0.2
Asian	0	0

Characteristics of Minnesota Farm Businesses

Minnesota has many different types and sizes of farms due to business preferences, production expertise, topography, soil fertility, climate, family histories, and a variety of other factors. The findings in this section will reveal information about the forms of the farm businesses, years of farm ownership, and types of farms.

Forms of Farm Business

The data in Table C reveal that most farm operators (85%) operate their farm businesses as sole proprietors. At least 80% of all farmers reporting less than \$500,000 in total farm sales operate their farms as sole proprietorships. Almost three quarters of farmers (73% or 2,888 of 3,945) reporting between \$500,000 and \$999,999 in sales operate as corporations. Thirty-seven percent of farmers with more than \$1 million in annual farm sales operate as corporations, while fewer than half of farmers at that level (45%) operate their farms as sole proprietors.

Years of Farm Business Ownership

Producers in Minnesota represented by survey respondents have been farming for an average of 28.6 years (SD = 14.9). Farmers reporting total annual farm sales of \$100,000 to \$249,999 have been in business longest, with an average of 33 years in farming. Over 64% (64.2%) of the farmers have been farming for 21 or more years.

Types of Farm Operation

The majority of farmers describe their farming operations as crop enterprises (41.3%). Approximately one-quarter (25.2%) of farmers said they operated crop and livestock operations, and 19.2% operated livestock farms. There were a few fruit and vegetable enterprises (3.6%) represented among the survey respondents and even fewer (1.2%) who described their operations as specialty crop enterprises.

Approximately 13% of respondents listed other types of enterprises to describe their operations. The most frequently mentioned enterprises were Conservation Reserve Program (CRP) lands (7%), specialty livestock (1.4%), and trees (1.0%).

Types of Production

Farmers were asked to indicate the types of farming that describe their operations. They selected any of the following types of production practices: conventional, organic (certified, transitional, or uncertified), sustainable, and grass-based. Most respondents (71.0%) described their farms as conventional. Almost all

farmers (97.7%) who were running uncertified organic farms reported earning less than \$25,000 in total farm sales annually. The greatest proportion of people who described themselves as having a certified organic farm were those reporting \$50,000 to \$99,999 in annual total farm sales.

Table C. *Farm Business Characteristics of Minnesota Farmers*

Business characteristics	N	Farm Sales (\$1,000s)						
		<\$25	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	>\$1,000
No. of Farms in the Study	73,614	30,429	7,250	9,364	9,337	5,230	3,945	3,371
Form of Farm Business (Q4)	68,425	30,111	7,123	9,364	9,279	5,231	3,945	3,372
Sole Proprietorship	85.0%	26,118	6,565	8,583	8,230	4,254	2,888	1,505
Legal Partnership	6.4%	1,838	418	514	537	299	245	506
Corporation (LLC or C)	6.0%	911	140	57	512	621	641	1,247
Unknown	2.3%	1,090	-	210	-	57	114	114
Other	0.3%	154	-	-	-	-	57	-
Years in Farming (Q5)	68,222	29,942	7,250	9,212	9,272	5,230	3,945	3,371
M	28.6	25.4	29.2	29.9	33.0	31.7	31.4	32.2
SD	14.881	14.647	13.512	17.712	14.323	12.976	10.286	13.699
Years in Farming Groups (Q5)	68,223	29,943	7,250	9,212	9,271	5,230	3,945	3,372
10 or less	23.4%	9,356	1,425	2,425	1,070	843	304	549
11- 20	12.4	4,368	1,225	782	1,010	232	357	500
21 or more	64.2	16,219	4,600	6,005	7,191	4,155	3,284	2,323
Farm Operation (Q10)	65,827	27,791	7,250	9,085	9,210	5,231	3,944	3,315
Crops	41.3%	7,568	2,661	5,386	4,501	2,989	2,299	1,807
Crops and livestock	25.2%	4,361	2,732	2,013	3,346	1,825	1,350	937
Livestock	19.2%	7,959	1,171	1,234	1,171	417	238	449
Fruits or vegetables	3.6%	1,546	419	312	-	-	-	65
Specialty crops	1.2%	588	-	-	65	-	57	57
Other	9.6%	5,770	267	140	127	-	-	-
Type of Production (Q11)								
Conventional	51,552 ^a 70.0% ^b	17,979 ^c 34.9% ^d	6,273 12.2%	7,665 14.9%	8,227 16.0%	4,882 9.5%	3,464 6.7%	3,062 5.9%
Grass-based	6,502 8.8%	5,504 84.7%	292 4.5%	450 6.9%	256 3.9%	0 -	0 -	0 -
Sustainable	6,016 8.2%	2,190 36.4%	850 14.1%	673 11.2%	862 14.3%	500 8.3%	640 10.6%	301 5.0%
Organic-Uncertified	2,543 3.5%	2,485 97.7%	0 -	0 -	58 2.3%	0 -	0 -	0 -
Organic-Certified	941 1.3%	154 16.4%	0 -	405 43.0%	140 14.9%	115 12.2%	127 13.5%	0
Organic-Transitional	651 0.9%	459 70.5%	127 19.5%	65 10.0%	0 -	0 -	0 -	0 -

Notes: ^aTotal number of farmers with listed type of production. ^bThe proportion (%) of total farmers who use the selected type of production practice (e.g., 70.0% (51,552/73,614) of farmers use conventional farming practices, regardless of gross annual sales). ^cThe number of farmers with the indicated gross annual sales who use the indicated type of production (i.e., 17,979 farmers who use conventional farming practices earn less than \$25,000). ^dThe percentage of farmers who use the indicated type of production for the indicated gross annual sales (e.g., 34.9% (17,979/51,552) of growers who use conventional farming practices have annual gross sales of less than \$25,000).

Vendors

Farmers identified vendors used to assist them in their farming operations. Highlighted responses in Table D indicate the top three vendors identified by farmers in each of the farms sales categories. The most frequently selected vendors among all respondents were tax preparation services (66.0%), veterinary services (36.3%), and bankers (34.7%). These categories were also among the most frequently selected vendors for farmers reporting less than \$100,000 in annual total farm sales. Other farmers were identified most frequently as vendors among producers reporting less than \$50,000 in farms sales. Crop marketing advisor(s), FBM educators, and marketing specialists were among the top three vendors identified for farmers reporting more than \$100,000 in farms sales. Business accounting services were identified by 37.3% of farmers who had less than \$25,000 in farm sales and at the high end of the sales spectrum (greater than \$500,000), where approximately 15% of each of the top two sales levels reported using them.

Table D. *Vendors Who Assist Farmers by Level of Farm Sales*

Vendors (Q3)	Farm Sales (\$1,000s)							
	Total	<\$25	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	>\$1,000
Tax preparation service	48,567 66.0% ^a	17,490 36.0% ^b	4,909 10.1%	6,961 14.3%	8,112 16.7%	4,534 9.3%	3,703 7.6%	2,857 5.9%
Veterinary service	26,696 36.3	11,007 41.2	4,101 15.4	2,976 11.1	3,771 14.1	2,250 8.4	1,280 4.8	1,310 4.9
Bankers	25,553 34.7	4,675 18.3	2,928 11.5	3,829 15.0	4,679 18.3	3,536 13.8	3,466 13.6	2,440 9.5
Other farmers	22,499 30.6	9,434 41.9	3,358 14.9	2,911 12.9	2,909 12.9	1,475 6.6	1,361 6.0	1,050 4.7
Crop consultant	16,328 22.2	1,998 12.2	837 5.1	3,143 19.3	3,592 22.0	2,771 17.0	2,330 14.3	1,656 10.1
Lawyer	13,059 17.7	2,899 22.2	908 7.0	1,469 11.2	2,089 16.0	1,768 13.5	2,032 15.6	1,894 14.5
Crop marketing advisor(s)	10,098 13.7	910 9.0	558 5.5	890 8.8	2,749 27.2	1,492 14.8	2,008 19.9	1,491 14.8
Nutrition consultant	8,361 11.4	1,940 23.2	679 8.1	1,035 12.4	1,575 18.8	1,234 14.8	871 10.4	1,028 12.3
Retirement specialist	6,976 9.5	1,533 22.0	851 12.2	858 12.3	1,370 19.6	1,063 15.2	477 6.8	824 11.8
Business accounting service	6,618 9.0	2,471 37.3	0 -	809 12.2	702 10.6	574 8.7	1,053 15.9	1,010 15.3
Livestock consultant	4,876 6.6	1,605 32.9	279 5.7	768 15.8	626 12.8	357 7.3	474 9.7	766 15.7
Livestock marketing advisor(s)	4,255 5.8	1,184 27.8	418 9.8	535 12.6	970 22.8	299 7.0	352 8.3	497 11.7
FBM educator	4,238 5.8	280 6.6	57 1.3	350 8.3	1,008 23.8	995 23.5	759 17.9	790 18.6
Marketing specialist	2,633 3.6	567 21.5	0 -	127 4.8	832 31.6	173 6.6	294 11.2	641 24.3

Notes: ^aThe percentage (66.0%) of all people who answered the question and selected the vendor choice (48,567/73,614). ^bThe percentage (36.0%) of people who selected the vendor and who earned less than \$25,000 in farm sales (17490/48,567).

Marketing Strategies

Respondents identified the marketing strategies used in their farm businesses during 2011 from a list of 12 possible types of vendors (Table E). The most frequently selected marketing strategies overall were cash sales of crops (53.1%), cash sales of livestock (35.3%), and crop contracts (27.4%). A large proportion of farmers with the lowest annual total farm sales (less than \$25,000) used Internet-based marketing (55.8%), direct marketing of meat (44.8%), and more traditional marketing strategies, such as

the newspaper, radio, and television (40.3%). Many farmers (34.5%) in the next highest sales category of sales (\$25,000 to \$49,999) also used direct marketing strategies, but with fruits and vegetables.

Commodity futures (crops) were used frequently by middle-income farmers (\$50,000 to \$249,999) and by those with more than \$500,000 in annual sales. Livestock commodity futures and livestock contracts figured prominently as marketing strategies for high-income farmers—those with more than \$250,000 in annual sales.

Table E. *Marketing Strategies Used in 2011 by Farm Sales Levels*

Marketing Strategies (Q12)	Total	Farm Sales (\$1,000s)						
		<\$25	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	>\$1,000
Crops – cash sales	39,056 ^a 53.1% ^b	11,012 ^c 28.2% ^d	4,365 11.2%	6,471 16.6%	6,865 17.6%	4,517 11.6%	3,600 9.2%	2,227 5.7%
Livestock – cash sales	25,950 35.3	8,700 33.5	3,693 14.2	3,354 12.9	4,936 19.0	2,368 9.1	1,587 6.1	1,312 5.1
Crops – contracts	20,143 27.4	1,099 5.5	1,436 7.1	4,046 20.1	4,936 24.5	3,756 18.6	2,820 14.0	2,050 10.2
Crops – commodity futures	10,038 13.6	419 4.2	431 4.3	1,994 19.9	2,018 20.1	1,573 15.7	1,762 17.6	1,839 18.3
Direct marketing – meat	3,745 5.1	1,678 44.8	266 7.1	337 9.0	383 10.2	647 17.3	172 4.6	262 7.0
Internet-based	3,501 4.8	1,953 55.8	140 4.0	387 11.1	367 10.5	57 1.6	230 6.6	368 10.5
Traditional—newspaper, radio, TV	2,962 4.0	1,193 40.3	280 9.4	184 6.2	427 14.4	285 9.6	341 11.5	253 8.5
Value-added approaches	2,824 3.8	431 15.3	539 19.1	152 5.4	510 18.1	625 22.1	240 8.5	327 11.6
Livestock – contracts	2,502 3.4	479 19.1	57 2.3	127 5.1	315 12.6	487 19.5	297 11.9	741 29.6
Social media (e.g., Facebook, Twitter)	1,998 2.7	694 34.7	0 -	444 22.2	320 16.0	114 5.7	115 5.8	312 15.6
Livestock – commodity futures	1,297 1.8	279 21.5	58 4.5	0 -	57 4.4	242 18.7	115 8.9	546 42.1
Direct marketing – fruits, vegetables	1,216 1.7	433 35.6	419 34.5	185 15.2	0 -	0 -	57 4.7	122 10.0

Notes: ^aTotal respondents from all sales categories who used the marketing strategy. ^bPercentage of total Minnesota farmers (73,614) who used the selected marketing strategy. ^cNumber of producers within corresponding sales group who used the marketing strategy. ^dPercentage of total respondents within the corresponding sales category who selected the marketing strategy.

Farm Business Management Education Interests and Needs

The ability to manage the business is one of the keys to success in business. Education and training are essential for producers to maintain their competitive edge in the global marketplace. The results section provides the findings of the study relating to the characteristics, marketing strategies, and key vendors used by Minnesota farmers; business management education needs; crop production management education needs; livestock production management education needs; employee education needs; instructional preferences; barriers to instruction; and related factors that influence education for Minnesota farmers.

Foundational and Advanced Farm Business Management Education Interests and Needs

Farmers indicated their level of interest in education or training in 23 farm business management education topics by indicating if they wanted to learn foundational (introductory concepts and skills) or advanced concepts and skills (intermediate or advanced concepts and skills) in each topic. They also had the option of indicating they had no interest in learning a concept or skill. Table F displays the farm business management topics in order of highest to lowest numbers of people with an interest in foundational or advanced concepts and skills in the topics.

The topics of interest to the greatest number of farmers were exploring estate planning options with 50.9% of farmers having in interest (35.3% in foundational concepts and 15.6% in advanced concepts); tax management strategies (49.1% in foundational or advance concepts); and evaluating the impact of personal retirement plans on tax liability (46.9% foundational or advanced concepts). An average of 24.8% and 12.2% of farmers indicated interest for each foundational or advanced learning topic respectively. The data further indicate that 63% of respondents reported no interest in learning about each business management topic. This may have been due, in part, to their average mean age of 57.6 years.

It is important to recognize that lower percentages in the following tables do not necessarily reflect low amounts of interest by farmers in Minnesota. Multiplying the relative percentages by total respondents for each item will generate a more realistic picture of the educational demand for the business management education topics. For example, though learning about personnel issues is the lowest ranked topic, the total percentage of 16.1% of the 63,182 farmers indicates there are 10,172 respondents with interest in learning about the topic. Likewise, the highly desired instruction, estate planning options, may garner up to 33,020 participants from across Minnesota.

Table F. *Proportion of Farmers Interested in Business Management Topics*

Education Topics (Q13)	Total	Level of Business Management Education		
		Foundational	Advanced	Not interested
Estate planning options	64,874	35.3 ^a	15.6 ^b	49.1 ^c
Tax management strategies	63,440	32.7	16.4	50.9
Retirement plans and tax liability	63,921	32.4	14.5	52.9
New technologies	63,550	28.6	15.3	55.9
Creating a business plan	63,808	30.1	12.1	57.8
Establishing goals	64,082	29.4	12.3	58.3
Recordkeeping system	63,985	25.8	15.8	58.4
Budgets and break-even calculations	63,512	24	15.5	60.4
Marketing plans	64,035	25.3	13.4	61.1
Commodity markets	63,478	23.9	14.2	61.7
Financing capital assets	63,365	24.4	13.7	62
Enterprise budgets for cash flow	63,765	24.1	13.6	62.2
Business analysis for decisions	63,905	25.5	11.6	63
Business structures	63,064	25.8	11.1	63.1
Annual business analysis	63,800	23.7	13	63.3
Risk management assessment	63,174	25.3	8.8	65.9
Capital and credit needs	63,717	23.7	10.1	66.3
Financial statements to secure capital	63,378	21.1	12.1	66.6
Business transition options	63,354	20	11.1	68.9
Communication skills	63,296	20.6	9	70.2
Farm, community organization benefits	62,965	22.1	7.2	70.3
Benefits of personal leadership	62,494	15.7	7.9	76.2
Personnel issues	63,182	10.5	5.9	83.6

Notes: ^aPercentage of farmers with interest in foundational education (introductory concepts and/or skills). ^bPercentage of farmers with interest in advanced education (intermediate or advanced concepts and/or skills). ^cPercentage of farmers with no interest in the topic.

Farmer Interest in Foundational Farm Business Management Education

Table G shows the proportion of farmers from each farm sales category who expressed an interest in learning introductory skills or concepts. Topics are listed from the highest to lowest percentage of all farmers who expressed an interest in foundational concepts and interests in each topic. The proportion of farmers with an interest in introductory skills and concepts in topics ranged from 10.5% to 35.3%. The numbers of farmers who expressed an interest in learning the foundational topics decreased as total farm

sales increased. For example, the highest proportion of farmers with total farm sales of less than \$25,000 and an interest in any topic was 35.3%, while the highest proportion of farmers with more than \$250,000 in farm sales and an interest in any of these topics was only 5.9%. More farmers (4.2%) with mid-level total farm sales (\$50,000 to \$99,999) were also interested in foundational concepts in creating a farm business plan.

The three foundational topics that interested the greatest number of all farmers were estate planning, tax management strategies, and the impact of retirement planning on tax liability. However, as total farm sales increased to between \$100,000 and \$999,999, more farmers were interested in marketing plans (1.4% to 5.3%) and commodity markets (1.7% to 5.3%). More farmers in the highest level of farm sales (more than \$1 million) were interested in risk management assessment (1.7%) and commodity markets (1.7%).

Even though they are viewed to have high importance in operating a contemporary business, topics related to personnel issues; personal leadership benefits from involvement in farm and community organizations; business transition options; and developing written and oral communication skills were the least popular foundational topics.

However, before electing not to offer the least preferred foundation topics, it is important to recognize that providers of the education should explore farmer demand for each of the topics regardless of how high or low. For example, further review of the data reveal that the number of farmers interested in each topic ranges from a low of 6,634 (10.5% of 63,182) for personnel issues to a high of 22,901 (35.3% of 64,874) for estate planning options. The average market for each foundation topic is approximately 15,658 producers.

Table G. *Farmers' Interest in Foundational Farm Business Management Topics by Farm Sales*

Education Topics (Q13)	Farm Sales (\$1,000s)								
	N	%	<\$25	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	<\$1,000
			30,429	7,250	9,364	9,337	5,230	3,945	3,371
Estate planning options	64,874 ^a	35.3% ^b	13.8% ^c	4.6%	4.0%	5.9%	2.9%	2.2%	1.9%
Tax management strategies	63,440	32.7	12.5	3.5	4.7	4.7	3.3	2.4	1.5
Retirement plans and tax liability	63,921	32.4	11.9	3.7	4.3	5.0	2.9	2.5	2.1
Create a business plan	63,808	30.1	10.9	3.7	4.2	5.2	3.1	1.7	1.3
Establishing goals	64,082	29.4	11.1	4.7	2.9	4.7	2.8	2.0	1.3
New technologies	63,550	28.6	8.4	5.0	3.1	4.8	3.2	2.6	1.4
Business structures	63,064	25.8	11.4	2.7	2.8	3.7	2.2	2.0	.9
Recordkeeping system	63,985	25.8	9.9	3.8	3.2	4.7	2.7	.6	.9
Business analysis	63,905	25.5	7.6	3.5	3.6	4.4	3.4	1.6	1.4
Marketing plans	64,035	25.3	7.4	3.7	2.4	5.3	3.9	1.4	1.2
Risk management assessment	63,174	25.3	8.5	3.8	3.2	3.2	2.7	2.3	1.7
Financing capital assets	63,365	24.4	8.2	3.8	2.4	4.3	2.7	1.7	1.3
Enterprise budgets-cash flow	63,765	24.1	8.3	3.8	2.6	4.7	2.5	1.2	1.0
Budgets, breakeven calculations	63,512	24.0	8.9	2.7	3.0	4.1	2.8	1.0	1.4
Commodity markets	63,478	23.9	6.4	2.7	2.6	5.3	3.5	1.7	1.7
Annual business analysis	63,800	23.7	6.7	3.1	3.4	4.6	3.5	1.3	1.1
Capital and credit needs	63,717	23.7	8.1	2.7	2.2	5.3	2.9	1.2	1.2
Farm, community organization benefits	62,965	22.1	6.9	2.8	3.8	3.6	1.8	1.9	1.2
Financial statements to secure capital	63,378	21.1	5.4	3.7	2.7	4.7	2.9	.8	.8
Communication skills	63,296	20.6	6.2	2.8	2.5	3.7	1.8	2.2	1.4
Business transition options	63,354	20.0	5.4	2.6	3.3	3.5	2.1	1.6	1.5
Personal leadership benefits	62,494	15.7	5.4	1.3	1.8	3.2	1.4	1.5	1.0
Personnel issues	63,182	10.5	1.8	1.1	1.1	2.2	1.2	1.8	1.2

Notes: ^aTotal number of respondents to the item. ^bTotal percentage of respondents with interest in foundational knowledge and skills. ^cPercentage of respondents from the category of farm sales with interest in foundational knowledge and skills in the specified topic.

Interest in Advanced Farm Business Management Education

Tax management strategies and estate planning options are among the top three topics of interest to most farmers (Table H). However, recordkeeping systems replaced the impact of retirement planning on tax liability as a topic of interest to the most farmers. Advanced concepts and skills in implementing a comprehensive recordkeeping system (e.g., business records, finance, livestock and crop production records, equipment records, environmental records) was of interest to 15.8% of all farmers. It was also of interest to a high proportion of farmers with lower farm sales (less than \$50,000) as well as for higher income groups—those earning between \$250,000 and \$999,999. Advanced instruction in identifying new technologies needed to remain competitive was of interest to a relatively high number of farmers at the higher end of the sales spectrum (\$100,000 to \$249,999) and those earning more than \$1 million. There were no other patterns in the number of farmers with an interest in advanced instruction in these topics based on farm sales.

Additional review of the data reveal that the number of farmers interested in each advanced topic ranged from 10,404 (16.4% of 63,440) for estate planning options to 3,728 (5.9% of 63,182) for personnel issues. On the average, over 9,000 farmers expressed interest in each of the top ten advanced topics. It appears a properly created seminar for any one of these top ten topics may have sufficient demand to cover delivery costs.

Table H. *Farmers' Interest in Advanced Farm Business Management Topics by Farm Sales*

Education Topics (Q13)	N	%	Farm Sales (\$1,000s)						
			<\$25	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	<\$1,000
			30,429	7,250	9,364	9,337	5,230	3,945	3,371
Tax management strategies	63,440 ^a	16.4% ^b	3.9% ^c	1.8	1.5	3.4	1.9	2.0	1.7
Recordkeeping system	63,985	15.8	3.5	2.2	1.8	2.3	2.0	2.6	1.4
Estate planning options	64,874	15.6	3.4	1.3	2.3	2.8	1.9	2.3	1.6
Budgets, breakeven calculations	63,512	15.5	3.0	1.8	1.8	3.1	1.7	2.6	1.6
New technologies	63,550	15.3	3.1	1.3	1.9	3.1	1.5	2.2	2.1
Retirement plans and tax liability	63,921 ^a	14.5	3.3 ^c	1.1	2.2	2.8	1.7	1.9	1.5
Commodity markets	63,478	14.2	1.3	2.0	1.6	3.6	1.4	2.5	1.7
Financing capital assets	63,365	13.7	2.3	1.4	1.9	3.1	1.2	2.2	1.6
Enterprise budgets-cash flow	63,765	13.6	2.6	1.6	2.1	2.0	1.8	2.3	1.4
Marketing plans	64,035	13.4	2.1	1.6	2.4	2.0	1.2	2.5	1.5
Annual business analysis	63,800	13.0	2.3	1.5	1.5	2.3	1.4	2.2	1.8
Establishing goals	64,082	12.3	3.3	1.3	1.7	1.5	1.1	1.8	1.6
Financial statements to secure capital	63,378	12.1	2.9	1.0	1.0	2.0	1.2	2.4	1.5
Creating a business plan	63,808	12.1	2.3	1.9	1.1	2.2	1.1	2.0	1.5
Business analysis	63,905	11.6	2.0	1.1	1.5	1.7	1.6	2.1	1.6
Business structures	63,064	11.1	1.8	1.5	1.3	1.6	1.5	1.9	1.6
Business transition options	63,354	11.1	2.0	1.1	.9	3.0	1.0	1.9	1.1
Capital and credit needs	63,717	10.1	.9	1.3	1.3	1.3	1.3	2.4	1.5
Communication skills	63,296	9.0	1.9	1.1	.6	1.8	1.0	1.2	1.4
Risk management assessment	63,174	8.8	1.6	.4	.9	2.1	1.1	1.6	1.0
Personal leadership benefits	62,494	7.9	1.4	.9	.8	1.4	.7	1.4	1.3
Farm, community organization benefits	62,965	7.2	1.2	1.1	.1	1.3	1.0	1.3	1.3
Personnel issues	63,182	5.9	1.4	.9	.7	.4	.5	1.0	1.1

Notes: ^aTotal number of respondents to the item. ^bTotal percentage of respondents with interest in advanced knowledge and skills. ^cPercentage of respondents from the category of farm sales with interest in advanced knowledge and skills relating to the topic.

Selected Farm Business Management Education Hot Topics

Providers of education for producers are interested in knowing what educational topics are of the greatest immediate interest to farmers. Farmers were given a list of 23 farm business management topics and were asked to identify the three topics for which they had the greatest educational need. Estate planning, marketing plans and tax management strategies were the top three topics of interest for all farmers (Table D). Responses were also analyzed based on the number of farmers in each total annual farm sales category.

The number of farmers in Minnesota with interest in the selected educational topics ranged from 421 (learn about evaluating the benefits of serving in leadership positions of farm and community organizations) to 12,427 for learning about estate planning options. The average number of farmers interested in all topics, except estate planning, was 3,009. Though the expressed need differs by farm sales categories, it appears there is sufficient need for a variety of business management education offerings for Minnesota farmers.

Table I. *Farm Business Management Education Hot Topics by Farm Sales*

Topics (Q14)	Total ^a	Farm Sales (\$1,000s)						
		<\$25	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	>\$1,000
Estate planning options	12,427 ^b	30.4% ^c	13.6%	13.0%	16.2%	8.5%	9.0%	9.2%
Marketing plans	8,029	20.6	20.1	13.6	17.3	13.4	7.5	7.5
Tax management strategies	7,644	39.2	8.5	15.5	9.2	12.3	11.6	3.7
New technologies	5,246	24.9	22.9	11.5	9.7	18.3	5.6	7.1
Retirement plans and tax liability	4,444	33.4	6.3	16.8	19.8	7.8	9.5	6.4
Creating a business plan	4,379	49.3	11.5	10.6	7.1	12.3	4.0	5.3
Commodity markets	4,344	12.9	9.6	14.9	25.1	15.3	15.1	7.0
Recordkeeping system	4,314	32.5	32.0	9.4	10.2	8.1	7.9	
Acquiring/financing capital assets	3,801	31.0	19.3	14.0	17.0	4.6	10.9	3.2
Establishing goals	3,539	50.2	7.9	19.5	6.9	5.2	1.6	8.8
Exploring business transition options	3,023	34.6	4.2	8.4	22.6	6.9	11.7	11.5
Annual business analysis	2,693	17.0	21.3	11.8	17.2	12.3	8.6	11.7
Budgets and break-even calculations	2,508	19.5	22.1	10.1	29.9	11.5	4.6	2.3
Enterprise budgets for cash flow	2,353	32.0	11.9	14.3	19.3	12.2	4.8	5.5
Business analysis for decisions	1,807	31.7	7.7	31.5	0	6.4	9.5	13.1
Business structures	1,358	40.6	10.3	0	13.6	0	16.9	18.6
Risk management assessment	1,347	63.3	0	0	13.0	4.2	4.3	15.2
Capital and credit needs	1,340	32.3	32.2	0	4.9	4.3	8.5	17.9
Personnel hiring and management	972	0	15.8	28.7	6.0	6.0	11.7	31.8
Financial statements to secure capital	955	16.1	20.6	27.2	12.0	12.0	11.9	0
Benefits of personal leadership	936	32.5	0	29.8	12.3	12.3	6.2	6.9
Communication skills	744	18.8	0	0	24.9	16.4	31.2	8.7
Farm/community organization benefits	421	69.8	0	30.2	0	0	0	0

Notes. ^aTotal number of responses. ^bThe number of individuals who listed this topic. ^cThe proportion of individuals who listed the topic and earned less than \$25,000 in total farm sales (30.4%).

Table J shows the topics ranked among the top three in terms of percentages of farmers in each sales category who indicated a “hot” topic. The only topics that were ranked within the top three most popular topics by more than one farm sales category were business structures, capital and credit needs, commodity markets, new technology, communication skills, and understanding the benefits of membership in farm and community organizations.

Table J. *Top Three Ranked Hot Topics in Farm Business Management by Farm Sales*

Farm Business Management Education	Farm Sales (\$1,000s)						
	<\$25	\$25- 49.9	\$50- 99.9	\$100- 249.9	\$250- 499.9	\$500- 999.9	>\$1,000
Establishing goals	3						
Business structures						2	2
Recordkeeping system		2					
Business analysis			1				
Budgets, breakeven calculations				1			
Capital and credit needs		1					3
Personnel issues							1
Commodity markets				2	3	3	
Risk management assessment	2						
New technologies		3			1		
Communication skills				3	2	1	
Farm, community organization benefits	1		2				
Personal leadership benefits			3				

Crop Production Management Education Needs and Interests

Providing for the crop production management education needs of farmers starts with awareness of the number of farmers currently producing each of the major crops. The production management education needs for the major crops are subsequently summarized and discussed for all producers and for producers within selected farm sales categories. The data for this section was provided by interested respondents who inserted the name of two crops and interest in corresponding education topics.

Crop Enterprises by Farm Sales

Corn (51.1%), soybeans (46.2%), and alfalfa (42.7%) were the major crops grown by the largest number of Minnesota farmers (n=73,614). The data in Table K indicate that as the farm sales increase, the

proportion of farmers growing corn and soybeans also increases. Over 50% of the producers with annual sales of \$50,000 or less produced alfalfa or mixed hay. Wheat was grown by nearly 10,000 farmers with the greatest number (1,990) among farmers who produced \$50,000 to \$99,999 in annual sales. Nearly 40% of the

Table K. *Crop Enterprises by Farm Sales*

Crops Grown (Q8)	Total	Farm Sales (\$1,000s)						
		<\$25	\$25-50	\$50-99.9	\$100- 249.9	\$250- 499.9	\$500- 999.9	>\$1,000
	73,614 ^a	30,429	7,250	9,364	9,337	5,230	3,945	3,371
Corn	37,603 ^b	7,249 ^d	4,519	6,692	8,217	4,821	3,466	2,639
	51.1% ^c	19.3% ^e	12.0%	17.8%	21.9%	12.8%	9.2%	7.0%
Soybeans	34,035	6,312	3,523	6,822	6,662	4,643	3,600	2,474
	46.2	18.5	10.4	20.0	19.6	13.6	10.6	7.3
Alfalfa/mixed hay	31,461	14,070	4,131	3,631	5,102	2,308	1,330	889
	42.7	44.7	13.1	11.5	16.2	7.3	4.2	2.8
Wheat	9,860	1,517	977	1,990	1,400	1,887	1,252	837
	13.4	15.4	9.9	20.2	14.2	19.1	12.7	8.5
Oats	8,316	1,519	1,788	1,974	1,974	555	122	384
	11.3	18.3	21.5	23.7	23.7	6.7	1.5	4.6
Vegetables	2,194	1,006	140	370	185	184	114	195
	3.0	45.9	6.4	16.9	8.4	8.4	5.2	8.9
Barley	2,109	420	406	254	610	240	114	65
	2.9	19.9	19.3	12.0	28.9	11.4	5.4	3.1
Fruits	1,412	1,006	279	127	0	0	0	0
	1.9	71.2	19.8	9.0	-	-	-	-
Sugar beets	1,234	0	266	0	185	237	65	481
	1.7	-	21.6	-	15.0	19.2	5.3	39.0
Canola	192	0	0	127	0	0	65	0
	.3	-	-	66.1	-	-	33.9	-

Notes: ^aTotal number of respondents. ^bThe number of people who reported growing the crop. ^cThe proportion of all respondents who reported growing the crop. ^dThe number of respondents who reported growing the crop and earning less than \$25,000 in annual total farm sales. ^eThe proportion of respondents who reported growing the crop and earning less than \$25,000 in annual total farm sales.

farmers with sales of \$250,000 to \$499,999 produced wheat. Oats continue to be a favorite crop (11.3%), produced mainly by farmers with annual sales of \$249,999 or less. Sugar beets, fruits, barley, and vegetables are produced by small percentages (1.9 – 3.0), though sizable numbers (1,234 – 2,194), of Minnesota farmers. A lengthy list of other crops and vegetables are produced by 10,601 (14.4%) of Minnesota producers.

Crop Production Management Education Needs for Major Crops

Before looking at the desired education topics for each crop, note that 60.9% (22,884) of corn, 62.5% (21,276) of soybeans, 23.5% (7,386) of alfalfa, and 32.3% (3,180) of wheat producers desired production management education for one or more production topics. The data in Table L reveal that soil fertility is the first or second most desired production management education topic for the major listed crops. Marketing is the second most desired topic by farmers for corn (58.2%) and soybeans (62.2%) while varietal selection (43.7%) is the second most desired topic among farmers of alfalfa and wheat. Food safety is the least desired topic (11.7%), though over 600 corn farmers are interested in pertinent education. Further analysis reveals that the number of farmers interested in a specific education topic ranges from 15,286 interested in soil fertility for corn to 140 for food safety training for wheat.

Table L. *Crop Production Management Education Needs for Major Crops*

	Corn	Soybeans	Alfalfa	Wheat	Other Hay
Production Topics (Q18)	22,884 ^a	21,276	7,386	3,180	1,572
Soil fertility and management	66.8% ^b	66.3%	63.7%	86.7%	53.6%
Variety selection	45.0	48.6	43.7	68.4	41.0
Planting	43.8	43.8	40.8	57.6	44.8
Marketing	58.2	62.2	17.2	65.2	27.7
Harvesting	42.0	38.3	39.2	57.8	49.6
Soil conservation	38.8	41.8	28.6	31.3	56.2
Pest management	41.7	47.0	24.9	41.3	18.7
Machinery selection/ maintenance	33.6	31.2	27.3	42.8	38.2
Handling and storage	34.6	27.4	19.5	46.1	16.3
Government programs	30.7	29.0	26.8	38.4	13.5
Precision farming	38.5	40.9	12.0	23.4	3.7
Water management	25.3	25.6	21.3	21.8	21.2
Environmental programs	27.2	25.4	17.3	23.4	18.7
Facilities design, management, maintenance	21.5	16.5	17.3	28.7	20.0
Food safety	11.7	11.9	5.4	4.4	0.0

Notes: ^aThe number of individuals interested in the crop. ^bThe proportion (%) of individuals interested in the topic for the corresponding crop.

Production Management Education Hot Topics for Major Crops

Producers were invited to insert one or two education topics for which they had the greatest educational need. Table M shows that soil fertility and management was the education topic most desired by farmers

with corn (24.8%), soybean (25.5%), alfalfa (19.0%), and other hay enterprises (19.5%). Thirty percent of the wheat farmers were most interested in precision farming. In individual farmer counts, the demand ranged from a high of 5,654 farmers with interest in soil fertility and management for corn to a low of 56 wheat farmers with interest in machinery selection and maintenance. Statewide demand appears to justify ongoing production management education programming for a number of topics.

Table M. *Production Management Education Hot Topics for High Priority Crop Enterprises*

Production Management Topics (Q19, 20)	Corn	Soybeans	Alfalfa	Wheat	Other hay
	22,797 ^a	16,145	7,088	2,965	1,312
Soil fertility and management	24.8% ^b	25.5%	19.0%	0%	19.5%
Marketing	14.6	14.5	4.3	6.6	19.5
Variety selection	9.3	17.1	11.8	5.1	0.0
Pest management	9.2	9.5	12.4	4.7	10.6
Precision farming	9.1	5.2	2.8	30.0	0.0
Planting	7.5	6.6	9.6	0.0	10.7
Harvesting	3.9	3.7	4.1	18.0	11.7
Handling and storage	3.9	1.5	6.1	.0	4.4
Soil conservation	3.6	2.4	2.1	15.7	0.0
Environmental programs	2.8	1.5	2.0	3.8	0.0
Government programs	2.4	2.4	2.8	0	0.0
Water management	2.2	2.6	2.1	0	0.0
Facilities design, management, maintenance	2.0	0.4	4.1	9.8	0.0
Other	1.9	0.9	6.5	9.8	11.7
Machinery selection, maintenance	1.6	2.4	5.9	1.9	11.7
Food safety	0.0	1.3	0.0	4.3	0.0

Notes: ^aThe number of individuals interested in the crop. ^bThe proportion (%) of individuals interested in the topic for the corresponding crop.

Livestock Production Management Education Needs and Interests

Providing for the livestock production management education needs of farmers starts with awareness of the number of farmers currently producing each of the major classes of livestock. The production management education needs for the primary classes of livestock are subsequently summarized and discussed for all producers and for producers within selected farm sales categories. The data for this section were provided by respondents who inserted the name of one or two classes of livestock and indicated corresponding educational topics.

The data in Table N reveal that the primary classes of livestock (with the respective number of farmers) reported being raised by farmers in the fall of 2011 were beef (22,964), horses (9,778), chickens (6,431), dairy (5,090), hogs (4,160), and sheep (4,039). The percentage of farmers within each farm sales category varied depending upon the class of livestock. For example, beef were raised by 15,739 (68.5%) farmers with annual farm sales of less than \$100,000. Over 66% of farmers who indicated they raised chickens had annual farm sales of \$25,000 or less. Over 80% of the total farmers (5,090) who raised dairy generated annual farm sales of \$100,000 or more. In addition to the number of farmers raising selected numbers of alternate classes of livestock, 2,995 farmers also raised a variety of other livestock and poultry.

Table N. *Livestock Enterprises by Farm Sales*

Livestock Enterprises (Q9)	Farm Sales (\$1,000s)							
	Total	<\$25	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	>\$1,000
All responses	73,614 ^a	30,429	7,250	9,364	9,337	5,230	3,945	3,371
	22,964 ^b	8,739 ^d	4,128	2,872	3,818	1,603	1,127	677
Beef	31.2% ^c	38.1% ^e	18.0%	12.5%	16.6%	7.0%	4.9%	2.9%
Horses	9,778	6,100	1,245	1,131	578	365	294	65
	13.3	62.4	12.7	11.6	5.9	3.7	3.0	.7
Chickens	6,431	4,349	571	655	568	173	114	0
	8.7	67.6	8.9	10.2	8.8	2.7	1.8	-
Dairy	5,090	866	127	185	1,880	877	634	521
	6.9	17.0	2.5	3.6	36.9	17.2	12.5	10.2
Hogs	4,160	1,183	152	266	996	638	238	686
	5.7	28.4	3.7	6.4	23.9	15.3	5.7	16.5
Sheep	4,039	2,162	445	325	578	290	173	65
	5.5	53.5	11.0	8.0	14.3	7.2	4.3	1.6
Goats	2,003	1,018	127	127	420	254	57	
	2.7	50.8	6.3	6.3	21.0	12.7	2.8	
Turkeys	1,132	619	260	0	0	0	65	
	1.5	54.7	23.0	-	-	-	5.7	
Geese	633	447	0	127	0	58	0	
	.9	70.7	-	20.1	-	9.2	-	-

Notes: ^aTotal number of respondents. ^bThe number of people who reported raising the livestock. ^cThe proportion of all respondents who reported raising the livestock. ^dThe number of respondents who reported raising the livestock and who earn less than \$25,000 in annual total farm sales. ^eThe proportion of respondents who reported raising the livestock and earning less than \$25,000 in annual total farm sales.

Livestock Production Management Education Needs for Primary Classes of Livestock

The list of the one or two primary classes of livestock provided by the respondents for which they desired production management education were coded and ordered as reflected in Table O. Cattle includes cattle and calves; beef cows; other cattle, heifers, steers, calves, bulls; and cattle in feedlot. Hogs include market hogs and hogs-pigs.

The demand (% of the total for each class of livestock) for the production management education topics varies. For example, when sorted from high to low by cattle, it is evident that production management education relating to feed management is a highly important topic for farmers who raised cattle, sheep,

horses, hogs, dairy, and poultry. Other topics in the top five for a number of the classes of livestock include health and basic veterinary care, nutrition, breeding and selection (genetics), facilities, and marketing. The percentages of farmers interested in production management topics for each class of livestock are listed in Table O. Interest ranges from 58 farmers statewide (7.1% of 821 farmers) interested in ventilation for poultry to 11,850 farmers interested in feed management for cattle and for dairy.

Table O. *Livestock Production Topics for Major Classes of Livestock*

Production Management Topics (Q24)	Class of Livestock					
	Cattle	Horses	Sheep	Hogs	Dairy	Poultry- Eggs
	18,249 ^a	3,733	3,526	2,509	2,098	821
Feed management	58.2% ^b	51.6%	77.3%	39.2%	58.5%	55.8%
Health and basic veterinary care	57.2	62.7	59.2	39.7	41.7	31
Nutrition	54.9	41.1	46.9	34.7	49.7	31
Facilities	47.5	25.9	52	38.9	69	24.1
Breeding and selection	46.3	43.4	58.4	29.4	54.4	54.2
Marketing	42.8	24.4	44.7	21.6	41.8	45.9
Basic animal husbandry practices	39.5	19.6	49.3	29.6	35.6	29.4
Live animal handling	39	23.6	34.1	28.2	29.1	14
Government programs	32.4	34	45.5	28.7	32.8	24.1
Equipment selection	27.1	8.5	40.1	19.3	26.6	7.1
Environmental programs	25.8	41	28.1	26.4	27.7	24.1
Waste handling management	16.8	17.7	24.5	29.4	38.6	24.1
Ventilation	14.5	4.8	23.9	27.2	38.6	7.1

Notes: ^aThe number of individuals interested in the selected class of livestock. ^bThe percentage of individuals who were interested in learning more about the topic for the corresponding class of livestock.

Livestock Production Management Education Hot Topics

Producers were invited to insert one or two production management education topics for which they had the greatest educational need (hot topics). Key education topics for farmers among the various classes of livestock included nutrition, feed management, breeding and selection (genetics), health and basic veterinary care, and marketing (Table P). The statewide cadre of farmers with interest in the same

production management education topics varies from 58 individuals (9% of 649) with an interest in waste management for poultry to 5,016 farmers with an interest in nutrition for cattle and dairy.

Table P. *Production Management Hot Topics for Major Classes of Livestock*

Production Management Topics (Q25 & 26)	Cattle	Sheep	Horses	Hogs	Dairy	Poultry- Eggs
	29,919 ^a	5,068	4,351	2,755	1,960	649
Nutrition	16.0 ^b	10.8	21	5.5	11.7	0
Feed management	15.1	9.4	6	14.9	5.8	0
Breeding and selection	14.0	22.7	4.1	26.4	8.8	19.5
Health and basic veterinary care	11.8	10.2	26.9	9.0	11.6	9.0
Marketing	11.8	10.3	18.2	7.6	15.1	0
Facilities	10.9	16.8	3.5	13.7	9.4	21.5
Basic animal husbandry practices	5.4	8	3.5	0	5.9	19.5
Government programs	3.8	3	7.3	0	3	21.5
Other	3.4	0	3.5	0	0	0
Live animal handling	2.5	0	0	2.5	0	0
Unknown	2.2	0	0	5.1	15.5	0
Equipment selection	1.3	6.1	0	2.6	6.5	0
Environmental programs	1.2	2.8	0	0	0	0
Waste handling management	0.5	0	6	5	3.3	9
Ventilation	0	0	0	7.6	3.3	0

Notes: ^aThe number of people who were interested in learning more about the selected class of livestock.

^bThe percentage of individuals who were interested in the selected topic for the selected class of livestock.

Education and Training Needs for Employees by Farm Sales

Respondents provided the names of one or two educational topics they were interested in for their paid and unpaid employees. The responses were broken into five groups of skills and knowledge: employability, mechanical, crops- and soils-related, livestock, and business (See Table Q). Slightly over 6,400 (8.7%) Minnesota farmers indicated an interest in employability training. From highest to lowest priority, topics requested included: communications, attention to detail, safety, punctuality, time management, cleanliness, and conflict resolution. Farmers with farm sales of \$1 million or more indicated the greatest need with more than 2,250 of the 3,371 (67.4%) farmers requesting training. A total of 4,665 (72.8%) farmers with farm sales of \$100,000 or more requested employability training.

The proportion of farmers (n=1,897) requesting education in mechanical topics for their employees was highest for producers with annual sales of \$100,000 or more. Examples of education topics for their employees included: equipment maintenance, equipment repair, and equipment operation (e.g., combining).

A need for crop- and soil-related topics was reported by 623 farmers. Farmers with sales of \$50,000 to \$99,999 reported the greatest need. Examples of topics requested in this category were: spraying, organic orchard production, plant knowledge, basic agronomy and soil testing.

Employee education for livestock-related topics was indicated by 0.4% (306) of farmers. Examples of topics include: animal nutrition, care of cattle, feed selection, milking technologies, and stockmanship.

Employee education in business-related topics was requested most (114) by farmers with \$1 million or more in annual sales, followed by 57 farmers with sales of \$250,000 to \$499,999. Specific topics for their employees included: the finances of the business, business plans, and father-son agreements.

Table Q. *Education and Training Needs for Employees by Farm Sales*

Employee Education Needs (Q28)	Total	Farm Sales (\$1,000s)						
		<\$25	\$25- 49.9	\$50- 99.9	\$100- 249.9	\$250- 499.9	\$500- 999.9	>\$1,000
	73,614 ^a	30,429	7,250	9,364	9,337	5,230	3,945	3,371
Employability	6,410 ^b	817 ^d	431	497	687	940	765	2273
	8.7% ^c	12.7% ^e	6.7%	7.8%	10.7%	14.7%	11.9%	35.5%
Mechanical Skills	1,897	291	152	0	383	229	411	431
	2.6	15.3%	8.0%	-	20.2%	12.1%	21.7%	22.7%
Crops/Soils-related	623	140	0	254	0	115	0	114
	0.8	22.5%	-	40.8%	-	18.5%	-	18.3%
Livestock-related	306	0	0	127	57	0	57	65
	0.4%	-	-	41.5%	18.6%	-	18.6%	21.2%
Business	171	0	0	0	0	57	0	114
	0.2%	-	-	-	-	33.3%	-	66.7%

Notes. ^aTotal number of farmers. ^bTotal number of responses related to the topic. ^cPercentage of total responses related to the topic. ^dTotal number of responses for the topic that were listed by people reporting the corresponding annual total farms sales. ^ePercentage of total responses for the topic that were listed by people reporting the corresponding annual total farms sales (817/6,410).

Instructional and Program Delivery Preferences

A one-way-between-groups analysis of variance (ANOVA) was conducted to explore the impact of annual total farm sales on levels of preference for forms of instructional and program delivery using a 7-point scale. The scale ranged from 1 (no preference) to 7 (highly preferred). Survey respondents were divided into eight groups based on instrument question number 7 (Appendix): 1) less than \$10,000; 2) \$10,000 to \$24,999; 3) \$25,000 to \$49,999; 4) \$50,000 to \$99,999; 5) \$100,000 to \$249,999; 6) \$250,000 to \$499,999; 7) \$500,000 to \$999,999; and 8) greater than \$1 million.

The Welch test for significance was used when the Levene's test for equality of variance was significant. Post hoc comparisons of means were made using the Games-Howell test since groups were of unequal size and variances were unequal. The effect size coefficient — an indicator of practical significance — was calculated using eta squared. Differences and effect sizes are discussed in detail in each of the following sections.

Education and Training Delivery Preferences

Farmers were instructed to indicate their level of preference for their education and training delivery, instructional methods, and instructional media preferences by placing a mark on a 7-point Likert-like scale. Mean group scores from 3.5 to 7 indicated a positive preference. Mean group scores from 0 to 3.49 indicated a limited preference for the measures.

The data in Table R reflect the farmers' preference for the delivery of education and training. The two mildly preferred methods of delivery were education provided to farmers at an off-campus location ($M=3.6$ $SD=2.7$) and at a host farm ($M=3.5$ $SD=2.3$). The mean data for the corresponding sales categories reveal that farmers with annual sales of \$250,000 or more indicated a higher mean score preference (>4.0) for these two approaches than all other farmers.

Further review of the mean scores for the data in Table R indicate that Minnesota farmers with annual sales of \$250,000 or more tend to prefer additional approaches to delivery. However, the mean scores (less than 3.5) for delivery of courses indicate farmers do not prefer instruction if it is delivered partially in person and online, at farm organization meetings, at their farm or business site, from a college campus, entirely online, or through online video conference. The bolded values reflect the top three preferences by farm sales. Farmers with annual sales greater than \$100,000 to \$249,999 have definite preferences (mean scores greater than 3.5) for use of selected approaches to delivery, whereas farmers with lower sales do not have many preferred approaches (mean scores less than 3.5).

Table R. Education and Training Delivery Preferences by Farm Sales

Delivery Mechanism (Q29)	Total	Farm Sales (\$1,000s)										ANOVA				
		M	SD	<\$10	\$10-24.9	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	>\$1,000	F	df _b	df _w	p	η ²
Off-campus classroom	3.6 ¹	2.2	3.1 ^A	3.3 ^B	3.5 ^{BC}	3.5 ^C	3.8 ^D	4.2 ^E	4.6 ^F	4.4 ^G	414	7	17,317	0.00	0.04	
	2.3 ²			2.4	2.5	2.3	2.2	2.1	1.8	2.00						
Host farm	3.5		3.1 ^A	3.1 ^A	3.7 ^B	3.5 ^C	3.5 ^C	4.2 ^D	4.3 ^D	3.9 ^E	292	7	17,271	0.00	0.03	
	2.3		2.3	2.3	2.5	2.1	2.2	2.1	2.0	2.1						
Personal/online Blend	3.3		3.2 ^A	3.2 ^{AB}	3.7 ^C	2.9 ^D	3.4 ^E	3.3 ^{BE}	3.7 ^C	3.9 ^F	143	7	17,056	0.00	0.02	
	2.3		2.3	2.5	2.3	2.1	2.2	2.1	2.0	2.1						
Farm organization meetings	3.3		2.7 ^A	2.4 ^B	3.6 ^C	3.3 ^D	3.8 ^E	4.3 ^F	4.4 ^G	4.0 ^H	850	7	17,091	0.00	0.09	
	2.1		2.0	1.8	2.2	2.2	2.2	2.0	1.8	2.0						
Business site	3.3		3.0 ^A	3.0 ^A	3.2 ^B	3.3 ^C	3.4 ^C	3.4 ^{CD}	4.3 ^E	4.2 ^{EF}	209	7	17,360	0.00	0.03	
	2.5		2.54	2.4	2.4	2.5	2.4	2.3	2.4	2.3						
College campus	2.9		2.5 ^A	2.5 ^A	3.3 ^B	2.9 ^{CD}	2.9 ^C	3.0 ^D	3.9 ^E	3.1 ^{DF}	266	7	17,035	0.00	0.03	
	2.1		2.1	2.0	2.5	2.2	2.0	1.9	1.9	2.2						
Online only	2.9		2.9 ^A	3.0 ^A	3.2 ^B	2.6 ^C	2.8 ^D	2.9 ^A	3.5 ^E	3.0 ^A	81	7	16,923	0.00	0.01	
	2.2		2.2	2.4	2.6	2.2	2.1	2.1	2.03	2.0						
Individual - video conference	2.7		2.3 ^A	2.3 ^A	3.2 ^B	2.7 ^C	2.6 ^C	3.0 ^D	3.2 ^B	3.5 ^E	272	7	16,659	0.00	0.04	
	2.1		1.9	2.1	2.3	2.0	2.2	1.9	2.00	2.2						

Notes: ¹Mean score on a preference scale of 1 (not preferred) to 7 (highly preferred). ²Standard Deviation. Means with the same letter in their superscripts do not differ significantly from one another according to a Games-Howell test.

Farmer Preferences for Selected Instructional Methods and Strategies

Research shows that student learning is optimized when students experience a variety of instructional methods. The data in Table S show that Minnesota farmers also prefer a variety of methods. As a group, their top five preferences are hands-on activities ($M=4.3$ $SD=2.27$), demonstrations ($M=4.2$, $SD=2.21$), one-on-one conversations with other farmers ($M=4.1$ $SD=2.23$), speakers/industry experts ($M=4.0$ $SD=2.18$) and field trips ($M=3.9$, $SD=2.27$). Their least preferred methods are use of case studies ($M=3.3$ $SD=2.06$) and webinars ($M=2.9$ $SD=2.11$).

A review of the mean scores by farm sales categories for most methods and strategies reveals that the level of farmer preference increased with farm sales. Farmers within the \$500,000 to \$999,999 category had the highest mean preference ($M=4.7$ $SD=.44$) for all items except guest speakers (5.0), which was more preferred by farmers with sales of \$1 million or more in farm sales. Farmers with annual sales of \$10,000 to \$24,999 in annual sales had the lowest mean ($M=3.2$ $SD=.33$).

The top three most highly preferred methods and strategies are bolded in Table S for each farm sales category. Except for producers with sales of more than \$1 million, all farmers favored demonstrations and instruction involving hands-on-learning the most. Farmers with more than \$1 million in sales most preferred guest speakers and, secondly, industry experts. The ANOVA data analyses outputs ($p < .05$) in Table S reveal that annual farm sales do indeed have an influence on the preferences of farmers. However, except for sizable practical significant differences ($\eta^2 < .05$) in preferences among industry experts, conferences, guest speakers, and events featuring specialized instructors, most farmers have unnoticeable differences in levels of preference for the majority of selected instructional methods and strategies ($\eta^2 \Rightarrow .04$).

Table S. *Instructional Methods and Strategies Preferences by Farm Sales*

Instructional preferences (Q30)	Total	Farm Sales (\$1,000s)										ANOVA			
		<\$10	\$10-24.9	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	>\$1,000	F	df _b	df _w	p	η ²	
Hands-on activities	4.3 2.3	3.8 ^A 2.42	3.7 ^B 2.40	4.7 ^C 2.24	4.4 ^D 2.28	4.4 ^D 2.20	4.8 ^E 1.80	5.3 ^F 1.60	4.7 ^{CE} 1.76	408	7	17,172	.00	0.04	
Demonstrations	4.2 2.21	3.9 ^A 2.44	3.4 ^B 2.27	4.6 ^C 2.13	4.3 ^D 2.16	4.4 ^E 1.99	4.9 ^F 1.82	4.9 ^F 1.64	4.4 ^E 1.99	347	7	17,237	.00	0.04	
One-on-one with other farmers	4.1 2.23	3.7 ^A 2.39	3.5 ^B 2.36	4.0 ^C 2.21	4.4 ^D 2.10	4.5 ^E 2.01	4.6 ^E 1.87	5.0 ^F 1.90	4.4 ^{DE} 1.94	359	7	17,428	.00	0.04	
Speakers/industry experts	4.0 2.18	3.5 ^A 2.21	3.3 ^B 2.48	4.1 ^C 2.08	4.1 ^{CD} 2.21	4.2 ^D 2.01	4.5 ^E 1.79	5.0 ^F 1.63	4.8 ^G 1.93	503	7	16,928	.00	0.06	
Field trips	3.9 ^I 2.27	3.8 ^A 2.49	3.5 ^B 2.31	3.9 ^C 2.32	3.7 ^A 2.24	4.2 ^D 2.08	4.3 ^D 1.92	4.6 ^E 1.71	4.1 ^D 2.17	162	7	17,514	.00	0.02	
Conferences for farmers	3.9 2.23	3.3 ^A 2.33	3.0 ^B 2.07	4.2 ^C 2.18	3.8 ^D 2.21	4.3 ^E 2.14	4.8 ^F 1.78	5.3 ^G 1.39	4.4 ^E 2.08	938	7	16,869	.00	0.08	
Question/answer sessions	3.8 2.14	3.3 ^A 2.34	3.2 ^B 2.21	4.3 ^{CD} 2.02	3.9 ^E 2.11	3.9 ^E 1.94	4.4 ^C 1.92	4.5 ^F 1.44	4.2 ^D 1.79	412	7	17,465	.00	0.05	
Guest speakers	3.8 2.11	3.4 ^A 2.26	3.1 ^B 2.16	3.6 ^C 1.96	3.8 ^D 2.09	4.0 ^E 1.98	4.5 ^F 1.62	4.8 ^G 1.67	5.0 ^H 1.71	650	7	17,484	.00	0.07	
Instructor events	3.8 2.16	3.5 ^A 2.27	3.1 ^B 2.24	4.0 ^C 2.07	3.8 ^D 2.18	4.0 ^C 1.99	4.4 ^E 1.79	4.9 ^F 1.90	4.5 ^G 1.87	408	7	17,153	.00	0.05	
Agricultural suppliers	3.7 2.11	3.3 ^A 2.16	3.1 ^B 2.27	3.6 ^C 2.13	3.9 ^D 2.16	3.7 ^C 1.96	4.3 ^E 1.86	4.4 ^E 1.54	4.3 ^E 1.98	344	7	17,195	.00	0.04	
Individualized in-person	3.6 2.23	3.3 ^A 2.37	2.9 ^B 2.11	3.7 ^C 2.18	3.7 ^C 2.27	3.5 ^D 2.17	4.1 ^E 1.88	4.5 ^F 1.85	4.4 ^F 2.04	345	7	16,861	.00	0.04	
Case study with instructor	3.3 2.06	2.9 ^A 2.03	3.0 ^B 2.29	3.4 ^C 1.90	3.3 ^C 2.16	3.5 ^D 2.11	3.9 ^E 1.70	4.1 ^F 1.69	3.7 ^G 1.79	300	7	16,338	.00	0.03	
Speaker(s) webinar	2.9 2.11	2.8 ^A 2.17	2.4 ^B 1.99	3.1 ^C 2.17	3.0 ^{CE} 2.10	2.8 ^A 1.91	3.1 ^C 1.98	3.8 ^D 2.02	3.4 ^E 2.25	172	7	16,769	.00	0.02	

Notes: Mean score on a preference scale of 1 (not preferred) to 7 (highly preferred). Means with the same letter in their superscripts do not differ significantly from one another according to a Games-Howell test.

Instructional Media Preferences for All Producers

Alternate instructional media can have a major impact upon learning. The data in Table T reflect that Minnesota farmers prefer use of a variety of instructional media for learning. As a group, their top five preferences based on the mean preference scores on a scale of 1 (not preferred) to 7 (highly preferred) were print materials (4.8), demonstration plots (4.1), newspaper (3.9), electronic materials (3.8), and the Internet (3.5). Their least preferred media included use of the telephone (2.9), email messages from the instructor (3.2), online library (3.4), online video library of presentations (3.4), and sample problems or simulations (3.4).

A review of the mean preference scores of the instructional media by farm sales categories reveals that the level of farmer preference increased with farm sales. Farmers within the \$500,000 to \$999,999 category had the highest mean preference (4.32) for all items, except use of the newspaper and email messages from an instructor, which were more highly preferred by the farmers with annual sales equal to or greater than \$1 million. Farmers with annual sales of \$10,000 to \$24,999 in annual sales had the lowest mean preference score for the items (3.2).

The top three most highly preferred media for each farm sales category are bolded in Table T. Regardless of annual farm sales, all farmers favored use of print materials. Except for farmers with annual sales of less than \$10,000, all farmers highly preferred use of demonstration plots. Use of the newspaper remained a media preference of most farmers.

The ANOVA data analysis summarized in Table T reveals that annual farm sales do, indeed, have an influence on the preferences of farmers. However, except for sizable practical significant differences ($\eta^2 < .05$) in preference for demonstrations, there was no statistically significant difference ($p < .05$) and a small practical significance ($\eta^2 = .04$) in preferences among the majority of selected media.

Table T. *Instructional Media Preferences by Farm Sales*

Instructional Media (Q31)		Farm Sales (\$1,000s)								ANOVA				
		<\$10	\$10-24.9	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	>\$1,000	F	df _b	df _w	p	η ²
Print materials	Total	4.6 ^A	3.9 ^B	5.4 ^C	4.9 ^D	4.9 ^D	5.2 ^E	5.4 ^C	5.1 ^E	259	7	17,231	0.00	0.04
		2.16 ²	2.57	2.07	2.00	1.94	1.68	1.48	1.71					
Demonstration plots	4.1	3.5 ^A	3.3 ^B	4.3 ^C	4.3 ^C	4.5 ^D	5.0 ^E	5.1 ^F	4.5 ^D	663	7	17,478	0.00	0.07
	2.16	2.26	2.21	2.14	2.10	2.02	1.72	1.63	1.75					
Newspaper	3.9	3.8 ^A	3.7 ^A	3.7 ^A	4.1 ^B	3.9 ^C	4.4 ^D	4.0 ^B	4.4 ^D	111	7	17,426	0.00	0.01
	2.09	2.34	2.40	1.94	2.01	1.95	1.65	1.74	1.62					
Electronic materials	3.8	3.6 ^{AD}	3.2 ^B	4.2 ^C	3.7 ^A	3.5 ^D	3.9 ^E	4.6 ^F	4.6 ^F	259	7	17,231	0.00	0.03
	2.33	2.37	2.46	2.44	2.30	2.21	2.13	2.13	1.95					
Internet	3.5	3.4 ^A	3.1 ^B	3.8 ^C	3.3 ^D	3.3 ^{AD}	3.4 ^A	4.2 ^E	3.9 ^C	139	7	17,008	0.00	0.02
	2.26	2.30	2.49	2.45	2.11	2.26	1.99	1.87	2.02					
Sample problems or simulations	3.4	3.1 ^A	2.9 ^B	3.9 ^C	3.5 ^D	3.4 ^E	4.1 ^F	4.1 ^F	3.8 ^C	363	7	17,042	0.00	0.04
	1.99	1.98	2.02	1.99	2.09	2.03	1.68	1.69	1.61					
Online video library-speakers	3.35	3.2 ^A	2.8 ^B	3.9 ^C	3.3 ^D	3.0 ^E	3.4 ^F	4.3 ^G	4.0 ^C	304	7	16,783	0.00	0.03
	2.19	2.33	2.15	2.18	2.15	2.07	1.96	1.95	1.88					
Online library-instructors	3.3	3.2 ^A	3.1 ^B	3.8 ^C	3.2 ^A	2.9 ^D	3.4 ^E	4.1 ^F	3.7 ^C	201	7	16,911	0.00	0.02
	2.23	2.38	2.28	2.19	2.22	2.04	2.04	2.02	1.94					
Email from instructor	3.2	2.8 ^A	3.0 ^B	3.9 ^C	2.9 ^B	3.0 ^B	3.3 ^D	4.0 ^{CE}	4.1 ^E	369	7	16,886	0.00	0.04
	2.20	2.16	2.39	2.48	2.03	2.13	1.97	1.83	2.02					
Telephone - instructor	2.9	2.6 ^A	2.1 ^B	2.9 ^C	3.2 ^D	2.9 ^C	3.2 ^D	3.4 ^E	3.5 ^E	387	7	16,887	0.00	0.04
	1.87	1.82	1.54	1.95	2.05	1.75	1.74	1.84	2.00					

Notes: ¹ Mean ² Standard Deviation. Means with the same letter in their superscripts do not differ significantly from one another according to a Games-Howell test.

Other Factors Influencing Program Participation

Participation in meaningful and high quality continuing and professional education is critical if farmers are to remain competitive in the global marketplace. In order to know how to deliver instruction more effectively, education providers need to be aware of selected barriers that limit adult participation in farm business and production management education. This section sought to learn more about the farmers' opinions and technologies so that providers can increase farmer participation in the future. Farmers indicated which of a list of barriers prevented them from participating in college and university events. Additional items requested more information about the distances they are willing to travel, money they are willing to invest for education, their access to communication technologies, and their preferences for providers of agricultural education and training.

Barriers to Program Participation

The data in Table U show that nearly 50% of the farmers (33,759) indicated they do not attend local college and university education events because they are too busy. A schedule conflict is the second most common reason provided for not attending. Interestingly, 22,469 (30.5%) are simply unaware of college and university education and training opportunities. The fourth most frequent reason (29.3%) was distance to events, followed by the belief that they can learn what they need from their family, friends, and other farmers (25% or 18,259). Registration cost for events was the sixth (17.3%) most common barrier for all farmers. The least common barrier (7.8%) for Minnesota farmers was that the instruction did not match how the farmers learned.

A review of the data by farm sales categories reveals that regardless of income level, farmers agree on most of the top five barriers with a few exceptions. For instance, the cost of registration is an issue for farmers with sales of \$25,000 to \$49,999. Farmers within the \$100,000 to \$249,999 and \$1 million and above sales groups indicated that their agricultural suppliers provide a lot of their needed education.

Table U. *Barriers to Participation by Farm Sales*

Barriers (Q32)	Farm Sales (\$1,000s)							
	Total	<\$25	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	>\$1,000
	73,614 ^a	30,429	7,250	9,364	9,337	5,230	3,945	3,371
Too busy	33,759 ^b 45.9% ^c	10,989 ^d 32.6% ^e	3,996 11.8%	5,730 17.0%	5,173 15.3%	3,071 9.1%	2,600 7.7%	2,200 6.5%
Schedule conflicts	22,990 31.2	7,134 31.0	3,815 16.6	3,424 14.9	3,449 15.0	2,282 9.9	1,592 6.9	1,294 5.6
Unaware of events	22,469 30.5	9,152 40.7	2,491 11.1	3,138 14.0	3,007 13.4	2,045 9.1	1,666 7.4	970 4.3
Distance to the events	21,552 29.3	7,879 36.6	2,189 10.2	3,211 14.9	3,531 16.4	2,135 9.9	1,704 7.9	903 4.2
Family, friends, other farmers provide needed information	18,259 24.8	6,934 38.0	2,247 12.3	3,513 19.2	2,824 15.5	1,592 8.7	718 3.9	432 2.4
Registration cost	12,739 17.3	4,940 38.8	2,685 21.1	1,747 13.7	1,438 11.3	1,050 8.2	405 3.2	474 3.7
Agricultural suppliers provide needed information	11,773 16.0	1,889 16.0	1,548 13.1	2,305 19.6	2,833 24.1	1,630 13.8	702 6.0	865 7.3
Programs not designed for my type of operation	10,741 14.6	5,267 49.0	991 9.2	1,500 14.0	1,307 12.2	715 6.7	417 3.9	544 5.1
Internet provides needed information	10,732 14.6	3,776 35.2	1,511 14.1	1,179 11.0	2,161 20.1	770 7.2	788 7.3	547 5.1
Time needed for assignments ¹	10,620 14.4	3,888 36.6	1,881 17.7	1,597 15.0	1,687 15.9	520 4.9	608 5.7	440 4.1
Instruction does not meet my needs	10,268 13.9	4,076 39.7	991 9.7	1,067 10.4	2,039 19.9	642 6.3	718 7.0	736 7.2
Past experience with educational events	7,373 10.0	1,056 14.3	304 4.1	1,429 19.4	1,565 21.2	1,167 15.8	1,168 15.8	685 9.3
Instruction does not match how I learn	5,760 7.8	2,031 35.3	685 11.9	755 13.1	1,125 19.5	475 8.2	444 7.7	245 4.3

Notes: ^aTotal number of people who responded to the question. ^bTotal number of people who selected the barrier as a response. ^cPercentage of the population of farmers who selected the barrier as a response (e.g., 33,759 / 73,614 = 45.9%). ^dThe number of people who selected the barrier as a response and who reported earning the corresponding annual total farm sales. ^eThe percentage of people who selected the barrier as a response and who reported earning the corresponding annual total farm sales (e.g., 10,989 / 33,759 = 32.6%)

Distance

A one-way-between-groups analysis of variance (ANOVA) was conducted to explore the impact of annual total farm sales on the distance people were willing to travel to attend an educational program that was relevant to them. Survey respondents were divided into the same eight groups based on annual total farm sales

as reported in earlier questions. The Welch test was used since the Levene's test for equality of variance was significant, indicating unequal variances within the population.

The data in Table V reveal that there was a statistically significant difference in distance at the $p < 0.05$ level for all sales groups: $F(7, 14515) = 716$. The effect size between groups calculated using eta squared indicated a medium effect size (0.07). Post hoc comparisons of means used the Games-Howell test since groups were of unequal size and variances were unequal.

The average distance people were willing to travel was 58.1 miles (Table V). There were statistically significant differences in distance people were willing to travel among all farm sales groups except those in farm sales groups 2, 4, and 5. People in these groups were willing to travel between 61 and 69 miles. Those earning the least in farm sales were willing to travel the fewest miles, and those earning the most in total farm sales were willing to travel farthest.

Table V. *Distance Farmers Would Travel for Education by Farm Sales*

Farm sales group #	Farm sales (\$1,000s)	N	M (miles)	SD
1	Less than \$10	14,552	34.4 ^A	27.7
3	\$25-49.9	5,773	51.1 ^B	49.5
6	\$250-499.9	4,283	54.6 ^C	32.4
4	\$50-99.9	6,385	61.0 ^D	91.4
2	\$10-24.9	4,381	65.5 ^D	87.0
5	\$100-249.9	6,966	69.2 ^D	108.7
7	\$500-999.9	3,534	78.7 ^E	54.5
8	Greater than \$1,000	2,796	128.3 ^F	209.9
Total		48,670	58.1	85.7

Note. Means with the same letter in their superscripts do not differ significantly from one another according to a Games-Howell test.

Financial Considerations

Since cost is likely to influence people's decisions about taking part in education and training programs, people were asked an open-ended question about how much they were willing to pay for a year-round education program (Q36) and for half-day (Q37) and full-day (Q38) workshops related to farm business management. A between-groups analysis of variance was conducted to determine if there were significant differences in the prices people were willing to pay based on their annual total farm sales. The eight farm sales groups were the same as those used in previous ANOVA tests and are based on responses to survey question 7 (see appendix). The Welch test was used since the Levene's test for equality of variance was

significant, indicating unequal variances within the population. Games-Howell post hoc comparisons of means were used since farm sales groups were of unequal size and variances were unequal.

There were statistically significant differences at the $p < 0.05$ level among farm sales groups in the amount of money people were willing to pay for a year-round farm business management education program: $F(7, 11311) = 803$. The effect size between groups calculated using eta squared indicated a large effect size (0.14) using Cohen's classification of effect sizes. As indicated in Table W, the average amount people are willing to pay for an annual farm business management program is \$295. The amount people are willing to spend increases with increases in annual total farms sales. Differences among farm sales groups were significantly different among all groups except groups 3, 4, and 5, made up of people earning between \$25,000 and \$249,999 in farm sales. People in those groups were willing to spend between \$311 and \$324 for a year-round farm business management program.

Table W. *Amount Farmers Would Pay for a Year-Round Education Program by Farm Sales*

Farm sales group	Farm sales (in \$1,000s)	N	M (\$)	SD
1	Less than \$10	11,132	95.4 ^A	207.87
2	\$10-24.9	4,117	147.0 ^B	298.69
3	\$25-49.9	4,458	311.1 ^C	381.24
5	\$100-249.9	5,889	324.5 ^C	432.24
4	\$50-99.9	5,768	326.4 ^C	488.20
6	\$250-499.9	3,275	384.8 ^D	649.06
7	\$500-999.9	2,706	684.2 ^E	808.27
8	Greater than \$1,000	1,949	840.4 ^F	1065.72
Total		39,294	295.1	526.48

Note: Means with the same letter in their superscripts do not differ significantly from one another according to a Games-Howell test.

Cost of a Half-Day Workshop

There were statistically significant differences at the $p < 0.05$ level among farm sales groups in the amount of money people were willing to pay for a half-day farm business management education workshop: $F(7, 13764) = 655$ (Table X). The effect size calculated using eta squared indicates a large effect size (0.13) using Cohen's classification of effect sizes. People were willing to pay an average of \$40 for a half-day workshop. The amount people are willing to spend generally increases with increases in total annual farms sales. Differences among farm sales groups were significantly different among all groups except groups 3, 4, and 6, made up of people earning between \$25,000 and \$99,999 and those earning between \$250,000 and \$499,999 in farm sales. People in those groups were willing to spend between \$43.6 and \$45.7 for a half-day farm business management program.

Table X. *Amount Farmers Would Pay for a Half-day Workshop by Farm Sales*

Farm sales group	Farm sales (\$1,000s)	N	M (\$)	SD
1	Less than \$10	13,886	22.0 ^A	25.95
2	\$10-24.9	4,575	27.1 ^B	27.43
5	\$100-249.9	6,510	36.2 ^C	38.06
6	\$250-499.9	3,865	43.6 ^D	51.60
4	\$50-99.9	6,802	44.2 ^D	50.11
3	\$25-49.9	5,029	45.7 ^D	37.12
7	\$500-999.9	3,239	70.2 ^E	97.47
8	Greater than \$1,000	2,503	111.8 ^F	145.25
Total		46,409	40.3	59.01

Note: Means with the same letter in their superscripts do not differ significantly from one another according to a Games-Howell test.

Cost of a Full-day Workshop

There were statistically significant differences at the $p < 0.05$ level among farm sales groups in the amount of money people were willing to pay for a full-day farm business management education workshop: $F(7, 13677) = 452$ (Table Y). The effect size calculated using eta squared indicates a large effect size (0.13) using Cohen's classification of effect sizes. People were willing to pay an average of \$64.5 for a full-day workshop. The amount people are willing to spend increased with increases in annual total farm sales. Differences among farm sales groups were significantly different among all groups except groups 4 and 5, which were made up of people earning between \$50,000 and \$249,999 in farm sales. People in those groups were willing to spend between \$57.3 and \$59.1 for a full-day farm business management program.

Table Y. *Amount Farmers Would Pay for a Full-day Workshop by Farm Sales*

Farm sales group	Farm Sales (\$1,000s)	N	M (\$)	SD
1	Less than \$10	13,472	36.7 ^A	54.11
2	\$10-24.9	4,575	46.4 ^B	54.61
5	\$100-249.9	6,129	57.3 ^C	68.78
4	\$50-99.9	6,453	59.1 ^C	66.10
3	\$25-49.9	4,889	66.4 ^D	51.73
6	\$250-499.9	3,807	71.5 ^E	68.29
7	\$500-999.9	3,111	129.1 ^F	196.39
8	Greater than \$1,000	2,447	186.6 ^G	239.26
Total		44,882	64.5	101.58

Note: Means with the same letter in their superscripts do not differ significantly from one another according to a Games-Howell test.

Availability of Communication Technology

An increasing amount of communications and education is being delivered through the Internet. Farmer accessibility to the Internet needs to be monitored in order to inform education providers. Knowledge of the proportion of farmers who have high-speed Internet available is important for providers who elect to deliver complete or hybrid online courses and seminars.

Use of the Internet

People responded to a survey question that asked if they use the Internet in their home or office by answering *yes* or *no*. Most people (72.1%) indicated they did use the Internet in their home or farm business office (Table Z). The proportion of people in each farm sales group who use the Internet in their home or farm business office generally increases as farm sales income increases. For example, 69.5% of the people in the lowest sales group use the Internet compared to 81.4% of people in the highest sales group.

Table Z. *Access to the Internet by Farm Sales*

Response (Q34)	Farm Sales (\$1,000s)							
	Total	<\$25	\$25-49.9	\$50-99.9	\$100- 249.9	\$250- 499.9	\$500- 999.9	>\$1,000
	61,648	n=30,429	7,250	9,364	9,337	5,230	3,945	3,371
Yes	44,445	17,580	4,883	6,125	6,043	3,916	3,357	2,541
	72.1% ^a	69.5% ^b	75.5%	66.7%	68.5%	79.5%	87.7%	81.4%
No	17,203	7,710	1,587	3,056	2,784	1,012	472	582
	27.9%	30.5%	24.5%	33.3%	31.5%	20.5%	12.3%	18.6%
Total	61,648	25,290 ^c	6,470	9,181	8,827	4,928	3,829	3,123
	100%	41.0%	10.5%	14.9%	14.3%	8.0%	6.2%	5.1%

Notes. ^aThe proportion of people who answered *yes* as a percentage of the total number of people who answered the question ($44,445 / 61,648 = 72.1\%$). ^bThe proportion of people in the less than \$25,000 in farm sales who answered *yes* ($17,580 / 25,290 = 69.5\%$). ^cThe proportion of people who answered the question that are in the less than \$25,000 in farms sales group.

Access to High-Speed Internet

Most people (61.7%) indicated they had high-speed Internet in their home or farm business office (Table AA). More farmers with high farm sales income have access to high-speed Internet than do lower income farmers. For example, only 57.0% of the lowest farm sales income group has high-speed Internet compared to 83.0% of farmers with the highest income from farm sales.

Table AA. Access to High Speed Internet by Farm Sales

Response (Q35)	Farm sales (\$1,000s)							
	Total	<\$25	\$25-49.9	\$50-99.9	\$100- 249.9	\$250- 499.9	\$500- 999.9	>\$1,000
Yes	37,538	14,496	3,285	5,182	5,404	3,375	3,304	2,492
	61.7% ^a	57.0% ^b	52.4%	59.5%	62.5%	68.5%	86.3%	83.0%
No	20,776	9,497	2,574	3,377	2,857	1,495	467	509
	34.2	37.3	41	38.8	33.1	30.3	12.2	7.0
Don't know	2,504	1,444	412	152	380	58	58	-
	4.1	5.7	6.6	1.7	4.4	1.2	1.5	0
Total	60,818	25,437	6,271	8,711	8,641	4,928	3,829	3,001
	100	41.8% ^c	10.3	14.3	14.2	8.1	6.3	4.9

Notes. ^aThe proportion of people who answered yes as a percentage of the total number of people who answered the question (37,538/60,818= 61.7%). ^bThe proportion of people in the less than \$25,000 farm sales group who have high-speed Internet (14,496/25,437= 57.0%). ^cThe percentage of people who answered the questions and earned less than \$25,000 in farm sales (25,437/60.818 = 41.8%).

Providers of Education

The farmers identified the providers they plan on using to educate and train their employees and themselves for the period October 2011 through July 2012 (Table BB). Agricultural suppliers (34.3%), Extension Service (30.9%), government agencies (17.4%), commodity organizations (14.0%), University of Minnesota (13.8%), and the Minnesota State Colleges and Universities (12.2%) were the top six providers indicated. Agricultural consultants (8.4%) and other providers (2.2%) made up the balance of providers to be used.

A closer view of the education providers producers planned to use reveals the percentage of farmers varies considerably by sales revenue, and in all but one case, increases by farm sales up to the \$500,000-\$999,999 category. For example, agricultural suppliers are the anticipated suppliers of education for 16.4% of farmers with sales of less than \$25,000, 39.8% with sales of \$25,000 to \$49,999, 41.3% with sales of \$50,000 to \$99,999, 56.7% with sales of \$100,000 to \$249,999, 73.5% with sales of \$500,000 to \$999,999, and 56.3% with sales of \$1 million or more. The average percentage of farmers within each sales category who anticipated using each of the providers ranged from 11.9% (<\$25,000) to 39.2% (\$500,000 to \$999,999).

Table BB. *Anticipated Providers of Education and Training*

Providers (Q41)	Total	Farms sales (\$1,000s)						
		<\$25	\$25-49.9	\$50-99.9	\$100-249.9	\$250-499.9	\$500-999.9	>\$1,000
	73,614	30,429	7,250	9,364	9,337	5,230	3,945	3,371
	25,324 ^b	4,999	2,888	3,869	5,292	3,478	2,899	1,899
Agricultural Suppliers	34.4% ^c	19.7% ^d	11.40%	15.30%	20.90%	13.70%	11.40%	7.50%
		16.4% ^c	39.8%	41.3%	56.7%	66.5%	73.5%	56.3%
	22,772	8,551	2,508	3,375	2,925	1,942	1,945	1,526
Extension Service	30.9	37.6	11	14.8	12.8	8.5	8.5	6.7
		28.1	34.6	36.0	31.3	37.1	49.3	45.3
	12,800	4,631	1,352	2,172	1,994	1,190	714	748
Government Agencies (FSA, NRCS, MDA, etc.)	17.4	36.2	10.6	17	15.6	9.3	5.6	5.8
		15.2	18.6	23.2	21.4	22.8	18.1	22.2
	10,271	2,321	1,105	1,023	1,693	1,401	1,856	871
Commodity Organizations	14	22.6	10.8	10	16.5	13.6	18.1	8.5
		7.6	15.2	10.9	18.1	26.8	47.0	25.8
	10,138	2,126	1,246	1,492	1,554	1,229	1,377	1,115
University of Minnesota	13.8	21	12.3	14.7	15.3	12.1	13.6	11
		7.0	17.2	15.9	16.6	23.5	34.9	33.1
	9,001	2,138	1,112	1,419	1,070	1,133	1,012	1,117
MnSCU ^a	12.2	23.8	12.4	15.8	11.9	12.6	11.2	12.4
		7.0	15.3	15.2	11.5	21.7	25.7	33.1
	6,216	587	140	1,212	1,224	923	1,011	1,119
Agricultural Consultants	8.4	9.4	2.3	19.5	19.7	14.8	16.3	18
		1.9	1.9	12.9	13.1	17.6	25.6	33.2

Notes. ^aMnSCU = Minnesota State Colleges and Universities. ^bTotal number of people who answered the question. ^cPercentage of all people who selected *agricultural suppliers* (25,324/73,614 = 34.4%). ^dPercentage of farmers who selected agricultural suppliers who earn less than \$25,000 from annual total farms sales (4,999 / 25,324 = 19.7%). Means with the same letter in their superscripts do not differ significantly from one another according to a Games-Howell test. ^ePercentage of total within the farm sales category (4,999 / 30,429 = 16.4%).

Farmers with sales of \$500,000 to \$999,999 in sales indicated the highest percentage intending to use agricultural suppliers (73.5%), Extension Service (49.35%), commodity organizations (47.0%), and the University of Minnesota. Farmers with sales of \$1 million or more showed the highest percentage of producers intending to use the Minnesota State Colleges and Universities system (33.1%) and agricultural consultants (33.2%). Farmers with sales of \$50,000 to \$99,000 showed the largest percentage intending to use education from government agencies.

SECTION III

Conclusions and Recommendations

The primary conclusions and recommendations for each of the analyses are addressed in this section. Further review of the data will ensure that additional suggestions for delivering programs will emerge to better meet the needs of Minnesota farmers.

Business Characteristics and Management Education Needs of Minnesota Farmers

<u>Conclusions</u>	<u>Recommendations</u>
1. Minnesota farmers use a variety of vendors to access information and services to help producers reach their goals.	1.1 Education providers should partner with vendors of farm information and services to design and deliver pertinent, effective, and timely education for producers.
2. The summary of farm business characteristics reveals that Minnesota farmers are very diverse in regard to their forms of business, type of farming operations, annual average total farm sales, education and age.	2.1 Education providers need to use the information in this study along with additional information to ensure they are meeting the education needs of their diverse audiences.
3. While the largest number of farmers still use cash crop and livestock sales, many use a variety of other traditional commodity futures-based and digital approaches to marketing.	3.1 Education providers need to continue to provide education about a variety of marketing strategies.
4. A large number of Minnesota farmers showed interest for foundational and advanced education in selected business management education topics.	4.1 Education and training providers and partners should establish a systematic multi-year approach to delivering foundational, advanced, and continuing education that addresses a variety of business management topics.
5. While there are some common interests among all farmers, producers with different average	5.1 Education providers should work with partners to strategically deliver desired business

annual farm sales have differing educational interests for foundational and advanced education.

6. A very large number of Minnesota farmers showed interest in a variety of business management education topics.

7. More than 4,000 farmers are interested in immediate education for selected business management education topics.

management education to farmers who have common characteristics and interests.

- 6.1 Education providers (including but not limited to the Minnesota State Colleges and Universities system colleges with Farm and Production Management Education programs, University of Minnesota Center for Farm Financial Management, Minnesota Extension Service, commodity organizations, and agricultural suppliers) and partners should explore ways to continue to provide quality business management education to Minnesota farmers.

- 7.1 Education providers and partners should plan and deliver education for the highest priority education topics in the next two years.

Crop Production Management Education Needs of Minnesota Farmers

Conclusions

1. A large share of producers for each of the major crops expressed interest in production management education.
2. Producers of the major crops have production management education interests among both common and unique production topics.
3. A large number of producers of the major crops have immediate interest in three to five production management education hot topics.

Recommendations

- 1.1 Education providers and their partners should offer production management education for key production management topics.
- 2.1 Education providers and partners should use the data of this study to understand producers' education interests in production management education for the major crops.
- 3.1 Education providers and partners can leverage the expertise of their technical staff members to design educational programs that can be offered when producers are available using traditional and Internet-based technologies.

4. A large number of Minnesota farmers show enough interest in secondary agronomic, specialty, and horticultural crop education to warrant programming.

4.1 Education providers and partners can work strategically with commodity, agri-industry and government organizations to offer timely education and training for less popular agronomic and horticultural crops.

Livestock Production Management Education Needs of Minnesota Farmers

Conclusions

1. A large share of producers for each of the major classes of livestock expressed interest in production management education.
2. A large number of farmers who raise beef, dairy, and hogs desire production management education for common and unique production topics.
3. The majority of producers of the major livestock groups have immediate interest in production management education for selected topics.

Recommendations

- 1.1 Since a large number of livestock producers have expressed interest, education providers and partners should offer production management education instruction for key production topics of the major classes of livestock.
- 2.1 Noting the likelihood of sufficient sizes of groups to teach, educational providers are encouraged to work with partners to strategically plan and deliver production management education in locales where farmers reside.
- 3.1 Education providers and partners should leverage the expertise of their technical staff members to teach the livestock production management topics of immediate interest to Minnesota farmers using traditional and Internet-based technologies.

Employee Training Needs of Minnesota Farmers

Conclusions

1. A large proportion of Minnesota farmers expressed the need for employability, mechanical, livestock-related, crops and soils, and/or business education and training for their employees.
- 2.

Recommendations

- 1.1 Educational providers and their partners need to take advantage of the opportunity to design and deliver training for the employees of thousands of Minnesota farmers.

Education and Training Delivery Preferences of Minnesota Farmers

Conclusions

1. Except for limited preference for instruction in off-campus classrooms and on host farms, Minnesota farmers as a single group have no specific preferences for education program delivery strategies.
2. Farmers with farm sales of \$250,000 and above indicate more acceptance of a variety of program delivery options.

Recommendations

- 1.1 In addition to delivering education at off-campus classrooms and host farms, education providers and partners should introduce and demonstrate a breadth of delivery approaches when working with Minnesota farmers.
- 2.1 In order to help all farmers acclimate to a breadth of delivery options, deliver high-demand business and production management education programming using a variety of delivery options for farmers with all levels of farm sales.

Instructional Methods and Strategies Preferences of Minnesota Farmers

Conclusions

1. Noting that the level of preference differs among farmers with their level of annual farm sales, Minnesota farmers are open to the use of a variety of instructional methods and strategies.

Recommendations

- 1.1 Education providers and partners should continue to secure student preferences and incorporate a variety of the most preferred instructional methods when teaching farmers.
- 1.2 Education providers and partners should continue to introduce and demonstrate a range of proven but less-preferred instructional methods and strategies.
- 1.3 Education providers need to ensure that their instructors can effectively incorporate a wide variety of instructional methods and strategies that align with farmer preferences into their instruction.

Instructional Media Preferences of Minnesota Farmers

Conclusions

1. Minnesota farmers as a group have a preference for the use of specific but limited numbers of instructional media.

Recommendations

- 1.1 Education providers need to continue to use the preferred instructional media when teaching farmers.
- 1.2 Since preferences differ with increasing farm sales, education providers and partners should continue to monitor student preferences and incorporate a variety of preferred instructional methods when instructing farmers.

Barriers to Participation in College and University Education Programming

Conclusions

1. There are common barriers to education and training that prevent farmers from participating in educational opportunities delivered by colleges and universities.

Recommendations

- 1.1 Education and training providers need to design, market, and deliver education and training programs that address barriers and effectively meet the needs and convenience of the farmers.

Access to Business and Production Management Education

Conclusions

1. Regardless of the type of farmer (crop, crop and livestock, or livestock), Minnesota farmers are willing to travel about 25-30 miles each way to attend education events.
2. Farmers have a specific range of prices they are willing to pay for half-day and full-day education and yearlong business management programs.

Recommendations

- 1.1 Education and training providers must deliver educational programs at sites that limit travel distance and time for the producers.
- 2.1 Education providers need to assess and carefully consider the price points of farmers when designing and delivering farm business and production management education programming.

Availability of Communication Technologies

Conclusions

1. Annual farm sales have an impact on farmers' access to the Internet in their homes or businesses.
2. The Internet is used by 72% of all farmers in their home or business and 62% of Minnesota farmers have high-speed Internet in their home or businesses.

Recommendations

- 1.1 Education providers need to be aware that not all farmers in their audience have access, knowledge or skills needed to use the Internet effectively.
- 2.1 Educational services, communications, and elements of education can be provided to an increasing number of farmers via the Internet.
- 2.2 Given the economic challenges, staffing patterns, and access to resources, education providers can strategically market hybrid courses and fully online education and programming to farmers who have such preferences and access to high-speed Internet.

Preferred Providers of Business and Production Management Education for Minnesota Farmers

Conclusions

1. Agricultural suppliers and the Minnesota Extension Service are the primary education and training providers most farmers anticipate using in 2012.
2. Farmers with sales of \$500,000 and above plan on receiving education and training from a large number of providers.

Recommendations

- 1.1 All education providers can expand their access to more farmers by collaboratively planning and delivering education with the major providers of education and training.
- 2.1 Education providers can enhance producer education by strategically incorporating high quality instruction from an array of providers at various producer and education events.

SECTION IV

Bibliography¹

- Ahearn, M. C., & Newton, D. J. (2009). Beginning farmers and ranchers, EIB-53, U.S. Department of Agriculture, Economic Research Service. Retrieved on April 15, 2011, from <http://www.ers.usda.gov/Publications/EIB53/EIB53.pdf>.
- Ariza, B.L. (2009). Understanding Hispanic farmers and their educational needs: A case of southwestern Michigan. Proceedings of the 25th annual meeting of AIAEE, InterContinental San Juan Resort. Retrieved on June 4, 2011, from <http://www.aiaee.org/attachments/article/600/067.pdf>.
- Barbercheck, M., Brasier, K.J., Kiernan, N.E., Sachs, C., Trauger, A., Findeis, J., Stone, A., & Moist, L.S. (2009). Meeting the extension needs of women farmers: A perspective from Pennsylvania. *Journal of Extension*. 47(3). Retrieved on March 15, 2011, from http://www.joe.org/joe/2009june/pdf/JOE_v47_3a9.pdf.
- Birkenholtz, R.J. (1999). Adult Learning. Danville, IL: Interstate Publishers, Inc.
- Bitsch, V. (2009). *2008 Michigan dairy industry survey*. Agricultural economics report. Department of Agriculture, Food and Resource Economics, East Lansing, MI: Michigan State University, East Lansing, MI. Retrieved on March 31, 2011, from <http://ageconsearch.umn.edu/handle/51842>.
- Bitsch, V., Lee, K., Ferris, T., Ross, D., & McFadden, M. (2008). *Dairy farmers priorities –2008 Michigan dairy industry priorities*. Michigan dairy review. Michigan State University, East Lansing, MI. Retrieved on August 18, 2011, from <https://www.msu.edu/~mdr/vol13no4/bitsch.html>.
- Brasier, K., & Findeis, J. (2008). Agricultural education: Gender identity and knowledge exchange. *Journal of Rural Studies*, 24(4), 432–39.
- Brasier, K., Barbercheck, M., Kiernan, N.E., Sachs, C., Schwartzberg, A., & Trauger, A. (2009).

- Extension educators' perceptions of the educational needs of women farmers in Pennsylvania. *Journal of Extension*, 47(3). Retrieved on March 15, 2011, from http://www.joe.org/joe/2009june/pdf/JOE_v47_3a9.pdf.
- Cross, K. P. (1981). *Adults as Learners*. San Francisco: Jossey-Bass.
- Fagan, W.T. (1991). *Understanding learning participation in adult literacy programs*. St. Johns, NL: Memorial University of Newfoundland and Labrador. ERIC Reproduction Document ED 333 108.
- Farner, S., Rhoads, M. E., Cutz, G., & Farner, B. (2005). Assessing the educational needs and interests of the Hispanic population: The role of extension. *Journal of Extension*, 43(4). Retrieved on June 4, 2011, from <http://www.joe.org/joe/2005august/rb2.php>.
- Frantz, N., Piercy, F., Donaldson, J., Richard, R. & Westbrook, J. (2010). How farmers learn: Implications for agricultural educators. *Journal of Rural Social Sciences*, 25(1), 37-59. Retrieved on May 1, 2011, from <http://www.ag.auburn.edu/auxiliary/srsa/pages/Articles/JRSS%202010%2025%201%2037-59.pdf>.
- Garcia-Pabon, J.L., & Lucht, J.R. (2009). Latino farmers in Missouri: Risks, services, and implications for extension. *Journal of Extension*. 47(4). Retrieved on June 6, 2011, from <http://www.joe.org/joe/2009august/a3.php>.
- Gaul, S., Hochmuth, R.C., Israel, G.D., & Tredewell, D. (2009). *Characteristics of small farm operators in Florida: Economics, demographics, and preferred information channels and sources*. (WCO88). Gainesville: Department of Agricultural Education and Communication, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Retrieved on March 15, 2011, from <http://edis.ifas.ufl.edu/wc088>.
- Ikerd, J. (2008). *The agricultural extension system and the "new American farmer": The opportunities have never been greater*. Paper presented at the 2008 National Association of County Agriculture Agents Conference, Greensboro, NC, July 17, 2008. Retrieved on April 1, 2011, from <http://web.missouri.edu/~ikerdj/papers/Greensboro%20--%20Extension%20New%20American%20Farmer.htm>.
- Israel, G.D. & Wilson, K.M. (2006). Sources and channels of information used by educational program clients. *Journal of Applied Communications* 90(4): 55–78. Retrieved on March 31, 2011, from http://www.aceweb.org/archsite/JAC/pdf/JAC_pdfs/JAC9004/JAC9004_RS03.pdf.

- Jacobson, B. (2005). *The status of organic agriculture in North Dakota*. North Dakota Department of Agriculture. Northern Plains Sustainable Agriculture Society. Retrieved April 2, 2011, from <http://www.agdepartment.com/Organic/StatusOrganicAgND.htm>.
- Joerger, R. M. (2011). *Personal Conversation with Dr. Richard Joerger on Farm Business Education in Minnesota*. St. Paul, MN: University of Minnesota.
- Joerger, R. M. (2003). Student perspectives of the nature, effectiveness, and value of the Minnesota farm business management education program. *Journal of Agriculture Education* 44 (1): 56-69. Retrieved on August 24, 2011, from <http://www.jae-online.org/back-issues/32-volume-44-number-1-2003/350-student-perceptions-of-the-nature-effectiveness-and-value-of-the-minnesota-farm-business-management-education-program-.html>.
- Joerger, R. & Murray, J. (1999, December). Farm business management education programs: A commendable past and a challenging future! *Agricultural Education Magazine*. 43(4), 21-24.
- Joerger, R. M., Ipe, M., & Persons, E. (2000). *An investigation of the nature, effectiveness, and impact of the Minnesota farm business management education program: The final report*. Division of Agriculture, Foods, and Environmental Education, Colleges of CEHD and COAFES, University of Minnesota, St. Paul, MN.
- Johnson, S.E., Bowlan, M., McGonigal, J., Ruhf, K., & Sheils, C. (2001). Listening to new farmers – Findings from new farmer focus groups, Northeast New Farmer Reports. The Northeast new farmer network. Retrieved April 12, 2011, from http://www.smallfarm.org/uploads/uploads/Files/LISTENING_TO_NEW_FARMERS.pdf.
- Johnson, S.E., Ruhf, K., Marion, B., Sheils, C., & McGoonigal, J. (2001). *Northeast new farmer report: Gaps in new farmer program and services*. Northeast new farmer network. New England Small Farm Institute. Retrieved on August 18, 2011, from http://www.smallfarm.org/uploads/uploads/Files/GAPS_IN_NEW_FARMER_PROGRAMS.pdf.
- Johnson, S.B., Carter, H.S., & Kaufman, E.K. (2008). Learning styles of farmers and others involved with the Maine potato industry. *Journal of Extension*, 41(3). Retrieved on April 15, 2011, from <http://www.joe.org/joe/2008august/rb7.php>.
- Kiernan, N. E. (2005). *Women in production agriculture: A hidden audience in your county?* Tipsheet #77, University Park, PA: Penn State Cooperative Extension. Retrieved on March 26, 2009, from <http://www.extension.psu.edu/evaluation/pdf/TS77.pdf>.

- Lezberg, S. & Newenhouse, A. (2009). *Effective outreach for Wisconsin's women and Hispanic farmers: Using community based social marketing for research*. Paper presented at the Annual Meeting of the 5th National Small Farm Conference, Springfield, Illinois. Retrieved on June 15, 2011 from http://citation.allacademic.com/meta/p_mla_ap_a_research_citation/3/7/2/7/7/p372773_index.htm
- 1.
- Lezberg, S. & Reyes-Hamaan, J. (2010). Hispanic farmers in Wisconsin. Environmental Resources Center. Madison, WI: University of Wisconsin. Retrieved on August 18, 2011, from http://www.uwex.edu/erc/sustainableag/docs/HispanicFarmerReport_Jan2010.pdf.
- MacKeracher, D., Stuart, T., and Potter, J. (2006). *State of the Field Report: Barriers to Participation in Adult Learning*. Fredericton, New Brunswick, Canada: University of New Brunswick.
- Mark, D.R., (2005). *Students perspectives on farming and ranching careers, agriculture education, and beginning farmer assistance programs*. (180) Lincoln: Department of Agriculture Economics, College of Agricultural Sciences and Natural Resources, Institute of Agriculture and Natural. University of Nebraska.
- Mulder, M. (2006). From tradition to innovation: skill needs in the agri-food sector. In, *Skills for Europe's future: anticipating occupational skill needs* (pp 93 – 105). European Centre for the Development of Vocational Training (CEDEFOP) panorama series. Office for Official Publications of the European Communities: Luxembourg. ISBN 978-92-896-0573-1
- National Research Council (NRC). (2009). *Transforming Agricultural Education for a Changing World*. Committee of a Leadership Summit to Effect Change in Teaching and Learning, Washington, DC: National Academy of Sciences.
- Nelson, D.R. & Trede, L.D. (2004). Educational needs of beginning farmers as perceived by Iowa extension professional staff. *Journal of Extension*, 42(1). Retrieved March 15, 2011, from <http://www.joe.org/joe/2004february/rb2.php>.
- Niewolny, K.L. & Lillard, P.T., (2010). Expanding the boundaries of beginning farmer training and program development: A review of contemporary initiatives to cultivate a new generation of American farmers. *Journal of Agriculture, Food Systems, and Community Development*. 1(1): 65-88. Retrieved on March 15, 2011, from http://www.agdevjournal.com/attachments/123_JAFSCD_Cover_Copyright_Contents_08-

10.pdf.

- Persons, E., Lehto, D., Casey, M., & Wittenberg, T. (1987). *The impact of the Minnesota adult farm management education program on farm family survival: A study of crisis prevention and intervention*. Minnesota Research and Development Center, University of Minnesota, St. Paul, MN.
- Polson, C.J. (1993). *Teaching adult students*. IDEA Paper No. 29. Manhattan, KS: Kansas State University, Center for Evaluation and Development. ERIC Reproduction Documents ED 395 136.
- Potter J. and Alderman, T.E. (1992). *A profile of adult learners at the University of New Brunswick*. Fredericton, New Brunswick, Canada: University of New Brunswick.
- Richardson, V. (1979). *Rewarding returns from an ingenious investment: The organization, analysis, and evaluation of adult farm management programs as they are conducted in Minnesota*. Colloquium paper, Department of Agricultural Education, University of Minnesota, St. Paul, MN.
- Senf, D., Maki, W., & Houck, J. P. (2008). *The Economic Importance of Minnesota's Food and Agriculture Industry*. St. Paul, MN: Department of Agricultural and Applied Economics, University of Minnesota.
- Sheils, C.M. & Descartes, M. (2001). Addressing gaps in new farmer programming. Growing new farmers – A Northeast service provider's consortium. Professional Development Article Series # 103. Retrieved April 11, 2011, from http://docs.google.com/viewer?a=v&q=cache:Thrxy-D32T4J:www.smallfarm.org/uploads/uploads/Files/Addressing_Gaps.pdf+professional+development+needs+of+farmers&hl=en&gl=us&pid=bl&srcid=ADGEESjCnYngVVIEeSvoY3n0DIjSZ_kNV9SigsHqXz8eTkqnGOGG_ATKB.
- Suvedi, M., Eunseong, J., & Coombs, J. (2010). Education needs of Michigan farmers. *Journal of Extension*, 48(3). Retrieved August 18, 2011, from <http://www.joe.org/joe/2010june/rb7.php>
- Swisher, M.E., Brennan, M., Shaw, M., & Rodriguez, J. (2007). *Hispanic-Latino farmers and ranchers*. Final report submitted to CSREES by University of Florida, Center for Organic Agriculture, Department of Family, Youth and Community Sciences, September 2006 – September 2007. Retrieved June 4, 2011, from http://www.csrees.usda.gov/nea/ag_systems/pdfs/hispanic_full_report.pdf
- Taylor, P., & Fransman, J. (2004). *Exploring the role of higher learning institutions as agents of*

- development and social change*. Institute of Development Studies Working Paper 219. Brighton, England. Retrieved on August 1, 2011, from <http://www.ids.ac.uk/files/Wp219.pdf>.
- Trauger, A., Sachs, C., Barbercheck, M., Kiernan, N. E., Braiser, K., & Findeis, J. (2008). Agricultural education: Gender identity and knowledge exchange. *Journal of Rural Studies*, 24, 432-439. Retrieved on August 28, 2011, from http://www.cals.ncsu.edu/agexed/ace523/Ag_Ed_Women-JRural_Studies-2008.pdf.
- Trauger, A., Sachs, C., Barbercheck, M., Kiernan, N. E., Trede, L.D., & Whitaker, S. (1998). Beginning farmer education in Iowa: Implications to extension. *Journal of Extension*, 36(5). Retrieved March 13, 2011, from <http://www.joe.org/joe/1998october/a3.html>.
- Trede, L. & Whitaker, L.S. (2000). Educational needs and perceptions of Iowa beginning farmers toward their education. *Journal of Agricultural Education*, 41(1), 39-48. Retrieved August 24, 2011, from <http://www.jae-online.org/back-issues/45-volume-41-number-1-2000/455-educational-needs-and-perceptions-of-iowa-beginning-farmers-toward-their-education-.html>.
- U.S. Department of Agriculture, (2009). *Farm computer usage and ownership*. National Agricultural Statistics Service. Retrieved on March 31, 2011, from <http://usda.mannlib.cornell.edu/usda/nass/FarmComp//2000s/2009/FarmComp-8-14-2009.pdf>.
- U.S. Department of Agriculture. (2007). The census of agriculture, Minnesota state data. National Agricultural Statistics Service. Retrieved March 31, 2011, from http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_State_Level/Minnesota/st27_1_050_050.pdf.
- U.S. Department of Agriculture. (2007). 2007 Census of Agriculture. Retrieved March 16, 2011, from http://www.agcensus.usda.gov/Publications/2007/Online_Highlights_Fact_Sheets/women.pdf.
- Vergot, P., Israel, G.D., & Mayo, D.E. (2005). Sources and channels of information used by beef cattle producers in twelve counties of the Northwest Florida extension district. *Journal of Extension* 43(2). Retrieved on March 19, 2011, from <http://www.joe.org/joe/2005april/rb6.php>.
- Warner, J. C., (1990). Farm business management state curriculum guide. Minnesota State Board of Technical Colleges, St. Paul: MN.

Note. ¹The bibliography was prepared for the review of literature that was conducted as part of this study.

SECTION V

Appendix

Education Interests, Needs, and Learning Preferences of Minnesota Producers Survey

Dear Producer:

This survey is being conducted by the USDA, NASS, Minnesota Field Office with Funding from the Minnesota State Colleges & Universities for the education and benefit of farmers. Information about your operation will remain confidential and response to this survey is voluntary.

Thank you,

Doug Hartwig, Director
USDA, NASS, Minnesota Field Office
800-453-7502

Richard M. Joerger, PhD
System Director for Agriculture, and Business Program Coordination
Minnesota State Colleges & Universities – Office of the Chancellor

[Please verify name and mailing address of this operation. Make corrections (including the correct operation name) on the label and continue.]

Section 1. Background Information

Instructions: Please mark or insert a written response for each of the following questions.

1. What is your primary role in your farm business?

0001

- ☐ ¹ Owner and operator ☐ ² Spouse of the primary owner and operator
☐ ³ Business partner – family member ☐ ⁴ Business partner – non-family member
☐ ⁵ Other Roles: (Please specify): _____

2. Place a check by the primary operator(s) of your farm. (Mark all that apply)

- ☐ ⁰⁰⁰² You ☐ ⁰⁰⁰³ Your spouse ☐ ⁰⁰⁰⁴ Your business partner(s)
☐ ⁰⁰⁰⁵ Other (Please specify): _____

3. The farm I operate and/or am affiliated with uses the following vendors to assist the operation. (Mark all that apply.)

- | | |
|--|---|
| <input type="checkbox"/> ⁰⁰⁰⁶ Livestock marketing advisor(s) | <input type="checkbox"/> ⁰⁰⁰⁷ Tax preparation service |
| <input type="checkbox"/> ⁰⁰⁰⁸ Crop marketing advisor(s) | <input type="checkbox"/> ⁰⁰⁰⁹ Business accounting service |
| <input type="checkbox"/> ⁰⁰¹⁰ Bankers | <input type="checkbox"/> ⁰⁰¹¹ Lawyer |
| <input type="checkbox"/> ⁰⁰¹² Farm Business Manager Educator(s) | <input type="checkbox"/> ⁰⁰¹³ Marketing specialist for value-added functions |
| <input type="checkbox"/> ⁰⁰¹⁴ Crop consultant | <input type="checkbox"/> ⁰⁰¹⁵ Retirement specialist |
| <input type="checkbox"/> ⁰⁰¹⁶ Livestock consultant | <input type="checkbox"/> ⁰⁰¹⁷ Nutrition consultant |
| <input type="checkbox"/> ⁰⁰¹⁸ Veterinary service) | <input type="checkbox"/> ⁰⁰¹⁹ Other farmers who have similar operations |
| <input type="checkbox"/> ⁰⁰²⁰ Other(s) (Please specify): _____ | |

4. Which of the following best describes the form of your farm business? ⁰⁰²¹

- ☐ ¹ Sole proprietorship ☐ ² Corporation (LLC, C, or other) ☐ ³ Legal Partnership
☐ ⁴ Other (Please specify): _____

5. How many years have you been involved in farming as a part or full owner of a farm? Please enter a number.
⁰⁰²² _____

6. In what county is your farm located (primary county)? _____ ⁰⁰²³

7. What is the average annual total farm sales (including government payments) for your farming operations? ⁰⁰²⁴

- ☐ ¹ < \$10,000 ☐ ² \$10,000-\$24,999 ☐ ³ \$25,000-\$49,999
☐ ⁴ \$50,000-\$99,999 ☐ ⁵ \$100,000-\$249,999 ☐ ⁶ \$250,000-\$499,999
☐ ⁷ \$500,000-\$999,999 ☐ ⁸ \$1,000,000-\$2,499,999 ☐ ⁹ > \$2,500,000

8. Which of the following crop enterprises do you have on your farm? (Please mark all that apply).

- ☐ ⁰⁰²⁵ Alfalfa and/or mixed hay ☐ ⁰⁰²⁶ Barley ☐ ⁰⁰²⁷ Canola ☐ ⁰⁰²⁸ Corn
☐ ⁰⁰²⁹ Wheat ☐ ⁰⁰³⁰ Oats ☐ ⁰⁰³¹ Soybeans ☐ ⁰⁰³² Sugar beets
☐ ⁰⁰³³ Fruits ☐ ⁰⁰³⁴ Vegetables
☐ ⁰⁰³⁵ ☐ Other Crops and Vegetables: (Please specify): _____

9. Which of the following livestock and/or poultry enterprises do you have on your farm? (Please mark all that apply)>

- ☐ ⁰⁰³⁶ Beef ☐ ⁰⁰³⁷ Dairy ☐ ⁰⁰³⁸ Hogs ☐ ⁰⁰³⁹ Sheep ☐ ⁰⁰⁴⁰ Goats
☐ ⁰⁰⁴¹ Horses ☐ ⁰⁰⁴² Turkeys ☐ ⁰⁰⁴³ Chickens ☐ ⁰⁰⁴⁴ Geese
☐ ⁰⁰⁴⁵ ☐ Other Livestock and Poultry: (Please specify): _____

10. Which of the following best describes your farming operation (select the category for which you obtain 70% or more of your gross sales.)
⁰⁰⁴⁶

- ☐ ¹ Crops ☐ ² Crops and Livestock ☐ ³ Livestock ☐ ⁴ Custom Work
☐ ⁵ Fruits /or vegetables ☐ ⁶ Specialty crops ☐ ⁷ Other (Please specify): _____

11. Which of the following types(s) of farming best describes your operation? (Please mark all that apply).

- ☐ ⁰⁰⁴⁷ Conventional ☐ ⁰⁰⁴⁸ Certified Organic ☐ ⁰⁰⁴⁹ Organic Transitional
☐ ⁰⁰⁵⁰ Sustainable ☐ ⁰⁰⁵¹ Grass Based ☐ ⁰⁰⁵² Organic (uncertified organic procedures)

12. What types of marketing strategies are you using in your farm business during 2011? (Please mark all that apply).

- ☐ ⁰⁰⁵³ Crops – cash sales ☐ ⁰⁰⁵⁴ Direct marketing of meat
☐ ⁰⁰⁵⁵ Crops – commodity futures market ☐ ⁰⁰⁵⁶ Value-added approaches to marketing (i.e., processed meats, milk, grains, and other produce for food and/or energy)
☐ ⁰⁰⁵⁷ Crops – contracts ☐ ⁰⁰⁵⁹ Internet-based product marketing
☐ ⁰⁰⁵⁸ Livestock – cash sales ☐ ⁰⁰⁶¹ Product marketing using social media (i.e., Facebook, Twitter, e-mail, etc.)
☐ ⁰⁰⁶⁰ Livestock – commodity futures market ☐ ⁰⁰⁶³ ☐ Traditional advertising – newspaper, radio, or TV
☐ ⁰⁰⁶² Livestock – contracts
☐ ⁰⁰⁶⁴ Direct marketing of fruits and vegetables
☐ ⁰⁰⁶⁵ Other(s) (Please specify): _____

Section 2. Farm Business Management Education Interests and Needs

13. Indicate your interest in education or training for the following business management topics by selecting FOUNDATIONAL if you have interest in learning or re-learning introductory concepts and skills. Select ADVANCED for learning intermediate or advanced concepts and skills. Select NI if you do not have interest in education or training for this topic.

		Foundational	Advanced	NI
Establishing business, family, and personal goals	0066	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Evaluating and selecting the best business structure model(s) for your business	0067	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Implementing a comprehensive recordkeeping system (i.e., business records, finance, livestock and crop production records, equipment records, environmental records)	0068	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Complete an annual farm business analysis that provides liquidity, solvency, profitability, efficiency, production information and other measures of your farm with benchmark data	0069	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Using the annual farm business analysis reports for making farm business decisions	0070	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Developing current crop &/or livestock enterprise budgets which include break even calculations	0071	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Using the current crop &/or livestock enterprise budgets to develop an annual cash flow plan	0072	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Determining the capital and corresponding credit needs of the business (i.e., buildings, land, and equipment)	0073	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Selecting the best options for acquiring and financing farm capital assets (land, buildings, equipment, livestock, etc.)	0074	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Preparing financial statement and other documents commonly used for securing capital (i.e., balance sheets, cash flow, income statements, planning documents)	0075	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Creating a farm business plan	0076	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Exploring estate planning options	0077	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Exploring business transition options (e.g., changing or adding enterprises, etc.)	0078	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Hiring, managing, evaluating, and terminating the employment of business employees	0079	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Creating a marketing plan	0080	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Using the commodity markets to increase profits and minimize risk	0081	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Evaluating tax management strategies	0082	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Evaluating the impact of personal retirement plans on tax liability	0083	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Implementing a comprehensive risk management assessment plan for the farm and non-farm operations (i.e., marketing, insurance, environmental, etc.)	0084	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Identifying new technologies needed to remain competitive	0085	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Developing written and verbal skills for communicating with business and family members, agricultural suppliers, lenders, and other professionals	0086	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Identifying the business benefits of membership in farm and community organizations	0087	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

Evaluating the benefits of serving in leadership positions of farm and community organizations

0088 ☐ 1 ☐ 2 ☐ 3

14. Selected from the above list or elsewhere, list up to three "Hot" BUSINESS MANAGEMENT TOPICS for which you have the greatest education need.

a. _____ 0089 b. _____ 0090 c. _____
 _____ 0091

Section 3. Crops Production Management Education Interests and Needs

First of all, if you have an interest in learning more about crop production, indicate so in the next question. Then insert the name of the top two crops (Crop Title I and Crop Title II) you would like to learn more about in production management classes, workshops, or other events.

15. Do you currently grow or plan on growing crops on your farm: 0092
☐ 1 Yes ☐ 2 No, please proceed to Section 4 on page 5.

16. Insert the name of the first crop you would like to learn more about as
CROP TITLE I. (For Example, Crop Title I is soybeans)----->

17. Insert the title of the second crop you would like to learn more about as
CROP TITLE II. (For Example, Crop Title II may be wheat)----->

18. INSTRUCTIONS: Mark the boxes under Crop I and Crop II for the listed production management topics for which you would like additional education.

PRODUCTION MANAGEMENT TOPICS:	
Facilities Design, Management &/or Maintenance	0095
Food Safety	0096
Handling and Storage	0097
Harvesting	0098
Machinery Selection and Maintenance	0099
Marketing	0100
Pest Management	0101
Planting	0102
Precision Farming	0103
Soil Conservation	0104
Soil Fertility and Management	0105
Variety Selection	0106
Water Management	0107
Government Programs (i.e., FSA & NRCS, Labor Regulations, etc.)	0108
Environmental Programs (i.e., EPA, MPCA, NRCS, etc.)	0109
Other: (Please specify) _____	0110

Crop Title I ↓	
0093	Crop Title II ↓
	0094
→	
↓	↓
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 1	<input type="checkbox"/> 2

19. Selected from the above list or elsewhere (research, farm magazines, guest speakers, etc.) list up to two PRODUCTION MANAGEMENT “Hot” topics you need to be informed about *for your Crop Title I* (See Question 16).

0111 b. _____ 0112

20. Selected from the above list or elsewhere list up to two PRODUCTION MANAGEMENT “Hot” topics you need to be informed about *for your Crop Title II* (See Question 17).

0113 b. _____ 0114

Section 4. Livestock Production Management Education Interests and Needs

First, if you have an interest in learning more about livestock production, indicate so in the next question. Then insert the name of the top two species or classes of livestock (Livestock I and Livestock II) you would like to learn more about in production management classes, workshops, or other events.

21. Do you currently raise or plan on raising livestock on your farm? ⁰¹¹⁵
☐ 1 Yes ☐ 2 No, please proceed to Section 5, Question 27

22. Insert the name of your first LIVESTOCK SPECIES OR CLASS of LIVESTOCK for which you would like to learn more as Livestock I. (An example may be “dry cows” or “gestating sows”, etc.) -----→

23. Insert the title of the second LIVESTOCK SPECIES OR CLASS of LIVESTOCK you would like to learn more about as Livestock II.-----→

24. INSTRUCTIONS: Mark the boxes under Livestock I and Livestock II for the listed production management topic for which you would like additional education.

PRODUCTION MANAGEMENT TOPICS:		Species or Class of Livestock I ↓ 0116	Species or Class of Livestock I I ↓ 0117
		↓	↓
Basic Animal Husbandry Practices	0118	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Breeding and Selection	0119	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Equipment Selection	0120	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Facilities Selection, Design, Management and/or Maintenance	0121	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Feed Selection, Formulation, and Management	0122	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Health and Basic Veterinary Care and Practices	0123	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Live Animal Handling	0124	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Marketing	0125	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Nutrition	0126	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Ventilation	0127	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Waste Handling Systems and Management	0128	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Government Programs (i.e., FSA & NRCS, Labor Regulations, etc.)	0129	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Environmental Programs (i.e., EPA, MPCA, NRCS, etc.)	0130	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Other: (please Please specify) _____	0131	<input type="checkbox"/> 1	<input type="checkbox"/> 2

25. Selected from the above list or elsewhere for your Class of Livestock I, list up to two PRODUCTION MANAGEMENT “Hot” topics you need to be informed about in the near future. (See Question 22)

a. _____ 0132 b. _____ 0133

26. Selected from the above list or elsewhere for your Class of Livestock or Species II, list up to two PRODUCTION MANAGEMENT “Hot” topics you need to be informed about in the near future. (See Question 23)

a. _____ 0134 b. _____ 0135

Section 5. Employee Education Interests and Needs

27. Do you have hired employees on your farm? 0136 ☐¹ Yes ☐² No, please proceed to Question 29.
28. Insert the names of the education and training topics your paid or unpaid employees need to learn in order to be more effective employees. Examples include workplace safety or workplace behaviors (punctuality, attention to detail, cleanliness, communication skills, safety and health, equipment maintenance, etc.)
- a. _____ 0137 b. _____ 0138

Section 6. Producer Preferences for the Delivery of Education and Training Programs

29. Place a mark on the response which indicates your level of preference for the delivery of education and training programs.

Delivery Preferences		Highly Preferred					Not Preferred	
		7	6	5	4	3	2	1
Delivered at my business site	0139	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivered at a host farm to a small group of farmers with similar educational needs	0140	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivered on a college or university campus	0141	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivered in a traditional classroom setting at an off-campus site (i.e., local community setting, business, government building)	0142	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivered as a blend of face-to-face and online delivery	0143	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivered as individualized instruction using video conferencing (Skype, or similar technology)	0144	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivered totally online	0145	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivered at farm organization meetings (i.e., commodity meetings)	0146	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify) _____	0147	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 7. Producer Preferences for Different Instructional Methods and Strategies

30. Select your level of preference for the listed approaches, strategies and methods of instruction.

Instructional Approaches and Methods		Highly Preferred					Not Preferred	
		7	6	5	4	3	2	1
Field trips	0148	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question and answer sessions	0149	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrations	0150	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conferences specifically designed for producers	0151	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hands-on learning activities	0152	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Individualized in-person instruction with an instructor	0153	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guest speakers	0154	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Events at a central location with featured speakers/industry experts	0155	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Webinar with one or more featured speakers (Note: a webinar is a presentation delivered over the internet to individual	0156	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

computers)

One-to-one conversations with other farmers	0157	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Case studies guided by instructor &/or facilitator	0158	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Events which feature a number of instructors with specialty knowledge &/or skills (Farm business management and/or production)	0159	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivered by representatives of agriculture supply companies (feed, machinery, chemical, seed, facilities, etc.)	0160	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: (please Please specify)	0161	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 8. Preferred Instructional Media and Aids for Learning

31. Select your level of preference for the following instructional media and aids when you are in a learning situation.

Instructional Media and Aids		Highly Preferred					Not Preferred	
		7	6	5	4	3	2	1
Print materials (e.g., newsletters, research articles, market reports, fact sheets, etc.)	0162	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic (or digital) materials delivered via e-mail or the internet (e.g., newsletters, research articles, market reports, fact sheets, data summaries)	0163	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication with instructor by telephone	0164	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Farm demonstration plots	0165	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample problems and/or simulations	0166	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The internet for information and class instruction	0167	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-mail communications from instructor	0168	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Informative newspaper columns prepared by instructor	0169	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online video library of presentations by featured speakers	0170	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online library of information provided by instructors	0171	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: (please Please specify) _____	0172	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32. What are the primary reasons you do not participate in education and training and training opportunities sponsored by your local college and universities? (i.e., workshops, college courses, special speakers, etc.) *Please mark all that apply.*

- | | |
|--|---|
| <input type="checkbox"/> 0173 I am too busy to attend | <input type="checkbox"/> 0174 The instruction does not meet my needs |
| <input type="checkbox"/> 0175 The cost of registration is too high | <input type="checkbox"/> 0176 I do not have time to complete related assignments |
| <input type="checkbox"/> 0177 The distance to attend the events is too far | <input type="checkbox"/> 0178 The instruction does not provide for my preferred ways of learning |
| <input type="checkbox"/> 0179 I am not aware of the education events | |
| <input type="checkbox"/> 0180 The time of day of the events often conflicts with my schedule | <input type="checkbox"/> 0181 I do not have time to complete related assignment |
| <input type="checkbox"/> 0182 Agricultural suppliers already provide the education | <input type="checkbox"/> 0183 I learn what I need to from family, friends, and other producers |
| <input type="checkbox"/> 0184 The education programs are not designed for my type of operation | <input type="checkbox"/> 0185 Similar events in the past have not provided sufficient information to justify attendance |
| <input type="checkbox"/> 0186 I can usually find what I need to know on the | <input type="checkbox"/> 0187 Other: (Please Specify): |

Section 9. Related Information

33. Given an education program is applicable and relevant to you, how many total miles are you willing to travel? ⁰¹⁸⁸ _____
34. Do you use the internet in your home or farm business office? ⁰¹⁸⁹ ☐¹ Yes ☐² No
35. Do you have HIGH-SPEED internet in your home or farm business office? ⁰¹⁹⁰ ☐¹ Yes ☐² No ☐³ I don't know
36. The amount of money I am willing to pay for a year-around education program (i.e., Mn FBM Program) which focuses upon the concepts, knowledge and skills which help me to better manage my farm is ¹⁹¹ _____ dollars.
37. The amount of money I am willing to pay for the registration fee for a quality 3 hour (1/2 day) workshop is ⁰¹⁹² _____ dollars.
38. The amount of money I am willing to pay for the registration fee for a quality 6-8 hour (full day) workshop is ⁰¹⁹³ _____ dollars.
39. Do you currently plan on enrolling or re-enrolling in a year-around Farm Business Management Education Program such as offered through the Minnesota State Colleges and Universities? ⁰¹⁹⁴ ☐¹ Yes ☐² No
40. An estimate of the number of workshops or seminars offered by colleges, universities, Extension Service and/or agricultural supply companies that you plan to attend from August 2011 through June 2012 is:
¹⁹⁵ ☐¹ 0 ☐² 1-3 ☐³ 4-6 ☐⁴ 7-9 ☐⁵ >9
41. Which institution, agencies and/or businesses will be the providers of agricultural education and training for you and your employees in the upcoming year? Please mark all that apply.

- | | | |
|--|--|---|
| <input type="checkbox"/> ⁰¹⁹⁶ Minnesota State Colleges and Universities | <input type="checkbox"/> ⁰¹⁹⁷ Extension Service | <input type="checkbox"/> ⁰¹⁹⁸ University of MN |
| <input type="checkbox"/> ⁰¹⁹⁹ Crop &/or Livestock Commodity Organization(s) | <input type="checkbox"/> ⁰²⁰⁰ Agricultural Suppliers (Credit, feed, seed, insurance, equipment, etc.) | <input type="checkbox"/> ⁰²⁰¹ Government Agencies (FSA, NRCS, MPCA, etc) |
| <input type="checkbox"/> ⁰²⁰² Private Agricultural | <input type="checkbox"/> ⁰²⁰³ Other (Please _____) | |

Section 10. Participant Information

42. What is the year of your birth? ⁰²⁰⁴ 19 _____
43. What is your sex? ⁰²⁰⁵ ☐¹ Male ☐² Female
44. Do you currently work part-time off the farm? ⁰²⁰⁶ ☐¹ Yes ☐² No
45. Do you work off the farm more than 20 hours per week? ⁰²⁰⁷ ☐¹ Yes ☐² No
46. Which is the highest level of education you completed? ⁰²⁰⁸
- | | |
|---|---|
| <input type="checkbox"/> ¹ 8 th grade | <input type="checkbox"/> ² High School Graduate |
| <input type="checkbox"/> ³ 1 Yr College Degree, Diploma or Certificate | <input type="checkbox"/> ⁴ 2 Yr College Degree, Diploma or Certificate |
| <input type="checkbox"/> ⁵ Bachelor's Degree (B.A./B.S.) | <input type="checkbox"/> ⁶ Graduate Degree (Master's, Ph.D., Ed.D, J.D.) |
| <input type="checkbox"/> ⁷ Other (Please specify): _____ | |

47. Are you of Spanish, Hispanic, or Latino origin or background, such as Mexican, Cuban or Puerto Rican, regardless of race?
0209 ☐¹ Yes ☐² No

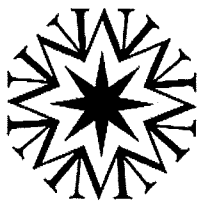
48. What is your racial background? (select one or more):

☐⁰²¹⁰ American Indian or Alaskan Native ☐⁰²¹¹ Native Hawaiian or Other Pacific Islander ☐⁰²¹² White
☐⁰²¹³ Black or African American ☐⁰²¹⁴ Asian

THANK YOU VERY MUCH FOR COMPLETING THIS ASSESSMENT!

Please enclose the questionnaire in the envelope and place in it the mail.

Richard M. Joerger, Ph.D.
Minnesota State Colleges and Universities
St. Paul MN



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