

Northeast Iowa Dairy Research Summary*

Background

NEED METHODOLOGY – SAMPLE FRAME, TIME OF YEAR, RESPONSE RATE, ETC.

This report provides an overview of the initial findings of the overall study. The emphasis of this report is on the characteristics of the Northeast Iowa dairy sector, and on the characteristics of the operators and their families. Attention is paid to the dairy farmers' use of various dairy and crop production technologies and practices. Questions addressing farmers' familiarity with technologies such as computers and precision farming are also included.

This report summarizes the results for all the dairy farms in the sample as well as findings based on herd size. Because dairy farms in northeast Iowa range in size from fewer than 10 to more than 200 head, the tables report the characteristics of farms in four herd size categories: fewer than 25 cows, 25 to 49 cows, 50 to 99 cows, 100 or more cows. In each case, herd size includes both milking and dry cows.

Size of Dairy Herd

The results in Table 1 summarize the diversity of dairy farms in northeast Iowa. Nearly 20 percent of the responding operations reported herds of 100 or more head; more than 30 percent had fewer than 50 head. The smaller operations accounted for less than 15 percent of cows in the sample and less than 5 percent of the milk reported produced in the area. At the same time farms with 100 or more cows were responsible for 40 percent of the cows and more than two-thirds of the milk produced by farms in the sample.

Table 1. Size and productivity of Respondents to the 1999 Iowa Dairy Farm Poll.

	Total	Herd Size			
		1 to 24	25 to 49	50 to 99	100 +
Number of respondents	524	38	116	277	93
Percent of dairy farms in sample	100.0	7.3	22.1	52.9	17.7
Average number of cows in milking herd	76	15	39	68	170
Average milk shipped per lactating cow per day	151.5	47.6	55.7	156.2	283.4
Average acres of farmland operated (total)	367.7	143.9	284.0	340.8	615.1
Average acres owned	220.4	94.1	192.8	211.2	335.9
Average acres rented	155.2	66.4	100.6	135.7	306.0

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Table 1 also shows that dairy farms in northeast Iowa operate, on average nearly 5 acres of farmland per cow in the milking herd. This contrasts with the situation in the U.S. south and west where very large herds are raised on farms with relatively little farmland. Not surprisingly, dairy herd size is very strongly associated with the number of acres of land operated. Farms with 24 or fewer cows averaged about 144 acres per farm, while farms with 100 or more cows operated over 600 acres per farm, on average. Operators of smaller dairy farms tended to report owning most of their land (66%). By contrast, the operators of the larger herds (100 or more) rented nearly half (45%) of their land.

Figure 1. Total dairy cows in northeast Iowa by herd size

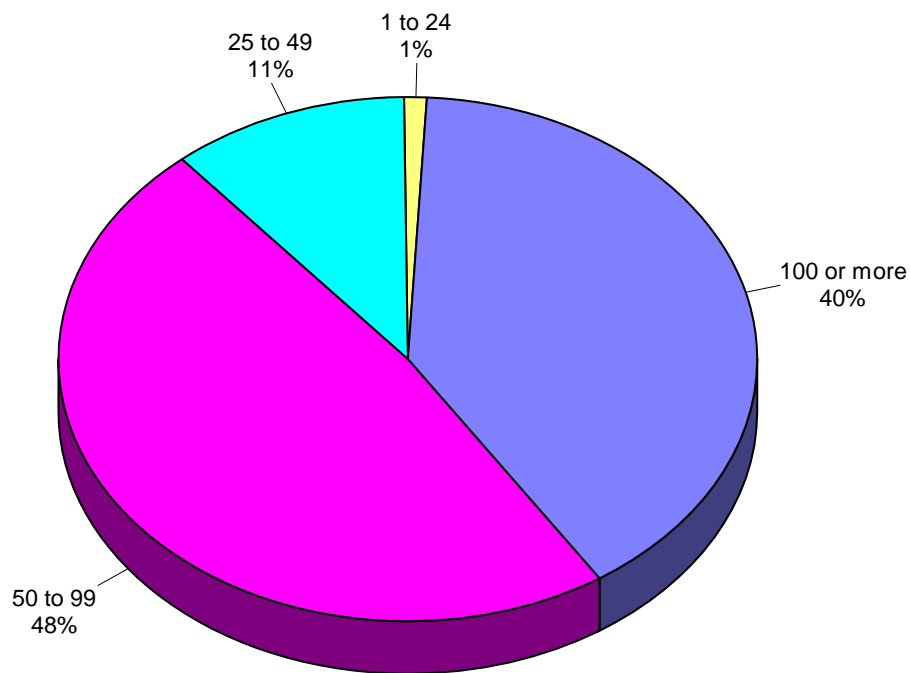
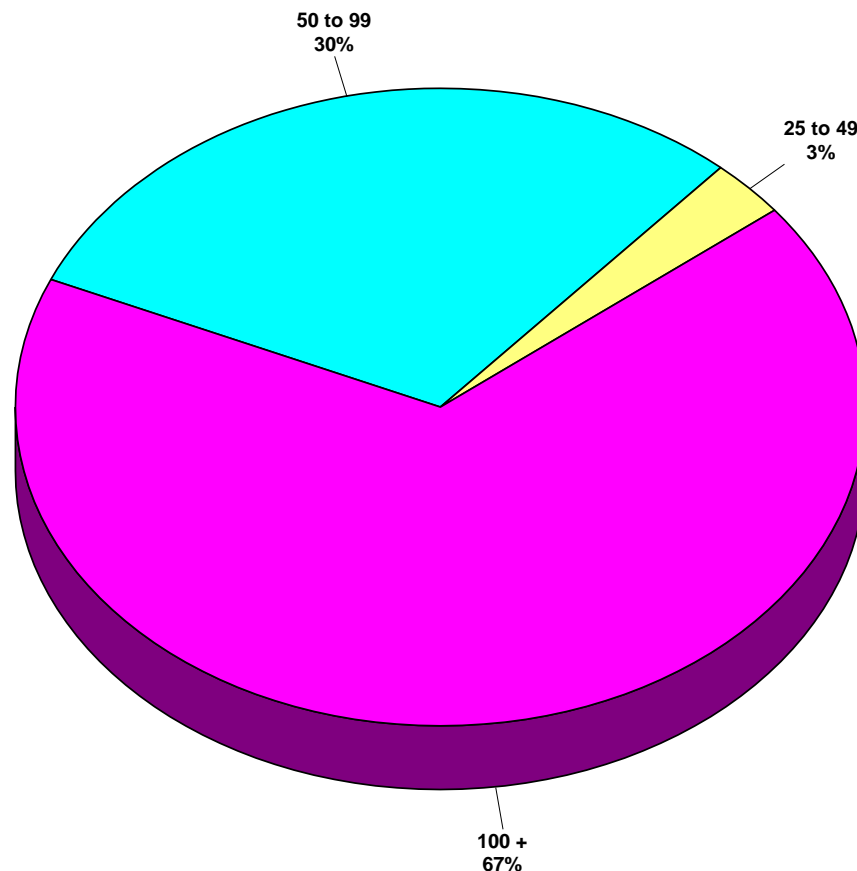


Figure 2. Total milk shipped per day in northeast Iowa by herd size



Dairy Farm Operator and Household Characteristics

Table 2 reports data on a number of indicators of the characteristics of dairy farm operators and their families. The average age of farmers in the sample was 46.1 years. Across the various herd size operators there was relatively little fluctuation in average ages ranging from 44.9 to 48.1.

The vast majority of dairy farmers in northeast Iowa grew up on farms and became involved in farming at an early age. On average, the dairy farmers in the sample first became involved in dairy farming when they were 21 years of age, and were about 26 years old when they took over the farm they are currently operating. Two of every three respondents indicated their current operation was originally owned by their parents. Among the larger operators (100 cows or more) that portion was 57 percent.

Also included in Table 2 is information on the role that farm and off-farm income plays on these dairy households. Ten percent of operators and 44 percent of the spouses of

operators reported having a regular off-farm job during 1999. Operators of small dairy farms (fewer than 25 cows) were particularly likely (31.6%) to have a regular off-farm job when compared to the 4.3 percent of operators with herds of 100 or more.

Regardless of the off-farm employment status of farm operators and/or their spouses, the majority of respondents (77%) indicated that more than 90 percent of their household income came from farming. Approximately three-fifths of the smallest operators reported this portion of income from farming compared to four-fifths of the largest operators.

Table 2. Dairy Operator and Household Characteristics

		Herd Size				
	<u>Total</u>	<u>1 to 24</u>	<u>25 to 49</u>	<u>50 to 99</u>	<u>100 +</u>	
<i>Age and Farm Background</i>						
Average age of principal operator (years)	46.1	44.9	48.1	44.9	46.5	
Average age when first become a farm operator (years)	21.4	21.7	22.3	21.2	21.1	
Average age when took over this farm (years)	25.9	24.6	26.6	25.7	26.5	
Operators' parents farmed (% yes)	96.1	89.5	97.4	96.0	96.8	
Current farm was originally owned by parents (% yes)	66.8	71.1	70.7	68.2	57.0	
<i>Participation in off-farm employment</i>						
Operator	10.0	31.6	13.9	6.9	4.3	
Spouse	44.1	35.7	48.9	46.4	38.1	
<i>Proportion of total household income from farming</i>						
At least half	12.5	8.3	15.7	12.8	7.5	
More than 90 percent	76.8	61.1	72.2	78.8	82.8	
<i>Family's quality of life</i>						
Very or somewhat satisfied	78.7	86.5	82.6	77.3	75.3	
Become much or somewhat better during past 5 years	35.6	24.3	31.6	37.4	40.2	
<i>Estimated years operator able to continue farming</i>						
Will not continue or out of farming already	0.8	0.0	0.0	1.2	1.1	
One more year	4.6	6.1	4.6	4.3	4.5	
2 or 3 years	12.9	12.1	12.8	12.9	13.5	
4 or 5 years	11.9	9.1	16.5	12.1	6.7	
6 to 10 years	20.2	21.2	21.1	21.9	11.2	
Indefinitely – sufficient farm returns	41.5	33.3	36.7	40.6	55.1	
Indefinitely – sufficient off-farm income	8.1	18.2	8.3	7.0	7.9	

This dairy poll also asked the respondents two questions about how they feel about their quality of life. The results in Table 2 show somewhat contradictory results. On one hand, most of the respondents (79%) said they were “very” or “somewhat” satisfied with their quality of life. Smaller operators tended to report this level of satisfaction more readily than larger operators. On the other hand, the scale of dairy farming was directly associated to feelings about whether the quality of life had become “much” or “somewhat” better over the past five years. Twenty-four percent of respondents from farms with small herds (less than 25 cows) reported that their quality of life had become better, compared to 40 percent of respondents with herds of 100 or more cows.

Operators were also asked about their plans to continue in or exit from dairying. There were no noticeable differences among the operators for the near future, but looking further down the road, 1 in 5 small operators indicated plans on getting out of dairying in the next 6 to 10 years compared to 11 percent of the largest operators. Other sizeable differences were found in the percentages of operators reporting they would farm indefinitely due to sufficient farm returns (33% of small operators vs. 55% of large operators) or due to sufficient off-farm income (18% of small operators vs. 8% of large operators).

Farm Enterprise Characteristics

Table 3 presents the results on the characteristics of dairy farms in northeast Iowa. The vast majority of operations in the sample were single family/individual operations or partnerships. Virtually all the smallest dairy farms – those with 24 or fewer cows – were either single family/individual operations or family partnerships (91.9% and 5.4%, respectively). This was essentially the case as well for dairy farms with 25 to 39 and 50 to 99 cows. But for larger dairy farms, a sizable share were incorporated. Fourteen percent of farms with 100 or more cows were organized as family or non-family corporations.

Dairy farms in the sample also vary a great deal in terms of family versus nonfamily sources of labor. For the typical smaller operation (less than 50 cows) it was uncommon for there to be regular non-family employees. More than 95 percent of the total farms in the sample reported relying on family labor for all, or for more than half, of the work on the farm (85% and 11%, respectively). Larger dairy farms were more likely to rely on hired labor. More than half (53%) reported hiring regular non-family employees.

Table 3. Farm Enterprise Characteristics

		Herd Size			
	Total	1 to 24	25 to 49	50 to 99	100 +
<i>Organizational form of farm enterprise</i>					
Single family or individual operation	81.5	91.9	87.7	84.6	61.1
Partnership	9.6	5.4	5.2	8.2	21.2
Family corporation	3.3	0.0	0.9	2.6	10.0
Non-family corporation	1.0	0.0	0.9	0.0	4.4
Other	4.6	2.7	5.3	4.5	3.3
Hire any regular non-family employees (% yes)	21.4	2.9	8.8	19.0	52.7
<i>Share of farm labor done by farm household</i>					
More than 90 percent	84.7	82.9	96.5	89.1	58.7
More than 50 percent	10.6	5.7	0.9	8.6	30.4
Less than 25 percent	2.5	5.7	0.9	1.1	6.5
<i>Ratio of farm debts to value of farm assets</i>					
Debts less than 10% of asset values	19.8	10.0	23.7	21.1	15.9
Debts between 10% and 50% of asset values	67.5	75.0	63.2	67.4	69.5
Debts over 50% of asset values	12.8	15.0	13.2	11.5	14.6

Scale, Technology, and Management Practices

Whereas milking in stanchions or tie-stall barns were more common practices among operations with fewer than 100 cows, parlors (fat barns, pits, and others) were the most common among larger operators (100 + cows) (Table 4).

When asked about their usage of various dairy management practices and technologies, more than half of the respondents indicated keeping production records, using artificial insemination on at least 75 percent of their heifers, using regularly scheduled vet visits, and balancing feed rations at least 4 times a year. Less common practices included using total mixed ration machinery (40%) using rBST (24%), and milking 3 times a day (2%). Only 9 percent of the respondents reported forward contracting any of their milk production. While some of these technologies applied fairly generally to dairy operators in northeast Iowa, most of the technologies were used far more extensively by one group of farmers than by others. Except for artificial insemination, the largest dairy farms were most likely to employ these particular production technologies. For two, using rBST and total mixed rations the 100+ cow operations were more than twice as likely as others to have adopted these practices.

With regard to manure management, the majority of small operators (less than 100 cows) reported putting their manure directly into the spreader and/or spreading their manure daily. In contrast was the 49 percent of large operators (100+ head) that

reported storing their manure in a lined structure. Nearly a third (32%) of the large operators indicated they had a nutrient management plan compared to only 10 percent of operators with fewer than 25 cows.

Table 4. Use of Various Technologies and Management Practices among Dairy Farmers

		Herd Size			
	Total	1 to 24	25 to 49	50 to 99	100 +
<i>Milking and housing facilities</i>					
Milk in stanchion or tie-stall barn	75.5	90.3	92.6	78.7	38.6
Milk cows in parlor (fat barn, pit, or other parlor)	24.5	9.7	7.4	21.3	61.4
Has freestall barn for milking herd	31.2	5.3	9.0	31.2	70.5
<i>Dairy Management Practices and Technologies</i>					
Uses regularly scheduled vet visits	68.3	37.1	50.0	75.3	83.3
Balances feed rations at least 4 times/year	73.9	34.3	54.4	80.4	94.6
Uses artificial insemination on at least 75% of heifers	58.6	38.2	63.5	59.3	59.3
Keeps production records on individual milk cows	59.4	11.1	54.4	64.8	71.9
Uses total mixed ration machinery (TMR)	40.2	2.9	14.2	41.9	82.6
Uses rBST on any cows	23.6	0.0	7.1	26.4	46.7
Milks cows three times per day	1.7	0.0	0.9	1.1	5.8
Forward contracts at least some of milk production	9.1	3.0	1.8	10.3	18.0
<i>Manure Management</i>					
Put manure directly into spreader and/or spread daily	53.3	59.5	67.3	51.9	37.2
Store manure in lined structure	23.4	0.0	8.7	24.7	48.8
Has written a nutrient management plan for farm (% yes)	23.3	10.5	20.7	23.4	31.5
<i>Precision Farming/ Computer Usage</i>					
Very familiar with the use of precision farming	4.6	0.0	7.0	2.2	11.0
Uses or plans to use precision farming techniques	19.0	5.8	13.2	20.8	26.4
Owns a computer (% yes)	56.1	20.6	45.0	57.9	78.9
Uses a computer to manage farm records	64.5	***	50.0	66.9	69.6
Accesses the Internet for farm information	46.5	***	48.0	44.8	53.6

*** N too small to justify percentages

About 5 percent of the respondents indicated being “very familiar” with precision farming with 19 percent reporting they either currently use or plan to use this technology within the next 5 years. As may be expected, greater percentages of larger operations responded in this manner than did smaller operators.

More than half of the total respondents reported having a computer. Again this response varied greatly between the small operators (21%) and large operators (79%). Among the respondents with computers, sizeable portions reported using the computer to manage farm records (64%) and accessing the Internet for farm information (46%).

Farm Policy and Market Issues

Respondents were also asked about various changes in state and federal policies that have impacted farm businesses and farm families in Iowa. Table 5 summarizes the responses to questions regarding recent changes in policy and market conditions. Overall, fewer than 20 percent of the operators reported positive impacts from any of the specific changes identified. Sizable portions of the respondents (20% to 50%) indicated they were not affected by the changes or were unsure of their impacts.

Table 5. Impacts of Recent Changes in Policies or Market Conditions

<i>Type of Change</i>	<u>Total</u>	<u>Herd Size</u>			
		<u>1 to 24</u>	<u>25 to 49</u>	<u>50 to 99</u>	<u>100 +</u>
		-----percentages-----			
Phase-out of federal price supports for grains					
Negative impact	33.8	30.0	31.5	35.9	32.2
Not affected or not sure	50.0	56.7	55.9	47.4	46.7
Positive impact	16.2	13.3	12.6	16.6	21.1
Phase-out of federal dairy price supports					
Negative impact	54.5	51.6	54.4	53.9	55.6
Not affected or not sure	32.5	38.7	38.6	29.9	32.2
Positive impact	13.0	9.7	7.1	16.3	12.2
Mergers among farm input suppliers					
Negative impact	50.6	32.3	51.3	54.1	43.8
Not affected or not sure	39.6	67.7	41.6	35.4	41.6
Positive impact	9.8	0.0	7.1	10.4	14.6
Mergers among dairy cooperatives					
Negative impact	46.1	32.3	45.6	45.8	51.6
Not affected or not sure	40.5	61.3	43.0	39.9	35.2
Positive impact	13.3	6.4	11.4	14.4	13.2
Increased volatility of dairy prices					
Negative impact	62.6	41.9	65.8	63.2	64.8
Not affected or not sure	19.6	38.7	20.2	18.0	17.0
Positive impact	17.8	19.4	14.0	18.8	18.2

Respondents were then asked to indicate their level of agreement or disagreement with 6 statements regarding current farm policy issues (Table 6). For three of the 6 statements, more than half of the respondents indicated some level of agreement (“The government should try to prevent further consolidation in the dairy cooperative sector”; “Dairy product imports are hurting my farm operation”; “The government should start a John’s control program in Iowa”). No statement received that level of disagreement.

Table 6. Farm Policy Issues

		Total	Herd Size			
			1 to 24	25 to 49	50 to 99	100 +
Statement		-----percentages-----				
Free trade agreements will help my farm business over the long term	Disagree	30.2	24.2	29.3	31.8	27.2
	Not sure	33.3	48.5	33.6	33.9	26.1
	Agree	36.5	27.3	37.1	34.3	46.7
The phase-out of most federal farm programs will make it easier for me to improve my income	Disagree	44.8	29.4	43.9	46.5	44.4
	Not sure	36.6	44.1	35.1	36.3	36.7
	Agree	18.6	26.5	21.0	17.2	18.9
The government should try to prevent further consolidation in the dairy cooperative sector	Disagree	13.5	15.2	10.3	13.5	18.5
	Not sure	24.1	30.3	25.9	23.0	23.9
	Agree	62.4	54.6	63.8	63.6	57.7
The government should do more to deal with the stray voltage problem	Disagree	28.0	30.3	29.3	24.2	37.0
	Not sure	32.8	54.5	37.9	30.8	26.1
	Agree	39.2	15.2	32.7	45.1	37.0
The government should start a John's control program in Iowa	Disagree	17.0	24.2	14.0	13.8	28.3
	Not sure	28.0	27.3	38.6	29.8	10.9
	Agree	55.0	48.5	47.4	56.3	60.9
Dairy product imports are hurting my farm operation	Disagree	4.4	0.0	5.3	4.0	6.5
	Not sure	15.5	32.4	14.0	16.5	8.7
	Agree	80.2	67.6	80.7	79.5	84.8

The level of agreement to many of the statements varied considerable between small operators and large operators. For example, to the statement, “The government should

do more to deal with the stray voltage program”, 15 percent of the smallest operators agreed with that statement compared to 37 percent of the largest operators.

When asked their level of agreement or disagreement to various statements regarding land use policy (Table 7), nearly 3 of every 4 respondents agreed that local government should restrict non-farm development in important agricultural areas. The other statement to which more than half of the respondents agreed (60%) was “The state should adopt statewide zoning to protect farms from urban encroachment”.

Table 7. State and Local Land Use Policy

		Herd Size				
		Total	1 to 24	25 to 49	50 to 99	100 +
Statement		-----percentages-----				
If farmland is to be protected from urban encroachment, farmers will need to accept restrictions on their ability to sell their lands						
	Disagree	33.8	28.6	39.5	30.7	39.1
	Not sure	25.3	17.1	26.3	27.4	19.6
	Agree	40.9	54.3	34.2	42.0	41.3
Local government should restrict non-farm development in important agricultural areas						
	Disagree	12.4	8.3	14.8	10.9	17.4
	Not sure	13.6	22.2	9.6	15.2	12.0
	Agree	74.1	69.5	75.7	73.9	70.7
The state should adopt statewide zoning to protect farms from urban encroachment						
	Disagree	17.1	15.2	16.5	15.6	22.8
	Not sure	22.6	42.4	20.0	23.6	18.5
	Agree	60.2	42.4	63.4	60.8	58.7
Farmers should be paid if they agree NOT to sell land for non-farm development						
	Disagree	27.4	32.4	25.2	25.8	33.0
	Not sure	31.4	35.3	34.8	33.1	19.8
	Agree	41.2	32.4	40.0	41.1	47.3

The responses to statements dealing with the environment are summarized in Table 8. More than half of the respondents (63%) agreed that strict environmental regulations of livestock facilities are needed to prevent a few farmers from abusing the environment. Only among the largest operators did fewer than half of the respondents agree with this statement at some level. With that, nearly a third of the largest operators indicated that

environmental rules for confinement facilities have gotten too strict, whereas 71 percent of the smallest operators reported the rules have not gotten strict enough.

Table 8. Environmental Issues

		Total	Herd Size			
			1 to 24	25 to 49	50 to 99	100 +
Statement		-----percentages-----				
Livestock farmers in Iowa should be required to have a comprehensive nutrient management plan						
	Disagree	47.4	48.5	52.6	44.7	46.7
	Not sure	23.8	33.3	25.9	22.7	20.7
	Agree	28.8	18.2	21.5	32.6	32.6
Strict environmental regulation of confinement livestock facilities is needed because a few farmers will abuse the environment unless forced to do otherwise						
	Disagree	21.5	5.6	16.5	18.9	43.5
	Not sure	15.8	19.4	15.7	15.6	14.1
	Agree	62.6	75.0	67.8	65.5	42.4
Environmental rules and regulations and pollution laws on confinement livestock facilities have gotten too strict						
	Disagree	54.8	71.4	61.2	57.3	31.5
	Not sure	30.2	22.9	31.0	29.9	35.9
	Agree	14.9	5.7	7.7	12.8	32.6
To protect water quality, all farmers should be required to control their livestock's access to streams and waterways						
	Disagree	48.8	40.0	55.2	48.2	47.8
	Not sure	18.0	34.3	15.5	19.3	9.8
	Agree	33.3	25.7	29.3	32.4	42.4

With regards to the future of Iowa's dairy industry, 9 of every 10 respondents agree that maintaining a system of family-operated dairy farms is essential (Table 9). The likelihood of continuing family farm operations however, is diminished by the finding that only a third of the respondents indicated they would encourage their children to become dairy farmers. Smallest (1 to 24 head) (50%) and largest (100+ head) (43%) were more likely to encourage their children to join the industry. Although the majority of respondents (77%) indicate the replacement of smaller family dairy farms by large-scale dairy farms would have undesirable consequences for Iowa, a fourth of the respondents feel that that change is inevitable.

Table 9. Future of Iowa's Dairy Industry

		<u>Total</u>	<u>Herd Size</u>			
			<u>1 to 24</u>	<u>25 to 49</u>	<u>50 to 99</u>	<u>100 +</u>
<i>Statement</i>		-----percentages-----				
Maintaining a system of family-operated dairy farms is essential to the future of rural Iowa						
	Disagree	3.4	0.0	3.5	3.3	4.3
	Not sure	5.9	10.8	7.9	4.4	5.4
	Agree	90.8	89.2	88.6	92.3	90.3
I would encourage my children to become dairy farmers						
	Disagree	35.2	17.6	41.7	35.7	29.3
	Not sure	32.1	32.4	32.2	34.2	27.2
	Agree	32.7	50.0	26.1	30.2	43.5
More large dairy operations and other large farms are needed to increase the competitiveness of Iowa agriculture						
	Disagree	88.6	97.2	91.2	89.7	79.6
	Not sure	6.3	2.8	3.5	7.3	7.5
	Agree	5.1	0.0	5.3	3.0	12.9
The replacement of smaller family dairy farms by large-scale dairy farms using hired labor would have undesirable economic and social consequences for Iowa						
	Disagree	10.4	8.1	4.3	8.5	24.7
	Not sure	12.8	10.8	15.7	12.9	9.7
	Agree	76.8	81.1	80.0	78.7	65.6
Large-scale dairy farming, such as that in California where herds of several thousand cows are common, is inevitable						
	Disagree	51.4	50.0	48.7	53.8	48.4
	Not sure	22.5	16.7	29.6	22.0	17.2
	Agree	26.0	33.4	21.7	24.2	34.4
Intensive rotational grazing is a viable alternative to conventional dairy practices						
	Disagree	13.7	2.8	8.8	14.0	22.6
	Not sure	27.4	22.2	28.1	24.7	33.3
	Agree	59.8	75.0	63.1	61.3	44.1

Summary of Findings

Dairy farming in Northeast Iowa is a diverse industry. Numbers of cows in a milking herd range from an average of 15 on some operations to 170 on others. Characteristics of the dairy farm operators are less diverse in that the average age ranges from 44.9 among the smallest operators to 46.5 among the largest. These dairy operators came from farming families and began their own operations in their early-to mid-twenties. The vast majority of these operations are single family or individual operations with the farm household providing more than 90 percent of the labor.

The diversity in the dairy operations becomes more apparent in the technology and management practices. More than three-quarters of the smaller operations (less than 100 head) milk in stanchions or tie-stall barns compared to only 39 percent of the largest operations. Larger operations were also more likely to report the use of regularly scheduled vet visits, balancing feed rations, keeping production records, using total mixed ration machinery, and using rBST on any cows. Larger operations were also more familiar than smaller operations with precision farming technology.

The impact, and direction of impact (whether positive or negative) of various changes in policies and market conditions, as well as opinions on various statements regarding land use, the environment, and the future of Iowa's dairy industry also varied among the different size operators. For example, half of the largest operators reported that mergers among dairy cooperatives have had a negative impact on their farm business compared to only a third of smallest operators. Environmental statements had similar levels of discrepancy between the larger and smaller operations, most notably on the issue of confinement livestock regulations. There was greater consensus among the operators of different sized operations on the issue of state and local land use policy. The majority of respondents from each group of operation agreeing that local government should restrict non-farm development in important agricultural areas.

With regard to the future of Iowa's dairy industry, the vast majority of respondents agree that maintaining a system of family-operated dairy farms is essential for the state; however, relatively few operators indicate encouraging their children to enter the dairy industry. Similarly, while the majority of respondents indicated that the replacement of smaller family dairy farms by large-scale dairy farms would have undesirable social and economic consequences for Iowa, a fourth of the respondents indicate that this change is inevitable.