

Promotional Efforts vs. Economic Factors as Drivers of Producers' Decisions to Expand or Start a Dairy

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Promotional Efforts vs. Economic Factors as Drivers of Producers' Decisions to Expand or Start a Dairy*

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Abstract

States have developed programs to expand or attract new dairies. Whether these programs played a role in producers' decisions is evaluated. A multi-state survey of milk producers was conducted to identify factors affecting producers' decisions to expand dairy. Results are presented by state and size of dairy. The public promotion and support category was ranked the lowest in importance for dairy growth, but individual items within the category were rated as positive. Of the 42 items rated, extension service received the tenth highest rating of importance. Assistance in obtaining licenses and permits, and guaranteed loans had ratings implying a positive impact, but to a lesser extent than extension and university research.

Market for milk and co-products was ranked the most important. The second most important category was resource availability and resource prices, but this ranking varied by size. Small dairies ranked family and community ties second and large dairies ranked regulatory environment as second.

Illinois milk producers compared to other state producers had perceived disadvantages with respect to land prices, utility costs, climate and ease of regulatory compliance.

Key words: dairy, survey, location, expansion

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Promotional Efforts vs. Economic Factors as Drivers of Producers' Decisions to Expand or Start a Dairy

The dairy industry in the United States is experiencing structural changes (size and concentration) at the farm, processing, and distribution stages of the dairy industry. The number of farms and milk cows nationwide is projected to decline, but the actual quantity of milk production in the United States is projected to remain nearly constant due to increased productivity. Collins stated over the past decade national milk production has increased by about 1.2 percent per year, as milk production per cow increased by 2.2 percent per year. Milk cow numbers declined about 1 percent per year.

Regional shifts in dairy production are also evident. From 1978 to 1997, milk cow numbers increased by 64% in California, 94% in Idaho, and 461% in New Mexico (NASS 2002). Whereas, Wisconsin had a 21% decline in cow numbers. Trends similar to Wisconsin were experienced by other midwestern and eastern states. The West enjoys several advantages: a warmer climate, a modern infrastructure, economies of scale achieved from the larger farm size, structure of farm ownership, and social and regulatory environment friendly to dairy (Peterson). Collins stated "A new type of dairy farm appears to be emerging that is much larger, lowering capital costs per cow. This new dairy will use more purchased inputs, including labor..." Peterson stated that it is the "western" style of dairy farming, which contributes to the mobility of the industry, since it is less self-sufficient in feed and thus does not require land for expansion as does the "traditional" style. The efficiencies to be gained from the warmer and drier climate include lower requirements for housing facilities, fewer mud and waste-handling problems, lower feed storage costs, and higher-quality forage (Jackson-Smith and Buttel). "Simple open shelters suffice; uncovered hay stacks are common" (Gilbert and Akor). "Dairy cows prefer arid warmer climates, and forage quality appears higher in regions with milk production growth than

the rest of the country” (Peterson). The Midwest has higher capital costs per cow because of the weather and the fewer number of cows per dairy. More buildings have to be built to hold feed and house cows from the rain and the harsh weather in the winter.

Facing a decline in dairy production a number of states or regions within a state have developed programs to attract new dairy operations or increase the size or productivity of existing operations. Examples of such programs are: Kansas currently has implemented an incentive program to attract new dairies. There are energy incentives provided by each community, which offers economic development rates and incentives. There are also tax breaks given to those businesses that are eligible. Specific dairy initiatives in Kansas include the abundance of feed production, favorable environment, high quality alfalfa, and ideal land (WKREDA). South Dakota has attracted producers from other states by building a new cheese factory that would require about 65,000 cows to produce milk for cheese (Groeneveld). Wisconsin has tax benefits and an Agricultural Development Zone Program (Wisconsin Department of Commerce). Two questions arise: Are state promotional efforts effective? Do any of them counter the forces driving structural change in the dairy industry?

Other studies have examined factors influencing the geographical changes in U.S. livestock production (Hubbell and Welsh; Roe, Irwin, and Sharp; and Peterson). Peterson found that agglomeration, environmental regulations, market accessibility, input availability, climate, and property tax as factors explaining dairy location. A limitation of these studies was that they excluded the impact of state or local promotional activities to increase production units, and did not collect input from those dairymen making the decision to expand or relocate.

Objective

The purpose of our research was to directly elicit from producers ratings of factors important to

dairy expansion in their location. Specific objectives were (1) Determine factors important to producers' decisions to expand, to start or to relocate a dairy in their current location. (2) Determine relative importance of promotion programs. Factors to be evaluated: public sector promotion and support, community support and services, regulatory environment, structure of dairy industry, resource availability, market for dairy farm products, and family and community ties. Specific research questions to be answered were: (1) Do the perceptions of producers regarding the evaluated factors vary by cow herd size? (2) Do the perceptions of producers regarding the evaluated factors vary by state or region?

Method and Data

A mail survey instrument was developed to gather producer's opinions on the favorability of their location pertaining to a number of different items. Each item was rated by producers as to its impact on their decision to expand or locate a dairy in their area. The ratings were on a scale from very negative, negative, neutral, positive, to very positive. The items were categorized into 1 of 7 categories. The categories were: (1) public sector promotion and support, (2) community support and services, (3) regulatory environment, (4) structure of the dairy industry, (5) resource availability and resource prices, (6) market for milk and co products, and (7) family and community ties. Category 1 included promotion and advertising to recruit dairy, extension service, university research, guaranteed loans, labor training programs, tax breaks, assistance in obtaining licenses. Category 2 included 4 items related to community amenities and community support of dairy. Category 3 included 4 regulatory items on buildings, health, environment and labor. Category 4 included 5 structure items on number of dairies, volume of local processors, dairy cooperatives, producer organizations, and transportation infrastructure. Category 5 included 12 items on land, feed, labor, water, climate, utilities, and veterinarian services.

Category 6 included 6 items on milk markets, markets for heifers and culls, and rendering services. Category 7 included 4 items related to family, friends, community, and plans for future generations. Also, information was collected on years of operation, location of dairy, changes in cow numbers, milk production from 1997-2002, any expansions or relocations in the past five years.

After rating the 42 items listed under the above categories, the producer then ranked the 7 categories from 1 most important to 7 least important. (See Appendix for complete survey instrument)

The survey instrument was evaluated by volunteer dairy producers attending the 2003 World Dairy Expo in Madison, Wisconsin. Upon revision the survey was mailed to selected dairy producers in the states of Idaho, New Mexico, Kansas, South Dakota, Iowa, Wisconsin, Illinois and Ohio. We attempted to get names and addresses for those dairies that expanded or relocated since 1997. This was done in most states by obtaining a list of producers who obtained a new Class A milk health permit between 1997 and 2002. Other lists of producers consisted of Concentrated Animal Feeding Operations (CAFO) permit list for Wisconsin and agriculture construction permit list for Iowa. Intent to construct livestock facilities or waste storage under the Illinois Livestock Management Facilities Act was used to supplement the grade A milk health list for Illinois. The first mailing was in November of 2003. Two follow-up mailings occurred a month apart. The survey was sent to 1264 producers. Useable responses were received from 404 producers, a 32% response rate. Of those responding, 51% had a herd size of 100 cows or less, 34% had herd size between 100 and 1000 cows, and 15% had a herd size of greater than 1000 cows.

Differences in response by state or size of dairy herd were quantified by using a Chi-square test. The Chi-Square test procedure tabulates a variable into categories and tests the hypothesis that the observed frequencies do not differ from their expected values. The expected values were the categorical results for the total number of responses. The Chi-square tests were estimated using SPSS version 12.0 for Windows.

Who Responded

Of the 405 responses, 34% were from Ohio, 25% from Idaho, 12% from Wisconsin, 12% from Illinois, 11% from South Dakota, 3% from Kansas, 2% from New Mexico and less than 1% from Iowa. The response rate was 32%. Response rates by state ranged from 9% to 48%.

Characteristics of the Dairy Operator

The average age of the dairy operators who responded was 46 years old. Twenty five percent of the dairy operators were under age 38, and 25% of the operators were older than age 54. The average years of experience of operating a dairy among respondents was 20 years. Twenty-five percent of the dairy operators had less than 9 years of experience, and 25% of the operators had more than 30 years of experience. The highest level of education completed by 53% of the respondents was high school, 19% completed two years of college, 20% completed four years of college and 8% completed study beyond a bachelor's degree. The ethnic ancestry indicated by respondents was 34% English, 32% German, 13% Dutch and 20% other.

Characteristics of the Dairy Operation

The average size of the dairy herd at the time of the survey among respondents was 513 cows, but the median was 100 cows. Fifty-seven percent of the operators have expanded their dairy since 1997. Average milk production per cow per year in 1997 was 18,024 lbs., and current milk

production increased to 20,095 lbs. Eighteen percent of the operators indicated they relocated their dairy since 1997. Twenty-nine percent indicated that they built a new dairy since 1997.

Results

The results are summarized in table 1 which presents the mean rating for each item for the total respondents and those who indicated they have or have not expanded their dairy operation since 1997. A higher rating indicated that item was perceived to contribute more to expanding or locating a dairy in their location. Items with significant differences are identified with asterisks. The top rated items in each of the dairy growth factors and those items that significantly differed are discussed below.

For public sector promotion and support, category 1, extension service, university research, and assistance in obtaining licenses and permits were the highest rated items. Dairy farms that expanded rated guaranteed loans significantly higher than those who did not expand. Recruitment activities, tax breaks, and labor training programs had a slightly negative mean rating. A mean rating less than 3 where 3 is neutral would imply the very negative and negative ratings outweighed the positive ratings.

For community support and services, category 2, all items had a positive mean rating. Support from dairy and farm organizations and community amenities rated the highest.

For regulatory environment, category 3, ease of compliance with health regulations and ease compliance with labor regulations rated higher than the ease of compliance with environmental regulations and ease of obtaining site and building permits.

For structure of the dairy industry, category 4, all items had a positive mean rating with transportation infrastructure rated the highest followed by milk producer organizations, dairy

cooperatives, size and volume of local dairy processors, and enough dairies to support infrastructure.

For resource availability and resource prices, category 5, veterinary and nutritional services and feed stuff availability were the highest rated items. Land availability, land prices, property taxes and other fees had a mean rating of less than three suggesting a negative impact. Dairy farms that expanded rated climate, labor availability, labor wages, utility cost, and property taxes and other fees significantly more positive or significantly less negative than those dairy farms that did not expand.

For markets for milk and co-products, category 6, market for cull cows and calves, and market for replacement heifers were the highest rated items. Ability to ship milk to high priced milk markets was the lowest rated item with a mean score less than three indicating a negative impact. Dairy farms that expanded rated local milk prices, rendering services and ability to ship to higher priced markets significantly more positive than those dairy farms that did not expand.

For family and community ties, category 7, to be near family and friends, and maintain affiliations with church and civic organizations were rated the highest although all items had a mean rating greater than 3.46. Dairy farms that expanded rated plans for future generations to continue in dairy significantly higher than those dairy farms that did not expand. Dairy farms that did not expand rated maintain affiliation with church and civic organizations significantly higher than dairy farms that expanded.

In terms of ranking the overall categories (table 2), the market for milk and co-products had the most favorable ranking followed by resource availability and resource prices, family and community ties, structure of dairy industry, regulatory environment, community support and services, and last public promotion and support.

Differences by Size of Dairy

To determine whether items important in expanding and locating a dairy vary by the size of dairy farm, the responses were grouped into 3 size categories, up to 100 cows, between 101 and 1,000 cows, and greater than 1,000 cows. The results are presented in tables 3 and 4. Respondents who answered yes or no to expanding the dairy since 1997 were included in the analysis because of the results reported in table 1 that indicated there were not significant differences for most items between dairies that expanded or did not expand.

For public promotion and support, category 1, promotion and advertising to recruit dairy, guaranteed loans, labor training programs, and tax breaks were rated significantly different by herd size although these items were largely rated neutral in importance. The small dairies and the large dairies rated recruiting activities and guaranteed loans positive compared to the medium dairies. Small dairies rated tax breaks higher in importance to expand than the other two groups. Large dairies rated labor training higher than the other two groups.

For community support and services, category 2, community amenities, community support for dairy industry, and support from utility promotions were significantly different. Medium dairies rated community amenities positive more frequently than the other two groups. Small and large dairies rated community support for dairy industry higher than the medium group. Large dairies rated support from utility promotions positive more frequently than the other two groups.

For regulatory environment, category 3, small farms rated ease of obtaining site and building licenses positive significantly more frequently than the other two groups. Large dairies rated ease of compliance to health and environmental regulations significantly higher compared to the other two categories.

For structure of the dairy industry, category 4, as size of dairies increase the higher the rating for enough dairies to support infrastructure. Medium and large dairies rated milk producer organization significantly higher in importance than small dairies.

For resource availability and resource prices, category 5, a significant trend of higher ratings with increase in size was indicated for land availability, land prices, property taxes and other fees, feed prices, climate, labor availability, and labor wages. Medium farms rated veterinary and nutritional services significantly higher than the other two groups.

For markets for milk and co-products, category 6, a significant trend of higher ratings with increase in size was indicated for local milk prices, ability to ship to higher price milk markets, market for replacement heifers, and rendering services. Medium dairies rated market for cull cows and calves significantly higher than the other two groups.

For family and community ties, category 7, a significant trend of lower ratings with increase in size was apparent to be near family and friends. Small and Medium dairies rated family having a dairy history in the area significantly higher than large dairies. Medium and large dairies rated plans for future generations significantly higher than small dairies.

In terms of ranking categories affecting dairy growth, all three groups rated market for milk and co-products number one and public promotion and support last. Small dairies ranked family and community ties second. Medium dairies ranked resource availability second. Large dairies ranked regulatory environment second.

Differences between States

Illinois was used as our reference state to compare with other states. Since 1997 Illinois has continued a decreasing trend in milk production, number of cows and number of operations (NASS 2004). Illinois was compared to the states of Idaho, Ohio, South Dakota and Wisconsin,

states which had a sufficient number of responses. Idaho experienced rapid growth in dairy, although since 1997 Idaho has seen an increase in milk production with a slight decrease in cow numbers (NASS 2004). Ohio has been able to reverse the downward trend in milk production of many eastern and Midwest states. Ohio's milk production from 1997 to 2002 increased slightly with production per cow increasing and the number of operations decreasing (NASS 2004). South Dakota has actively recruited dairy to the state, but its milk production has seen ups and downs from 1997 to 2002, with it peaking in 2000 and remaining slightly higher in 2002 than in 1997 (NASS 2004). South Dakota has also seen a decline in the number of dairy operations (NASS 2004). Wisconsin, the second largest milk producing state in the U.S., experienced a slight decrease in milk production from 1997 to 2002 along with a decline in cow numbers and operations (NASS 2004). The results of the comparison for those items that were significantly different are presented in table 5.

For public promotion and support, category 1, Illinois differed from Idaho and South Dakota on the rating for promotion and advertising to recruit dairy. Illinois rated promotion and advertising neutral more frequently than expected whereas South Dakota rated it positive more frequently. Conversely, Idaho rated promotion and advertising negative more frequently than Illinois. Idaho and Wisconsin rated labor training programs positive more frequently, whereas Illinois was more frequently neutral. Wisconsin was also more frequently positive on guaranteed loans than Illinois. Ohio rated tax breaks and assistance in obtaining licenses and permits positive, whereas Illinois rated these items negative.

For community support and services, category 2, Illinois rated community amenities very positive compared to Ohio which was more frequently neutral. Wisconsin rated support from dairy or farm organizations very positive and rated support from utility promotions positive as

compared to Illinois which was neutral more frequently. Illinois did not differ from the other states on category 2 items.

For regulatory environment, category 3, Illinois perceived itself neutral to negative compared to the other states on several category 3 items. Ohio, South Dakota and Wisconsin rated the ease to obtain site and building licenses very positive or positive compared to Illinois which was negative or very negative than those states. Idaho, South Dakota, and Wisconsin rated the ease of compliance with health regulations positive compared to Illinois which was neutral. All of the four other states rated the ease of compliance with environmental regulations positive more frequently than Illinois which was either neutral or negative.

For structure of the dairy industry, category 4, again Illinois perceived these items negative and neutral more frequently than the other states except for dairy cooperative which Illinois rated very positive compared to Ohio which was neutral. Idaho and Wisconsin rated enough dairies to support the infrastructure very positive compared to Illinois which was neutral. Wisconsin also rated size and volume of local dairy processors and transportation infrastructure for milk and supplies very positive compared to Illinois which was neutral.

For resource availability and resource prices, category 5, Illinois perceived itself at a disadvantage compared to the other states except Illinois rated water availability very positive compared to Idaho which was negative more frequently, and Illinois rated water cost neutral compared to Idaho's negative. Ohio, South Dakota, and Wisconsin rated land prices very positive, compared to Illinois which was negative or very negative. South Dakota rated property taxes and other fees positive more frequently than Illinois. Illinois rated feed stuff availability very positive compared to Idaho's positive, but Illinois was neutral compared to Ohio and Wisconsin which were positive. All the other states rated climate positive compared to Illinois

which was neutral. Idaho, Ohio, and Wisconsin rated labor availability positive more frequently than Illinois which was either neutral or negative. Wisconsin also rated labor wages positive more frequently than Illinois. All the other states rated utility costs positive or very positive compared to Illinois which was neutral or very negative compared to Wisconsin.

For market for milk and co-product, category 6, only one item of significant difference appeared. Illinois rated milk price positive more frequently than Idaho's negative, but Illinois was negative compared to Wisconsin's very positive.

For family and community ties, category 7, there was only one significant different item. Wisconsin rated family has a dairy history in the area very positive compared to Illinois which was positive.

In terms of ranking the categories, Ohio ranked family and community ties higher than Illinois. South Dakota ranked resource availability and resource prices higher than Illinois. Wisconsin ranked structure of dairy industry more important than Illinois.

Conclusions

Our objectives were (1) Determine factors important to producers' decisions to expand, to start or to relocate a dairy in their current location. (2) Determine relative importance of promotion programs. Specific research questions were (1) Do the perceptions of producers regarding the evaluated factors vary by cow herd size? (2) Do the perceptions of producers regarding the evaluated factors vary by state or region?

As a general category, public promotion and support was ranked the lowest in importance for dairy growth, but individual items within the category were rated as having positive impact. Extension service and university research had a mean rating reflecting a positive impact. Of the 42 items evaluated, extension service received the tenth highest rating. Assistance in obtaining

licenses and permits, and guaranteed loans also had mean ratings favoring a positive impact, but to a lesser extent than extension and university research. Dairy operators who expanded or who have large operations rated guaranteed loans higher. Large operations also rated labor training programs more positive. Tax breaks and dairy recruitment activities were rated neutral to negative.

Market for milk and co-products category was ranked the most important, but in terms of individual items, local milk prices were largely rated neutral for expanding or locating a dairy locally. This possible inconsistency could be a result of the time of the survey and the low price experienced in 2003.

The second most important ranked category was resource availability and resource prices, but this ranking varied by size of farms. Small dairies ranked family and community ties second and large dairies ranked regulatory environment as second. Overall, the results suggested that economic and social factors outweigh public promotion and support as for important reasons to expand or locate a dairy.

Illinois had the most definite downward trend in milk production of the states evaluated. Illinois dairy operators perceived Illinois having a number of items that were negative or less positive than states experiencing growth in milk production or maintaining their production. The regulatory compliance items, land prices, utility cost, and climate were consistently rated lower than all the other states. Thus, Illinois milk producers have perceived themselves having economic disadvantages with respect to land and utilities; and environmental and business disadvantages with respect to climate and regulatory compliance. Although public promotion and support for dairy was not ranked high, the results suggest a role for such activities in Illinois especially for research and extension. Research in Illinois should determine if the perceived

economic, environmental and regulatory limitations for Illinois producers are factual. If perceived economic, environmental and regulatory limitations are factual then research should assess whether management strategies or technologies exist to maintain a viable dairy industry in Illinois. Extension would provide outreach for new management strategies and technology and focus on activities to aid in regulatory compliance. Illinois public policy makers should evaluate regulatory policies as to their effectiveness and impact on the dairy industry.

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Table 1. Mean Rating for Expanding or Locating a Dairy by Operators Who Have and Have Not Expanded Their Dairy

Items rated on a scale of 1 to 5 or not applicable where 1= Very Negative, 2=Negative, 3=Neutral, 4=Positive, 5=Very Positive	Have you expanded your dairy?		
	no	yes	Total
1a. Promotion and advertising to recruit dairy	2.90	2.95	2.93
1b. Extension service	3.71	3.69	3.70
1c. University research	3.64	3.59	3.61
1d. Guaranteed loans*	3.01	3.12	3.08
1e. Labor training programs	2.80	2.92	2.87
1f. Tax breaks	2.97	2.82	2.88
1g. Assistance in obtaining licenses and permits	3.14	3.16	3.15
2a. Community amenities—schools, parks, health services, etc.	3.59	3.72	3.67
2b. Community support for dairy industry	3.31	3.35	3.34
2c. Support from dairy or farm organizations	3.64	3.83	3.76
2d. Support from utility promotions	3.12	3.20	3.17
3a. Easy to obtain site and building licenses and permits	2.98	3.02	3.00
3b. Easy to comply with health regulations	3.17	3.30	3.25
3c. Easy to comply with environmental regulations	2.87	3.13	3.03
3d. Easy to comply with labor regulations	3.25	3.44	3.37
4a. Enough dairies to support needed infrastructure	3.30	3.41	3.36
4b. Size and volume of local dairy processors in area	3.56	3.70	3.64
4c. Dairy cooperative	3.73	3.65	3.68
4d. Transportation infrastructure for hauling milk and supplies	3.99	4.01	4.00
4e. Milk producer organization	3.75	3.70	3.72
5a. Land availability	2.94	2.93	2.93
5b. Land prices	2.67	2.62	2.64
5c. Property taxes and other fees**	2.81	2.91	2.87
5d. Feed stuff availability	3.97	4.02	4.00
5e. Feed prices	3.44	3.62	3.55
5f. Water availability	3.71	3.79	3.75
5g. Water cost	3.59	3.75	3.68
5h. Veterinary and nutritional services	3.93	4.08	4.02
5i. Climate**	3.31	3.56	3.46
5j. Labor availability**	3.12	3.45	3.32
5k. Labor wages**	3.05	3.32	3.21
5l. Utility cost*	3.18	3.24	3.21
6a. Local milk prices***	2.91	3.21	3.08
6b. Ability to ship to higher price milk markets**	2.56	2.80	2.70
6c. Cost to market milk	2.90	3.10	3.02
6d. Market for cull cows and calves	3.60	3.68	3.65
6e. Market for replacement heifers	3.57	3.68	3.64
6f. Rendering services***	2.76	3.20	3.02
7a. To be near family and friends	4.08	3.99	4.02
7b. Family has a dairy history in the area	3.94	3.75	3.83
7c. Plans for future generations to continue in dairy***	3.16	3.66	3.46
7d. Maintain affiliations with church or civic organizations*	4.01	3.98	3.99

Significant differences Pearson Chi-square * P<0.1, ** P<0.05, *** P<0.01 N= 398

Table 2. Mean Ranking of Categories Affecting Dairy Growth in Operator's Location by Operators Who Have and Have Not Expanded

	Have you expanded your dairy?		
	no	yes	Total
Market for Milk and Co-products	2.86	3.20	3.06
Resource Availability and Resource Prices	3.53	3.59	3.57
Family and Community Ties	3.54	3.72	3.65
Structure of Dairy Industry	3.94	3.90	3.92
Regulatory Environment	4.64	3.92	4.20
Community Support and Services	4.24	4.34	4.30
Public Promotion and Support	4.79	4.93	4.88

Categories ranked by order of importance, 1 Most Important 7 Least Important
N=360

Table 3. Mean Rating for Expanding or Locating a Dairy for Dairy Operator's Area by Size of Cow Herd

Items rated on a scale of 1 to 5 or not applicable where 1= Very Negative, 2=Negative, 3=Neutral, 4=Positive, 5=Very Positive	Dairy Cow Numbers			
	≤ 100	101 to 1000	>1000	Total
1a. Promotion and advertising to recruit dairy*	3.03	2.73	3.12	2.93
1b. Extension service	3.74	3.73	3.50	3.70
1c. University research	3.59	3.66	3.57	3.61
1d. Guaranteed loans*	3.10	2.94	3.33	3.08
1e. Labor training programs*	2.87	2.79	3.04	2.87
1f. Tax breaks**	3.01	2.68	2.96	2.88
1g. Assistance in obtaining licenses and permits	3.28	3.02	3.14	3.15
2a. Community amenities—schools, parks, health services, etc.***	3.46	3.87	3.79	3.67
2b. Community support for dairy industry*	3.46	3.18	3.33	3.34
2c. Support from dairy or farm organizations	3.71	3.76	3.90	3.76
2d. Support from utility promotions***	3.09	3.06	3.60	3.17
3a. Easy to obtain site and building licenses and permits**	3.18	2.78	3.00	3.00
3b. Easy to comply with health regulations**	3.29	3.11	3.44	3.25
3c. Easy to comply with environmental regulations**	3.11	2.83	3.25	3.03
3d. Easy to comply with labor regulations	3.26	3.38	3.61	3.37
4a. Enough dairies to support needed infrastructure***	3.16	3.51	3.61	3.36
4b. Size and volume of local dairy processors in area	3.49	3.77	3.83	3.64
4c. Dairy cooperative	3.56	3.82	3.72	3.68
4d. Transportation infrastructure for hauling milk and supplies	3.92	4.07	4.08	4.00
4e. Milk producer organization*	3.56	3.85	3.84	3.72
5a. Land availability***	2.71	3.04	3.36	2.93
5b. Land prices***	2.42	2.66	3.26	2.64
5c. Property taxes and other fees*	2.73	2.93	3.14	2.87
5d. Feed stuff availability	3.92	4.07	4.07	4.00
5e. Feed prices***	3.36	3.68	3.81	3.55
5f. Water availability	3.82	3.70	3.66	3.75
5g. Water cost	3.67	3.70	3.69	3.68
5h. Veterinary and nutritional services**	3.89	4.16	4.10	4.02
5i. Climate***	3.28	3.47	3.93	3.46
5j. Labor availability***	2.96	3.46	4.02	3.32
5k. Labor wages***	2.94	3.32	3.69	3.21
5l. Utility cost	3.20	3.19	3.33	3.21
6a. Local milk prices*	3.02	3.12	3.21	3.08
6b. Ability to ship to higher price milk markets*	2.65	2.66	2.92	2.70
6c. Cost to market milk	2.99	3.04	3.05	3.02
6d. Market for cull cows and calves***	3.64	3.73	3.47	3.65
6e. Market for replacement heifers**	3.65	3.66	3.54	3.64
6f. Rendering services***	2.73	3.18	3.45	3.02
7a. To be near family and friends**	4.11	4.06	3.69	4.02
7b. Family has a dairy history in the area***	3.91	3.98	3.20	3.83
7c. Plans for future generations to continue in dairy**	3.29	3.62	3.58	3.46
7d. Maintain affiliations with church or civic organizations	4.02	4.06	3.75	3.99

Significant differences Pearson Chi-square * P<0.1, ** P<0.05, *** P<0.01 N=372

Table 4. Mean Ranking of Categories Affecting Dairy Growth in Operator's Location by Size of Dairy Cow Herd

	Dairy Cow Numbers			Total
	≤ 100	101 to 1000	>1000	
Market for Milk and Co-products	3.11	2.98	3.13	3.06
Resource Availability and Resource Prices	3.67	3.48	3.50	3.57
Family and Community Ties	3.23	3.86	4.43	3.65
Structure of Dairy Industry	3.99	3.87	3.80	3.92
Regulatory Environment	4.75	3.82	3.45	4.20
Community Support and Services	4.17	4.56	4.09	4.30
Public Promotion and Support	4.77	5.11	4.66	4.88

Categories ranked by order of importance, 1 Most Important to 7 Least Important
N=360

Table 5. Differences between Illinois and Other States as to Importance to Expand or Locate a Dairy (Differences are actual responses compared to expected response.)

	Source of Rating Difference	
	Illinois	Idaho
1a. Promotion and advertising to recruit dairy*	Neutral	Negative
1e. Labor training programs*	Neutral	Positive
3b. Easy to comply with health regulations***	Neutral	Negative
3c. Easy to comply with environmental regulations*	Neutral	Very Negative
4a. Enough dairies to support needed infrastructure*	Neutral	Very Positive
5b. Land prices***	Very Negative	Neutral
5d. Feed stuff availability*	Very Positive	Positive
5f. Water availability***	Very Positive	Negative
5g. Water cost*	Neutral	Negative
5i. Climate***	Neutral	Positive
5j. Labor availability***	Neutral	Positive
5k. Labor Wages***	Neutral	Positive
5l. Utility cost**	Neutral	Positive
6a. Local milk prices***	Positive	Negative
	Illinois	Ohio
1f. Tax breaks**	Very Negative	Positive
1g. Assistance in obtaining licenses and permits***	Negative	Positive
2a. Community amenities - schools, parks, health services, etc.*	Very Positive	Neutral
3a. Easy to obtain site and building licenses and permits**	Negative	Very Positive
3c. Easy to comply with environmental regulations***	Negative	Positive
4c. Dairy cooperative**	Very Positive	Neutral
5b. Land prices**	Negative	Very Positive
5d. Feed stuff availability*	Neutral	Positive
5i. Climate**	Neutral	Positive
5j. Labor availability**	Neutral	Positive
5l. Utility cost**	Very Negative	Very Positive
Family and Community Ties*	5	1
	Illinois	South Dakota
1a. Promotion and advertising to recruit dairy**	Neutral	Positive
3a. Easy to obtain site and building licenses and permits***	Very Negative	Positive
3b. Easy to comply with health regulations***	Neutral	Very Positive
3c. Easy to comply with environmental regulations***	Neutral	Positive
5a. Land availability*	Negative	Very Positive
5b. Land prices*	Negative	Very Positive
5c. Property taxes and other fees***	Negative	Positive
5i. Climate**	Neutral	Positive
5l. Utility cost**	Neutral	Positive
Resource Availability and Resource Prices**	5	2

Table 5. continued

	Source of Rating Difference	
	Illinois	Wisconsin
1d. Guaranteed loans**	Neutral	Positive
1e. Labor training programs***	Neutral	Positive
2c. Support from dairy or farm organizations*	Neutral	Very Positive
2d. Support from utility promotions***	Neutral	Positive
3a. Easy to obtain site and building licenses and permits**	Very Negative	Very Positive
3b. Easy to comply with health regulations**	Neutral	Very Positive
3c. Easy to comply with environmental regulations**	Neutral	Very Positive
4a. Enough dairies to support needed infrastructure***	Neutral	Very Positive
4b. Size and volume of local dairy processors in area*	Neutral	Very Positive
4d. Transportation infrastructure for hauling milk and supplies*	Neutral	Very Positive
5b. Land prices*	Very Negative	Very Positive
5d. Feed stuff availability**	Neutral	Positive
5g. Water cost**	Neutral	Very Positive
5i. Climate***	Neutral	Positive
5j. Labor availability***	Negative	Positive
5k. Labor Wages**	Negative	Positive
5l. Utility cost*	Negative	Very Positive
6a. Local milk prices**	Negative	Very Positive
6b. Ability to ship to higher price milk markets**	Very Negative	Neutral
6f. Rendering services***	Negative	Very Positive
7b. Family has a dairy history in the area**	Positive	Very Positive
Structure of Dairy Industry*	4	1

Significant differences Pearson Chi-square * P<0.1, ** P<0.05, *** P<0.01

Appendix Survey Instrument

Dairy Survey

This study is a multi-state survey of dairy farmers to determine factors related to location that are important to a dairy producer's decision to start, expand or relocate a dairy.

Part 1. Complete background information

1. How many years have you operated a dairy? _____

2. Where is your current dairy located?
State _____ County _____ Zip code _____

3. How many milking cows are in your current dairy herd? _____

4. Have you expanded your dairy since 1997? Yes ____ No ____
If yes, how many milking cows have you added? _____
1997 milk production _____ lbs/cow/year Current milk production _____ lbs/cow/year

5. Have you relocated your dairy since 1997? Yes ____ No ____
Did you build a new dairy? Yes ____ No ____
Where was your previous dairy?
State _____ County _____ Zip code _____ or Country _____

6. What is your age? _____

7. What is the highest level of education completed by the dairy operator?
High school _____
Two years of college _____
Four years of college _____
Completed study beyond bachelors _____

8. Ethnicity or ancestry of the operator (English, German, Spanish, Dutch, etc.) _____

Part 2. Please rate your area on a scale of 1 to 5 for expanding or locating a dairy.

Place number rating or NA in column at right for each item.	Ratings 1. Very negative 2. Negative 3. Neutral 4. Positive 5. Very Positive NA Not applicable
1. Public Sector Promotion and Support	
a. Promotion and advertising to recruit dairy	
b. Extension service	
c. University research	
d. Guaranteed loans	
e. Labor training programs	
f. Tax breaks	
g. Assistance in obtaining licenses and permits	
2. Community Support and Services	
a. Community amenities—schools, parks, health services, etc.	
b. Community support for dairy industry	
c. Support from dairy or farm organizations	
d. Support from utility promotions	
3. Regulatory Environment	
a. Easy to obtain site and building licenses and permits	
b. Easy to comply with health regulations	
c. Easy to comply with environmental regulations	
d. Easy to comply with labor regulations	
4. Structure of Dairy Industry	
a. Enough dairies to support needed infrastructure	
b. Size and volume of local dairy processors in area	
c. Dairy cooperative	
d. Transportation infrastructure for hauling milk and supplies	
e. Milk producer organization	

Part 2 continued.

Please rate your area on a scale of 1 to 5 for expanding or locating a dairy.

Place number rating or NA in column at right for each item.	Ratings 1. Very negative 2. Negative 3. Neutral 4. Positive 5. Very Positive NA Not applicable
5. Resource Availability and Resource Prices	
a. Land availability	
b. Land prices	
c. Property taxes and other fees	
d. Feed stuff availability	
e. Feed prices	
f. Water availability	
g. Water cost	
h. Veterinary and nutritional services	
i. Climate	
j. Labor availability	
k. Labor wages	
l. Utility cost	
6. Market for Milk and Co-Products	
a. Local milk prices	
b. Ability to ship to higher price milk markets	
c. Cost to market milk	
d. Market for cull cows and calves	
e. Market for replacement heifers	
f. Rendering services	
7. Family and Community Ties	
a. To be near family and friends	
b. Family has a dairy history in the area	
c. Plans for future generations to continue in dairy	
d. Maintain affiliations with church or civic organizations	

Part 3. Rank the following categories in order from most important (1) to least important (7) for dairy growth in your area.

- _____ Public Promotion and Support
- _____ Community Support and Services
- _____ Regulatory Environment
- _____ Structure of Dairy Industry
- _____ Resource Availability and Resource Prices
- _____ Market for Milk and Co-products
- _____ Family and Community Ties

Part 4. We realize this survey likely does not capture all the factors affecting a decision to expand or relocate a dairy. Please take the time to explain what you believe are the important reasons for making a decision to start, expand or relocate a dairy in your area.

Please discuss your experience with starting, expanding or relocating a dairy.

Thank you, please return this survey in the enclosed envelope.