

Iowa Dairy Goat Farm Survey–Fall 2019

In 2019, the **Iowa State University Extension and Outreach Dairy Team** contracted the Center for Survey Statistics and Methodology (CSSM) at Iowa State University to conduct a mail survey with dairy goat farmers in Iowa to learn more about their operation, current needs, and expectations for the future.

This survey was part of a research effort coordinated by Leo Timms, emeritus professor of animal science and retired extension dairy specialist at Iowa State, and Jennifer Bentley, dairy specialist with ISU Extension and Outreach, who served as principal investigators on this project. Bentley and Kristen Burke, a former farm management specialist with ISU Extension and Outreach, analyzed and compiled survey results for Iowa State and collaborators. Results provide insight on the current state of the dairy goat industry in Iowa and will be summarized and provided through reports for dairy goat producers, educators, industry collaborators, and the public. This information will help educators and industry collaborators determine educational programming areas in the short and long term. Additionally, results will help all audiences better understand the demographics of dairy goat farms, management practices used, and the future of the industry.

Design and procedures

The survey was developed cooperatively by CSSM and the principal investigators. The survey was 12 pages in length and included questions relating to farm characteristics, dairy goat doe and kid management, manure management, financial management, potential changes in the operation, family labor, information sources, and farm and personal demographics. Printed copies of the survey were prepared by CSSM and mailed to 215 dairy goat milk producers on August 20, 2019 with a cover letter and postage-paid return envelope enclosed. A post card reminder was sent to 210 non-respondents on August 28, 2019, and a second copy of the survey was mailed to 165 non-respondents on September 9, 2019.

Results

The sample for this study consisted of 215 producers drawn from a list of all dairy goat operations in the state of Iowa (provided by Iowa Department of Agriculture and Land Stewardship (IDALS) Dairy Bureau) and provided to CSSM by Timms. Of the 215 dairy goat farmers in the sample, three (1.4%) were classified as ineligible because they had no goats. Completed surveys were received from 88 farmers, for an overall response rate of 41.5%. As shown in Table 1,

Table 1. Survey response by county

COUNTY	COUNT	TOTAL NUMBER OF PRODUCERS IN COUNTY	PERCENTAGE RESPONSES BY COUNTY
Johnson	29	42	69%
Ringgold	8	10	80%
Clayton	7	30	23%
Jefferson	7	13	54%
Washington	7	19	37%
Buchanan	6	24	25%
Davis	6	12	50%
Van Buren	3	4	75%
Worth	3	10	30%
Keokuk	2	3	67%
Mitchell	2	10	20%
Wayne	2	7	29%
Allamakee	1	3	33%
Dubuque	1	3	33%
Howard	1	7	14%
Iowa	1	1	100%
Linn	1	1	100%
Winneshiek	1	2	50%

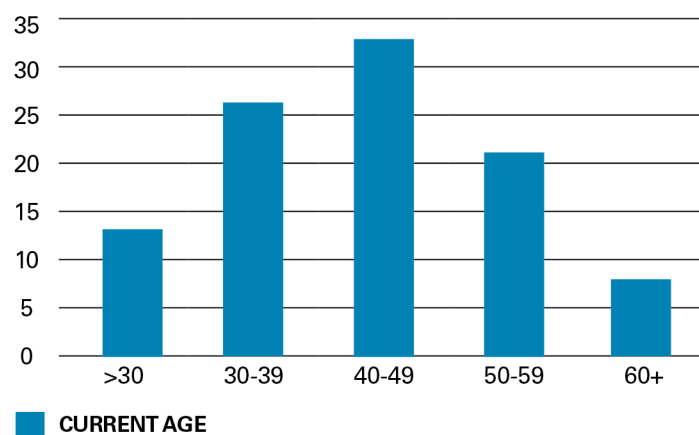


Figure 1. Current age of dairy goat producers, 2019

counties are listed by responses, total number of producers in the county, and their response rate.

Of the respondents, the majority were male (97%), and average age was 43 years (22-75; 38% < 40) (Figure 1). Forty-nine percent of dairy goat farmers got started in the dairy industry by previously milking cows, with the remaining a combination of either having parents or family members already working with dairy goats or a family member recommending raising and milking dairy goats.

Table 2. Commodities produced on farm, 2019

Which commodities were produced on your farm in 2019?

COMMODITIES	PERCENT
Dairy Goat Milk	100
Corn for Grain or Silage	72.7
Hay/Haylage/Pasture	71.6
Dairy Goat Meat	63.6
Soybean	59.1
Small grains (oats, barley, etc.)	47.7
Beef	37.5
Dairy Cow milk	10.2
Hogs	8
Other Crops	6.8
Other Goat Products Made/sold	3.4

Table 3. Annual average milk production, pounds per doe

POUNDS	PERCENT
501-1000	1.1
1001-2000	31.8
2001-3000	61.4
3001-4000	1.1
Don't know	2.3
Missing	2.3

Table 4. Average dairy goat herd components

	FAT	PROTEIN	MUN	SCCx1000
Average	3.03	2.69	27.45	986
St. Dev ±	0.25	0.16	3.15	288
Minimum	2.60	2.40	19.00	500
Maximum	3.80	3.20	35.50	1960

In addition to producing milking goats, 70% of operations also produce hay, haylage, or pasture and corn for grain or silage (Table 2). Additionally, nearly half of operations produce dairy goat meat, soybean, small grains, or beef.

Average Number of Milking and Dry Does:

2014 – 105 (range 0-700)
2019 – 155 (range 52-430)

While most operations are less than 350 head, the largest segment of goat operations has a herd size between 100-199 head (55%). Although there has been limited growth in larger operations, small to medium sized operations have increased herd size over the last five years.

Producers in Iowa utilize grazing to varying degrees; with 2% intensively grazing, 11% moderately grazing, and 19% minimally grazing. Sixty-four percent do not include grazing in their management. Thirty-one percent of operations are identified as an organic operation.

Milk production and composition

As shown in Figure 2, the Saanen breed is the predominant breed on 34% of dairy goat operations, with Alpine next at 27.3% (99% and 97% of herds have Saanen and Alpine, respectively). Rolling herd average is the yearly average production per doe for a herd. As shown in Table 3, over 60% of all herds had an annual milk production between 2,000-3,000 pounds per doe. Milk production is measured predominately through bulk tank only (68%) with 32% testing milk through Dairy Herd Improvement (DHIA).

As shown in Table 4, average fat and protein percent in milk produced is 3.03 and 2.69, with average Milk Urea Nitrogen (MUN) at 27.45. Average Somatic Cell Count (SCC) in milk for all herds is 986,000. Herds with higher production had a below average SCC while lower production herds had slightly higher than average SCC. Data was from August through October, reflecting mostly does in mid-late lactation.

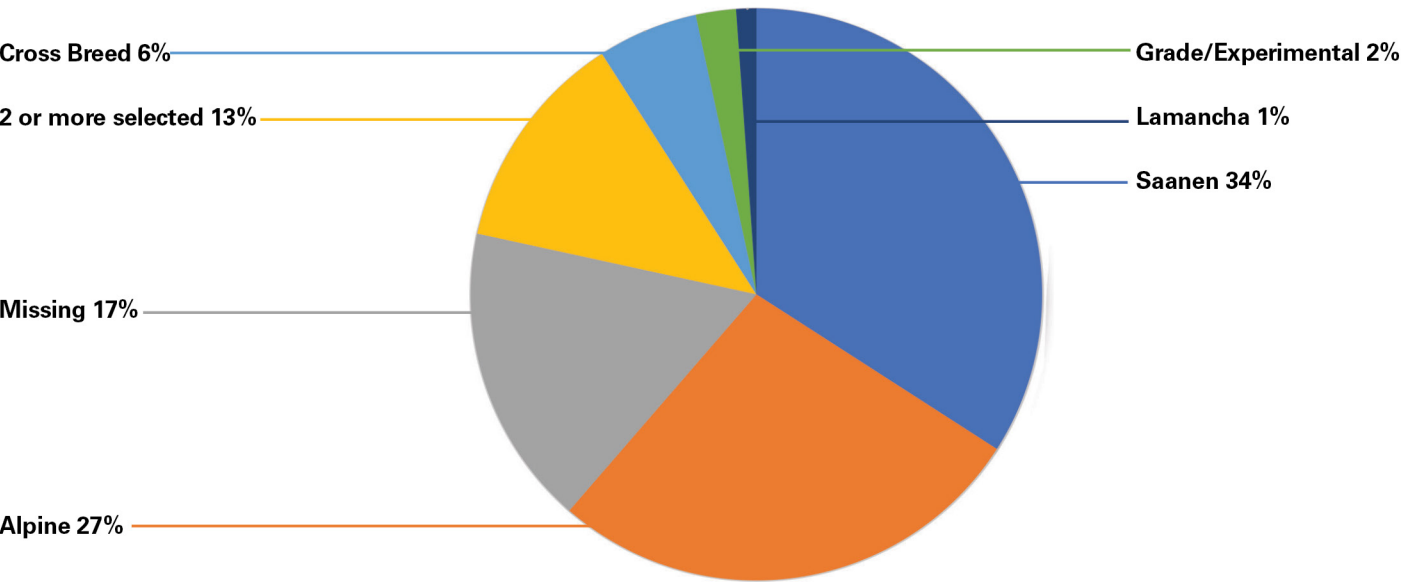


Figure 2. Predominant breed milked

Facilities

Milking: In reference to dairy goat milking facilities, 55% are utilizing a bucket milker with 33% hand milking. Those milking in a parlor system showed 49% with parallel parlor, 26% parallel parlor with a rapid exit system, 3% herringbone, and 1% carousel (rotary) parlor. A majority of smaller herds, under 100 head, are hand milking, while larger herds are using a pipeline or parlor system. On average, 15 does can be milked at one time in their milking system, with 57% most commonly milking between 10 and 20 does at one time. All dairy goat operations milk twice a day. On average, 99 does per hour are milked depending on facility type; an average of 66 does per hour for bucket and between 110 and 130 for most other types of milking systems.

Housing: Seventy-six percent house their milking herd in a bedded pen with either a dirt or paved lot, while 24% house milking does in a bedded pen with total confinement. As shown in Figure 3, operators have more recently updated milking equipment and facilities compared to housing facilities. Facility changes in the next 5-10 years was a lower priority due to the high percentages that have made facility changes and upgrades over the past 10 years.

Dairy farm management

Respondents were asked questions regarding practices and records utilized in their operation.

Veterinary service: The main service operations seek from veterinarians is treatment recommendations, while treatment protocols, herd health, preventative practices, and education are other services producers commonly utilize. Eighty-five percent responded they have veterinarians in their areas with dairy goat experience. Forty-four percent utilize veterinary services 3-5 times a year, while 38% use only once a year.

Table 5. Dairy goat management practices, use rate

Do you currently use any of the following dairy management practices or technologies?	
ANSWER	PERCENT
Hoof trimming	97
Deworming methods	94
Routine vaccinations	80
Individual doe Somatic Cell (SCC) testing	64
External parasite control on all animals	58
Milk culturing to identify mastitis	39
Dry doe treatment	17
Synchronization program for reproduction	11
Artificial insemination (AI)	2
Heat detection aids such as patch, chalk, paint	1
Breed out of season using lights	1
Breed out of season using hormones	1

Milk marketing: When selling milk, 48% of producers market milk through an independent processor, 44% market through a dairy farm cooperative, and 5% market to an organic dairy cooperative.

Records: Only 7% of operators use a computer to keep records for their operations, with 49% not keeping production records on individual goats. Those who do keep records use DHI records, PCDART, or another method.

Health and reproductive management: Operators employ a variety of practices and technologies to manage their dairy goats and operation. As listed in Table 5, common practices used include hoof trimming, deworming methods, routine vaccinations, individual doe SCC testing, external parasite control, and milk culturing. Operations are less likely to engage in practices related to dry doe treatments and reproduction practices such as AI or heat detection aids and breeding out of season.

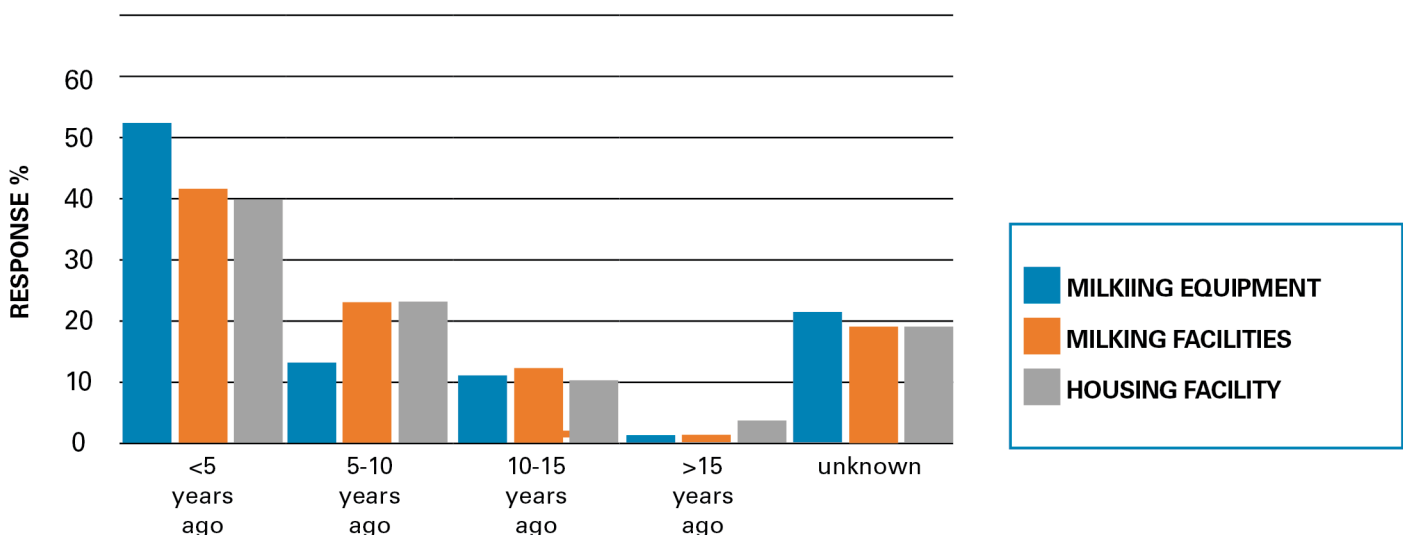


Figure 3. Recent facility upgrade, percent of operations



Milking management

Dairy goat operators were asked about pre and post milking practices as part of their milking management (Table 6). Forty-eight percent of respondents use no pre-milking sanitation. The remaining 52% used a variety of premilking sanitation practices (towels and sanitation wipes, commercial teat dip, homemade solution, or water) but only 23% dried teats prior to unit attachment. Only 23% forestripped teats prior to milking. Seventy-three percent of operators check udders post milkout, with 27% utilizing a commercial or homemade solution for postdip.

Doe management

Eighty-one percent of operators average a dry doe period of 60 days, with an average length of lactation of 300 days. The majority of does are moved into the milking string between one and four days post kidding. Ninety-four percent of first lactation does freshened at one year of age.

Kid management

Producers were asked how soon after birth the average dairy goat kid receives colostrum. Twenty-seven percent responded less than one hour after birth, 55% within 1-2 hours after birth, and 16% within 2-4 hours after birth. On average, first feeding colostrum amount fed is 8.77 ounces (4-20 ounces); with a second feeding average of 7.85 ounces (0-24 ounces). Table 7 shows sources of colostrum fed. Thirty-six percent use visual appearance as a method to estimate immunoglobulins or colostrum quality in first kid feeding. Eight percent use volume of first milking colostrum, while 1% utilize a refractometer. Less than 2% of all operators routinely monitor serum proteins as a measure of passive transfer status of newborn kids.

Table 6. Pre- and post-milking practices, use rate

PRE-MILKING PRACTICE	PERCENT USE
No pre-milking sanitation	48
Forestrip milk from teats	23
No drying of teats with towel	20
Dry teats with individual towels	15
Predip with commercial teat dip	13
Sanitation wipes	11
Wash with liquid and a common towel	10
Dry teats with a common towel	8
Predip with homemade solution	7
Wash with Udder Wash and individual towels	6
Wash with water and individual towels	5
POST-MILKING PRACTICE	PERCENT USE
Check udders for milkout	73
Postdip with commercial dip	23
Postdip with homemade solution	4

Table 7. Sources of colostrum fed, ranked by response

	YES, PERCENT	PREDOMINATE SOURCE, PERCENT
Raw colostrum from fresh doe	43	28
Commercial colostrum bovine based	43	31
Heat treated goat colostrum	29	22
Other commercial colostrum/ goat colostrum replacer	11	7
Heat treated cow colostrum	1	0
Raw cow colostrum	1	0

Table 8. Type of milk fed to kids, ranked by response

TYPE OF MILK FED TO KIDS	PERCENT USE
Milk replacer (formula intended for goat kids)	86
Unpasteurized goat milk	30
Pasteurized goat milk	16
Unpasteurized cow milk	8
Milk replacer (formula intended for lambs)	2
Pasteurized cow milk	1

When feeding dairy goat kids, 63% of producers utilize a lamb bar with multiple nipples, 32% utilize individual bottle feeding, 10% a free choice cold milk feeding program, 6% doe raised milk, and 3% utilize an automatic feeder. The remaining feed using a combination of buckets or bottles with nipples, an individual pan, or feeding trough.

Eighty-six percent of respondents feed kids twice a day, utilizing milk as shown in Table 8. The majority of producers wean kids by age; followed by grain/starter consumption and bodyweight. The average weaning age of doe kids is 52.6 days (35-90 days); with an average weaning weight of 23.5 pounds (10-40 pounds). Buck kids are weaned around the same age at 50.4 days, weighing 24.4 pounds.

Feeding management

Dairy goat producers feed their milking herd one of three ways: 72% utilize grain feeding only while milking 42% limit feed with all animals having equal access 27% always have feed available

Primary forages include:

- Alfalfa hay
- Grass hay
- Baleage
- Additional forages include haylage, silage, and small grains

Feed allowances based on:

- Individual milk yield
- Bodyweight
- Pen average

While the majority feed in confinement all year round, 11% utilize grazing and 15% manage a hybrid system; grazing half the day and the other half in the pen with supplemental feed.

Eighty-nine percent feed using a forage in the trough or feeder with a separate concentrate supplement. Three percent utilize a total mixed ration, while 5% feed forage only. On average, 3.4 pounds of concentrate feed is fed to each milking doe per day (2-10 pounds). Within all animal groups, 50% feed once per day and 20% feed twice per day. Producers feeding the herd using a total mixed ration push up feed three times per day.

Vitamins and minerals are provided primarily through free choice in the trough, included in the concentrate mix, or provided as a lick block and included in the total mixed ration if fed.

Water is available in 40% of operations by using an automatic water and nipple system; 28% utilizing a water tank or a combination of both watering systems. There are multiple ways producers manage the nutrition of their milking does. The majority of producers manage nutrition with the assistance from a feed mill, co-op, or feed store, with a combination of managing nutrition on their own, working with a nutritionist, or assistance from other dairy goat producers.



Health issues and management

There are many health issues dairy goat producers face in their operations. Those most commonly found are diarrhea in kids; CL (caseous lymphadenitis); internal parasites; mastitis; and CAE (caprine arthritis-encephalitis). Figure 4 describes the frequency of all common health issues in dairy goat herds from not at all to very often. Only 26% of operations test for CAE, CL, or Johne’s. If an animal does test positive, the animals are most commonly separated from the herd or sold.

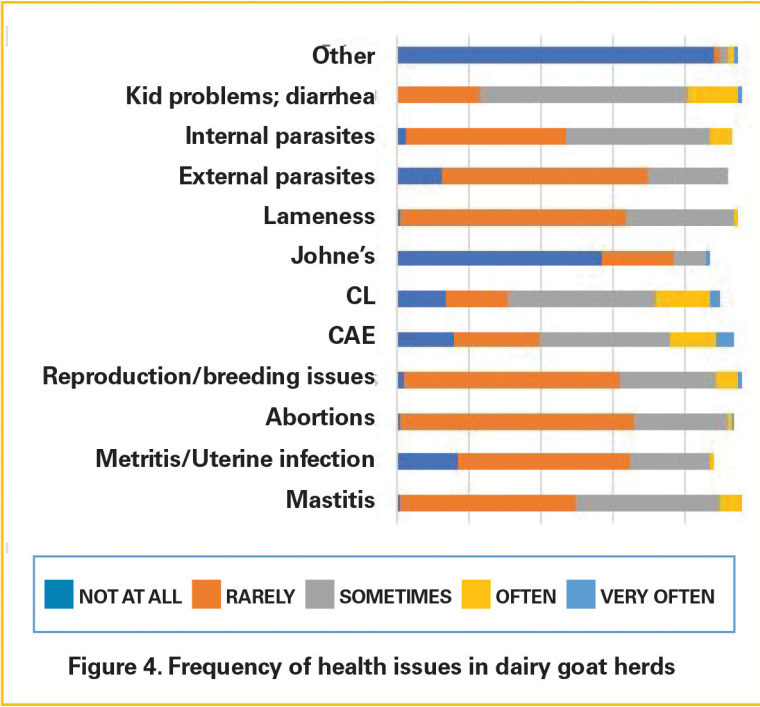


Figure 4. Frequency of health issues in dairy goat herds

	% USE
Culled due to low production	94
Culled due to mastitis/udder problems	83
Death	74
Culled due to illness or injury	67
Culled due to foot/leg problems	35
Sold to someone else for milk production	23
Sold to someone else for breeding	19
Culled due to disposition	18
Other	9

Treatment for health issues are managed in a variety of ways. Figure 5 describes the different treatments used for dairy goat health issues.

The main reasons animals leave dairy goat operations (Table 9) are due to low milk production; mastitis and udder problems; death; illness or injury; foot or leg problems; sold to someone else for milk production or breeding; or culled due to disposition. Other reasons noted by producers include somatic cell count, reproduction, CAE, or too many replacements already in the herd.

Crop and manure management

The average acre base per farm in 2019 was 91 acres for owned land and 17 acres for rented land. Total land base ranges from 0-300 acres owned and operated, while rented and operated ranges from 0-200 acres (Table 10). Operations were asked several questions regarding manure handling and management. Most operations leave manure in their

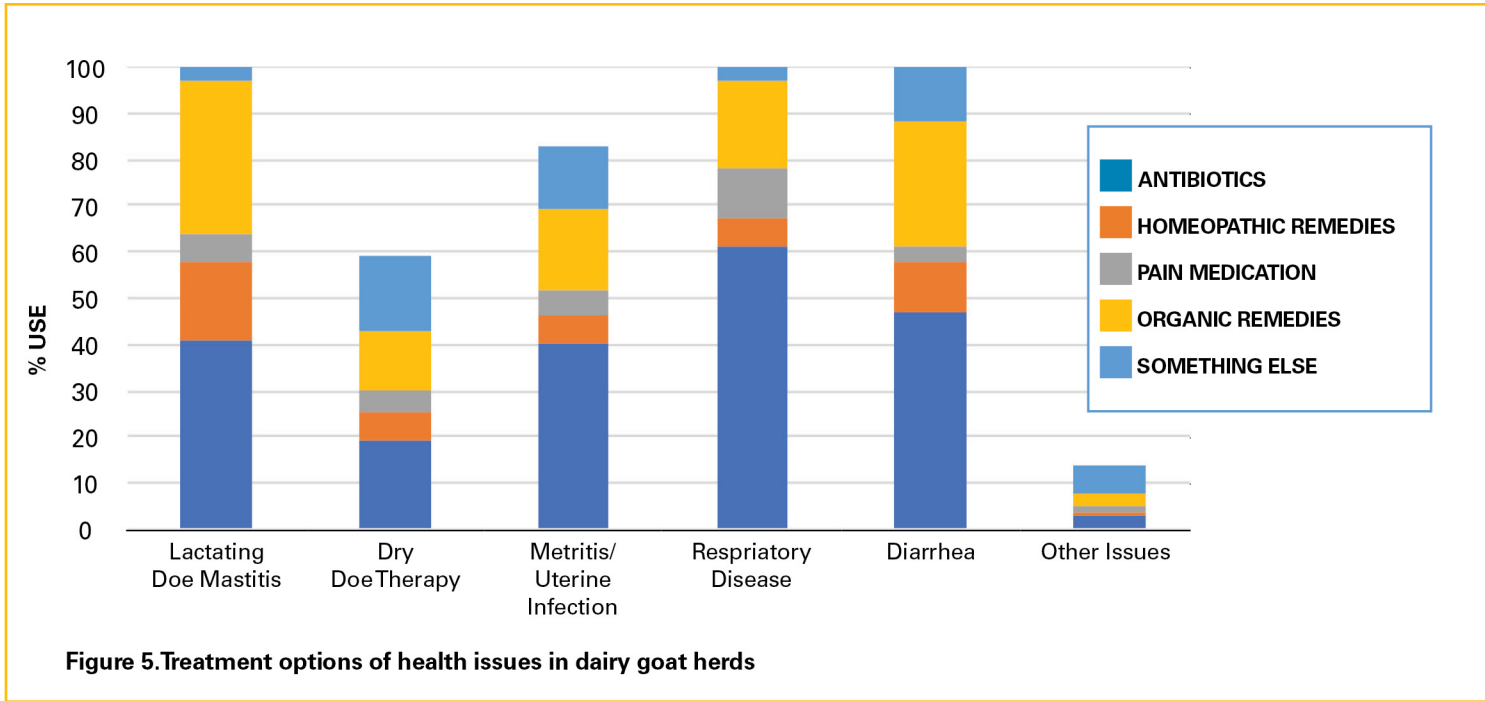


Figure 5. Treatment options of health issues in dairy goat herds

Table 10. Average acres of farmland operated in 2014 and 2019

	CURRENT 2019	2014
Total acres owned and operated	91 (0-300)	66 (0-700)
Total acres rented and operated	17 (0-200)	15.5 (0-182)
Acres in pasture	19.4 (0-90)	14.6 (0-90)
Acres in corn for grain	17.5 (0-100)	
Acres in corn for silage	1.75 (0-18)	
Acres for hay or haylage (including new seeding)	22.8 (0-70)	
Acres of oats, barley or other small grains	9.6 (0-45)	
Acres of soybeans	13 (0-80)	
Acres of other crops (cover crops, small grains, produce)	3.5 (0-62)	

barns or out buildings, or stockpile it until ready to spread on the field. Fifty percent adjust the commercial fertilizer application rate based on estimated nutrients in manure; however, only 31% of operators test the nutrient content of their manure, testing less than yearly or using book values. Eighty-one percent responded they have adequate cropland to spread manure.

Family labor and labor management

The majority of dairy goat operators utilize family working both full-time and part-time, with very limited or no use of hired labor. Twenty-three percent of the main operators have a regular off-farm job, while 7% of spouses have a regular off-farm job.

Information sources

Operators primarily use other farmers, family and friends, dairy nutrition consultants, veterinarians, industry meetings, and magazines for dairy goat management and production issues. The preferred method of obtaining dairy

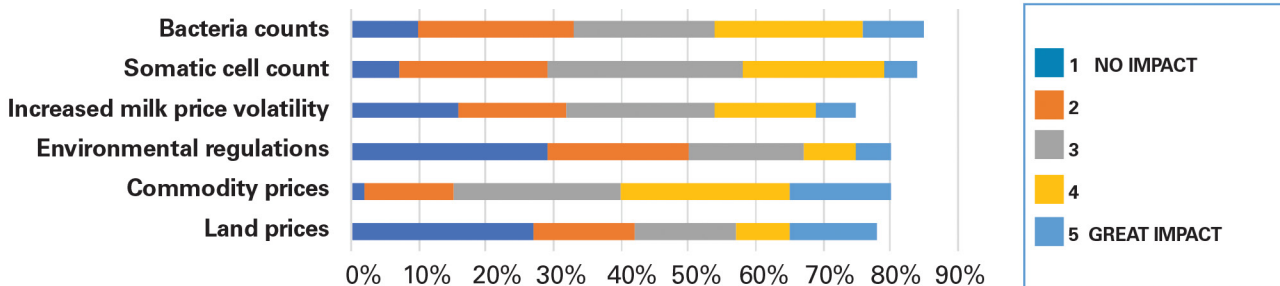
Table 11. Additional training areas needed in Iowa for producers, ranked by response

ANSWER	YES, %
Basic nutrition	63
Kid management	61
Mastitis prevention and treatment	60
Vaccination, herd health and treatment	58
Reproduction management	55
Udder health	45
Herd record keeping	40
Hoof care	38
Housing/bedding/ventilation	38
Financial record keeping/analysis	33
Antibiotic use	31
Other: CAE and CL; sustainable agriculture; milk markets	2

goat management and production information is through magazines or newsletters, small groups, and farm field days, industry meetings, and one-on-one at the farm. According to Table 11, basic nutrition, kid management, and mastitis prevention and treatment are the top three topics which need more programming for producers in Iowa.

Financial management, pricing, and issues in the dairy goat industry

Ninety percent of producers responded that dairy goats are profitable at current prices. The current average price per hundredweight of dairy goat milk received is \$37.91, with a range of \$25 to \$57. The average pricing they receive for buck kids is \$45, cull does is \$115, and replacement female kids is \$142.90. Eighty-nine percent of operations sell buck kids; with 43% selling at 10 days of age or younger and 44% selling 90 days or older, averaging 67 days old when sold. Only 18% of respondents know what it costs to produce a hundred pounds of dairy goat milk, averaging \$22.33.

**Figure 6. Impact of conditions on farm businesses**



Currently, producers indicate that commodity prices, bacteria count, and somatic cell count are the top three conditions that have significant impact and concern on their dairy goat business (Figure 6).

Future of Iowa dairy goat industry

Participants were asked questions pertaining to the future of their dairy goat operation (Table 12). Forty-nine percent indicated they plan to expand their herd in the next five years. Herd expansion equaled average growth by 88 milking does. Thirty percent of respondents projected updating facilities and equipment during the next 15 years.

Today's operators plan to stay in the business as the majority of respondents do not plan to retire, discontinue milking, or sell the operation in the next 15 years.

Table 12. Projected facility expansions or upgrades in the next 15 years

Do you plan to expand or update any of the following within the next 15 years?					
Response, percent	< 5 years	5-10 years	10-15 years	>15 years	Not reported
Expand your herd? EXPAND BY HOW MANY? 88 milking does	49%	0%	0%	0%	0%
Update housing facility for milking does	14%	8%	3%	55%	20%
Update milking facility	13%	8%	5%	56%	19%
Update manure storage	3%	7%	3%	61%	25%
Update non-lactating animal facilities	15%	6%	5%	52%	23%

Conclusion

Dairy goat producers see their herds as profitable, plan to continue to stay in the business (49% plan to expand), and expressed needs for enhanced education and service. This survey provides the platform of the existing industry while also forecasting needs and educational areas.

Iowa Dairy Goat Industry:

- 3rd in US dairy goat production
- 214 licensed dairy goat herds
- 34,000 milking does in Iowa

A vast amount of information is available to be extracted from the Iowa Dairy Goat Industry survey. This type of survey will help educational institutions and industry further define the potential future of the industry and needed areas of education. The opportunities for industry, educators, and the public to learn about the Iowa dairy goat industry from this survey are numerous.

This survey was organized by the Iowa State University Extension and Outreach Dairy Team under the direction of dairy specialists Leo Timms and Jennifer Bentley. Members of the project team included Hugo Ramirez, former assistant professor and extension dairy specialist at Iowa State; Larry Tranel and Fred Hall, dairy specialists with ISU Extension and Outreach; and Melissa O'Rourke, farm management specialist with ISU Extension and Outreach. Their direction and guidance on this project is greatly appreciated. Additionally, extension received an exploratory grant, (13984) with the North Central Risk Management Extension Education Center. Collaboration to help make this project a success also came from Paul Plummer, DVM and director of the National Institute of Antimicrobial Resistance Research and Education at Iowa State; the Iowa Dairy Goat Association; Saputo Cheese; and Mt. Sterling Coop.

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