

# Grass-fed Dairy Production Practices and Farmer Perceptions

Results from a survey of grass-fed dairy producers in the US

## Background

Over the last decade, organic grass-fed dairy production has grown rapidly in the US. Since 2016, we estimate that the number of grass-fed organic dairy farmers in the US has expanded by over 400% and, for the first time since 2018, new markets for both organic and organic grass-fed milk are now open. In 2019, the first national survey of grass-fed dairy producers provided an initial overview of farm demographics, production practices, and research and technical assistance needs of this group of producers. While this and other research has produced valuable insights into this unique production system, with more farms looking to enter this market, more in-depth knowledge is required for all aspects of the production system (i.e., soil, forage, herd management, economics, milk quality, etc.).

To continue to capture current information and build our knowledge, the project team developed and distributed a survey via mail to 509 grass-fed farms throughout the US in 2024. The survey included some similar questions as the 2019 survey regarding farm characteristics, farmer demographics, and perceptions, but included more detailed questions regarding youngstock rearing, herd health, and grazing management. One hundred forty-four farmers returned the survey for a response rate of 28.3%. This article summarizes some of the results of this survey.

For the purposes of this publication, grass-fed dairy is defined as dairy production in which the ration does not contain any grain or grain byproducts. Nutrient needs on these farms are met with grazed and stored forages.

## Farmer Demographics

Farmer responses represented nine states, with most farms located in NY, OH, IN, and PA (Figure 1). Other states (<5% respondents each) included VT, WI, MD, VA, and MN. While farmers from 16 states responded to the 2019 survey, the regional concentration was very similar and reflects the location of grass-fed milk buyers, processing, and markets. The average age of respondents was 46.4 years which is similar to the 47.6 years found in 2019 and is younger than

the national average of 58.1 years. Also similar to 2019 was the prevalence of farmers that self-identified as belonging to the plain community. In 2019 this group represented 61.0% of respondents and in 2024 this was 75.0%. The majority of farms had been certified organic for 13.6 years and certified grass-fed for 5.0 years. However, farmers reported that they had been practicing grass-fed management for an average of 7.0 years despite certification.

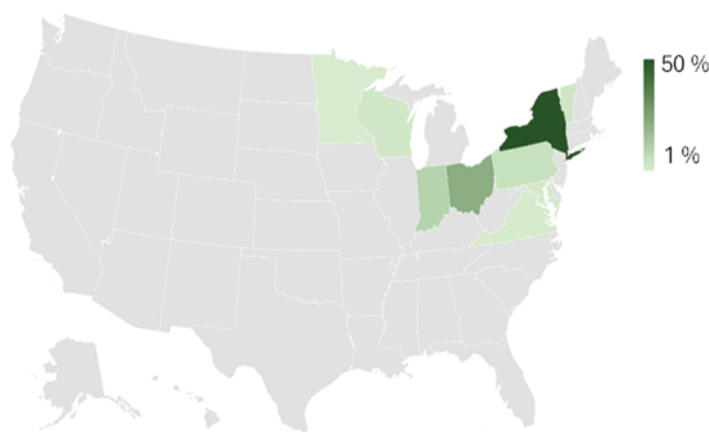


Figure 1. Percent respondents from each state.

## Herd Characteristics

Herd size and composition were similar to the 2019 survey with the average farm managing 48.0 milking cows that were predominantly crossbreeds (44.4%) including Jersey (85.9%), Holstein (84.4%), Fleckvieh (31.3%), and Normande (29.7%) genetics. Other prevalent breeds included purebred Holstein (32.6%) and Jersey (25.0%) with many additional breeds such as Ayrshire, Brown Swiss, and Fleckvieh, representing <5% each. On average farmers estimated their annual (self-reported) milk production to be 10,599 lbs per cow, an increase of 1,294 lbs from the 2019 survey. Most farms (88.9%) produce milk year-round and milk twice or more daily (87.5%). Average milk butterfat and protein content was 4.4% and 3.4% respectively. As was found in the previous survey, Holstein cattle produced the most milk followed by crossbreeds and then Jerseys with Jerseys producing the highest fat and protein content. Additionally, farms milking twice or more per day reported higher milk production and lower somatic cell count than those milking once per day.

## Land and Soil Management

Farms were producing forage on an average of 197 acres of pasture and crop land which equates to 4.1 acres per cow. Despite this land base, 72.3% reported that they still needed to purchase 36.4% of their herd's forage needs. In addition to perennial pasture and hay, 51.4% of farms also grew annual forage crops. This was substantially higher than the 32.5% found in 2019. The increase may be due to farmers seeking climate resilient strategies to enhance forage production. Additionally, farmers were harvesting bedding from an average of 10.6 acres. The need to purchase extra forage for the majority of farmers (72.3%) was similarly found in the previous survey and other research conducted by this team. Forage purchases are often required to have sufficient high-quality forage to maintain cow health and productivity without grain supplementation. While farms may have adequate land base to produce the quantity of dry matter required to support the herd, if the quality of that dry matter is not sufficiently high additional forage purchases will be required. Some farms (32.1%) also utilized off-farm custom grazing services which can help reduce a farm's forage needs.



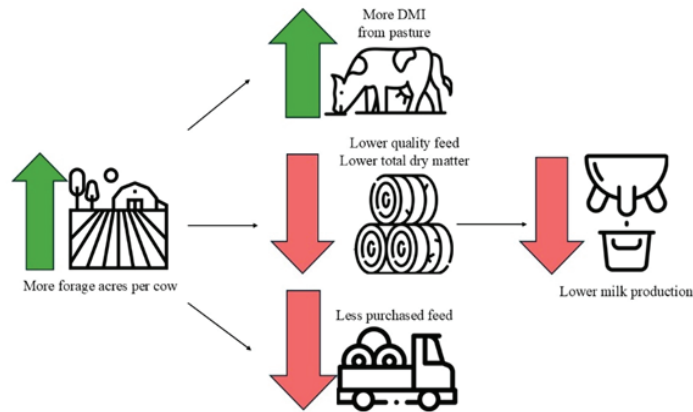
Most farmers (60.0% and 52.7% respectively) felt that their soil health and forage quality have increased as a result of becoming grass-fed. However, less than 15% reported a decrease in soil fertility and forage yields since becoming grass-fed. Most (77.2%) farms reported testing their soil and 81.8% reported purchasing fertilizers, manures, or other soil amendments, however, only 52.3% of these farms based their fertilizer purchased on their soil test recommendations. Farmers mostly used a variety of different amendments (66.9%) including poultry manure (74.1%), blended fertilizers (41.1%), lime (41.1%), and foliar sprays (20.5%). Farmers that followed soil test recommendations and those who purchased soil amendments self-reported significantly higher annual milk production than those who did not. In addition, farmers who utilized a variety of soil amendments reported higher annual milk production than those who

only used poultry manure. Finally, 30.0% of respondents said they felt their current forage yield and quality was limiting their milk production and farm income. These data reveal potential opportunities for farmers to enhance forage productivity, and ultimately farm economics through implementing a more robust soil fertility program. Given that some farms indicated low to very low knowledge levels regarding interpreting soil tests (33.8%), selecting fertilizers (21.5%), and improving soil nutrients (29.9%) there are opportunities for technical resources and education in these areas.

## Grazing Management

While the grass-fed standards currently require 150 days of grazing for the lactating herd, farmers reported grazing for 195 days or 6.5 months. Consistent with the management necessary to maximize forage quality, 79.2% of respondents indicated they gave the lactating herd a fresh paddock two or more times per day. In addition, farmers allowed pastures to recover between grazing for an average of 23.8 days in the spring, 32.7 days in the summer, and 34.7 days in the fall. On average, farms stocked the lactating herd at 52.7 cows per acre. Pre-grazing height averaged 12.7 inches and post-grazing residual 5.0 inches. However, post-grazing residual ranged from 1.0 to 12.0 inches and just over half (52.1%) of respondents reported maintaining a post-grazing residual greater than 4.0 inches. These data suggest that some farms may be grazing plants too short, which can damage the growing points and energy storage regions of the plants and over time can contribute to a decline in pasture productivity.

Heifer calves began grazing at 3.8 months of age with a range from 0-12.0 months. Certified organic and grass-fed dairy farms are required to graze all animals beyond 6.0 months of age. The most common grazing system for youngstock included moving them to a new paddock every few days (38.1%) or weekly (32.1%). Pastures used for youngstock grazing were allowed slightly longer recovery periods between grazings compared to the lactating herd at 28.6 days in spring, 36.6 days in summer, and 38.0 days in fall. Similarly, pre- and post-grazing sward heights were slightly taller than the lactating herd's. Average pre-grazing height was 14.3 inches with post-grazing residual ranging from 1.0 to 15.0 inches with an average of 5.2 inches. A slightly higher proportion of respondents (57.8%) reported maintaining a post-grazing residual height greater than 4.0 inches in the youngstock grazing system compared to the lactating herd.

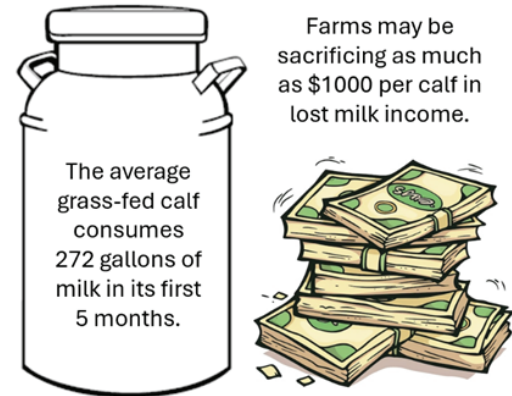


Half of the respondent farms indicated that their herd receives 80-100% of its dry matter needs from pasture during the grazing season. Interestingly, higher acres per cow managed and higher dry matter intake from pasture through the grazing season were correlated with lower annual self-reported milk production. Furthermore, farms managing more acres per cow purchased less feed. These data suggest that farms with larger acreages purchase less forage, rely more on pasture during the grazing season, and make less milk. With the constant changes in pasture quantity and quality throughout the season, farms that supplement more dry hay or baleage during the grazing season may be more able to maximize total dry matter intake or better balance cow nutrition to support higher milk production. In addition, managing a smaller land base can make harvesting higher quality forage easier as harvest timing and speed are two critical factors in forage quality. Farmers who managed more acres per cow were less satisfied with their level of milk production.

## Youngstock Management and Herd Health

Seventy-five percent of farms reported keeping enough heifer calves to meet the average cull rate of 18.8%, however, 23.6% reported keeping all heifer calves. Without supplemental grain, calves are fed milk and high-quality forages to support early growth and development. In addition to milk, calves were offered hay after 11 days and minerals after 41 days. On average calves were fed 1.75 gallons of milk per calf per day for 5.1 months. This equates to 272 gallons per calf which represents a substantial investment in lost potential milk income being diverted to these youngstock. In addition, breeding age averaged 16.5 months but ranged from 11 to 30 months. Farms waiting longer to get heifers bred will have additional stored forage and pasture needs as all animals beyond 6 months of age are required to graze per the grass-fed standards. These data represent the significant costs of raising replacements, especially extra animals beyond what is needed to meet

replacement rates. Calves were most commonly fed milk in groups (52.8%) and individually (23.9%). Nurse cows were utilized on just 18.3% of farms and dam raising on only 4.9% of farms. Nurse cow farms typically used a ratio of two calves per nurse cow.



Scours was identified as the most important health issue for youngstock by 44.8% of respondents followed by respiratory disease and internal parasites. However, these responses were influenced by calf rearing system. For example, respiratory disease was less of an issue for farms raising calves on nurse cows but more of an issue for farms raising calves individually with bottles/buckets. Internal parasites were less common on farms raising calves on dams or nurse cows, but external pests and pinkeye were more common in these instances perhaps resulting from increased contact between animals. Pinkeye was more of an issue for farms using group feeder systems and less for farms using individual bottle/buckets, again likely due to contact between animals.

The most common causes of calf mortality were scours (39.4%), dystocia (23.3%), and respiratory disease (20.2%). Despite this, 71.5% of respondents did not administer any vaccinations to calves and did not impact herd cull rates. For farmers who administered vaccinations, the most common vaccinations targeted respiratory disease (10.4%), scours (5.6%), and pinkeye (4.2%). Fifty-five percent of respondents managed pests and parasites in youngstock, most commonly targeting flies, worms, coccidia, lice, and mites. For fly control, essential oils were most common (29.6%) followed by garlic salt (18.8%), 'fly spray' (unidentified agent but presumably botanical) (12.5%), and sticky tape (9.4%). Internal parasites were most commonly treated with diatomaceous earth (38.1%) herbal/essential oil products (16.7%) rotational grazing practices (7.5%), and garlic (7.1%). Essential oil products were also most common to treat coccidia, lice, and mites.

Calf Rearing System	Respiratory disease	Internal parasites	External pests	Pinkeye	No health issues
Dam raised	—	↓	↑	↑	—
Nurse cows	↓	↓	—	—	↑
Individual bottle/bucket	↑	—	—	↓	↓
Group feeder system	—	—	—	↑	↓

Arrows indicate which health issues were reported as more common (red) or less common (green) on farms using different calf rearing strategies. Orange dashes indicate no association between variables.

When asked what aspects of their operation they were most satisfied with, most respondents indicated cow body condition, herd health, quality of youngstock, pests and parasites, and reproduction and calving. These also aligned with farmers current knowledge levels which were highest in relation to cow body condition scoring and youngstock management.

## Next Steps and Acknowledgements

This survey provides farmers, technical service providers, researchers, and other stakeholders valuable insights into the status of the grass-fed dairy industry regarding production practices, herd and land management strategies, and farmer perceptions. We will continue to utilize this information to develop resources and tools to help farmers and stakeholders to support the grass-fed dairy industry. This survey was conducted as part of a research project funded through the USDA's Organic Research and Extension Initiative (OREI), titled Enhancing the Viability of Grass-Fed Dairy Production in the U.S. Through Comprehensive Research and Extension (Project no. 2023-51300). Our research team is currently developing and implementing other research to address calf rearing and development, farm financial success, soil nutrient cycling and crop fertility management, and milk sensory quality and nutrition. For more information about the grass-fed project, contact Heather Darby at [heather.darby@uvm.edu](mailto:heather.darby@uvm.edu) or 802-656-7613.