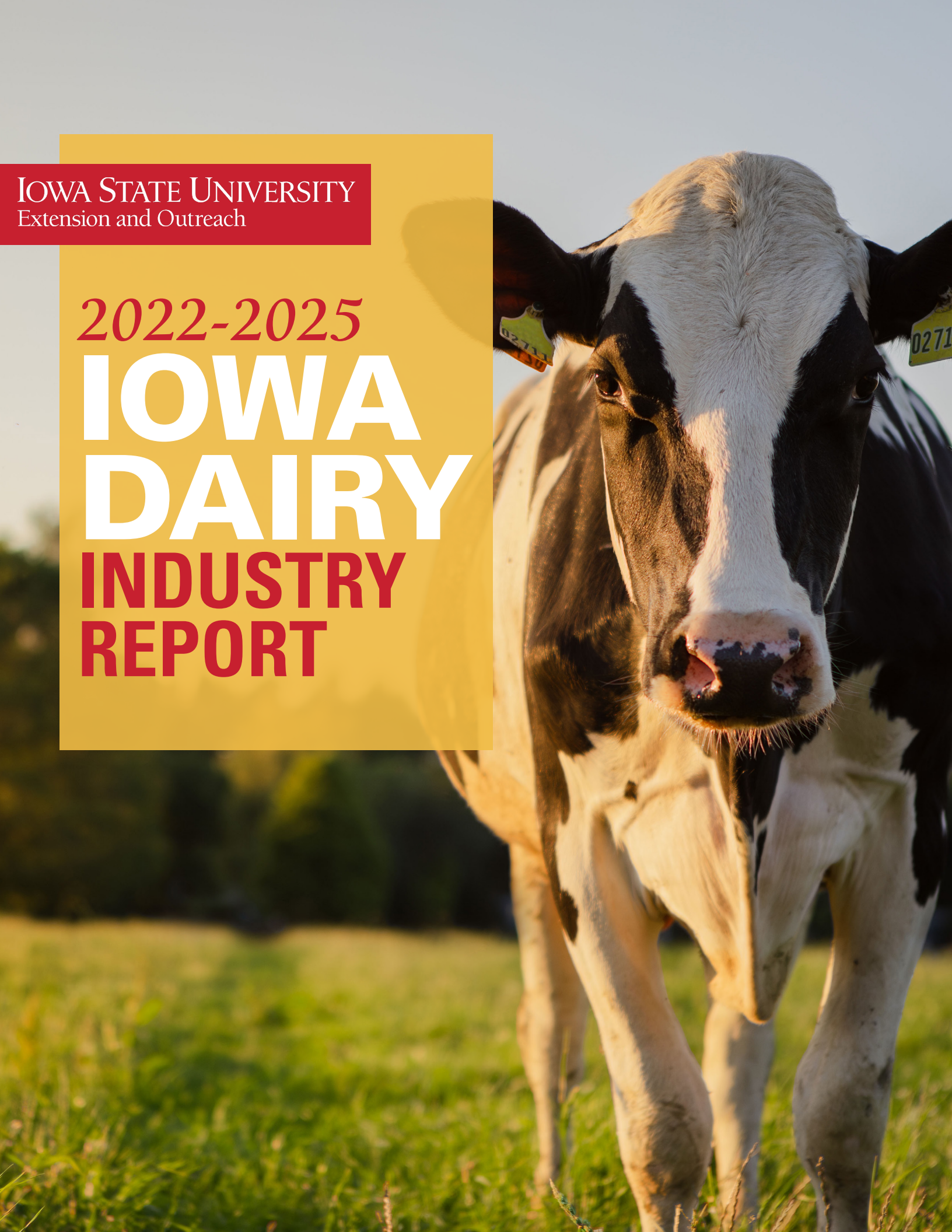
IOWA STATE UNIVERSITY
Extension and Outreach

2022-2025

IOWA DAIRY INDUSTRY REPORT



Contents

Executive Summary 3
Introduction 5
Overview of Iowa's Dairy Industry 6
U.S. Dairy Market Context and Global Market Position 9
Regional Processing Advantages Specific to Iowa 10
Infrastructure Advantages 12
Economic Impact 13
Iowa's Water Advantages 25
Wastewater Management at Iowa Dairy Operations 26
Iowa's Feedstuff Advantages 27
Manure Management and Nutrient Utilization 29
Value of Manure as Fertilizer 29
Nutrient Variability and Loss 30
Manure Systems and Regulatory Environment 30
Comparison to Synthetic Fertilizer 31
Iowa DNR Regulations and Compliance Framework 32
Regulatory and Compliance Landscape 32
Resources in Iowa 35
Banking and Financial Support Structure 36
Choose Iowa and How the Program Works 37
Agritourism and On Farm Processing and Stores 37
Outlook for 2026 Through 2030 38
Conclusion 39
References 41
Iowa Resources and Regulations 42
Author Biography 43



Executive Summary

Iowa's dairy industry represents a stable and increasingly competitive segment of the state's agricultural economy, supported by a combination of strong production performance, abundant feed resources, reliable water access, efficient infrastructure, and growing processing capacity. While dairy sectors in many regions have experienced contraction, Iowa has maintained steady growth in milk production, reaching 6.014 billion pounds in 2024, alongside gradual expansion in herd size and continued gains in per-cow productivity. This growth reflects a system that prioritizes efficiency, cost control, and alignment with available markets rather than rapid or speculative expansion.

The structure of the industry continues to evolve, with fewer but larger and more technologically advanced operations. Automation, including robotic milking and precision herd management, has improved labor efficiency and production consistency, allowing farms to remain competitive in an environment characterized by labor constraints and market volatility. At the same time, Iowa's strong milk quality performance supports premium pricing and reinforces its reputation as a reliable supplier within regional and national markets.

One of Iowa's most significant advantages lies in its feed system. As the nation's leading producer of corn and a major producer of soybeans, combined with a dense network of ethanol plants and feed mills, Iowa provides dairy operations with consistent access to cost-effective, high-quality feed ingredients. This localized supply chain reduces transportation costs, improves ration flexibility, and mitigates risk associated with global commodity fluctuations. The availability of distillers grains and specialty soybean products further enhances feed efficiency and supports high levels of milk production.

Iowa's integrated position within the Upper Midwest dairy network provides both flexibility and stability. Historically, a significant portion of Iowa milk has been processed in neighboring states, allowing producers access to diverse markets and reducing the risk of localized oversupply. At the same time, new investments in-state processing, including large-scale facilities such as the Daisy Brand project in Boone, signal a shift toward retaining more value within the state. Increased in-state utilization is expected to strengthen economic impact, support job creation, and encourage measured growth in milk production.

Transportation infrastructure and water availability further reinforce Iowa's competitive position. A well-developed highway system, ongoing invest-

ment in roads and bridges, and favorable roadway conditions support efficient movement of milk, feed, and finished products. In addition, Iowa's access to groundwater resources and rural water systems provides a reliable and cost-effective water supply, an increasingly important advantage compared to regions facing water scarcity and regulatory constraints.

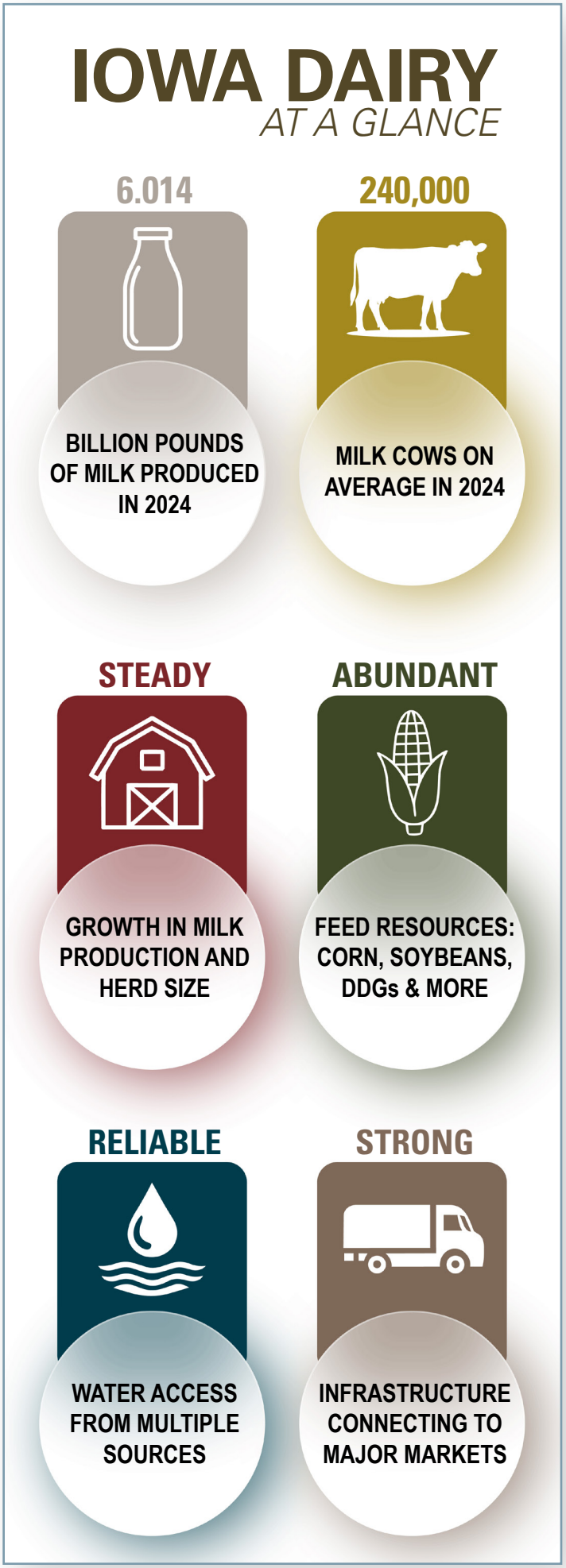
The state also benefits from a mature agricultural finance system and a coordinated network of support organizations. Specialized lenders, public incentive programs, risk management tools, and technical assistance from institutions such as Iowa State University Extension and Outreach reduce barriers to investment and support long-term industry stability. The statewide branding program, Choose Iowa, further enhances market development and provides targeted funding for value-added dairy processing and labor-saving technologies.

Manure management represents an additional structural advantage for Iowa dairy operations. As a nutrient-rich resource, manure provides a cost-effective alternative to synthetic fertilizers, supporting crop production while reducing input costs. When managed effectively within regulatory frameworks, manure contributes to a closed-loop system that enhances both economic and environmental sustainability.

Emerging opportunities in agritourism and on-farm processing provide further diversification potential. These models allow producers to capture additional value, strengthen consumer engagement, and build brand recognition in a market increasingly driven by local food interest and transparency.

Looking ahead to 2026 through 2030, Iowa's dairy industry is expected to experience continued modest growth, driven primarily by productivity gains, expanded processing capacity, and ongoing technological adoption. While challenges related to price volatility, labor availability, and regulatory requirements remain, Iowa's combination of structural advantages positions the state well for sustained competitiveness.

Overall, Iowa's dairy sector is defined not only by its production capacity but by its ability to integrate feed production, livestock management, processing, infra-



structure, and market access into a cohesive and efficient system. This integration will continue to support the state's role as a key contributor to both regional and national dairy markets while providing a strong foundation for future growth and value-added development.

Introduction

Iowa's dairy industry occupies a unique position within both the state's agricultural economy and the broader Upper Midwest dairy region. While national trends have pointed toward consolidation, regional shifts in production, and increasing operational pressures, Iowa has maintained a stable and gradually expanding dairy sector. This consistency reflects a production system shaped not only by farm-level efficiency, but by a combination of geographic, economic, and institutional factors that influence how dairy operations develop and scale within the state.

Understanding Iowa's dairy industry therefore requires a system-based perspective that goes beyond production statistics alone.

Unlike regions where dairy production exists in relative isolation, Iowa's industry is closely tied to surrounding processing networks, crop production systems, and transportation corridors. The state's role as a leading producer of corn, soybeans, and ethanol creates a direct connection between feed availability and dairy production, while established infrastructure and proximity to major markets support efficient movement of both raw milk and finished products. These interconnected systems shape the cost structure, risk profile, and long-term viability of dairy operations in Iowa.



Structural shifts within the industry are further redefining how value is created across Iowa's dairy supply chain. Fewer but larger operations, increased adoption of automation, evolving processing capacity, and changing consumer demand are reshaping production and distribution strategies. These developments are occurring alongside continued pressures related to labor availability, environmental expectations, and market volatility, all of which influence decision-making at both the farm and processor level. Understanding Iowa's dairy industry therefore requires a systems-based perspective that goes beyond production statistics alone. This report examines the key factors that influence dairy competitiveness in the state, including milk production trends, processing dynamics, infrastructure, water resources, feed systems, regulatory considerations, equipment access, financial structures, and emerging diversification opportunities. By evaluating these components together, the report provides a comprehensive view of how Iowa's dairy sector operates today and how it is positioned for future growth.

IOWA'S CONNECTED DAIRY ECOSYSTEM



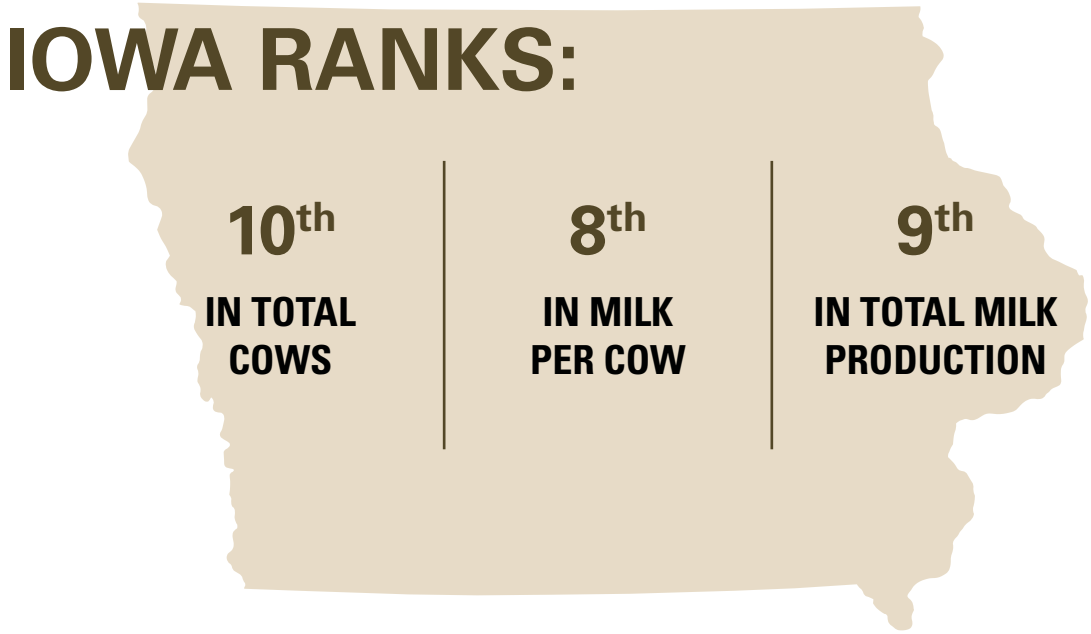
Overview of Iowa's Dairy Industry

Iowa's dairy industry stands as a cornerstone of the state's agricultural economy, combining long-standing production traditions with increasing levels of efficiency, automation, and scale. While national consolidation trends have reduced dairy activity in many states, Iowa is showing the opposite pattern, with steady growth in both milk production and herd size. This performance reflects a combination of strong farm-level productivity, access to feed resources, and integration with regional processing markets.

In the United States, Iowa's dairy industry ranks 10th in total cows, 8th in milk per cows, and 9th in total milk production[1]. According to 2024 data from the USDA National Agricultural Statistics Service 2025 Iowa Annual Statistical Bulletin, Iowa produced 6.014 billion pounds of milk. This represents a 1.5 percent increase from 5.923 billion pounds in 2023 and a 12 percent increase compared to 2020 production of 5.374 billion pounds. This sustained growth over multiple years positions Iowa among the nation's larger milk-producing states and accounts for roughly 3% of total U.S. milk production. Iowa's ability to maintain and gradually expand its share of national production underscores its continued competitiveness within the dairy sector.

Milk production gains are closely tied to improvements in productivity. Average milk production per cow reached 24,749 pounds in 2024, up slightly from 2023 and reflective of ongoing improvements in genetics, nutrition, herd management, and technology adoption. Iowa maintained an average of approximately 240,000 milk cows throughout the year, a level that remained stable compared to 2023 but represents a notable increase since 2020, when the herd totaled 215,000 head. As of January 1, 2025, milk cows that had calved totaled 245,000 head, up 5,000 from the prior year. These figures suggest that herd growth has not been speculative. Instead, it has generally remained aligned with available markets and processing capacity.

The structure of Iowa's dairy industry has continued to evolve through consolidation. The number of Grade A dairy operations has declined over time, while herd sizes have increased. This pattern mirrors broader national trends, but in Iowa it has not translated into declining milk output. Rather, it has been accompanied by stronger per-cow productivity, more intensive use of technology, and the growth of professionally managed operations. Northwest Iowa counties such as Sioux, Plymouth,



[1] Rankings pulled from progressive publish.com: https://www.progressivepublish.com/downloads/2026/general/2025-pd-stats-lowres.pdf

and Lyon and northeast Iowa counties including Winneshiek, Dubuque, and Clayton continue to serve as important centers of dairy activity. Larger operations increasingly rely on robotic milking systems, automated feeding, data-based herd management, and more advanced manure handling systems to improve labor efficiency and production consistency.



From a financial perspective, cash receipts from milk and cream marketings totaled $1.313 billion in 2024. This was an increase from $1.116 billion in 2023, though still below the unusually strong 2022 level. Average returns per 100 pounds of milk reached $21.90 in 2024. These figures illustrate a central reality of the dairy business. Even in a growing production environment, financial outcomes remain closely tied to price cycles, input costs, and the ability of individual operations to manage margins. For that reason, Iowa's structural cost advantages are especially important.

Cheese manufacturing remains one of the strongest segments of Iowa's dairy econmy. Total cheese production, excluding cottage cheese, reached 387.7 million pounds in 2024. While this level was slightly below the immediately preceding years, it remains well above 2019 output of 333.9 million pounds, indicating meaningful long-term growth in processing capacity. American-type cheeses accounted for roughly 212 million pounds, connecting Iowa to strong domestic demand and continued export growth in cheese markets.



Milk quality is another strength. Iowa has maintained consistently strong performance in somatic cell counts and overall milk quality, allowing farms to earn quality premiums within the Central and Upper Midwest Federal Milk Marketing Order structure. Iowa farms have provided a meaningful share of pooled volume under Order 30, reinforcing the state's reputation as a reliable source of high-quality milk. In a commodity business where margins are often narrow, these quality advantages matter. They influence not only producer pay prices, but also processor confidence and the attractiveness of Iowa milk to new manufacturing investment.

The economic impact of the dairy sector extends well beyond the farm. Previous economic modeling estimated

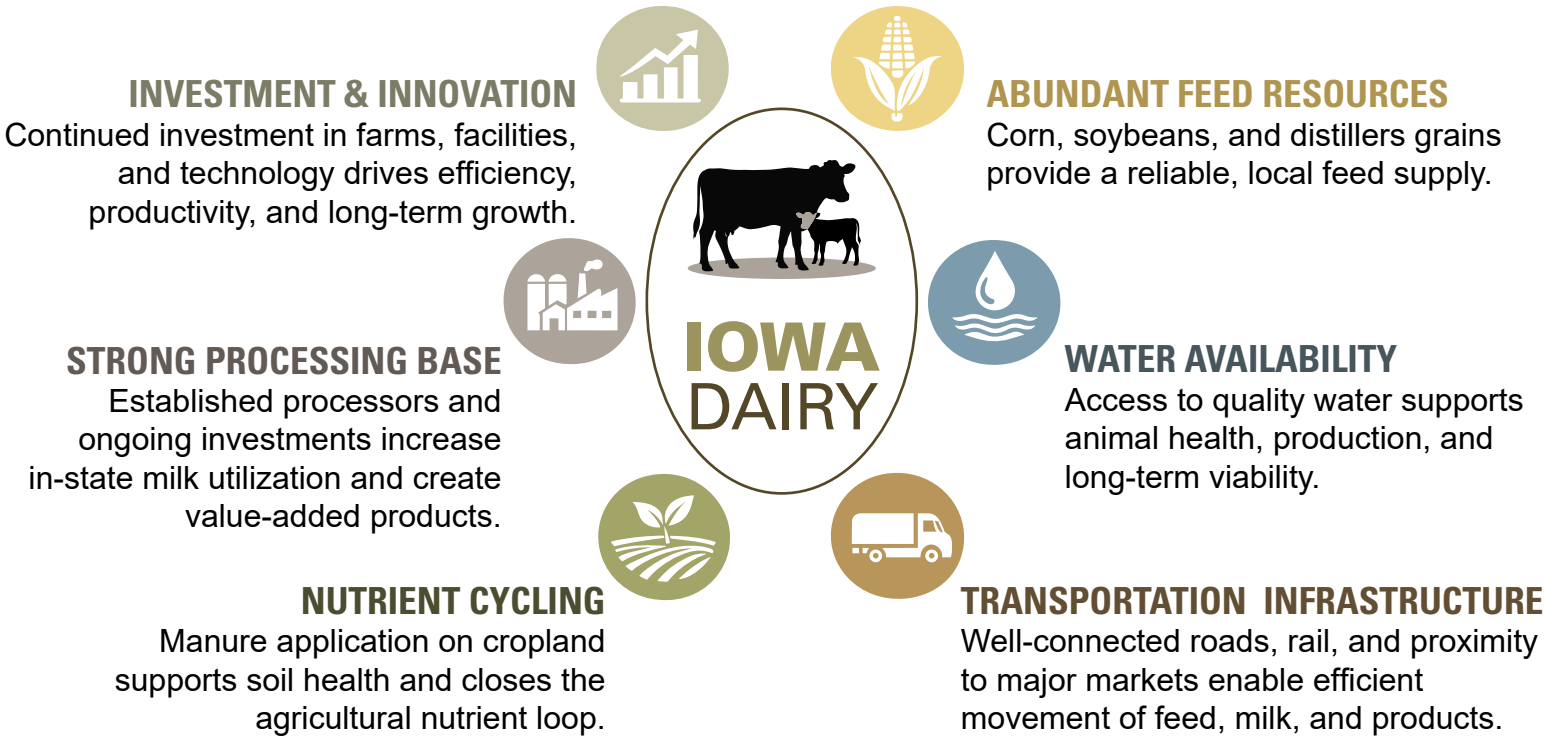
dairy-related output in the billions of dollars, with tens of thousands of jobs supported directly and indirectly through farming, processing, transportation, feed manufacturing, input supply, and related services. Given production growth, inflation, and significant new investments since earlier analyses, current statewide contributions are reasonably understood to be even larger. Dairy's value to Iowa is not limited to farmgate sales. It lies in the year-round business activity and value chain development that dairy supports.

Several structural advantages help explain this performance. Iowa benefits from abundant local feed resources, especially corn, soybeans, and distillers grains. It also has relatively favorable water access, strong rural transportation infrastructure, and land resources that allow nutrient cycling through manure application on crop ground. These interconnected assets contribute to a relatively efficient production environment. While challenges remain, including milk price volatility, labor constraints, regulatory pressures, and the capital intensity of expansion, the pattern of investment in Iowa's dairy sector signals confidence in the state's long-term role.

One of the clearest examples is the planned Daisy Brand sour cream and cottage cheese processing facility in Boone. The project represents a major investment and is expected to create substantial milk demand while generating new jobs and retaining more value-added processing within the state. Facilities of this scale matter because they increase in-state milk utilization, reduce dependence on exporting raw milk, and create stronger incentives for carefully measured herd growth.

Looking ahead to 2026 through 2030, Iowa is positioned for continued modest expansion driven more by efficiency, productivity, and additional in-state processing than by rapid herd growth alone. That combination is consistent with the way the state has developed in recent years and suggests that Iowa's dairy sector will remain an important area of agricultural and rural economic opportunity.

WHY IOWA IS COMPETITIVE



U.S. Dairy Market Context and Global Market Position



Iowa's dairy industry operates within a national and global market that has changed significantly over the past decade. At the national level, dairy demand has shifted away from traditional fluid milk consumption and toward cheese, yogurt, high-protein beverages, cultured products, convenience formats, and specialty items. This change has implications for how milk is processed, marketed, and valued. States that are well positioned for cheese, cultured dairy, and value-added manufacturing are increasingly better positioned for long-term competitiveness than those tied heavily to traditional fluid milk markets alone.

The U.S. dairy industry experienced slow but positive annualized revenue growth over the 2020 to 2025 period, reaching roughly $147 billion in 2025 according to industry analysis.

Although profitability was pressured by trade issues, higher equipment costs, and changing global conditions, the longer-term expectation remains positive. Over the 2025 to 2030 period, moderate growth is projected for both dairy manufacturing and broader dairy market activity. Iowa fits within this outlook as a state that has continued to grow production and is increasingly positioned to capture more value through processing.

The 2022 Census of Agriculture ranked Iowa among the leading states in milk sales and milk production. Even though Iowa's dairy industry has continued to consolidate total production has remained strong. Iowa remains a meaningful contributor to the group of top milk-producing states that dominate U.S. dairy sales and output. In addition, Iowa has a modest but strategically important base of milk processing establishments, including plants focused on fluid milk, cheese, specialty dairy, goat cheese, and frozen dairy products.

Consumer demand trends are particularly favorable for cheese and protein-rich dairy categories. Cheese continues to grow globally because it is highly versatile across retail, food service, and food manufacturing applications. It also aligns well with consumer interest in protein, convenience, and familiar natural foods. Yogurt and cultured dairy drinks have similarly benefited from consumer interest in satiety, gut health, and higher protein intake. More recently, the growth in consumer use of GLP-1 medications has increased demand for convenient, protein-dense foods, which has contributed to innovation in yogurt and cultured dairy beverages.



At the same time, the processing side of the dairy industry faces constraints. Much of the nation's dairy processing infrastructure is aging. Older facilities can remain

operational, but they are often less efficient, more expensive to maintain, and more difficult to retrofit for new products or higher throughput. Newer product opportunities often require not just new equipment, but redesigning utility systems, wastewater systems, labor structures, packaging lines, and food safety controls. For Iowa, this reality creates both a challenge and an opportunity. It highlights the need for investment, but it also makes new or expanded facilities in efficient locations more attractive.

On the global side, dairy exports remain important to balancing U.S. milk supply. U.S. dairy exports in 2025 approached record levels by value, supported by strong demand for cheese, butterfat, whey, and other dairy ingredients in markets such as Mexico, South Korea, Japan, Canada, and parts of the Middle East and North Africa. Export growth is supported by competitive pricing, global protein demand, and the need to move value-added dairy products into expanding international markets. Although not every pound of Iowa milk is directly exported, Iowa benefits when the national dairy system has strong export channels because these markets help support product demand and milk values.

For Iowa specifically, the national and global context reinforces the importance of continuing to shift from being primarily a milk-producing state with significant outflow to neighboring processors toward a state that captures more processing and value-added activity internally. The national dairy market increasingly rewards scale, quality, logistics, and manufacturing alignment. Iowa has many of those ingredients in place.

Regional Processing Advantages Specific to Iowa

Iowa's dairy processing system functions as part of a highly integrated Upper Midwest regional network rather than as an isolated state market. Historically, a significant share of Iowa's raw milk has moved to processors in neighboring states such as Wisconsin, Minnesota, South Dakota, Illinois, and Nebraska. This pattern has often been viewed as a limitation, but it also reflects a key strength. Iowa producers are connected to a broad, flexible processing network that can absorb milk efficiently and reduce the risks associated with localized capacity constraints.

Within the Upper Midwest Federal Milk Marketing Order structure, Iowa producers benefit from pooled pricing mechanisms, quality premiums, and access to large buyers. Iowa's milk quality enhances these advantages, since low somatic cell counts and reliable production support stronger processor relationships and quality-based incentives. Regional integration also protects producers when individual plants experience downtime, capacity constraints, or market shifts. Milk can be moved where it is needed rather than becoming stranded in a narrow local market.



THE UPPER MIDWEST ADVANTAGE

SHORTER DISTANCES
Lower hauling costs

REGIONAL ACCESS
More processor options

INCREASED RELIABILITY
Milk moves when it's needed

COST-EFFECTIVE & COMPETITIVE
Strengthening Iowa's position

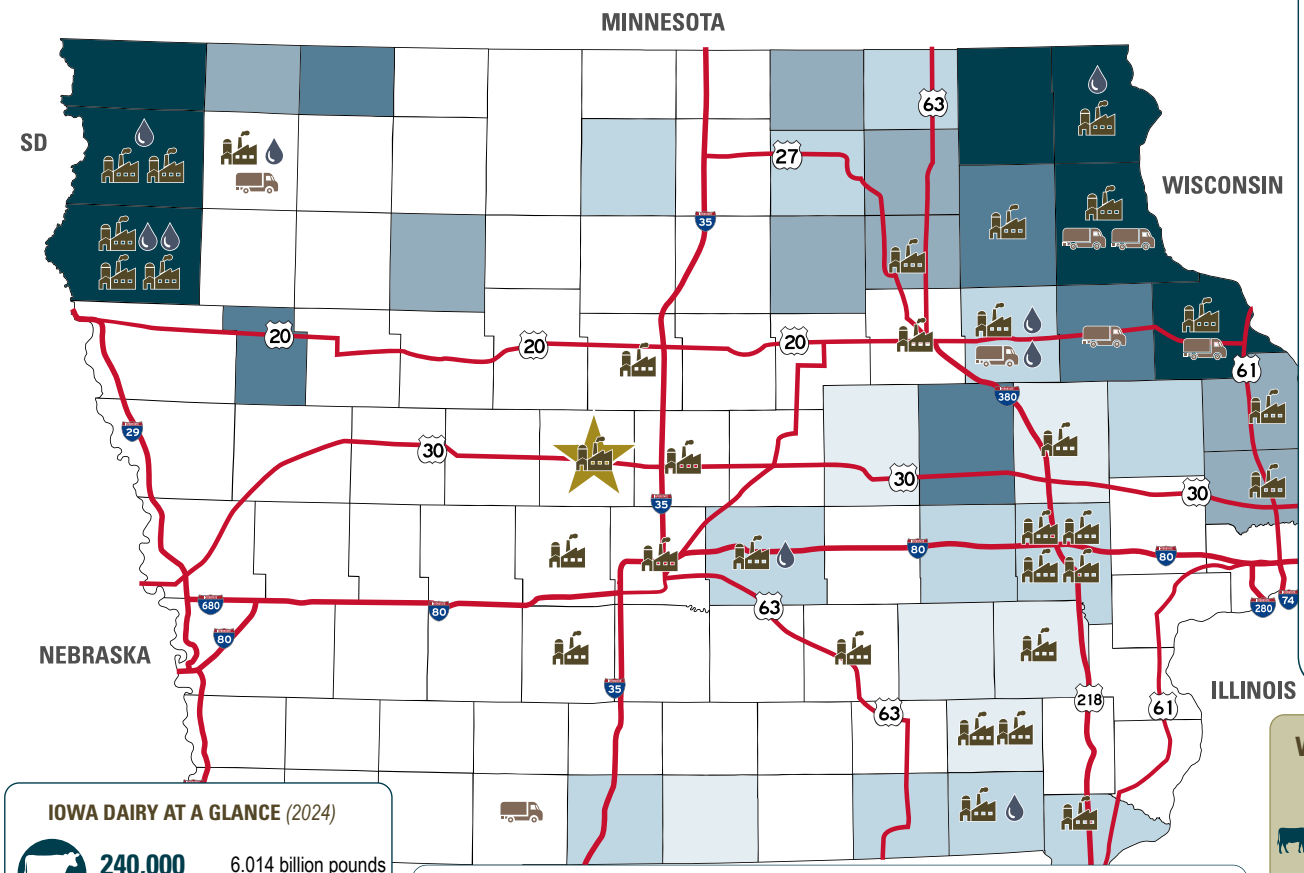
Transportation efficiency strengthens this position. Hauling costs in Iowa tend to be relatively favorable because many farms are located within practical distance of regional processors. Shorter distances improve reliability, reduce spoilage risk, and lower transportation cost per hundredweight. For a perishable product like raw milk, this logistical efficiency is fundamental. It benefits both farms and processors and becomes even more important during seasonal fluctuations in milk production.

From an economic development standpoint, regional processing integration should not be viewed as a barrier to more in-state processing. Rather, it acts as a stabilizing system that allows Iowa to expand internal capacity without having to build an entirely self-contained milk balancing structure all at once. This flexibility is one reason why major in-state investments are viable. New Iowa plants can draw on dependable milk supply while still operating within a wider regional balancing network.

The Daisy Brand facility in Boone reflects this transition. Rather than replacing the regional system, it captures more of Iowa's milk locally and increases the state's share of value-added dairy activity. As additional processing capacity comes online, Iowa has the opportunity to retain more milk in-state, increase labor income associated with manufacturing, and strengthen the connection between farm production and rural-industrial development.

IOWA DAIRY: A STRONG, CONNECTED NETWORK

Dairy farms, processors, and transportation systems work together to deliver efficient, reliable access to markets and create statewide economic impact.



MAP LEGEND

- **DAIRY FARMS** (>10,000 ↓ <500) Shading indicates relative dairy cow population(2024).
- **DAISY BRAND (BOONE)** New sour cream and cottage cheese facility.
- **PROCESSING PLANTS** 33 dairy processing plants located across Iowa (2024).
- **TRANSFER/RECEIVING** 7 transfer/receiving stations located across Iowa (2024).
- **WASH STATIONS** 9 wash stations located across Iowa (2024).
- **MAJOR HIGHWAYS** Interstate corridors provide efficient access for hauling.

IOWA DAIRY AT A GLANCE *(2024)*

- **240,000 DAIRY COWS** — 6.014 billion pounds of milk produced
- **33 PROCESSING PLANTS** — Across 26 counties, supporting local milk utilization
- **DAISY BRAND (BOONE)** — Major new facility bringing more value-added processing to Iowa

FROM FARM TO MARKET: IOWA'S DAIRY SUPPLY CHAIN

- **DAIRY FARMS** — Concentrated in Northern Iowa.
- **TRANSPORTATION** — Efficient hauling via Iowa's highway network.
- **PROCESSING PLANTS** — 33 plants turn milk into cheese, butter, yogurt, ice cream, and more.
- **DOMESTIC AND GLOBAL MARKETS** — Iowa dairy products reach families, businesses, and customers worldwide.

WHY TRANSPORTATION IS EFFICIENT IN IOWA

- Dairy production is concentrated in northern Iowa
- Processors are distributed throughout the state.
- Strong interstate network supports short hauling distances and reliability.
- New in-state investments increase local milk utilization and reduce out-of-state reliance.

Infrastructure Advantages

Iowa's transportation infrastructure plays a central role in supporting dairy production and processing by lowering costs, improving reliability, and allowing efficient movement of raw milk, feed ingredients, animals, equipment, and finished products. The state is strategically located and is served by strong interstate and highway corridors. Interstate 35 and Interstate 80 intersect near the center of the state and provide major north-south and east-west access. Additional corridors such as Interstate 29, Interstate 380, U.S. Highway 20, and U.S. Highway 30 strengthen connectivity to major dairy regions and neighboring markets.

This network matters because dairy is highly time sensitive. Raw milk must move quickly and predictably from farms to processing facilities. Feed ingredients must be delivered reliably. Processing plants require consistent access to packaging, ingredients, maintenance services, and outbound freight options. Even modest transportation inefficiencies can increase hauling costs, reduce flexibility, and create quality risk. Iowa's highway structure helps limit these problems.

State transportation investment has reinforced this advantage. Highway and bridge improvements have focused on safety, freight mobility, rural access, and modernization of important corridors. Major corridor work, including improvements along Interstate 35 and connections around Ames



and central Iowa, supports agricultural freight movement and helps reduce bottlenecks that affect milk and feed transport. Long-term progress on bridge quality and infrastructure conditions are important, especially for rural dairy areas that depend on consistent truck movement year-round.

Road condition itself is often overlooked, but it matters greatly for dairy. Reliable pavement reduces wear on tankers and feed trucks, lowers fuel inefficiency, and helps reduce delays. For processors considering new facility locations, roadway condition and freight connectivity reduce operational uncertainty and improve long-term competitiveness. Iowa's transportation advantage is therefore not simply about location on a map. It is about the functional condition and strategic improvement of the network that supports dairy movement every day.



Economic Impact

The economic contribution of dairy farming in Iowa, along with the value-added manufacturing activity directly linked to dairy farm production, was evaluated using dairy farm data from the USDA in combination with an input-output (I-O) model of the Iowa economy. Iowa State University has continuously maintained an IMPLAN input-output modeling system since the mid-1980s. IMPLAN provides annual state and county-level estimates of inter-industrial transactions that are then used to estimate likely economic outcomes from industrial production changes.



The I-O model used in this analysis was modified specifically to align with dairy sector sales in 2024, and all monetary values were adjusted to 2026 dollars to account for price level changes over time. Table 1 is based on the data from the 2022 Census of Agriculture, while Tables 2 through 11 are derived from the IMPLAN Input-Output model. As a result, all modeled economic contribution values represent 2024 industry activity expressed in 2026 dollars.

Two primary evaluations were completed within the I-O modeling process. The first estimates the economic contribution of dairy farming in Iowa. The second estimates the statewide economic contribution of dairy product manufacturing, including fluid milk, cheese, dry dairy products, and frozen dairy product processing. Because dairy manufactures purchase raw milk and related inputs directly from dairy farms, the model was modified to remove these inter-industry linages to avoid double counting economic activity between farm production and manufacturing sectors.

This adjustment allows dairy farming and dairy manufacturing to be evaluated independently while still reflecting their broader contributions to Iowa's economy. The resulting estimates provide a more accurate measure of the combined importance of dairy production and dairy processing activities within the state. Together, these sectors support employment, generate labor income, contribute value-added economic activity, and create additional economic effects throughout Iowa's agricultural, transportation, service, and manufacturing industries.

The I-O MODELING PROCESS

1. DATA INPUT
Dairy farm data from USDA combined with IMPLAN input-output model.

2. MODEL APPLICATION
IMPLAN I-O model estimates inter-industrial transactions and linkages.

3. TWO EVALUATIONS
Economic contribution of dairy farming and statewide dairy product manufacturing.

4. VALUE ADJUSTMENT
All monetary values adjusted to 2026 dollars.

5. OUTCOMES ESTIMATED
Economic contributions measured for 2024 industry activity expressed in 2026 dollars.

Iowa's Dairy Industry

Iowa's dairy industry consists of both on-farm milk production and the value-added manufacturing activities that process milk into consumer products and food manufacturing ingredients. Together, these sectors contribute to Iowa's economy through agricultural production, processing activity, employment, transportation, and supply chain expenditures.

Key information regarding Iowa's dairy industry was obtained from the 2022 Census of Agriculture and is summarized in Table 1.

Table 1. Iowa's Dairy Farms

Characteristic	2017	2022
Farms with Milk Cows	1,592	1,016
Milk Cows	218,000	238,087
Other Cattle	212,349	204,220
Milk Sales *(Thousands of Dollars)*	$864,781	$1,328,940
Other Cattle Sales *(Thousands of Dollars)*	$159,977	$190,955
Total Sales *(Thousands of Dollars)*	$1,024,758	$1,519,895

Source: Milk Cow Herd Size by Inventory and Sales, from 2017 and 2022 Census of Agriculture, Table 17.



For comparison, data from 2017 is also included in Table 1. According to the 2022 Census of Agriculture, Iowa had 1,016 dairy farms generating more than $1.5 billion in total sales, with approximately 87% of those sales derived from milk sales (Table 1).

Table 1 separates dairy farm activity into milk sales, and cattle and calf sales, illustrating the diversified revenue structure of Iowa dairy operations. Further analysis of the Census of Agriculture data indicates Iowa's dairy farms accounted for 4.7% of all farms with cattle and calves in Iowa while holding 13.0% of the state's cattle and calf inventory. Iowa dairy farms generated 23.9% of total sales, including milk, and cattle and calf sales, among farms with cattle and calves reflecting the comparatively high economic productivity and value generated by dairy production systems.

$3.65 BILLION
INDUSTRY OUTPUT

4,030
JOBS SUPPORTED

$393 MILLION
IN LABOR INCOME

4
PRIMARY PROCESSING SECTORS

Beginning with Table 2, all IMPLAN input-output data represent 2024 economic activity expressed in 2026 dollars. The modeling results indicate that Iowa's dairy manufacturing industry consisted of four primary processing sectors in 2024: Fluid Milk, Cheese, Ice Cream and Frozen Dessert, and Dry, Condensed, and Evaporated Dairy Product (Table 2). Combined, these manufacturing sectors generated approximately $3.65 billion in industry output, which is generally comparable to gross sales, while supporting 4,030 jobs and $393 million in labor income. Among these sectors, Dry, Condensed, and Evaporated Dairy Product Manufacturing accounted for the largest share of total output, while Ice Cream and Frozen Dessert Manufacturing generated the greatest number of jobs and the highest level of labor income. These findings highlight the significant role dairy processing plays within Iowa's broader agricultural manufacturing economy and demonstrate the diversity of value-added activity supported by the state's dairy supply chain.



Table 2. Iowa Dairy Products Manufacturing, 2024

Characteristic	Industrial Output (Millions of Dollars)	Jobs	Total Labor Income (Millions of Dollars
Fluid Milk	$921.16	913.69	$83.75
Cheese	$858.60	684.97	$60.54
Dry, condensed, and evaporated dairy products	$1,025.23	661.87	$90.68
Ice cream and frozen desserts	$849.85	1,769.45	$158.28
Total	$3,654.84	4,029.98	$393.25

Source: IMPLAN I-O model as estimated by the Center for Agricultural and Rural Development (CARD), Iowa State University.

Dairy Industry Payroll Employment



Despite periodic fluctuations from year to year, employment within Iowa's dairy processing industry has generally trended upward over the past decade (Figure 9). Between 2012 and 2024, dairy processing employment increased from 3,221 to 3,931 jobs, representing overall growth of approximately 22% (Source: Bureau of Labor Statistics). Data from the preceding two tables were subsequently used to modify the I-O modeling system. In addition, the production characteristics within the model were evaluated to ensure they were reasonable and aligned broadly with dairy cost of production estimates developed by Iowa State University. The Iowa State University Extension and Outreach Dairy Team produces a range of cost and return estimates across different dairy production systems, which served as an important reference point for validating model assumptions and industry relationships (see generally https://www.extension.iastate.edu/dairyteam).



Modifying the Modeling System

Inter-industrial models track the buying and selling relationships that exist among industries thought the economy. Because agricultural sectors purchase goods and services from one another, and food processing firms purchase inputs directly from Iowa farmers, care must be taken to avoid double counting when evaluating the total economic contribution of interconnected industries.

This consideration is important within Iowa's dairy industry because the dairy manufacturing industry purchases raw milk products and other dairy inputs directly from dairy farms. As a result, any assessment of the economic contribution of dairy processing activity automatically assumes an increase in dairy production at the farm level. To separately measure the economic contributions of dairy farming and dairy processing, these inter-industry linkages were removed within the model. This adjustment allows dairy farming to be evaluated as an independent sector without purchases from dairy processing industries, while dairy processing sectors were modeled without including dairy farm purchases that had already been accounted for elsewhere in the analysis.

The adjustments were completed using IMPLAN's Industry Contribution Analysis framework. In addition to removing purchases between dairy farms and dairy processors, transactions occurring among the four dairy processing sectors were also removed to prevent additional duplication within the estimates. These modifications allow the model to isolate the unique contribution of each sector while still capturing the broader supply chain and household spending effects associated with dairy-related economic activity.

Once modified, the I-O model provides a dependable estimate of the independent and combined economic contributions generated by Iowa's dairy farming and dairy processing industries.



Understanding Economic Impact Terminology

The following tables summarize the economic contributions associated with Iowa's dairy farming and dairy processing industry. Input-output models generate several categories of economic information that help quantify the broader effects industries have on the state economy. For the purpose of this analysis four primary measures are used: Output, labor income, value-added, and jobs.

Output:

Output represents the value of industry production over the course of a year and is generally comparable to gross sales or total business revenue. In food and agricultural processing industries, output reflects the total value of products produced regardless of whether all products were sold within the reporting period.

Labor income:

Labor income includes wages, salaries, employer-provided benefits, and income paid to business owners for labor and management activities. Within agricultural industries, this measure captures both employee compensation and returns to farm operators for their labor contributions.

Jobs:

Jobs represent the annualized employment associated with industry activity. These estimates include full-time, part-time, and seasonal positions and are expressed as annualized job equivalents rather than full-time equivalent positions. Because individuals may hold multiple jobs within a year, total jobs reported within an economy may exceed the total number of employed people.

The results also separate economic activity into four levels of contribution: direct, indirect, induced, and total effects.

Value-added:

Value-added represents the additional economic value created through production activity and includes labor income, payments to investors such as dividends, rents, and interest, as well as indirect business taxes paid to government entities. Value-added is comparable to Gross Domestic Product (GDP), which is the standard measure used to evaluate economic activity at the state and national levels.

Direct values:

Output represents the value of industry production over the course of a year and is generally comparable to gross sales or total business revenue. In food and agricultural processing industries, output reflects the total value of products produced regardless of whether all products were sold within the reporting period.

Indirect values:

Indirect effects capture business-to-business purchases occurring throughout the supply chain, including expenditures on feed, transportation, utilities, packaging, wholesale trade, professional services, and other production inputs required to support dairy-related industries.

Induced values:

Induced effects reflect the household spending generated when workers employed in both direct and indirect industries spend their labor income throughout the economy. These expenditures support additional economic activity in sectors such as retail trade, healthcare, housing, restaurants, and consumer services.

Total values:

Total effects represent the combined sum of direct, indirect, and induced economic activity generated within the Iowa economy.

The Economic Contributions of Iowa's Dairy Production and Processing Sectors

The following tables summarize these economic relationships for Iowa's dairy farming and dairy processing sectors in 2024. The phrase "economic contribution" is used throughout this analysis because the estimates reflect the total multiplied-through economic activity associated with existing industries operating within the state economy. In contrast, the term "economic impact" is generally reserved for measuring economic changes resulting from shifts in demand, policy changes, or external economic events.

The sales and output values reported in Tables 1 and 2 were entered into the I-O modeling system as industry "shocks" in order to estimate the multiplied-through economic contributions associated with dairy production and dairy processing activity in Iowa. The following table includes a detailed explanation of the individual components and economic relationships presented within the model results to assist readers in interpreting the information provided. Subsequent tables focus primarily on summarizing the total economic contribution estimates generated by each sector.

Table 3. The Economic Contribution of Iowa Dairy Farm Milk Sales, 2024

Contribution	Jobs	Labor Income	Value-added	Output
Direct	2,417.90	$196,706,324	$489,646,116	$1,286,911,652
Indirect	1,932.37	$158,147,523	$304,477,899	$758,332,825
Induced	1,313.90	$72,570,966	$146,432,289	$241,126,782
Total	5,664.18	$427,424,813	$940,556,303	$2,286,371,259

Milk Production

The first economic contribution summary outlines the multiplied-through economic activity associated with the production and sale of milk by Iowa dairy farms. Table 3 indicates that approximately $1.29 billion in dairy sales in 2024 directly supported 2,418 jobs at the farm level, including farm operators, while generating approximately $197 million in labor income.



The dairy farm activity summarized in Table 3 also generated substantial economic activity throughout Iowa's supply chain. Dairy farms required approximately $758 million in inputs from other Iowa industries, generating $304 million in value-added activity within supplying sectors. Supporting this level of indirect economic activity required approximately 1,932 jobs, which generated nearly $158 million in labor income.

Additional economic activity was generated when workers employed within both dairy farming and supporting industries spent their earnings throughout the Iowa economy. These induced household spending effects generated approximately $241 million in additional output, supporting 1,314 jobs and $72.6 million in labor income.

In total, Iowa dairy farming activity generated approximately $2.3 billion in total economic output in 2024. Of that total, approximately $940.6 million was value-added economic activity, including $427.4 million in labor income distributed across 5,664 Iowa jobs.

In addition to milk production, Iowa dairy farms also generated economic activity through cattle and calf sales. These sales were modeled separately using the cattle and calves production component of the I-O model, with the results summarized in Table 4. In 2024, dairy-related cattle and calf sales totaled approximately $238 million and directly supported 1,117 jobs while generating approximately $24.5 million in labor income.



After accounting for all inter-industry relationships within the model, dairy-related cattle and calf production generated approximately $394 million in total economic output across Iowa. Of that total, approximately $128.5 million represented value-added economic activity, including nearly $63 million in labor income distributed among approximately 1,664 jobs statewide.

Table 4. The Economic Contribution of Dairy Farm Cattle and Calf Sales, 2024

Contribution	Jobs	Labor Income	Value-added	Output
Direct	1,117.45	$24,460,895	$55,269,289	$238,194,494
Indirect	353.44	$27,894,512	$51,733,567	$120,190,116
Induced	192.68	$10,641,244	$21,471,831	$35,356,826
Total	1,663.56	$62,996,651	$128,474,687	$393,741,436

Table 5 combines the results from the previous two tables to summarize the overall economic contribution of dairy farming in Iowa. In total, Iowa dairy farms generated approximately $2.68 billion in total economic output in 2024. Of that total, approximately $1.07 billion represented value-added economic activity, including approximately $490 million in labor income distributed across 7,328 Iowa jobs.

Table 5. The Economic Contribution of Dairy Farm Milk, Cattle, and Calf Sales, 2024

Contribution	Jobs	Labor Income	Value-added	Output
Direct	3,535.35	$221,167 ,219	$544,915,405	$1,525,106,146
Indirect	2,285.81	$186,042,035	$356,211,466	$878,522,942
Induced	1,506.58	$83,212,209	$167,904,120	$276,483,607
Total	7,327.74	$490,421,464	$1,069,030,991	$2,680,112,695

Milk Products Manufacturing

Iowa dairy farms supply milk and dairy ingredients to processing sectors that manufacture products for both household consumption and use within broader food manufacturing industries. The following tables summarize the separate economic contributions generated by these dairy processing sectors within Iowa's economy.

As discussed previously, supply chain linkages within the model were modified to eliminate duplicate economic activity associated with dairy farm production and transactions occurring among dairy processing sectors themselves. These adjustments allow the economic contributions of each dairy processing sector to be measured independently while still permitting the total economic contribution of the industry to be evaluated collectively without double counting.

Table 6 indicates that Iowa's fluid milk processing sector generated approximately $1.78 billion in total economic output in 2024. Of that total, approximately $548 million represented value-added economic activity, including approximately $283 million in labor income supporting 3,801 Iowa jobs.

Table 6. The Economic Contribution of Fluid Milk Manufacturing, 2024

Contribution	Jobs	Labor Income	Value-added	Output
Direct	913.69	$83,749,413	$157,777,713	$921,156,006
Indirect	2,022.54	$151,635,418	$294,115,177	$700,386,932
Induced	864.46	$47,789,253	$96,449,157	$158,782,494
Total	3,800.69	$283,174,085	$548,342,047	$1,780,325,432

Iowa's cheese processing sector generated approximately $1.5 billion in total economic output in 2024 and contributed approximately $423 million in value-added economic activity (Table 7). Of that value-added activity, approximately $210 million was labor income supporting 2,854 Iowa jobs.



Table 7. The Economic Contribution of Cheese Manufacturing, 2024

Contribution	Jobs	Labor Income	Value-added	Output
Direct	684.97	$60,539,495	$130,156,772	$858,598,972
Indirect	1,529.43	$113,696,038	$221,549,218	$530,300,666
Induced	639.28	$35,340,460	$71,324,506	$117,420,779
Total	2,853.68	$209,575,993	$423,030,497	$1,506,320,417



Manufacturers of dry, condensed, and evaporated dairy products generated approximately $1.68 billion in total economic output in 2024 after all direct, indirect, and induced effects were accounted for within the model (Table 8). This sector contributed approximately $611 million in value-added economic activity, including approximately $246.7 million in labor income supporting 2,865 Iowa jobs.

Table 8. The Economic Contribution of Dry, Condensed and Evaporated Dairy Product Manufacturing, 2024

Contribution	Jobs	Labor Income	Value-added	Output
Direct	661.87	$90,681,924	$307,096,795	$1,025,234,200
Indirect	1,452.05	$114,490,434	$220,357,860	$520,839,801
Induced	751.38	$41,545,829	$83,852,433	$138,037,025
Total	2,865.29	$246,718,187	$611,307,087	$1,684,111,026

Table 9 summarizes the economic contribution of Iowa's ice cream and frozen dairy products processing sector. In 2024, the sector generated approximately $1.39 billion in total economic output, of which approximately $503 million represented value-added economic activity. Of that value-added total, approximately $299 million was labor income supporting 3,730 Iowa jobs.



Table 9. The Economic Contribution of Ice Cream and Frozen Dairy Product Manufacturing, 2024

Contribution	Jobs	Labor Income	Value-added	Output
Direct	1,769.45	$158,279,539	$239,826,982	$849,853,264
Indirect	1,049.34	$90,455,001	$161,666,846	$369,788,504
Induced	911.37	$50,405,060	$101,739,233	$167,469,805
Total	3,730.16	$299,139,600	$503,233,061	$1,387,111,573



Table 10 combines the previous four tables to summarize the total economic contribution of Iowa's dairy processing sectors in 2024. Collectively, Iowa dairy processors generated approximately $6.36 billion in total economic output. Of that total, approximately $2.09 billion represented value-added economic activity, including approximately $1.04 billion in labor income supporting 13,250 Iowa jobs.

Table 10. The Economic Contribution of All Dairy Products Manufacturing, 2024

Contribution	Jobs	Labor Income	Value-added	Output
Direct	4,029.98	$393,250,371	$834,858,263	$3,654,842,441
Indirect	6,053.36	$470,276,891	$897,689,100	$2,121,315,903
Induced	3,166.49	$175,080,603	$353,365,328	$581,710,103
Total	13,249.83	$1,038,607,865	$2,085,912,691	$6,357,868,447

Combined Dairy Farming and Dairy Products Manufacturing Contributions

With the individual dairy farming and dairy processing sectors modeled independently to eliminate double counting, the combined economic contribution of Iowa's dairy industry can be evaluated in total.



Together, Iowa's dairy farming and dairy processing industries generated approximately $9.04 billion in total economic output in 2024. Of that total, approximately $3.15 billion represented value-added economic activity, including approximately $1.53 billion in labor income supporting 20,578 Iowa jobs across the state economy.

Table 11. The Economic Contribution of All Dairy Farming and Dairy Products Manufacturing, 2024

Contribution	Jobs	Labor Income	Value-added	Output
Direct	7,565.33	$614,417,591	$1,379,773,668	$5,179,948,587
Indirect	8,339.17	$656,318,926	$1,253,900,566	$2,999,838,845
Induced	4,673.07	$258,292,812	$521,269,448	$858,193,710
Total	20,577.57	$1,529,029,329	$3,154,943,682	$9,037,981,142

Table 12 illustrates the distribution of employment generated across industries associated with Iowa's dairy farming and dairy processing sectors. The table lists the top 20 industries in terms of job support, including both the directly measured dairy sectors as well as supplying industries and household-serving sectors supported through indirect and induced economic activity.

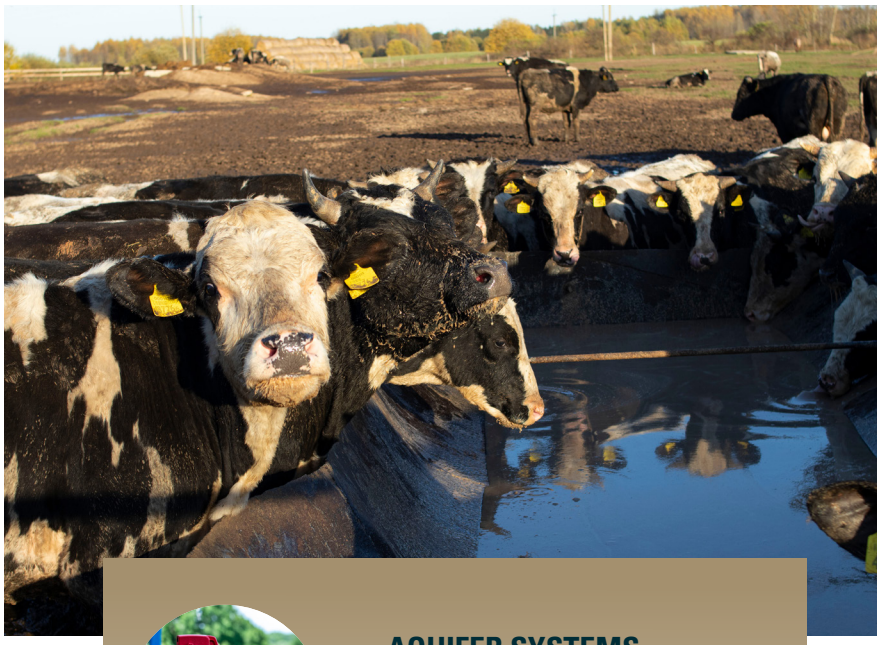
As expected, the largest employment contributions occur within the dairy production and dairy processing sectors included directly within the analysis. However, substantial employment effects are also observed in industries such as wholesale trade, truck transportation, warehousing, restaurants, management and support services, retail trade, and other sectors connected to the broader dairy supply chain and household spending economy.

Table 12. Top 20 Combined Dairy Production and Dairy Products Manufacturing Job Creation by Industry

Industry	Jobs
Dairy cattle and milk production (milk only)	3,535
Ice cream and frozen dessert manufacturing	1,769
Fluid milk manufacturing	914
Cheese manufacturing	685
Dry, condensed, and evaporated dairy product manufacturing	662
Truck transportation	619
Wholesale – Grocery and related product wholesalers	470
Wholesale - Other nondurable goods merchant wholesalers	351
Management of companies and enterprises	348
Other Real Estate	346
Support activities for agriculture and forestry	278
Full-service restaurants	255
Couriers and messengers	229
Limited service restaurants	228
Warehousing and storage	210
Hospitals	191
Employment services	173
Retail – General merchandise stores	172
Retail – Food and beverage stores	166
Monetary authorities and depository credit intermediation	153

Iowa's Water Advantages

Dairy operations require a clean, consistent water supply for cattle consumption, cleaning, cooling, sanitation, and other daily operations. Water quantity and quality directly influence animal health, milk quality, equipment longevity, regulatory compliance, and labor efficiency. For that reason, water access is a foundational issue in dairy competitiveness.



Iowa can be considered relatively water abundant compared to many competing dairy states. The state benefits from multiple aquifer systems, robust rural water infrastructure, and support from institutions such as the Iowa Department of Natural Resources and the Iowa Rural Water Association. This gives dairy operators access to both well water and treated water sources across much of the state.

Iowa's aquifer systems are particularly important because wells remain the primary water source for many rural farms. The state's geology supports a broad range of groundwater resources, giving dairy producers options that many western dairy regions do not enjoy. In contrast, major dairy states in the western United States continue to face long-term groundwater depletion, regulatory constraints, and significantly higher water costs. That difference is not just environmental. It is economic and strategic.

Rural water systems further strengthen Iowa's position. Regional rural water associations provide treated and softened water, consistent delivery pressure, and access to service in areas where private well development may be expensive or technically difficult. These systems reduce some of the risk associated with contaminants, variable water quality, and on-farm treatment needs.

For operations that rely on private wells, water management still requires attention. Regular testing, treatment where needed, and compliance with state requirements remain essential. Many farms work with county health departments, certified well contractors, licensed drillers, or private treatment companies to address iron, sulfur, bacteria, hardness, or other water issues. These systems can add cost, but they are manageable within Iowa's broader water framework.



AQUIFER SYSTEMS
Groundwater resources support private wells for many dairy operations



RURAL WATER SYSTEMS
Regional systems provide treated, softened water with consistent delivery.



MUNICIPAL AND INDUSTRIAL INFRASTRUCTURE
Regional systems provide treated, softened water with consistent delivery.

Larger dairy processing facilities operate under different rules and require stronger municipal or industrial water infrastructure. Iowa's network of public water systems, municipal treatment facilities, and wastewater plants supports these industrial uses. Access to such infrastructure becomes particularly important for large-scale dairy manufacturing investment, where reliable water quantity and wastewater handling are major site selection factors.

Wastewater Management at Iowa Dairy Operations



Wastewater management is closely tied to water access and is a significant regulatory and operational issue for both farms and processors. Dairy wastewater in Iowa is governed through a combination of federal Clean Water Act requirements and state-administered programs. The exact regulatory structure depends on the source, scale, and whether any discharge to waters of the state occurs.

At the farm level, many dairy operations function as nonpoint sources under Iowa's nutrient reduction framework, but large confinement dairies may fall under Concentrated Animal Feeding Operation requirements and therefore must obtain specific permits and maintain nutrient management plans. Even when a farm does not require a discharge permit, it still must comply with state standards related to storage, separation distances, land application practices, and manure management. These obligations require capital investment, planning, recordkeeping, and operating discipline.

For processors, wastewater management is often even more infrastructure dependent. Milk plant wastewater, parlor wash water, and other process water must be handled through approved systems. Some facilities route wastewater to municipal treatment systems under pretreatment requirements. Others integrate wastewater into permitted storage or approved treatment systems. Noncompliance can become costly quickly, making early planning and engineering critical.

Wastewater management is therefore not just a compliance issue. It is a strategic part of industry development. Where water treatment capacity and permitting pathways are clear, dairy expansion becomes more feasible. Where they are constrained, costs increase and projects become more complex.



Iowa's Feedstuff Advantages

For dairy farms, feed is the largest operating expense and commonly represents 30 to 40 percent of total operating costs. This means that feed availability, quality, and price have a major influence on the competitiveness of any dairy region. Iowa's feedstuff advantage is one of the strongest arguments for continued dairy growth in the state. Iowa produces more corn than any other state in the nation and ranks among the top soybean-producing states. Its combination of local crop production, ethanol co-products, and distributed feed manufacturing creates a feed supply chain that many dairy-producing states cannot easily match.



CROP BASE ADVANTAGE

Iowa's crop base is central to this advantage. The state harvested record corn yields in recent years and remains one of the largest soybean-producing regions in the country. For dairy rations, corn provides energy through grain and forage through silage, while soybeans support the protein side of the ration through soybean meal and specialty products. The scale of crop production helps moderate supply risk and reduces the need for long-haul feed imports.

CORN SILAGE & ETHANOL LEADERSHIP

Corn silage availability is particularly valuable because high-producing dairy herds depend on stable forage quality and volume. Iowa's production of corn silage provides a dependable forage base for many operations and supports integration between dairy farms and local crop ground. In addition to grain and silage, Iowa's role as the national leader in ethanol production creates one of the state's most distinctive dairy feed advantages.

ETHANOL & DISTILLERS GRAINS

The ethanol industry generates large volumes of distillers grains, including DDGs and modified distillers grains, which are widely used in dairy rations as protein and energy sources. Iowa's network of ethanol plants means these co-products are available throughout the state. Proximity matters because it lowers freight costs, allows access to wet or modified products where appropriate, and gives producers and feed mills flexibility in formulation. This relationship between ethanol and dairy is one of Iowa's clearest examples of agricultural synergy. Corn production supports ethanol, ethanol supports distillers grains, and distillers grains support dairy.

SOYBEAN-BASED PROTEIN SOURCES

Soybean-based protein sources provide another important piece of the ration. In addition to conventional soybean meal, Iowa has access to specialty products such as mechanically expelled soybean meal with higher rumen undegradable protein and higher fat levels. Products such as SoyPlus produced in Iowa give dairy nutritionists and producers more tools to increase feed efficiency, support milk fat, and fine-tune amino acid delivery for high-producing cows. These products are especially important where producers seek to improve productivity without simply increasing crude protein levels.

FEED MILL INFRASTRUCTURE

The feed advantage is reinforced by Iowa's extensive feed mill infrastructure. The state has a geographically dispersed network of commercial feed mills, cooperative feed departments, and custom blending operations. This gives producers relatively short-distance access to ration formulation, premixes, specialty ingredients, and bulk delivery. It also improves resilience. When disruptions occur, producers often have multiple sourcing options rather than relying on a single distant supplier.

CUSTOM FEED SOLUTIONS

Iowa's feed mills range from large cooperative systems to independent custom manufacturers. Many provide precision blending and delivery for specific classes of cattle, from calves and heifers to high-producing milking cows and transition groups. Turnaround times for custom blends are often short, which is important when forage quality shifts, commodity markets move, or herd needs change.

THE BOTTOM LINE

Taken together, Iowa's feed system provides a significant structural advantage. Ready access to corn, corn silage, soybean products, distillers grains, hay, and custom manufactured feed improves ration flexibility and supports lower-cost milk production. It reduces exposure to supply chain volatility and strengthens the state's long-term ability to support dairy growth without depending heavily on imported feed resources.



Manure Management and Nutrient Utilization

Iowa's dairy industry benefits from an important but often underappreciated advantage in manure management. Unlike many agricultural byproducts that require disposal, dairy manure represents a valuable resource that contributes directly to farm profitability, soil health, and long-term sustainability. For operations that integrate livestock with crop production, manure provides a practical and economically meaningful alternative to synthetic fertilizer. This creates a closed-loop system in which nutrients produced on the farm are returned to the land, reducing input costs and strengthening overall operational efficiency.



Value of Manure as Fertilizer

Dairy manure contains all thirteen essential plant nutrients, including nitrogen, phosphorus, and potassium, which are the primary nutrients required for crop production. The economic value of these nutrients can be significant when evaluated at commercial fertilizer prices. A herd of 200 full-grown dairy cattle, each weighing approximately 1,000 pounds, can generate more than 6.5 million pounds of wet manure annually based on standard production estimates. Within that volume, the manure contains substantial quantities of plant-available nutrients.

Estimated nutrient content from that level of manure production includes more than 39,000 pounds of nitrogen, over 16,000 pounds of phosphate, and more than 26,000 pounds of potash. When valued at typical nutrient prices, this represents tens of thousands of dollars in fertilizer equivalent. Nitrogen alone can account for more than $18,000 in value, while phosphate and potash can each contribute more than $11,000 depending on market conditions. These values illustrate that manure is not simply a waste management issue, but rather a significant on-farm asset.

For dairy farms that grow their own feed, manure can be applied directly to cropland, offsetting the need for purchased synthetic fertilizers and reducing exposure to fertilizer price volatility. This is particularly important given the rising and often unpredictable cost of commercial fertilizer inputs. In situations where manure production exceeds on-farm land capacity, producers may also establish agreements with neighboring crop farmers. These arrangements can include direct manure sales, custom application agreements, or exchange systems in which manure is traded for feed or other inputs. In either case, manure contributes measurable economic value to the farm.

MANURE: A VALUE RESOURCE

ANNUAL MANURE PRODUCTION
from 200 full-grown dairy cattle
(~1,000 lbs each)



NUTRIENT CONTENT
(Plant-Available)

N	>39,000 LBS NITROGEN
P_2O_5	>16,000 LBS PHOSPHATE
K_2O	>26,000 LBS POTASH

ECONOMIC VALUE
(at typical prices)

>$18,000
>$11,000
>$11,000

Nutrient Variability and Loss

Despite its value, the nutrient content of manure is not fixed and can vary significantly between operations. Factors such as animal diet, bedding material, storage method, handling practices, and environmental conditions all influence the final nutrient composition. As a result, actual nutrient levels may differ from standard estimates, and testing is often required to determine precise application rates.

Nutrient loss is another important consideration. Nitrogen is particularly susceptible to volatilization, where it is lost to the air as ammonia. This loss can occur rapidly if manure is not incorporated into the soil shortly after application. Phosphorus and potassium, while more stable, can still be lost through runoff and leaching, especially when manure is applied to open lots or during unfavorable weather conditions.

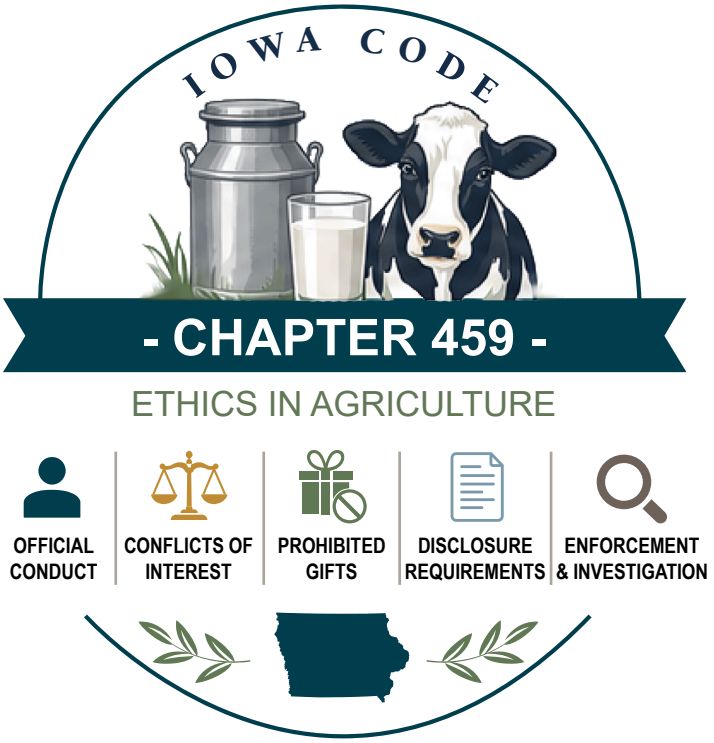


Management practices have a direct impact on nutrient retention. For example, manure that is scraped and removed from barns on a daily basis retains significantly more nutrient value than manure that accumulates and is removed infrequently. Studies have shown that solids scraped once per year instead of daily can lose up to twice the nutrient value. Similarly, open lot systems without adequate runoff control can experience substantial nutrient losses during precipitation events.

Because of these factors, effective manure management requires more than simple storage and application. It involves timing, incorporation methods, storage design, and coordination with crop nutrient needs. When managed properly, nutrient losses can be minimized and the economic value of manure can be more fully captured.

Manure Systems and Regulatory Environment

Manure management in Iowa operates within a defined regulatory framework that balances environmental protection with agricultural productivity. Iowa Code Chapter 459 governs animal feeding operations and establishes requirements related to manure storage, handling, and land application. These regulations are administered primarily through the Iowa Department of Natural Resources and are designed to prevent water contamination while allowing farms to utilize manure as a nutrient resource.



Larger dairy operations, particularly those classified as concentrated animal feeding operations, must comply with additional permitting requirements and maintain detailed nutrient management plans. These plans govern how manure is stored,

transported, and applied to land, including application rates, timing, and setbacks from sensitive areas such as waterways and wells. Even smaller operations that are not classified under these categories must still follow state standards related to manure handling and environmental protection.

The regulatory structure influences both costs and opportunities. On one hand, compliance requires investment in storage structures, recordkeeping, and management systems. On the other hand, it creates a framework that supports responsible nutrient use and helps maintain public trust in agricultural practices. As environmental expectations continue to evolve, manure management will remain an area of focus for both regulators and producers.

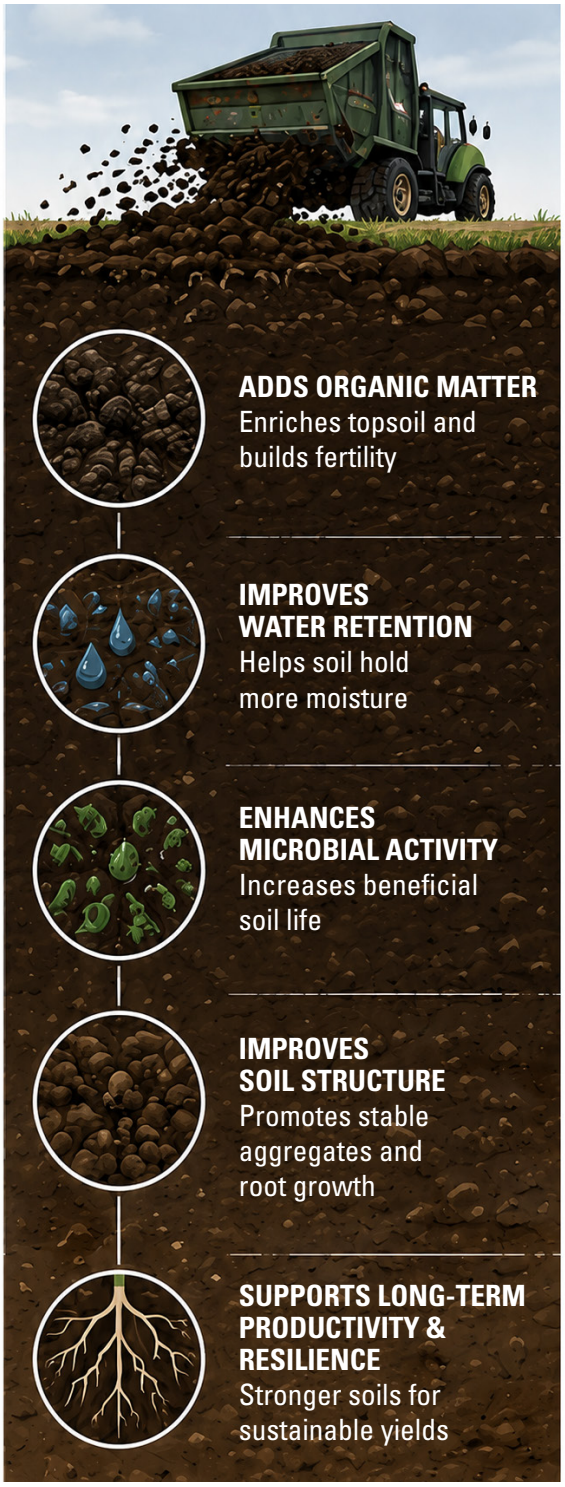
Comparison to Synthetic Fertilizer

When compared to synthetic fertilizer, manure offers both advantages and challenges. From a cost perspective, manure can significantly reduce reliance on purchased inputs, particularly for farms with sufficient land base to utilize nutrients effectively. The ability to recycle nutrients within the farm system provides a level of independence from global fertilizer markets, which are often subject to price volatility driven by energy costs, geopolitical factors, and supply chain disruptions.

Manure also contributes to soil health in ways that synthetic fertilizers do not. In addition to supplying nutrients, manure adds organic matter to the soil, improving structure, water retention, and microbial activity. These benefits can enhance long-term productivity and resilience, particularly in cropping systems that rely heavily on continuous corn or corn-soybean rotations.

At the same time, manure is more complex to manage than commercial fertilizer. Nutrient content is less uniform, application requires specialized equipment, and timing must align with both agronomic and regulatory considerations. Transportation can also be a limiting factor, as manure is bulky and expensive to move over long distances compared to concentrated fertilizers.

Despite these challenges, manure remains a clear competitive advantage for Iowa dairy operations, particularly those that integrate livestock and crop production. The ability to convert what would otherwise be a disposal challenge into a valuable input reinforces the efficiency of Iowa's agricultural system and supports the long-term sustainability of dairy production within the state.



Iowa DNR Regulations and Compliance Framework

Manure management in Iowa is regulated through a structured framework administered by the Iowa Department of Natural Resources, with oversight grounded in Iowa Code Chapter 459 and related administrative rules. These regulations establish requirements for manure storage, handling, and land application to protect water quality while allowing continued agricultural use of nutrients. Dairy operations that meet the threshold for concentrated animal feeding operations are required to obtain construction permits for manure storage structures, submit manure management plans, and follow specific application guidelines that account for crop nutrient needs, soil conditions, and environmental risk factors. These plans include requirements for application timing, incorporation practices, and setback distances from water bodies, drainage features, and wells.

Even operations that fall below regulatory thresholds are expected to follow best management practices to prevent nutrient loss and surface water contamination. The permitting process also governs the design and capacity of manure storage systems to ensure adequate containment during periods when land application is not appropriate. Compliance is monitored through recordkeeping, inspections, and reporting requirements, and violations can result in enforcement actions and financial penalties. While these regulations introduce additional management and capital considerations, they also provide a standardized framework that supports responsible nutrient utilization, reduces environmental risk, and reinforces public confidence in Iowa's dairy industry.



Regulatory and Compliance Landscape

Dairy Licensing Framework

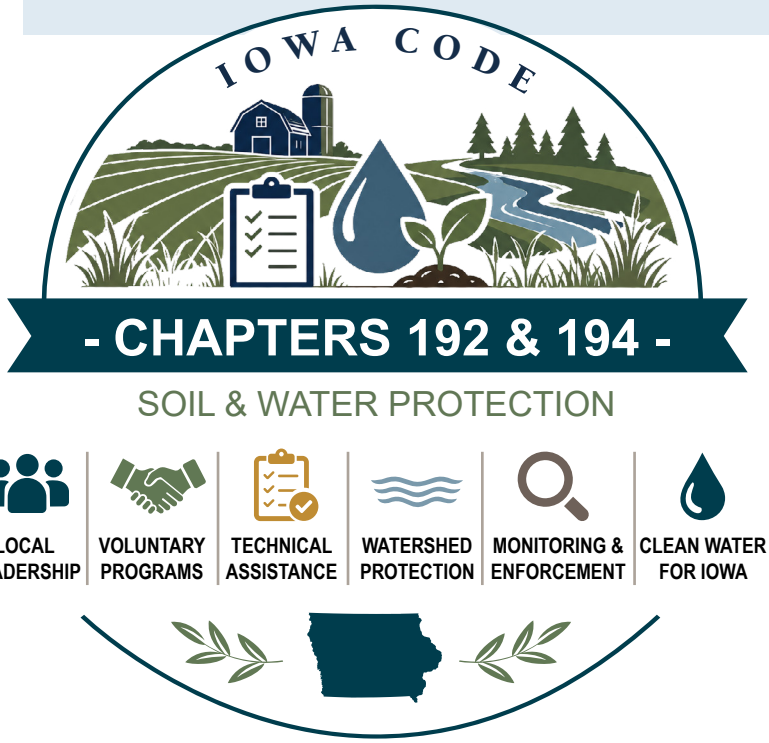
As a food product, the milk industry is regulated in Iowa. Both the production side of fluid milk and the processing side of milk products fall under regulation.

The processing and sale of milk and milk products from the farm falls under regulation from the Iowa Department of Agriculture and Land Stewardship. Dairy plant regulations cover permits for operation, milk quality standards, and facility requirements, with specific rules for sales and milk hauler/grader licensing.

Key requirements include having a valid permit to handle milk, adhering to specific sanitary and construction standards for facilities like milking barns and milk houses, and ensuring all milk is wholesome and properly handled.

To receive any license, testing must be conducted in accordance with Iowa Code Chapters 192 and 194, which regulate milk sampling procedures, temperature control, tank agitation, storage conditions, and testing containers. These chapters also establish the standards for Grade A and Manufacturing Grade dairies, as well as the conditions under which licenses may be suspended. Applications for a dairy plant license are made at an early stage, with initial floor plan designs. This will require a facility inspection upon completion. The permit is valid for two years.





Grade A vs. Grade B Constraints

- Milk Plant Permit: mandatory for any facility receiving, storing, processing, or selling milk or milk products.
- Grade A vs. Manufacturing Grade:
  - Grade A: licensed for bottled milk, yogurt, cottage cheese. A Grade A license is mandatory for any fluid milk sales.
  - Manufacturing Grade: permits cheese, butter, ice cream. Grade B is typically meant to indicate manufacturing of dairy products.
- Renewals & Fees: Annual fees up to $200–$1,000; hauler/driver permits up to $50/year.
  - Permits are issued bi-annually.

Facilities cannot produce both categories without separate infrastructure, significantly raising costs for diversified operations. This separation creates particular challenges for processors wanting to offer both fluid milk and manufactured products.

Plan Review Challenges and Inspections

If farm products will go beyond direct-to-consumer and include manufacturing, packaging, labeling and storage for sale to wholesale, retail, restaurants, institutions, etc., then an additional license is needed from the Iowa Department of Inspections, Appeals and Licensing.

- Processors must apply at least 30 days prior; based on Iowa Administrative Code 481 Ch. 31, sales determine fee ($75–$500).
- Plan Review mandatory before licensure—facility layouts and food safety protocols are assessed.

Producers frequently encounter uncertainty around equipment certification, especially when sourcing used or out-of-state items. Weld quality, material standards, and A3 certification for milk-contact surfaces require verification.

FDA/USDA Standards

Dairy plants must also meet the Food and Drug Administration's Pasteurized Milk Ordinance, which sets sanitation, pasteurization and handling requirements for fluid milk and milk products. This prevents foodborne illnesses like Listeria, Salmonella and E. coli. Products potentially crossing state lines also means FDA oversight. IDALS enforces regulations, but the basis for governance is outlined by the FDA.

- Facilities must meet FDA Pasteurized Milk Ordinance for Grade A and USDA standards for Manufacturing Grade products.

Food Safety & Inspection

Dairy plants require a HACCP plan – a hazard analysis critical control points plan to outline the steps of the manufacturing process, determine food safety risk points and develop procedures and plans to mitigate risks. These standards enable consumers to have trust in the product and ensure that Iowa milk and milk products can safely enter supply chains.

- Routine inspections by IDALS dairy inspectors.
- Protection Task Force guidelines (temp control, HACCP, recalls) is essential.

Environmental & Zoning Requirements

Depending on their size, Iowa dairies may also need Department of Natural Resources (DNR) permits. Anything over 1,000 animal units requires a construction permit. Any dairy utilizing earthen storage for manure requires a permit, regardless of the size of the dairy. Dairies under 500 cows are still subject to state and county regulations. The Iowa DNR provides a siting atlas to assist with planning. The construction permit will include provisions for both air and wastewater control and emissions. For assistance in siting, please contact the Coalition to Support Iowa's Farmers.



Local Equipment in Milk Processing and On Farm Dairy Systems

Iowa benefits from a well-established network of dairy equipment suppliers and service providers that support both milk production and dairy processing. This local equipment ecosystem lowers downtime, reduces service delays, and improves access to modern technology. In an industry that depends on continuous operation, local support capacity is a major asset.

On the farm side, Iowa has access to parlor designers, automation vendors, robotic milking dealers, cooling system suppliers, hygiene product distributors, and service technicians. These businesses are concentrated particularly in major dairy regions, giving producers faster response times and greater confidence in adopting more advanced equipment. Rapid access to parts and 24-hour service coverage matter greatly when milking systems fail or cooling systems are disrupted.



This ecosystem supports continued adoption of robotic milking and automation. For farms in the small to mid-sized range, robotics can reduce labor pressure, improve scheduling flexibility, enhance data collection, and support more consistent cow management. In Iowa, the presence of local dealers and technicians makes these systems more practical than they might be in regions with weaker service coverage.

Processing equipment support is also important. Pasteurizers, vats, tanks, packaging systems, cleaning systems, and specialty manufacturing lines require installation, maintenance, and technical guidance. Iowa's processors and on-farm value-added businesses benefit from access to regional and in-state suppliers who understand both the technology and the regulatory environment. The ability to coordinate production and processing equipment decisions locally helps reduce project complexity and supports more efficient capital investment.

Resources in Iowa

Iowa offers a broad and interconnected network of resources that support dairy producers, processors, and related businesses at nearly every stage of development. These resources provide advocacy, technical support, regulatory guidance, education, marketing assistance, and business development support.

Industry organizations provide representation and policy support. Promotion groups support consumer education and dairy demand. Iowa State University Extension and Outreach provides production analysis, financial tools, labor management training, robotics evaluation, manure planning support, and educational programming. State agencies oversee permitting, quality standards, inspections, and branding initiatives. Veterinary diagnostic and laboratory services support herd health and milk quality testing. Community colleges and workforce partners provide training relevant to dairy and processing labor needs.

This network matters because dairy success is not determined by a single factor. It depends on how well farms and processors can access expertise, solve problems, adapt to new requirements, and identify growth opportunities. Iowa's strength lies partly in the fact that these resources are not isolated from one another. They form a broader support structure that improves resilience and encourages long-term investment.

Banking and Financial Support Structure

Modern dairy production and dairy processing are highly capital intensive. Land, buildings, parlors, robotic systems, feed storage, manure systems, cooling equipment, transportation, and processing machinery all require substantial capital investment. For that reason, a state's financial ecosystem plays a major role in whether dairy businesses can survive, modernize, and expand.



Iowa's dairy sector benefits from a mature agricultural finance structure that includes specialized agricultural lenders, community banks, public incentive programs, risk management tools, and technical support organizations. Relationship-based lending remains especially important. Many dairy businesses are financed through lenders who understand agricultural cycles, herd production risk, land values, collateral structure, and the importance of management quality.

Farm Credit institutions play a major role in this system, providing operating lines, real estate financing, equipment loans, and dairy-specific expertise. Patronage refunds can reduce the effective cost of borrowing and help support cash flow. Community banks also remain important, particularly for family-owned and mid-sized operations where long-term relationships, local market knowledge, and flexibility are valuable.

State and federal programs strengthen this framework. Beginning farmer programs, tax incentives, grant opportunities, and USDA-backed loans can all help reduce barriers to entry or support specific types of capital investment. In the dairy sector, this is particularly important for projects involving labor-saving equipment, new processing capacity, value-added production, or environmentally required infrastructure.

Risk management tools also matter. Programs such as Dairy Margin Coverage and Livestock Gross Margin insurance provide partial protection during periods when margins become compressed by milk price declines or feed cost spikes. These tools do not eliminate risk, but they support lender confidence and improve the financial survivability of farms during difficult periods.

Iowa's broader support system further improves finance access. Extension specialists, support coalitions, and agricultural development groups often provide financial modeling, feasibility work, enterprise budgets, and expansion analysis that help both borrowers and lenders evaluate projects more effectively. In an industry where a single expansion can involve millions of dollars, that analytical support is not a minor service. It is part of the state's competitive infrastructure.

CAPITAL INVESTMENT LIFECYCLE



1. PLANNING
Evaluate needs & set goals

2. FINANCING
Secure funding & manage risk

3. CONSTRUCTION
Build & install infrastructure

4. PRODUCTION
Operate efficiently & manage costs

5. EXPANSION
Invest in growth & innovation

Choose Iowa and How the Program Works

Choose Iowa serves as one of the most visible statewide initiatives supporting local food and value-added agriculture. For dairy businesses, the program combines branding support, market development, and direct financial assistance. It helps connect consumers to Iowa-made products while also helping producers and processors invest in equipment and market access.

The branding side of the program allows participating businesses to use the Choose Iowa identity to signal local origin and strengthen consumer recognition. This can be especially valuable for direct-to-consumer products, on-farm stores, small processors, and agritourism-focused dairy operations. The digital passport and related promotional tools improve visibility and help consumers discover Iowa dairy businesses.



The grant side is equally important. Dairy Innovation Grants support projects related to on-farm processing and labor-reducing technology. For small and mid-sized dairy businesses, cost-share support can make the difference between delaying and moving forward with major purchases such as pasteurizers, packaging systems, robotic units, or cleaning technologies. Because these grants require project readiness, matching funds, and documentation, they also help reinforce disciplined investment planning.

Choose Iowa is important not only for the individual businesses that receive support, but for what it signals about state priorities. It reflects recognition that dairy growth will not come from production alone. It will come from stronger links between farms, processing, branding, and direct market engagement.

Visit Choose Iowa for more information about the Choose Iowa Program.

Agritourism and On Farm Processing and Stores

Agritourism and on-farm processing represent an increasingly important diversification strategy for Iowa dairy operations. These models allow producers to capture a larger share of the consumer dollar while also building public understanding of modern dairy production. In a market where commodity milk margins can be thin, value-added sales and farm-based experiences can provide useful supplemental income and stronger brand identity.



Examples across Iowa show how this works in practice. Farms that integrate production with bottling, cheese making, ice cream production, retail stores, tours, events, or school visits can create multiple revenue streams from the same core agricultural business. These models strengthen the relationship between consumer and producer and help farms differentiate themselves in a competitive marketplace.



On-farm processing allows producers to retain more value by converting raw milk into products with higher retail margins. Agritourism adds another layer by monetizing the farm experience itself. Tours, educational programming, events, and retail traffic all increase visibility and can reinforce loyalty to local dairy products. These models also align well with broader consumer trends favoring local food, transparency, and direct connection to food production.

Outlook for 2026 Through 2030

Looking ahead, Iowa's dairy industry appears positioned for continued but measured growth. The most likely path is not explosive expansion in cow numbers, but steady gains driven by improved productivity, continued automation, better milk utilization within the state, and stronger integration between production and processing.

New and expanded processing capacity will be a major factor. As more milk can be processed in-state, Iowa has the opportunity to retain more economic value, support additional jobs, and strengthen its dairy manufacturing base. This shift will also improve the economic multiplier associated with milk production and reduce dependence on exporting raw milk to neighboring states.

Challenges remain, including labor, liability, regulatory compliance, and seasonality. Even so, supportive legislation, branding programs, and consumer interest continue to make agritourism and on-farm value-added production attractive options for some Iowa dairy businesses.



Feed availability will remain a major advantage. Iowa's crop system, ethanol co-products, soybean resources, and feed mill network give dairy producers unusual flexibility and cost efficiency. Water availability and transportation reliability also continue to support long-term competitiveness relative to regions facing higher environmental stress or infrastructure limitations.

Technology adoption will likely continue, especially in robotic milking, data-based herd management, labor-saving systems, and specialized processing equipment. These technologies are particularly important in an environment where labor remains difficult to secure and operating consistency matters more than ever.

At the same time, the industry will continue to face risk. Milk price volatility remains unavoidable. Regulatory expectations related to water, wastewater, manure, and environmental performance will continue to evolve. Capital costs remain high, and older processing infrastructure nationally creates both urgency and expense. Even so, Iowa enters this period with multiple structural advantages that reduce these risks relative to many competing regions.

Conclusion

Iowa's dairy industry is supported by a rare combination of production capacity, feed access, infrastructure, water resources, financial systems, technical support, and expanding value-added opportunity. The state has not simply preserved a dairy sector through a time of national restructuring. It has continued to build one that is more efficient, more integrated, and increasingly more attractive for future investment.



The state's long-term competitiveness rests on several reinforcing strengths. It produces abundant feed locally. It has water resources and rural infrastructure that remain favorable compared to major western dairy regions. It operates within a flexible regional processing network while gradually increasing its own in-state processing capacity. It supports producers and processors through specialized finance, equipment access, Extension programming, and public initiatives such as Choose Iowa. It also offers opportunities for diversification through agritourism, on-farm processing, and local branding.

As dairy markets continue to shift toward cheese, cultured products, protein-rich foods, and value-added manufacturing, Iowa is well positioned to grow with those changes. The state's opportunity is not merely to produce more milk. It is to capture more value from the milk it already produces, support stronger rural economies, and reinforce dairy as a long-term pillar of Iowa agriculture.

SUPPORT SERVICES & RESOURCES

Thorough pre-planning, including early consultation with IDALS and ISU Extension and Outreach, reduces delays and costly revisions.

- Iowa State University Extension and Outreach helps with design, safety, business planning, and permits.
- Coalition to Support Iowa's Farmers will help with siting considerations.
- Dairy Products Control Bureau at IDALS provides forms, permits, and technical support.
- Department of Inspections, Appeals and Licensing provides forms, licensing and technical support.
- Grants & Technical Assistance available through Choose Iowa Dairy Innovation Grants and Dairy Business Innovation Alliance (DBIA).

THE ECONOMIC IMPACT OF

ALL DAIRY FARMING & MANUFACTURING *in Iowa*



20,578 JOBS

$1.53 BILLION LABOR INCOME

$9.04 BILLION OUTPUT

ECONOMIC IMPACT OF A SINGLE COW: **$36,890**

PERCENTAGE EACH SECTOR CONTRIBUTES TO TOTAL OUTPUT

70.3% DAIRY PRODUCTS MANUFACTURING



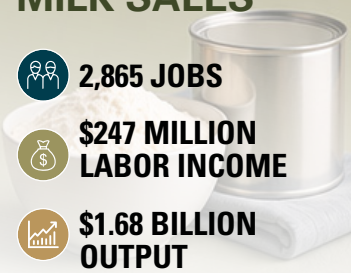
- 13,250 JOBS
- $1.04 BILLION LABOR INCOME
- $6.36 BILLION OUTPUT

25.3% DAIRY FARM MILK SALES



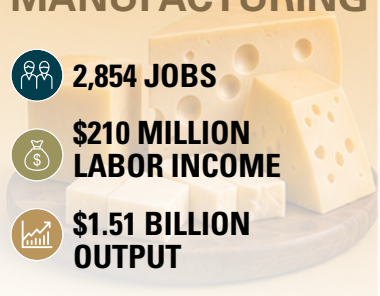
- 2,418 JOBS
- $427 MILLION LABOR INCOME
- $2.29 BILLION OUTPUT

18.6% DAIRY FARM MILK SALES



- 2,865 JOBS
- $247 MILLION LABOR INCOME
- $1.68 BILLION OUTPUT

16.7% CHEESE MANUFACTURING



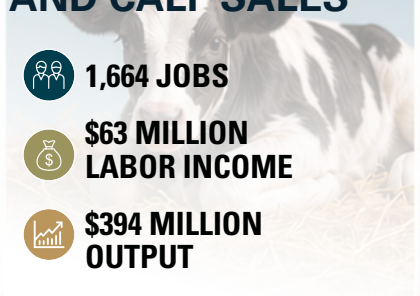
- 2,854 JOBS
- $210 MILLION LABOR INCOME
- $1.51 BILLION OUTPUT

15.3% ICE CREAM MANUFACTURING



- 3,730 JOBS
- $299 MILLION LABOR INCOME
- $1.39 BILLION OUTPUT

4.4% DAIRY FARM CATTLE AND CALF SALES



- 1,664 JOBS
- $63 MILLION LABOR INCOME
- $394 MILLION OUTPUT

1.8% FLUID MILK MANUFACTURING



- 3,801 JOBS
- $47.8 MILLION LABOR INCOME
- $159 MILLION OUTPUT

IOWA RANKS:

10TH IN TOTAL COWS
8TH IN MILK PER COW &
9TH IN TOTAL MILK PRODUCTION

DATA SOURCE:
USDA CENSUS OF AGRICULTURE 2022

Resources

1. Iowa Department of Natural Resources. “Groundwater Monitoring.” iowadnr.gov. Accessed February 2026. https://www.iowadnr.gov/environmental-protection/water-quality/water-quality-monitoring-assessment/groundwater
2. California State Water Resources Control Board. Sustainable Groundwater Management Act (SGMA) Overview. swrcb.ca.gov. Accessed February 2026.
3. Rathbun Regional Water Association. “About RRWA.” rrwa.net. Accessed February 2026. https://www.rrwa.net/about-rrwa.aspx
4. Iowa Rural Water Association. “About IRWA.” iowarwa.org. Accessed February 2026.
5. Johnson County, Iowa Public Health. “Private Well Grant & Water Testing.” johnsoncountyiowa.gov. Accessed February 2026. https://www.johnsoncountyiowa.gov/public-health/well-testing
6. Iowa Department of Natural Resources. “Well Testing / Private Well Grants Program.” iowadnr.gov. Accessed February 2026. https://www.iowadnr.gov/environmental-protection/water-quality/private-well-program/well-testing
7. Iowa Department of Natural Resources. “Private Well Program.” iowadnr.gov. Accessed February 2026. https://www.iowadnr.gov/environmental-protection/water-quality/private-well-program
8. Iowa Nutrient Reduction Strategy. nutrientstrategy.iastate.edu. Updated February 2025. Accessed February 2026.
9. Iowa Beef Center / ISU Extension. “Wet Weather Runoff Management for Open Lots.” iowabeefcenter.org. Accessed February 2026.
10. Dairy Foods Magazine. “Optimizing Dairy Plant Wastewater Operations.” dairyfoods.com. Accessed February 2026.
11. Iowa Code Chapter 459 — Confinement Feeding Operations. Iowa Legislature. legis.iowa.gov.
12. Iowa Finance Authority / Livestock Water Quality Program. opportunityiowa.gov. Accessed February 2026.
13. Iowa Department of Agriculture and Land Stewardship / USDA NASS. “2024 Iowa Crop Production Annual Summary.” January 2025. iowaagriculture.gov. https://iowaagriculture.gov/news/strong-prod-strong-market-demand
14. Iowa Environmental Council. (2021, February). Rural water systems in Iowa: Opportunities. https://www.iaenvironment.org/webres/File/Rural%20Water%20Systems%20in%20Iowa.pdf
15. Himmelmann, H., & Amaral-Phillips, D. M. (n.d.). Water needs for the dairy herd. University of Kentucky, Animal & Food Sciences. https://afs.mgcafe.uky.edu/content/water-needs-dairy-herd
16. Kononoff, P. J., & Clark, K. J. (2018). Water quality and requirements for dairy cattle (G2292). Nebraska Extension. https://extensionpubs.unl.edu/publication/g2292/na/html/view
17. Becker, C. (2024, July 3). Clean drinking water is essential to cows. Penn State Extension. https://extension.psu.edu/clean-drinking-water-is-essential-to-cows
18. State of Iowa. (2025). Iowa Geospatial Data Clearinghouse [Data set]. https://geodata.iowa.gov/datasets/49e77fc65b39481c8242e9aeae3b3bcf_13/about
19. State of Iowa. (2025). Iowa Geospatial Data Clearinghouse [Data set]. https://geodata.iowa.gov/datasets/8ba1006fd66a48e4b7c5eb43de9480f2_23/about
20. University of Massachusetts Amherst, Center for Agriculture, Food, and the Environment. (n.d.). Milkhouse wastewater management. https://www.umass.edu/agriculture-food-environment/crops-dairy-livestock-equine/fact-sheets/milkhouse-wastewater-management
21. Miller, Rhonda. How Much Manure Will My Animals Produce? Utah State University Extension. https://extension.usu.edu/smallfarms/files/How_Much_Manure.pdf
22. Kapil Arora. Manure for Sale. Journal of Nutrient Management. https://jofnm.com/article-341-Manure-for-sale.html#:~:text=Manure%20nutrients%20can%20be%20compared,the%20retail%20prices%20listed%20above.
23. Charles D. Fulhage and Donald L Pfost. (March 2022) Fertilizer Nutrients in Dairy Manure. University of Missouri Extension. https://extension.missouri.edu/publications/wq307

Iowa Resources and Regulations

1. Iowa State University Extension and Outreach. Dairy Program.
   https://www.extension.iastate.edu/ag/dairy
2. Iowa State University Extension and Outreach. Food Innovation and Business Hub.
   https://www.extension.iastate.edu/foodinnovation/
3. Iowa Department of Natural Resources. Wastewater Permitting Information Exchange (WWPIE).
   https://programs.iowadnr.gov/wwpie/
4. Iowa Department of Natural Resources. EASY Air Public Access Portal.
   https://programs.iowadnr.gov/easyair/Public/GovEnt/Shared/Pages/Main/Login.aspx
5. Iowa Department of Natural Resources. Air Quality Construction Permits.
   https://www.iowadnr.gov/environmental-protection/air-quality/air-quality-construction-permits
6. Iowa Department of Natural Resources. Air Quality Operating Permits.
   https://www.iowadnr.gov/environmental-protection/air-quality/operating-permits
7. Iowa Department of Inspections, Appeals, and Licensing. Food Resources.
   https://dial.iowa.gov/licenses/food-establishments-hotels/food-resources
8. Iowa Department of Inspections, Appeals, and Licensing. Food Processing Plants.
   https://dial.iowa.gov/licenses/food-establishments-hotels/food-processing-plants
9. Iowa Department of Inspections, Appeals, and Licensing. Apply for Food License.
   https://dial.iowa.gov/licenses/food-establishments-hotels/apply-food-license
10. Iowa Department of Agriculture and Land Stewardship. Dairy Products Control Bureau.
    https://iowaagriculture.gov/dairy-products-control-bureau
11. Iowa Department of Agriculture and Land Stewardship. Dairy Resources.
    https://iowaagriculture.gov/dairy-products-control-bureau/dairy-resources
12. Iowa Department of Agriculture and Land Stewardship. Choose Iowa.
    https://www.chooseiowa.com/
13. Coalition to Support Iowa's Farmers.
    https://www.supportfarmers.com/
14. Iowa Legislature. Iowa Administrative Code – Chapter 68, Dairy Products Control.
    https://regulations.justia.com/states/iowa/agency-21/chapter-68/rule-21-68-2/
15. Iowa Legislature. House File 2524 (Dairy-related legislation).
    https://www.legis.iowa.gov/DOCS/GA/79GA/Legislation/HF/02500/HF02524/Current.html

Author Biography

Connie Hardy joined the ISU Extension and Outreach Farm, Food and Enterprise Development team in September 2005 after having served as a program coordinator in the ISU Department of Food Science and Human Nutrition and the Center for Crops Utilization Research. Hardy's role has been to provide technical and business assistance to organizations that are developing food, feed, or industrial products from grains and agricultural crops. Working with the Iowa Grain Quality Initiative, she currently manages the service operations of the Grain Quality Lab.

Ethan M. Bowers is an Enterprise Development Specialist with the Farm, Food and Enterprise Development unit at Iowa State University Extension and Outreach. In this role, he provides industry-level analysis as well as small-business assistance to entrepreneurs in food manufacturing and agriculture. His work supports producers, processors, and emerging agribusinesses through applied research, business planning, and market analysis. Bowers contributes to Extension initiatives that strengthen farm level decision-making and enhance the economic viability of Iowa's food manufacturing and agricultural industries.

Alex Van Alstyne joined the Iowa State University Extension and Outreach Farm, Food Innovation and Business Hub team, where he serves as a Food Business Extension Specialist. In this role, Van Alstyne provides technical, business, and marketing assistance to entrepreneurs and organizations developing value-added food products across Iowa. In addition, he contributes to feasibility studies, business planning, and product development efforts that connect agricultural producers to new market Opportunities.

Team members have reviewed public information and production data for completeness and relevance to the current industry, and they offer opinions based on a thorough review of available data and information. This report is therefore not predictive in nature.

Source references are cited within the report in an informal manner with every effort made to attribute data originating outside the team's resources. Mistakes in citing, if any, are unintentional.

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Extension and Outreach

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