# *INDIANA DAIRY STRATEGY 2.0*

Presented to


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*World Perspectives, Inc.*
*1621 North Kent Street, Suite 606*
*Arlington, Virginia 22209*
*tel: 202-785-3345*
*e-mail: wpi@agrilink.com*

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## Preface - COVID

The following Indiana Dairy Strategy 2.0 report is an update of the original State dairy strategy developed in 2015. Obviously, the dairy industry in Indiana and across the country was dramatically impacted by the COVID pandemic and subject to disrupted supply chains, shifts in consumer demand and an unprecedented level of market uncertainty and volatility. This preface identifies the key shocks to the dairy value chain from COVID.

The extent of these disruptions and the duration of their impacts are as unknown and difficult to accurately predict as the long-term impact of the COVID virus itself but are important to recognize in the context of any forward-looking strategic plan for the State's industry. Unemployment and financial hardships of some U.S. residents likely contributed to lower consumption of dairy products and could extend into an unknown length of time moving forward. Also, the pace of economic recovery for food service and institutional demand from schools will be a key factor to demand recovery.

The COVID pandemic was declared a national emergency on March 15, 2020. At the same time most major cities and many states closed restaurants and limited public events. This dramatically reduced food service and institutional sales for dairy products. Schools were closed early in the spring of 2020 and many were not fully re-opened in the fall of 2020 adversely impacting school demand for fluid milk. Moreover, the demand destruction from the COVID pandemic unfolded as milk production started to enter its seasonal high spring production. Producers and processors were faced with having to manage unexpected surpluses and additional marketing costs caused by the disruption to normal marketing channels.

On March 18, the Department of Homeland Security identified critical infrastructure sectors, which included food manufacturers such as dairy processors, that were to remain in operation, nonetheless the loss of demand adversely impacted milk prices. According to the USDA, by mid-April the average price decline from the mid-January price level was $5.88 per hundredweight, a drop of about one-third based on a weighted average price of Class III (60% weight) and Class IV (40% weight) futures prices

Key impacts of COVID:

- The COVID pandemic contributed to weak domestic use of dairy products in April. Demand for dairy products generally decreased with the shift away from consumption through food service to at-home eating; Americans typically consume higher proportions of dairy products when they eat out compared to when they eat at home. Product impacted were cheese, sour cream, butter and ice cream.

- School closures impacted demand for fluid milk, more than offsetting increased retail demand resulting from stay-at-home decrees; in late March when retail panic buying started, fluid milk sales were up 10 million pounds per day, or 108 percent of March 2019, however starting in April, sales were at or below 2019 levels.

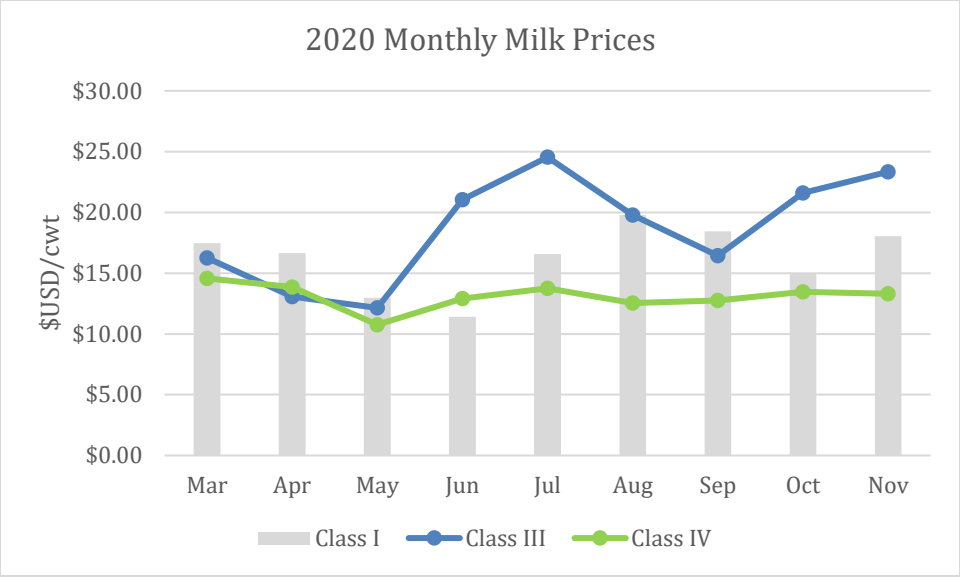
- In April, substantial quantities of milk from various parts of the country were not processed due to low demand for dairy products and logistical problems resulting from effects of the pandemic. That milk was "dumped" – i.e. spread on fields or added to manure lagoons. These necessary economic actions resulted in public and media scrutiny of the industry's sustainability and structure.

- Actions by cooperatives and other milk handlers to manage the oversupply of milk contributed to a tightening of the milk supply in May. Pricing terms were formulated to discourage dairy farmers from increasing milk production growth.

- The low prices for many dairy products in April and early May made them very competitive in export markets. Exports are often delivered in the months following sales negotiations. As demand for dairy products among domestic foodservice buyers has increased, commitments of sellers to the export market likely contributed to a tight supply of products for the domestic market which added to short term price volatility.

- Additionally, the U.S. Government began buying food (including dairy products) to distribute to foodbanks, community and faith-based organizations, and other nonprofit organizations through the USDA Farmers to Families Food Box Program. USDA has also purchased dairy products through funding and authorities provided in the Coronavirus Aid, Relief, and Economic Security Act (CARES); the Families First Coronavirus Response Act (FFCRA); Section 32 of the Act of August 24, 1935; and other USDA existing authorities. The Food Box program alone, which was extended for a fourth round through 31 December, is expected to purchase approximately $1 billion of milk and dairy products.

- With the cooperatives reducing oversupply of milk, and the government purchases of cheese, Class III prices were pushed to multi-year highs. However, Class IV milk prices did not increase by nearly the same rate. Prior to the 2018 farm bill, Class I milk was based off of the higher of Class III and Class IV prices, however, since reforms to the pricing formula in the 2018 farm bill, the Class I price is based on the average of the Class III and Class IV advanced prices plus 74 cents. The 74-cent spread was the historical difference between the Class III and IV skim prices to make dairy farmers and milk prices indifferent to this change over a longer-term horizon. However, under the new formula, anytime the spread between Class III and IV is wider than $1.48 per hundredweight, dairy farmers will end up with a lower Class I milk price. And that is what happened.



Source: USDA, WPI

As a result of the new formula, the Class I milk price never fully captured the rally in Class III milk prices. World Perspectives estimates that more than 40 percent of all Indiana milk production is used as Class I. According to a calculation by the American Farm Bureau Federation, the new formula resulted in a loss of $443 million in Class I milk income from July through October 2020. This unintended consequence of the federal milk pricing formula during the COVID pandemic likely will trigger further policy changes in the near future.

The Class III price rally did prevent production of milk from dropping as much as was anticipated early in the pandemic and higher supplies are expected to carry over into 2021 with a bearish impact on the All Milk price.

| Near Term Milk Production, Marketing and Price Outlook | | | |
|---|---|---|---|
| | **2019** | **2020 estimated** | **2021 forecast** |
| Milk Production *billion lbs* | 218.4 | 222.5 | 225.9 |
| Milk Marketings *billion lbs* | 217.4 | 221.5 | 224.9 |
| All Milk Price *$/cwt* | $18.63 | $18.25 | $17.70 |

Source: USDA, WPI

## Executive Summary

The Indiana State Department of Agriculture (ISDA) undertook the development of the *Indiana Dairy Strategy* in 2015. The following report is a five-year re-fresh of that original strategy intended to analyze new business opportunities, trends and challenges the industry faces and to develop recommendations for big thinking and identifying ways Indiana can better expand the economic viability of the dairy industry.

Obviously, the dairy industry in Indiana and across the country was dramatically impacted by the COVID pandemic and subject to disrupted supply chains, shifts in consumer demand and an unprecedented level of market uncertainty and volatility. Due to COVID disruptions 2021 will be a recovery year, but the dairy industry is poised to grow over the long term.

There have been a number of key developments and investments in milk processing capacity in Indiana since the 2015 strategy was developed and adopted:

- 2015: Dairy Farmers of America expanded operations in Goshen
- 2018: Walmart opened a new milk bottling plant in Fort Wayne
- 2019: Golfo di Napoli opened an Italian cheese plant in Huntington County
- 2020: Dreyer's announced an expansion of an additional ice cream production line at its Fort Wayne plant.

Additionally, Glanbia opened a new cheese plant in St. John, Michigan which will utilize Indiana milk.

Since the 2015 *Indiana Dairy Strategy* was developed there have been four key trends in the supply and demand balance of the U.S. dairy sector.

- Overall domestic dairy consumption has increased to an all-time high, although not across all categories
- Dairy exports have been unstable, due to both market conditions and export market disruptions
- Production increases have out-paced demand, which has resulted in a bearish price environment for most of the period
- Milk production efficiency and economic pressures have lead to increased dairy farm concentration

In 2019, Indiana ranked 15$^{th}$ in total U.S. milk production; the number of milk cows in the State has decreased since 2017 at a faster rate than the total number of farms indicating more concentration within the dairy farm sector, which is consistent with national trends. Production of milk-per-cow has increased, also following national trends. Improved milk prices in 2019 helped increased the State's total value of milk production compared to 2018 and to approach the 2017 value despite a decrease in aggregate milk production of about 4.5 percent.

Based on the past five years' average value of milk production, dairy farming in Indiana generates an annual average of $698.97 million in direct farm income. Moreover, dairy production has a major economic impact in the State in terms of feed demand, job creation, and tax revenue. This study estimates that Indiana dairies use approximately 26.14 million bushels of corn, 450,000 tons of alfalfa hay, and 201,600 tons of soybean meal (which is the equivalent of 6.72 million bushels of soybeans). That is a total feed use value of $238.91 million based on the five-year average prices of those feedstuffs.

Further, according to the 2019 Economic Impact Study of the Dairy Products Industry commissioned by the International Dairy Foods Association, the dairy industry in Indiana supports:

- 19,534 direct jobs
- $691,711,000 in direct job wages
- 37,248 indirect jobs
- $386.9 million in total tax contribution (income, property, sales, estate, payroll, licenses and fees) in Indiana

According to data from The McCully Group, it can be estimated that there is a net supply of about 3.5 million pounds of milk per day in the state which new or expanding processing capacity could draw on.

Indiana is a nationally recognized agriculture and business friendly state with a strong track record of success in expanding modern, efficient and sustainable milk production and processing.

This study recommends educating potential new milk processors on the business climate in Indiana to recruit expanded dairy processing capacity by positioning the State as the most desirable location for sustainable milk production, through policy development, industry support, and advocacy and promotion of Indiana's dairy industry.

## Background

The Indiana State Department of Agriculture (ISDA) undertook the development of the *Indiana Dairy Strategy* in 2015. The following report is a five-year re-fresh of that original strategy intended to analyze new business opportunities, trends and challenges the industry faces and to develop recommendations for big thinking and identifying ways Indiana can better expand the economic viability of the dairy industry.

Specifically, this updated strategy is intended to:

→ provide a current up-to-date picture of Indiana's dairy industry
→ attract dairy processing facilities to Indiana

Dairy farms are economic engines in rural areas. Further development of Indiana's dairy industry has the potential to provide a strong multiplier effect, including:

→ Bringing stability to dairy farmers
→ Providing demand for corn, distillers grains and soybean meal in Indiana
→ Creating jobs and economic activity both upstream for agricultural input providers and in downstream processing jobs
→ Enhance the well-being of dairy product consumers

This report provides a situational assessment of the current trends and structures of the U.S. dairy industry since the original strategy, including key market drivers which are likely to continue influencing the near-term future development and trends among processors. It is based on research of market data, analysis of industry trends, and input from key industry stakeholders both inside and outside Indiana. It also includes background on Indiana's dairy industry and trends and provides a specific evaluation of how to advantage Indiana's dairy industry through those broader trends and drivers.

There have been a number of key developments and investments in the processing capacity since the 2015 strategy was developed and adopted:

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Additionally, Glanbia opened a new cheese plant in St. John, Michigan which will utilize Indiana milk.

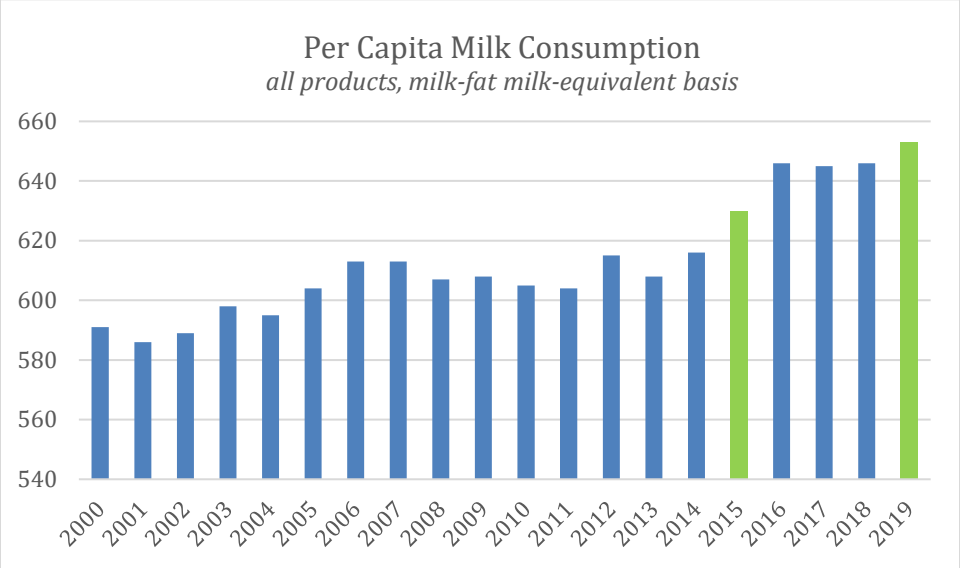
## Situational Analysis of U.S. Dairy Industry 2016-2019

Since the 2015 *Indiana Dairy Strategy* was developed there have been four key trends in the supply and demand balance of the U.S. dairy sector.

- Overall domestic dairy consumption has increased to an all-time high, although not across all categories
- Dairy exports have been unstable, due to both market conditions and export market disruptions
- Production increases have out-paced demand, which has resulted in a bearish price environment for most of the period
- Milk production efficiency and economic pressures have lead to increased dairy farm concentration

## Supply and Demand

U.S. consumer demand for dairy has been growing and remains strong. In 2019, per capita domestic conumption of milk (on a milk-fat basis) reached an historic high of 653 pounds, which was 103.7 percent of per capita consumption in 2015 when the original *Indiana Dairy Strategy* was developed.




Source: USDA, WPI

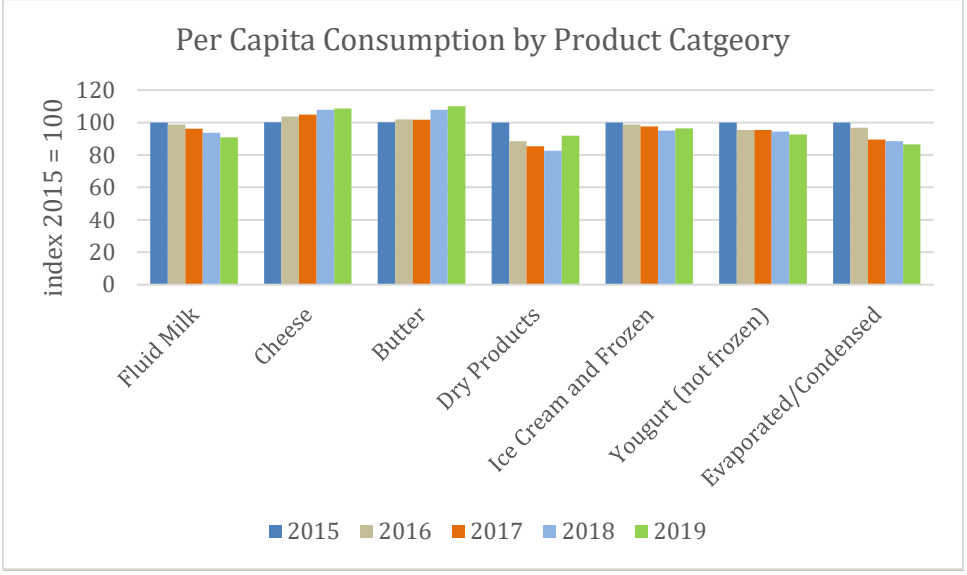
However, among dairy products, domestic consumption of fluid milk and ice cream has decreased; ***these are the two important uses of milk in Indiana***. Cheese and butter consumption, on the other hand, have increased.

There are a couple notable demand trends for fluid milk and cheese since 2015:

> ***Fluid milk***: while consumption has decreased overall, full fat milk consumption has increased (12 percent) and flavored full fat milk is up (36 percent); 2% milk is down (9 percent), 1% milk is down (21 percent) and skim milk is also down (37 percent) and lower fat flavored milk consumption has decreased (2 percent)
>
> ***Cheese***: the growth in cheese consumption has been in non-cheddar American-type cheese (41 percent), mozzarella (11 percent) and other Italian types and Swiss (6

percent each), and Hispanic type cheese (28 percent); processed cheese has decreased (4 percent)

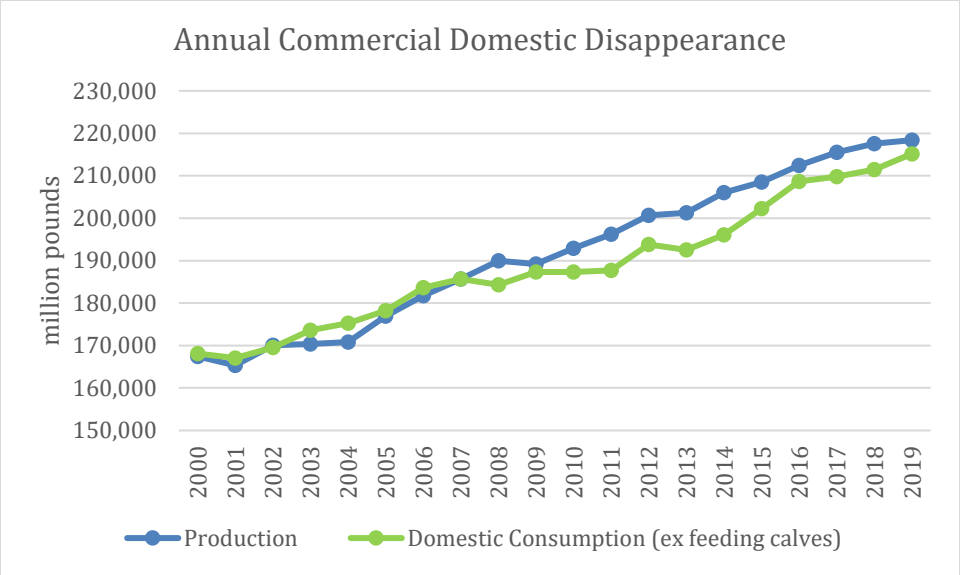
The chart below shows per capita consumption on an index basis pegged to annual disappearance from the year 2015. Since each pound of product differs in the amount of milk needed to produce it, the consumption trends are best shown as an index.




Source: USDA, WPI

Despite the increase in demand for dairy, production outgrew demand in 2017 and 2018 leading to an oversupply. In 2019, consumption again grew at a faster rate than production, though the end of the year balance sheet reflected record carry-in of beginning commercial stocks (cheese, butter, dry products, whey, lactose and canned products) in 2019 of 13.79 billion pounds, compared to the prior 10-year average of 11.09 billion pounds.

Ending commercial stocks as a percent of total utilization increased from 5 percent in 2014, to 5.8 percent in 2015, and then to 6.2 percent in 2018. In 2019, the ending stocks-to-use ratio was 6.1 percent, but that included government purchases under the USDA trade mitigation programs; without those net removals, the ending stocks would have remained at 6.2 percent. These higher ending stocks have been bearish for milk and dairy product prices.



Source: USDA, WPI

Given the gap between the growth in production and domestic consumption, exports are of growing importance to the supply and demand balance. Exports, however, have faced a number of headwinds since the last *Indiana Dairy Strategy* was developed and have proven to be a volatile market. Prior to the last report from 2004 to 2014, largely because of North American Free Trade Agreement (NAFTA) and resulting growth in demand from Mexico as well as demand growth in China and elsewhere in Asia, dairy exports from the U.S. more than tripled, peaking in 2014. Like other commodities, however, dairy exports experienced a significant drop off in 2015. While total U.S. agricultural exports dropped about 11 percent in 2015 compared to 2014, dairy exports dropped about 28 percent.

There are several reasons why dairy exports fell, including:

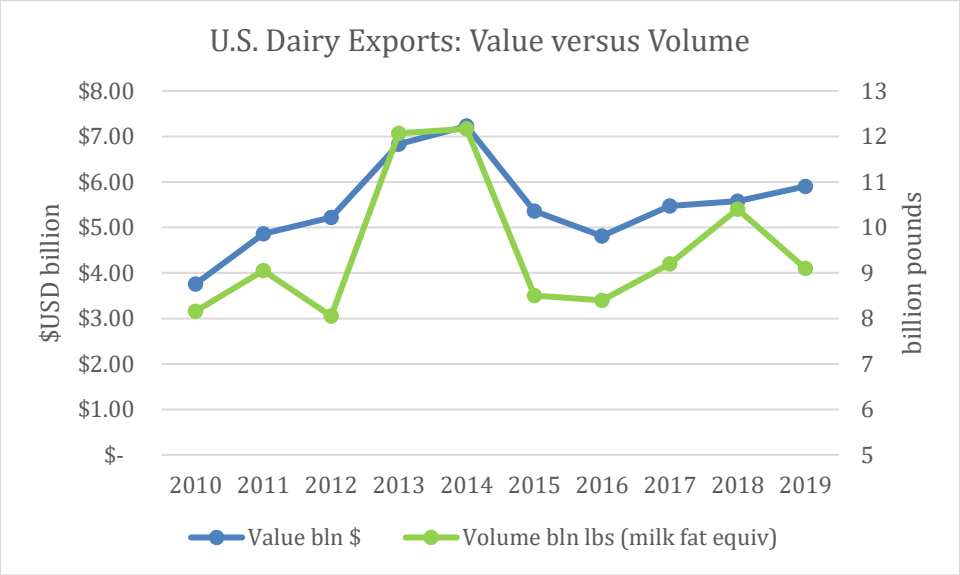
- Global demand for dairy products became relatively weak, levelling off from faster growth in previous years. This was especially the case in China.

- The value of the U.S. dollar was strong relative to other currencies.

- In response to economic and diplomatic sanctions placed on Russia over the invasion of the Ukraine, Russia banned a wide range of imports including most dairy products from the U.S. as well as other nations, including dairy exporting nations such as the EU, Canada, and Australia (who also imposed sanctions on Russia). Although the US was not a major supplier for Russia, the ban caused the EU specially to export to alternative markets in competition with the United States.

- In 2015, the EU in 2015 discontinued its milk supply quotas. EU dairy farmers thereafter increased their level of milk production, boosting their exports and crowding out dairy products from the U.S. in many markets.

- In 2019, U.S. dairy exports faced a number of trade sanctions and market access barriers after shipments had started to rebound in 2018.




Source: USDA, WPI

As can be seen from the chart above, 2018 was a peak year for export volumes since 2014, while export shipments dropped significantly in 2019 to slightly below 2017 levels. The table below shows a comparison. Cheese exports increased in 2019, but all other categories dropped. Whey and lactose volumes were lower due to lost sales in China as a result of retaliatory tariffs. Whey is also used as hog feed in China, so U.S. exports are also impacted by African swine fever.

| Dairy Product Export 2018 – 2019 | | | | |
|---|---|---|---|---|
| **Product** | **2018** | | **2019** | |
| | **Volume** | **% of Production** | **Volume** | **% of Production** |
| Non-Fat Dry Milk/ Skim Powder | 714,281 MT | 67% | 700,390 MT | 65% |
| Cheese | 348,563 MT | 5.9% | 357,910 MT | 6% |
| Whey | 546,793 MT | 49% | 447,950 MT | 35% |
| Lactose | 392,382 MT | 75% | 378,382 MT | 68% |

Source: US Dairy Export Council, WPI

While the U.S. exports a large variety of dairy products, four product categories—cheese, powder, whey products, and lactose—account for about 75-80 percent of the total volume and value. ***These are products where Indiana is not as competitively positioned in those products.***

It should be noted that as of the fourth quarter of 2020, dairy exports on a skim solids basis, are trending up once again, and projected to finish the year 13.9 percent higher than in 2019, and the forecast for 2021 to be 1.6 percent higher than 2020.

## Outlook

USDA's early long -term baseline forecast (the final long-term forecast will be issued in February 2021) shows more cows in production in 2021. It also forecasts higher productivity per cow. Cheese prices, which have been driving higher milk prices, are forecast to drop while price for butter increase and other product prices remain steady. In short, 2021 will be an adjustment year.

| USDA Dairy Outlook Forecast | | | | | | |
|---|---|---|---|---|---|---|
| **Production** | **2020 est** | **2021** | **2022** | **2023** | **2024** | **2025** |
| Milk Cows (1,000) | 9,365 | 9,370 | 9,365 | 9,375 | 9,375 | 9,370 |
| Milk per Cow (lbs) | 23,755 | 24,070 | 24,305 | 24,560 | 24,865 | 25,040 |
| Production (billion lbs) | 222.5 | 225.5 | 227.6 | 230.3 | 233.1 | 234.6 |
| Milk Marketed (billion lbs) | 221.5 | 224.5 | 226.6 | 229.2 | 232.1 | 233.6 |
| **Milk Prices** | | | | | | |
| All Milk ($/cwt) | $18.25 | $17.70 | $18.40 | $17.95 | $17.60 | $17.60 |
| **Product Prices** | | | | | | |
| Cheddar Cheese ($/lb) | $1.97 | $1.80 | $1.82 | $1.75 | $1.69 | $1.66 |
| Butter ($/lb) | $1.59 | $1.70 | $1.83 | $1.83 | $1.91 | $1.91 |
| Non-Fat Dry Milk($/lb) | $1.04 | $1.05 | $1.20 | $1.16 | $1.09 | $1.09 |
| Dry Whey ($/lb) | $0.36 | $0.36 | $0.38 | $0.39 | $0.39 | $0.41 |

Source: USDA, WPI

## Dairy Farm Consolidation

The low-price environment over the 2016-2019 period put substantial financial pressure on dairy producers, leading to a loss of dairy farms across the country. In the Northeast and Midwest, where Indiana producers supply milk, the number of dairy farms licensed to sell milk dropped 15 percent between 2017 and 2019. The number of cows, however, did not drop commensurately, nor did milk production. That is an indication that farms were consolidating.

According to data from USDA's Economic Research Service (ERS), larger dairy farms have substantially lower costs of production, on average, than smaller farms. This is especially the case in feed costs, but also for other categories of production operating costs, ranging from labor to adoption of production technology. The cost advantage on average appears to extend across a wide range of larger sizes, with farms with 2,000 cows realizing lower costs than farms with 1,000 cows, which in turn realize lower costs than farms with 500 cows. Production efficiency which has trended with farm consolidation is a driving factor in increased milk production.

| Changes in Dairy Sector 2015 through 2019 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Number of Dairy Herds | | Total Number of Milk Cows | | Milk Production per Cow | | Total Milk Production | |
| U.S. | Indiana | U.S. | Indiana | U.S. | Indiana | U.S. | Indiana |
| -22% | -28% | 0.2% | -2.2% | 4% | 5% | 5% | -1% |

Source: USDA, WPI

## Indiana Milk Production and Disposition

Over the past 25 years the State's production as a percent of total U.S. milk output has varied between 1.75 percent to slightly more than 2 percent. Since 2015, milk production has averaged about 1.9 percent of the national total. A total of 8 states produce more than two-thirds of all milk in the U.S.

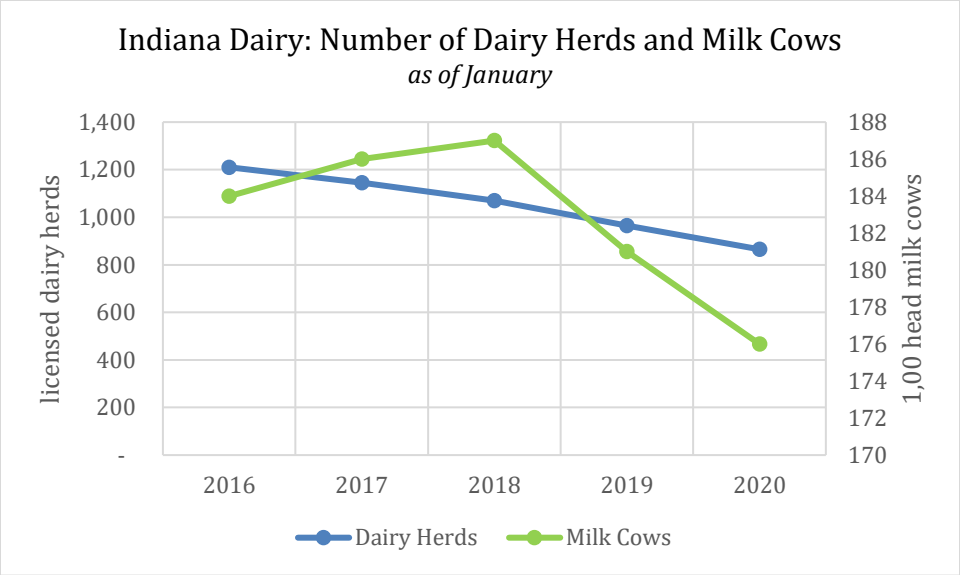
### Production

In 2019, Indiana ranked 15th in total U.S. milk production; that compares to 2015 when the state ranked 14th in milk production.

| Indiana Milk Production | | | | |
|---|---|---|---|---|
| **Year** | **Production** *mln lbs* | **Cows** *head* | **Production per Head** *lbs* | **Value of Milk** *mln $* |
| 2015 | 4,030 | 184,000 | 22,143 | $688.51 |
| 2016 | 4,153 | 184,000 | 22,571 | $667.60 |
| 2017 | 4,264 | 185,000 | 22,802 | $748.36 |
| 2018 | 4,161 | 184,000 | 22,614 | $649.08 |
| 2019 | 4,073 | 176,000 | 22,882 | $741.29 |

Source: USDA, WPI

Milk-per-cow has increased, also following national trends. Improved milk prices in 2019 helped increased the State's total value of milk production compared to 2018 and to approach the 2017 value despite a decrease in aggregate milk production of about 4.5 percent.




Source: USDA, WPI

## Regional Breakdown

Approximately two-thirds of Indiana's milk production and dairy herd is in the northern part of the state.

| Dairy Cows and Milk Production by Region | | | |
|---|---|---|---|
| **Region** | **Cows** | **Milk** *in mln lbs (est)* | **Percent of Production** |
| North | 111,000 | 2,533.2 | 63% |
| Central | 18,300 | 417.64 | 10% |
| South | 14,800 | 337.8 | 8% |
| All other counties | 31,900 | 728.02 | 18% |

Source: USDA, Purdue, WPI

| Indiana Dairy Herd: Milk Cows Reported by County and Number of Farms | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| North | | | Central | | | South | | |
| County | Cows | Farms | County | Cows | Farms | County | Cows | Farms |
| JASPER | 24,000 | 7 | HENRY | 3,400 | 3 | DAVIESS | 1,600 | 22 |
| ELKHART | 18,400 | 144 | WAYNE | 2,500 | 44 | DUBOIS | 1,900 | 6 |
| LAGRANGE | 12,400 | 202 | PARKE | 2,000 | 33 | GIBSON | 1,000 | 3 |
| ADAMS | 8,400 | 12 | RANDOLPH | 2,000 | 8 | GREENE | 300 | 3 |
| MARSHALL | 7,000 | 41 | JAY | 1,900 | 4 | KNOX | 100 | 1 |
| LA PORTE | 6,100 | 11 | MADISON | 1,600 | 1 | MARTIN | 100 | 1 |
| NOBLE | 4,200 | 20 | RUSH | 1,300 | 5 | POSEY | 800 | 4 |
| PULASKI | 3,900 | 5 | CLAY | 900 | 1 | SPENCER | 500 | 5 |
| KOSCIUSKO | 3,700 | 19 | SHELBY | 600 | 4 | CRAWFORD | 200 | 1 |
| HUNTINGTON | 3,100 | 9 | BOONE | 500 | 3 | HARRISON | 600 | 2 |
| WELLS | 3,100 | 3 | HOWARD | 500 | 1 | JACKSON | 2,300 | 8 |
| FULTON | 2,700 | 26 | DELAWARE | 400 | 2 | LAWRENCE | 300 | 1 |
| WABASH | 2,300 | 7 | FOUNTAIN | 100 | 1 | MONROE | 100 | 1 |
| STEUBEN | 2,200 | 7 | OWEN | 100 | 1 | ORANGE | 100 | 1 |
| ALLEN | 2,000 | 14 | VIGO | 100 | 1 | PERRY | 800 | 6 |
| ST. JOSEPH | 1,800 | 9 | HAMILTON | 100 | 1 | WASHINGTON | 1,400 | 2 |
| MIAMI | 1,700 | 11 | HANCOCK | 100 | 1 | DEARBORN | 300 | 1 |
| DE KALB | 1,200 | 7 | HENDRICKS | 100 | 1 | FRANKLIN | 800 | 3 |
| PORTER | 900 | 1 | MORGAN | 100 | 1 | JEFFERSON | 500 | 3 |
| WHITLEY | 900 | 6 | | | | JENNINGS | 200 | 1 |
| LAKE | 500 | 3 | | | | RIPLEY | 600 | 2 |
| WHITE | 400 | 1 | | | | SWITZERLAND | 300 | 2 |
| CARROLL | 100 | 2 | | | | | | |

Source: USDA, Purdue, Indiana Board of Animal Health, WPI

## Feed and Operating Costs

Annual costs of production vary by state, regions within a state and the size of operation. However, USDA maintains an annual estimated average of production costs by state based on commodity data and producer responses to the Agricultural Resource Management Survey (ARMS) from milk producers. The last survey was in 2016, which provides the baseline, adjusted for subsequent annual updates based on price changes.

Regionally, Indiana is competitive for producers, with a relative advantage in value of milk sold and cost of purchased feed.

| Milk Production Costs and Returns *per hundredweight sold* | | | | |
|---|---|---|---|---|
| | **Indiana** | **Michigan** | **Kentucky** | **Ohio** |
| **Gross value of production** | | | | |
| Milk sold | $19.18 | $18.37 | $19.12 | $18.71 |
| Cattle | $1.43 | $2.33 | $1.20 | $1.14 |
| Other income | $0.53 | $0.50 | $0.56 | $0.50 |
| **Total, gross value of production** | $21.14 | $21.20 | $20.88 | $20.35 |
| **Operating costs** | | | | |
| Purchased feed | $5.40 | $7.40 | $5.37 | $7.28 |
| Grazed feed | $0.09 | $0.03 | $0.10 | $0.11 |
| Homegrown harvested feed | $6.79 | $5.26 | $5.75 | $3.16 |
| Total, feed costs | $12.28 | $12.69 | $11.22 | $10.55 |
| Veterinary and medicine | $0.73 | $1.05 | $0.63 | $0.77 |
| Bedding and litter | $0.30 | $0.27 | $0.29 | $0.22 |
| Marketing | $0.13 | $0.22 | $0.18 | $0.12 |
| Custom services | $0.75 | $0.88 | $0.96 | $0.78 |
| Fuel, lube, and electricity | $0.94 | $0.82 | $0.88 | $0.75 |
| Repairs | $1.04 | $0.75 | $0.53 | $0.62 |
| Other, operating costs | $0.01 | $0.00 | $0.00 | $0.01 |
| Interest on operating capital | $0.17 | $0.17 | $0.15 | $0.14 |
| **Total, operating costs** | $16.35 | $16.85 | $14.84 | $13.96 |
| **Value over operating costs** | $4.79 | $4.35 | $6.04 | $6.39 |

Source: USDA Agricultural Resource Management Survey

Indiana's primary cost disadvantage is related to its advantage in cost of purchased feed; i.e. the opportunity cost of farmland use for milk production is high in Indiana due to the relative productivity of land used for crop production. This is an allocated fixed cost (as opposed to an operating cost as shown above) but is a factor in expanding milk production in the region.

Measured in dollars per hundred weight of milk produced, the opportunity cost of expanding dairy production in Indiana is $0.06, compared to $0.02 in Michigan, $0.03 in Ohio, and $0.05 in Kentucky.

## Economic Impact of Dairy

Based on the past five years' average value of milk production, dairy in Indiana generates an annual average of $698.97 million in direct farm income. Moreover, dairy production has a major economic impact in terms of feed demand, job creation, and tax revenue to the State.

This study estimates that Indiana dairies use approximately 26.14 million bushels of corn, 450,000 tons of alfalfa hay, and 201,600 tons of soybean meal (which is the equivalent of 6.72 million bushels of soybeans). That is a total feed use value of $238.91 million based on the five-year average prices of those feedstuffs.

| Value of Feed Use by Indiana Dairy | | |
|---|---|---|
| **Feedstuff** | **5 year avg price** | **Value** |
| Corn (bushels) | $3.69 | $ 96,462,277 |
| Alfalfa Hay (tons) | $175 | $78,750,000 |
| Soybeans (bushels in soybean meal) | $9.48 | $63,699,248 |

Source: USDA, WPI

In May 2019, the International Dairy Food Association commissioned the economic consulting firm John Dunham & Associates to produce the Economic Impact Study of the Dairy Products Industry. The report was based on data from the U.S. Bureau of Economic Analysis Regional Impact Model II and privately collected data on employment. According to the report, the dairy industry in Indiana supports:

- 19,534 direct jobs
- $691,711,000 in direct job wages
- 37,248 indirect jobs
- $386.9 million in total tax contribution (income, property, sales, estate, payroll, licenses and fees) in Indiana

## Disposition of Milk

Indiana is in two Federal Milk Marketing Order (FMMO) regions, #33 – Mideast Federal Order, and #5 Appalachian Federal Order. Both orders are profiled below.

| Federal Milk Marketing Orders | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **FMMO** | **Producers** | **1,000 lbs Milk** | **Pool Distributing Plants** | **Pool Supply Plants** | **Milk Class by Use** | | | |
| | | | | | **I** | **II** | **III** | **IV** |
| Mideast | 4,182 | 18,941,747 | 33 | 26 | 35% | 18% | 32% | 16% |
| Appalachian | 1,517 | 5,326,588 | 17 | 1 | 70% | 16% | 7% | 6% |

Source: USDA

In 2020, Indiana has had up to 694 producers pool milk under the Mideast federal order (with a monthly average of 658). In the Appalachian federal order Indiana has up to 163 producers pool milk (with a monthly average of 125).

**Pool Distributing Plants in Indiana**

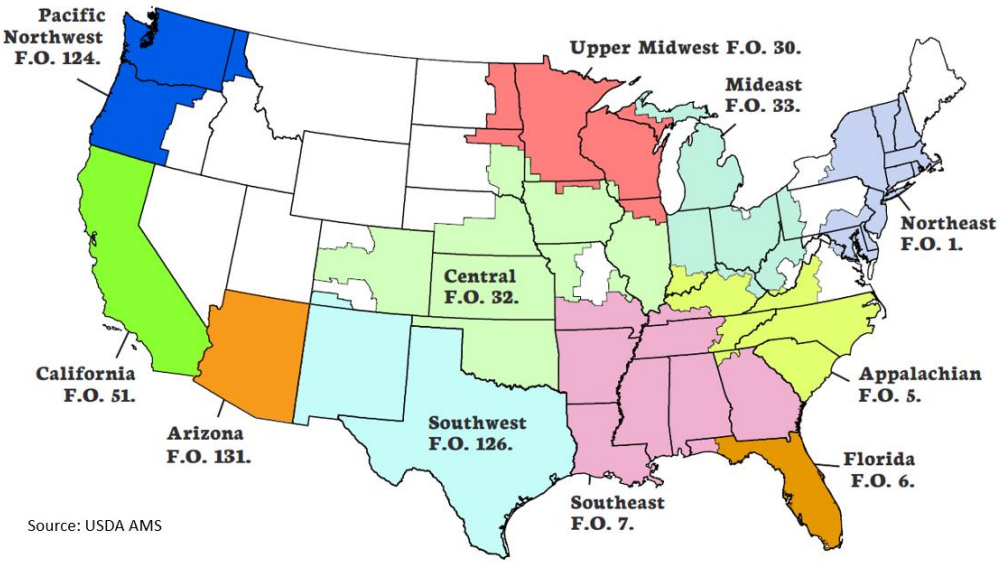
- Blue Kingfisher, LLC dba Walmart - Fort Wayne, Allen County
- East Side Jersey Dairy Inc. - Anderson Madison County
- The Kroger Company – Indianapolis, Marion County
- Nestle USA, Inc. - Anderson Madison County
- Pleasant View Dairy Corp. – Highland, Lake County
- Prairie Farms Dairy Inc. - Fort Wayne, Allen County
- Schenkel's All-Star Dairy, LLC – Huntington, Huntington County
- SmithFoods, Inc. - Richmond, Wayne County
- Prairie Farms Dairy, Inc – Holland, DuBois County

**Pool Supply Plants in Indiana**

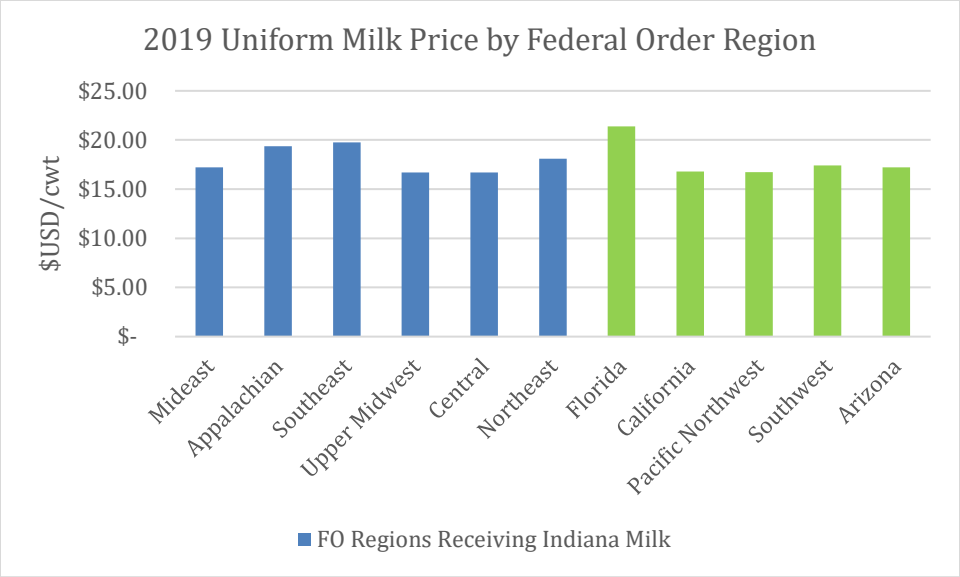
- Dairy Farmers of America – Goshen, Elkhart County
- Middlebury Cheese Company LLC – Middlebury, Elkhart County

The graphic below shows the current FMMO regions.

## Figure 1. Federal Milk Marketing Orders




***Indiana producers send milk to 5 or 6 federal order regions in any given year***. Milk shipped from Indiana outside of the Mideast or Appalachian federal order regions in which parts of Indiana are located, moves primarily to the Southeast order where there is higher Class I utilization and thus a price premium. However, being the western most state in the Mideast federal order, some milk also moves into the Upper Midwest and Central federal orders and some moves to the Northeast federal order region. A small, typically unreported, annually variable amount of milk also moves to the Florida federal order.



Source: USDA, WPI

Below are the receipts of Indiana milk under the FMMO system.

| **Receipts of Indiana Milk under the FMMO** *1,000 pounds* | | | | |
|---|---|---|---|---|
| **FMMO Region** | **2019** | **2018** | **2017** | **2016** |
| Mideast | 2,355,514 | 2,599,138 | 2,723,932 | 2,623,600 |
| Appalachian | 499,146 | 726,460 | 884,708 | 808,823 |
| Southeast | 558,870 | 502,957 | 414,265 | 440,146 |
| Florida | | *3,000* | | |
| Upper Midwest | *50,000* | 75,711 | 53,404 | 64,341 |
| Central | 24,361 | *3,000* | | 8,233 |
| Northeast | 17,109 | 15,933 | 20,887 | 17,526 |
| Total Milk Pooled | 3,505,000 | 3,926,199 | 4,097,196 | 3,962,669 |
| Percent of Milk Pooled | 87% | 95% | 96% | 96% |
| Pooled outside of Mideast/Appalachian | 650,340 | 600,601 | 489,556 | 530,246 |
| Milk not pooled | 524 | 207 | 169 | 165 |

*italicized* – estimates, data not published by USDA
Source: USDA, WPI

Based on the above data, approximately 1.8 million pounds per day of Indiana milk leaves the Mideast and Appalachian Federal Order region, and therefore the state.

While milk intake at dairy plants is considered proprietary information and few plants report this data publicly, however, there are a number of private estimates of plant capacity and milk intake. According to The McCully Group, a Chicago-based consulting and dairy market analytical firm who provides the industry with intelligence and analysis on milk markets, there is an estimated 2.75 billion pounds of milk processing capacity located within Indiana.

Producers in the state market just slightly more than 4 billion pounds of milk. Based on that, ***it can be estimated that there is a net supply of about 3.5 million pounds of milk per day in the state which new or expanding processing capacity could draw on***.

Note that new or expanded plants would have to compete for this milk, but basis would be in favor of a local Indiana plant as opposed to the net price of shipping fluid milk to Georgia, Florida, New York, and elsewhere.

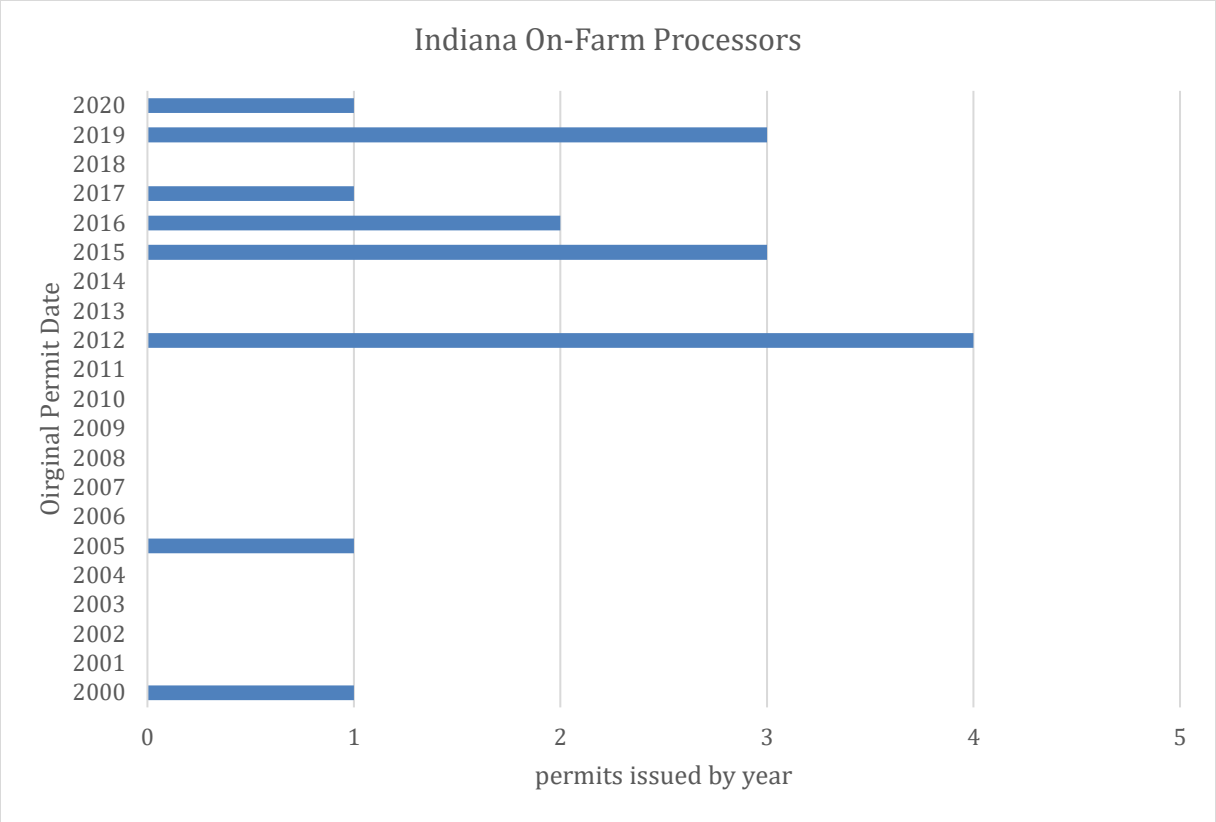
## Small and Medium Sized Dairies

Approximately 70 percent of all dairy farms in Indiana are small, but they make up only an estimated 17 percent of production. Very large farms of 1,000 head or more make up about 57 percent of milk production. The data and estimates below are based on the 2017 USDA National Agricultural Statistics Service Census of Agriculture (the most recent of the 5-year Census).

| Size Distribution of Indiana Dairy Farms | | |
|---|---|---|
| **Number of Cows** | **Percent of Farms** | **Percent of Milk Production** |
| < 50 | 70.1% | 17.26% |
| 50-100 | 14.3% | 7.06% |
| 100-200 | 9.7% | 9.57% |
| 200-500 | 3.6% | 5.30% |
| 500-1,000 | 1.0% | 3.85% |
| 1,000 - 2,500 | 0.8% | 17.09% |
| 2,500- 5,000 | 0.5% | 28.48% |
| > 5,000 | 0.1% | 11.39% |

Source: USDA, WPI

Indiana has 16 "farmstead" – or on-farm – processors. One quarter of those were originally licensed in 2012, and 87.5 percent were granted permits since that year. Almost 63 percent were permitted from 2015 to 2020.




Source: Board of Animal Health

Indiana has seen considerable growth in agrotourism and recreational operations and derived farm income. In 2017, the Indiana Office of Tourism Development and the Indiana State Department of Agriculture developed an Agritourism and Culinary Tourism Strategic Plan to advance culinary and agritourism as an economic driver for Indiana.

According to the National Agricultural Statistics Service Census of Agriculture, in 2017, Indiana had more than 91 farms reporting income from agritourism and recreational activities. Broken down by two categories of size, there were:

- 40 farms generating a total of $694,000 in reported income, for an average of $17,350 per farm

- 51 farms generating a total $6,445,000 in reported income, for an average of $126,372 per farm

The 2017 total agritourism revenue of $7.139 million is an increase of 72 percent over the 2012 census reported agritourism income. Included in this growth are a number of dairy related operations.

## Stakeholder Interviews and Perspectives

The following section provides an overview of the insights and feedback gathered via the stakeholder discussion and outreach effort. The goal of this research component was to gain the perspective of stakeholders from within the Indiana dairy sector, allied industries, the broader U.S. dairy industry, and other observers with an interest in the dairy, food and agricultural sector. The top-line insights are summarized below; many of these comments informed and directed the topics of statistical research in the preceding sections. Some of the comments and issues identified are supplemented with background and information from dairy industry documents, plans and strategies which already have been published.

### Steering Committee Objectives and Key Issues

Below are summary notes and topics identified by the ISDA's Steering Committee in response to the question, *what are the important structural challenges for Indiana's dairy industry?* These issues provided a context for the research of this study.

- Dairy is a constantly changing industry. Examples of the impact of this change include how the sector responded to COVID, key structural changes in the processing sector such as the buyout of Deans by Dairy Farmers of America, trade volatility, dairy farm consolidation, new competition, changing technology and more. This does not appear to be unique to the dairy industry; note that another commodity organization undergoing its strategic plan update interviewed for this project commented that the decision was made to reduce the timeline from its traditional 5-year long range outlook and plan down to a 3 year plan because all commodity and food industries are facing similar challenges of constant change and evolution.

- Consolidation and concentration within the producer sector was identified as an issue; on 1 January 2020, there were 6 percent fewer dairy cows in Indiana, but 19 percent fewer dairy herds than on the same date in 2018, indicating a clear trend in dairy farm consolidation.

- Need to move beyond just the commodity aspect of white milk to consider a value-added product development approach and new uses for fluid, powder, cheese, and yogurt.

- Attract innovation and new product development

- Incentivize innovation in dairy

- Opportunities for new and alternative marketing approaches and efforts to create an Indiana identity/brand for companies.

- Identify key international trade issues to help facilitate growth.

- Find opportunities to innovate in feed production around dairy and dairy products.

- Attract more dairy processing in Indiana

- Emphasis on new demand, not just consolidating or redirecting current milk flows

## Processors' Perspective

Following are summarized comments and topics gathered through research for this project interviews and discussions with processors and processor groups. In short, dairy processors are attracted to States and regions in which there is 1) a reliable supply of milk, 2) proximity and access to markets, and 3) a positive business climate both from a regulatory and commercial perspective as well as a state that is supportive of dairy expansion.

- Labor and workforce availability and skill are critical. There not only has to be a sufficient supply of farm labor to support dairy production, but also a suitable workforce of skilled labor to work in plants and capable of adapting to the increased level of automation and technology, as well as following necessary protocols for food safety in a processing plant environment.

- Transportation infrastructure is critical from both the ability to access the supply of fluid milk from farms and to distribute finished products. Issues such as the state's flexibility on truck weights, capability and commitment to maintaining infrastructure

- States need 21st Century infrastructure

- Processors aren't so worried about a state per se, but rather operating in a regional milk shed; Indiana can play off of Michigan - Indiana milk has more places to go compared to some other states

- Processors considering coming to a state pay attention to the experiences of competitors; success stories and testimonials are helpful

- It is cheaper to modify an older facility than to build a greenfield project

- Policy environment is important, both for agricultural policy and general business policy on both the statutory and regulatory front

- Tax structure is always important

- Environmental regulatory structure is a fundamental consideration at all levels of jurisdiction, both state (permitting, taxes, labor, etc) and local jurisdiction (county zoning)

- Processing, and the ability to adapt to markets and stabilize milk market requires regulatory flexibility, for example wastewater permitting to allow movement from cheese to powder

- COVID highlighted need for industry and infrastructure agility as well as regulatory agility; State can put pressure "in a good way" to create a processing sector that is more nimble

- Economic development incentives help but aren't the main reason for locating a plant

- There is potential to expand production by working with processors who will buy milk direct on a cost-plus basis

## Product Innovation

The following comments came from stakeholders across sectors about product innovation and value-added opportunities.

- Fresh milk can only go so far, there needs to be more value added and new products

- Product innovation is mostly a processor issue; state probably has limited role

- Indiana has an important success story in Fairlife's ultrafiltered milk (high protein)

- Dairy research at land grant universities is important. Purdue is a well-respected university not only in agriculture, but in engineering which has implications for processing plants. There is a role for dairy extension work with producers, general research, and one-on-one work with processors to test and validate corporate research.

- Integrate state and Purdue into Dairy Management Inc.'s Innovation Center for U.S. Dairy research

- There is a lot of room to innovate in the beverage space and powders more than cheese

- Next trend in product innovation will be in functional products and nutritional aspects, such as *a2 milk* (addressing protein intolerance), DFA's *Dairy-Plus* blends

(low lactose milk with plant-based beverage blend), pro-biotic, high protein, lipids, etc.

- Embrace agriculture technology in the state.

## Sustainability

The dairy sector is being driven by sustainability improvement goals, including the Net Zero Initiative (NZI), which is a collaboration of dairy organizations sharing a common goal to reach carbon neutrality, optimized water usage and improved water quality by 2050. Sustainability goals are an overriding issue for producer co-operatives and processors and will set the parameters of dairy expansion in coming years.

- Processors and milk buyers have timeline commitments over 5 years for sustainability goals and carbon footprint reductions, they are supply chain partners that will "put their money where mouth is" and could adjust in cost sharing

- If you want to attract dairy processing capacity, you have to address trends in the industry

- Dairy needs strategically placed businesses and companies that help support the dairy industry meet goals – it is a chance for Indiana to "prompt a market"

- Find a way to sell cover crops, ways to be integrated into dairy cow feed

- Milk is pooled, manure can be pooled too to be processed as pelletized fertilizer. We are way beyond (liquid manure) nutrient management plans at this point. Note that manure is a revenue stream for most dairy farms, improvement could enhance that alternative revenue source.

- Newtrient is addressing the waste and waste-to-energy capabilities for dairy. (Note, Newtrient is a company founded by 13 top dairy cooperatives, including Select Milk, Prairie Farms, DFA which have Indiana members, that works to accelerate manure management technologies for nutrient recovery and energy production for dairy farmers, researchers and other stakeholders).

- There is promising technology in feed additives that impact enteric emissions, Indiana can work with U.S. Food and Drug Administration on feed approvals and there is a role for Purdue in further research

- Biogas is an important development in the use of dairy manure that meets sustainability goals and creates a revenue stream for producers.

## Case Studies: States' Dairy Development Efforts

As noted previously in this report, in 2019, Indiana ranked 15th in total U.S. milk production; that compares to 2015 when the state ranked 14th in total milk production. In the interim, Indiana was surpassed by Colorado. Over that period, milk production in Indiana grew by 3 percent, in Colorado it grew by 28 percent.

Colorado added new cheese processing capacity. Leprino has publicly stated that they developed two new facilities there because of 1) the quality of the milk shed (in Northeastern Colorado), 2) water quality and availability, 3) access to labor, viable solutions to handling waste water, and 4) the state's general support of agriculture. These comments all align with the processor perspectives detailed above. Additionally, access to demand, as there was population growth in Colorado, added another factor.

Two states that have also seen tremendous growth in dairy since the last *Indiana Dairy Strategy* are Kansas and South Dakota – growing 20 percent and 19 percent respectively in milk production. The driving factors there are also instructive, as both states purposefully pursued expansion of dairy.

**South Dakota**: In the early 2000's, South Dakota targeted dairy as a sector for further economic development because of the added economic value that is generated by the industry. The state's dairy production started to expand in 2008. In 2012, the South Dakota Dairy Producers Association initiated the South Dakota Dairy Drive to support industry expansion. Activities included maintaining a presence at national Expos such as World Dairy Expo and World Ag Expo, participation in regional forums such as the Dairy Experience Forum hosted by the ADA of the Midwest, and in-state collaboration with South Dakota State University.

Working with the Midwest Dairy Association, the South Dakota industry promotes dairy among consumers through presenting information on both the production practices on dairy farms and the health and nutritional benefits of dairy, conducts outreach via efforts known as Champions of Dairy and holding Ambassador Workshops, research at South Dakota State University on processing, and develop and produce materials to support the industry's Path Forward initiative. The latter includes a "video featuring testimonials from key South Dakota leaders who are connected to and reliant on the dairy industry."

Dairy processors describe the industry in South Dakota, across both producers and processors, as extraordinarily collaborative and unified on common goals of building the sector. It should also be noted that even in rural South Dakota, the industry and the state pay attention to building support for livestock development generally, and dairy specifically to keep non-agricultural rural residents in support of the further expansion of the industry.

A difference between South Dakota and Indiana in terms of milk marketing is that much of the growth in production is in the western part of the state which is outside the FMMO; the eastern part of the states is under the Upper Midwest federal order and the Central federal order. Much of the state's assets in terms of attractiveness to dairy expansion are the I-29

interstate corridor (which runs from Canada to Kansas City), low feed costs, ag and business friendly environment, and ease of permitting. There were necessary investments in attracting labor to the state due to its sparse population.

**Kansas**: The state of Kansas also targeted dairy sector growth through proactive efforts and recruitment, advocacy, and policy support similar to South Dakota. Kansas' recruitment efforts also highlight past successes. Its growth strategy is based on the opportunities from feed costs, expanded dairy research at Kansas State University, the on-going expansion of dairy processing, regulatory certainty, water conservation and water supply management. Given Kansas' large feedlot and beef packing industry, support for marketing fed dairy cattle for beef and converting former feedlots used to raise dairy replacement heifers has also been a focus.

The Kansas Department of Agriculture (KDA) lists among its dairy development successes,

- *Since 2008, Kansas dairies have increased milk production by 45 percent.*
- *Milk processing has grown significantly with the addition of three milk processing facilities since 2011; 75 percent of all Kansas milk is now processed in the state.*
- *Kansas has increased its national presence in the dairy industry by participation in three national trade shows, engaging with ten dairy operators interested in relocation.*
- *Four Kansas dairies in the last five years have been selected to be featured as virtual farm tours at the World Dairy Expo.*
- *The Kansas dairy industry partnered with Kansas State University (KSU) to offer the first dairy career exploration seminar for secondary students.*
- *KSU, industry partners and KDA are partnering to design a new state-of-the-art K-State dairy research facility that will include expansion to 500 milking cows and robotics.*
- *Kansas is a national leader in the development of Secure Milk Supply plans at dairy operations, and 14 Kansas dairies have completed or are in the process of developing site-specific biosecurity plans as of February 2019.*

**Minnesota:** While not part of the state's dairy strategy per se, the major dairy state of Minnesota does have a model program that fits into the theme of regulatory certainty raised by stakeholders. The Minnesota Agricultural Water Quality Certification Program (MAWQCP) is a voluntary program for farmers and agricultural landowners to implement conservation practices which protect water quality. Those who implement and maintain approved farm management practices approved under the program will be certified and thus will be compliant with any new water quality rules or laws during for a period of 10 years. The program also allows certified producers to use their status to promote their business and commodity marketing. The program is integrated with a number of federal

voluntary and cost share programs, as well as private sector initiatives. Additionally, the program is a tool to assure the non-farm public of the efforts agricultural producers undertake to protect the state's water quality.

**Wisconsin Dairy Sustainability Efforts:** The dairy industry and State of Wisconsin have a number of sustainability efforts in place to promote dairy growth and maintain economic viability. Discovery Farms is a program of the University of Wisconsin- Madison Extension service which develops on-farm and related research. Research is on-going at more than 40 private farms focused on the economic and environmental effects of agricultural practices on a diverse group of farms. It also works to educate and improve communications among the agricultural community, consumers, researchers and policymakers.

Discovery Farms works collaboratively with the Dairy Farmers of Wisconsin commodity association and the project actually is governed by a farmer-led Steering Committee. This farmer-led group identifies program priorities and participates in the selection of research locations. Sustainability is a key objective of the research.

The dairy industry also works with Renew Wisconsin, a nonprofit organization that promotes renewable energy in the state. Wisconsin has more on-farm bio-energy systems to convert manure into energy than any other state, with a collective nameplate capacity of 65,288 kilowatts.

## Small and Medium Sized Dairy Opportunity

For small commercial dairy operations, the economic structure of the dairy industry is a major hurdle to economic viability. With limited milk production to generate revenue, the opportunity costs of uncompensated labor for a farmer, the cost of hired labor, and the thin margins in milk income over feed costs adversely impact the profitability of milking cows.

In general, dairy producers have adopted the economic strategy of lowering the costs of production, typically, by expansion and efficiency, which has led to trend of farm consolidation. Likewise, milk collection is an issue. It is not efficient from a transportation cost perspective for a milk tanker to call on multiple small farms to collect milk to be transported for processing.

For smaller farms to stay viable a business model that addresses these costs is needed. Such models include on-farm processing and direct to consumer marketing as well as distribution through local markets, retailers, and restaurants. Opportunities for policies and education to enable farm to consumer networks should be sought and also supported through the Indiana Grown program.

## Strategy Mapping

Strategy mapping is a systematic process to align research findings with overall vision and objectives. The graphic below shows, in a top-down process, the broad factors identified which when filtered through the Steering Committee's goals will provide a framework for the *Indiana Dairy Strategy 2.0*

This analysis, which produced the research findings above, was undertaken to provide a current up-to-date picture of Indiana's dairy industry and to use that information to ***attract dairy processing facilities to Indiana that will utilize the current milk production*** and allow for continued expansion of Indiana's dairy herd.

While Indiana is not a traditional dairy state, it provides an extraordinarily compelling profile to attract further dairy processing and production.

***Indiana Dairy Profile, …***

- *produces a net surplus supply of about 3.5 million pounds of milk per day which new or expanding processing capacity could draw upon*
- *has a faster than national average rate of growth in milk production efficiency measured in milk produced per cow*
- *is top 5 producer of corn, soybeans and distillers' grains providing a feedstuffs supply*

***… is already home to***

- *two major retailers' integrated private label fluid milk plants, Kroger and Walmart*
- *a Nestle plant, the first company to invest and partner with the U.S. Dairy Innovation Center on the Net Zero Initiative (NZI) for "climate smart" dairy initiatives*
- *is home to one of the nation's most innovative dairies, Fair Oaks Farms, which developed* ***fa!rlife*** *ultra-filtered milk*
- *attracted investment of a new cheese plant from Golfo di Napoli of Italy*

***… is an agriculture friendly state***

- *ranking in the top 10 states in total agricultural commodity sales*
- *with more than 10,000 agribusiness companies, including 1,751 life science companies such as Corteva Crop Protection, Beck's Hybrids, and Elanco Animal Health*
- *home to a world-class land grant research institution, Purdue University and a strong statewide education system with ag professional, research and vocational curricula*
- *headquarters of the National FFA Organization*

***… and a business friendly state boasting the following rankings,***

- *Top State for Business Infrastructure 2019 – CNBC*
- *Top 5 State for Business, Chief Executive magazine 2019*
- *The Tax Foundation Property Tax Index 2nd, and Best State Tax Climate 10th*

Given the importance of transportation of milk, it is also worth noting that the Indiana Department of Transportation (INDOT) has been accommodating to the dairy industry. In June 2020, waived the holiday travel restrictions for tankers carrying bulk milk up to 154,000lbs gross vehicle weight (GVW). The waiver applies to bulk milk tankers permitted with either a bulk milk annual permit or a single-trip overweight permit. This waiver reflects the food safety and handling requirements to which bulk milk is subject and the safety considerations that fewer, larger tankers with more axles, and braking capacity, would not have a significant detrimental effect on traffic safety over more, smaller tankers traveling during these busy travel periods.

Educating potential new processors on the business climate in Indiana is key. These dairy industry players have an innate understanding of the milk market and product distribution system and industry developments; they have much less familiarity with the attributes of doing business in Indiana. ***The Indiana Dairy Strategy 2.0 should be considered not only as a dairy specific effort, but as a general business recruitment/economic development exercise.***

According to the Indiana Economic Development Corporation, Indiana is a right to work state, with nationally low workers' compensation premiums, low property and corporate taxes, a solid fiscal situation and ranks as the top state in the country in pass-through highways. *All these are fundamental interests to the dairy industry*.

## Recommendations

The following actions are recommended to execute the *Indiana Dairy Strategy 2.0*

### Recruit Dairy Capacity

Develop a profile of Indiana's attributes as a dairy state based on the above information. While dairy-specific information is fundamental to such a communique, Indiana's greatest strength against other states – including larger dairy states in the region such as Ohio and Michigan – is its overall ag and business climate. As was identified in this study, tax, labor, infrastructure and other such non-dairy related business issues are equally critical to attract more processing.

***This profile should be socialized throughout the dairy industry by not just ISDA, but all of the State of Indiana's business and economic development entities***.

- Recruitment efforts should have the objective of identifying and engaging 1) innovative processors, 2) efficient and pioneering producers, and include 3) a broad agriculture/food industry approach for sectors that support dairy production and expansion (e.g. feed, animal health, new uses of milk, waste management, ag tech). Recruitment should also encompass in-state players willing to expand. Specific venues should be considered for recruitment, which may include World Ag Expo, World Dairy Expo, IDFA Dairy Forum, as well as direct contact with various industry organizations to cultivate relationships and enhance Indiana's visibility.

- A number of foreign companies (Glanbia, Bel, Agripour, Saputo, Lactalis) have invested in recent years in U.S. dairy infrastructure and facilities; Indiana's profile should be socialized among international companies as well. Note that one of the most recent operations opening in Indiana is the Italian company Golfo di Napoli.

- Socialize the Indiana dairy profile in the ag tech investment and venture capital community directly (e.g. AgFunder, SoftBank and others) and through conferences (e.g. Forbes Ag Tech).

- Securing testimonials – both dairy and non-dairy food and agricultural companies – to incorporate into the profile should be considered. An example for a potential testimonial on the producer side is such as Benton Group Dairies, and Walmart on the processor side.

## Position Indiana as the Most Desirable Location for Sustainable Milk Production

A dominate trend and goal in the industry is sustainability. Indiana should be positioned as the preferred location for sustainable milk production to benefit from this trend. As noted above, the second largest dairy state, Wisconsin has adopted this approach at the producer, land grant university, and state governmental level. For Indiana, the effort should include developing the presentations of some highlighted success stories, such as Fair Oaks Farm or Natural Prairie Dairy's manure to fertilizer and water recycling, and other identified projects.

- Conduct outreach to Dairy Management, Inc.'s U.S. Dairy Innovation Center and express interest in how Indiana State Department of Agriculture and dairy industry could play a role under the Net Zero Initiative (NZI) for Indiana through projects and pilots

- Conduct outreach to Newtrient directly and through Newtrient's founding co-ops which have a presence in Indiana, i.e. Prairie Farms, Dairy Farmers of America, and Select Milk.

- Integrate Indiana Dairy Producers, Purdue University, Purdue Foundry and AgriNovus (as well as other relevant entities such as other universities and vocational colleges, county and regional development authorities) into these efforts.

- Initiate a dairy specific project/program with AgriNovus; topical areas to consider include dairy waste to energy, manure to fertilizer, feed technology to reduce enteric emissions, herd management through vision and information technology, and robotics.

- Engage Indiana Corn Marketing Council and Indiana Soybean Alliance as well as Indiana Farm Bureau and the state's ethanol industry in discussions of feed technology, feeding trials, and research objectives.

## Policy Development

Indiana has a suite of conventional economic development policy tools and a positive regulatory and tax environment for dairy. There are specific areas where further refinement and reform could yield benefits for the Indiana dairy industry which are worth exploring.

- Consider a "regulatory certainty" program for the dairy industry – both producers and processors – that is based on the same principle as the Minnesota Agricultural Water Quality Certification Program (MAWQCP) whereby the State can certify upgrades in farm management and manufacturing processes to earn the certainty of regulatory compliance for a period moving forward (10 years in the case of MAWQCP), regardless of statutory or regulatory changes.

- Indiana's U.S. Senator Mike Braun has proposed a USDA certification program that would assess the carbon sequestration values of farming and land management practices allowing producers to monetize their practices. A state level carbon accounting and certification system for various reduction strategies could prompt a market for Indiana producers to monetize their carbon reductions in the form of a certified credit. Those credits could be sold directly, traded via exchange platform, or assigned to pounds of milk produced helping dairy processors meet their carbon reduction goals. The key action for a state program is to facilitate a sound and credible carbon accounting certification.

- Tax incentives are often offered for new or upgraded processing capacity. Review those incentives for direct impact on increasing milk through put and new demand. For example, in addition to provisions/stipulations requiring performance benchmarks such as employment and job creation, dairy specific benchmarks such as procurement thresholds for Indiana-produced milk could be incorporated.

- Innovation in value added dairy products builds demand for farm-gate milk, however, product development is expensive, especially for small and medium sized companies and farms. Grant funding for dairy specific research and development could be considered. Industry and other forms of private funding could be used to supplement grant programs.

- Review and assess energy statutes to ensure that Indiana governing law on power purchase agreements supports the potential full development for biogas and other dairy to renewable energy projects.

## Provide Industry Support

The State of Indiana has a number of ways that it can support the dairy industry, including

- Working with both producers and processors to determine the types of job skills and training necessary for the dairy industry. Indiana has a number of both 4-year colleges and junior colleges with various agriculture and food-based programs. Working with the industry is critical to ensure targeted curricula and adequate training to improve the pool of skilled workers needed. This effort can also be expanded to high school vocational agriculture programs. The focus should span the value chain from on-farm technology to processing plant operations.

- Encourage that Indiana dairy farmers are represented and involved in leadership development programs, including the AgrIInstitute and other programs and support efforts for dairy specific leadership and professional development.

- Direct in-state research to current and pertinent challenges and opportunities. For example, with the emphasis on sustainability, research on feed use and nutritional values of cover crops and cover crop rotation to benefit dairy producers.

- Direct in-state research on food technology innovation, dairy processing and product development.

- Procurement of dairy products through a number of state institutions and programs can be used to target demand for Indiana dairy.

## Small and Medium Sized Dairies

Small and medium sized dairies face a number of economic hurdles to stay viable, not just in Indiana, but across the nation.

- Provide policy and producer education support for on-farm processing, direct to consumer marketing, and local food system networks.

- Search for opportunities to facilitate direct dedicated supply of milk from smaller farms to smaller and medium sized processors; this could include organic milk.

- Fully integrate appropriate small and medium dairy operations into the State's Agritourism and Culinary Tourism Strategic Plan.

## Export Development

The Indiana Department of Agriculture should engage and leverage the expertise and export development support resources that are available through the U.S. Dairy Export Council and Food Export Midwest USA.

- Conduct outreach to U.S. Dairy Export Council (USDEC). The organization is the primary entity conducting promotion and market research for export development of U.S. dairy products. It is primarily funded by the dairy check off program through Dairy Management, Inc., and USDA's Foreign Agricultural Service's export development programs, as well as membership dues. USDEC should be engaged to explore export potential for Indiana dairy products.

- ISDA is a member of the Food Export Midwest USA state regional trade group which administers USDA funds for export promotion. Working more closely with Food Export on recruiting small and medium sized dairy product companies and promoting dairy foods and products with dairy would be especially helpful to smaller dairies in the state (the program is limited to companies that fall within the Small Business Administration guidelines, but there are size exemptions for cooperatives).

## Advocacy and Promotion

Indiana dairy already has one of the best-known marketing and promotion platforms in the Indianapolis 500 Winner's Circle tradition of drinking a bottle of milk. That forms the basis for the "Winners Drink Milk®" campaign. The engagement campaign through the American Dairy Association Indiana is a complete repository of research, facts and promotional concepts for dairy promotion. ISDA can seek ways to supplement those efforts.

- Facilitate additional ways to educate dieticians, schools, and pediatricians on the nutritional benefits of milk and dairy foods.

- The Indiana Grown program has a number of dairy (including dairy goat) members. The program could benefit from cross marketing of products through venues to highlight pairings of products in the program, for example, bakery products and dairy, i.e. cake and ice cream, cookies and milk, etc. This would be especially helpful to small dairy companies. Smaller dairies and companies benefit more from such partnerships to develop a local/Indiana identity (as opposed to a generic "consume more dairy" approach) so that consumers seek Indiana-based milk and dairy products.

- Further, outside of the Indiana Grown program, there are opportunities to promote other pairings of Indiana products, i.e. buttered popcorn, linking dairy to one of Indiana's top specialty commodities. This would be more of a "consume more dairy" approach to increased demand in the State.

- Indiana dairy products can be promoted with other generic promotional pairing efforts, such as an Indiana dairy campaign to eat more breakfast cereal, or use real milk in coffee, etc. Consider - based on a quick back of the envelope calculation - if 10 percent of the population of Indiana ate one more bowl of cereal per week with 4 ounces of milk and added 1 ounce of milk to an extra cup of coffee per week (the

volume would be higher for lattes and cappuccinos), that would equate to 11.7 million pounds of additional fluid milk annual use – which is more than a full day's on farm production.

- Certification programs, such as outlined in a previous section could be developed into a label claim and marketing tool. The key factor for success is third party verification, which is a role for the state certification. Such imprimaturs could be incorporated into the Indiana Grown program, for example, Indiana *Sustainably* Grown. There are a variety of traits and production practices for which consumers exhibit a willingness to pay, including animal welfare which could also be the basis of a certification program (many dairies use Validus for animal welfare certification, a company that was original started by the National Pork Producers Council). There are several private third-party certifiers for various production practices, but a state certification would have authority in the market. There are pros and cons to a state program, but it is worth considering.

- Competitive product innovation programs with grants or cash awards could be used to spur innovation and promote new products, especially for small and medium sized operations. Such programs could also be used for innovative and cutting-edge production methods (similar to corn yield contests). Competitions like these can be a catalyst to accelerate growth. Note that the 2017 American Farm Bureau Federation Entrepreneur of the Year award went to an Alaska business that developed hydroponic growing system for inside a shipping container and was awarded $30,000 prize. Currently, according to AgFunder, the company is in the midst of a successful $8 million capital raise.

- A critical element of advocacy and promotion is facilitating community acceptance of new and expanded dairy production. A continuous effort at educating state residents about the benefits of dairy production – especially non-agricultural rural residents – in order to maintain support for the further expansion of the industry is essential.

## Implementation

It is recommended that the Indiana State Department of Agriculture chronicle the recommendations it adopts from this report, along with other tactics, objectives and actions that are ultimately incorporated into its dairy industry development strategy for the following purposes:

- To communicate with local governments and economic development authorities to pursue a coordinated approach to developing the dairy industry in the State. Local authorities play a key role in the expansion of the industry, as is detailed by this report.

- To conduct an annual review over each of the next 5 years with the ISDA Steering Committee on the progress made to date, any lessons learned from implementation efforts, as well as assessing the relevance and priority of the above recommendations over time given the dynamics of the dairy industry.

## Appendix – U.S. Dairy Companies

The top 97 dairy processing companies, ranked by total revenue, is shown in the Appendix. The information was gathered from *Dairy Foods* magazine and company reports. All of the companies have sales in excess of $150 million. Of these companies, 56 are privately held, 23 are publicly traded stock companies, and 23 are cooperatives; 11 are foreign owned. Collectively they account for 439 processing plants in the U.S. out of an estimated 1,300 total.

| Top Dairy Processors in the U.S. | | | | |
|---|---|---|---|---|
| **Processor/Handler** | **Ownership** | **Milk by Class** | **# US plants** | **Plant Locations by State** |
| Nestle, North America | Public, Switzerland | I, II | 10 | CA IA MD NJ UT |
| Saputo | Public, Canada | I, II, III, IV | 15 | CA SD NM WI TX MN AL KY CT MD FL NY |
| Danone, North America | Public, France | II | 12 | CA FL NJ PA OH OR TX UT VA |
| Kraft Heinz | Public | II, III | 11 | CA IL MN MO NY WI |
| Agropur | Cooperative, Canada | I, II, III, IV | 11 | ID IA MI MN WI SD |
| Schrieber | Private | II, III | 32 | AZ CA MO PA TX UT WI |
| DFA | Cooperative | I, II, III, IV | 45 | CA CO IN KS IA ME MI MO MN NM ND NY PA SD UT |
| Grupo LaLa | Public, Mexico | I, II, III, IV | - | CO, NE, TX |
| Land O Lakes | Cooperative | I, II, III, IV | 9 | CA MN OH WI VT |
| General Mills | Public | II | 4 | CA MI TN |
| California Dairies | Cooperative | I, II, III, IV | 6 | CA |
| Great Lakes Cheese | Private | III | 8 | NY OH UT WI |
| Kroger | Public | I, II, III | 19 | AZ CA CO GA IN KS KY MI OH OR NC TN TX UT VA |
| Leprino | Private | III | 9 | CA MI NM NY |
| Prairie Farms Dairy | Cooperative | I, II, III, IV | 44 | AR IL IN IA KY KS MI MS MO NE OH OK IA MN WI |
| Pamalat/Lactalis | Public, Italy | I, II, III, IV | 4 | CA ID NY WI |
| Conagra | Public | II, III | 3 | IN IA WI |
| Hilmar | Private | III | 2 | CA TX |
| HP Hood | Private | I, II | 13 | CA CT ME MA NH NY IL NY PA VA VT |
| Darigold | Cooperative | I, II, III, IV | 11 | ID WA MT |

| Processor/Handler | Ownership | Milk Class | Plants | Plant Location by State |
|---|---|---|---|---|
| Glanbia | Public, Ireland | III | 5 | CA ID NM |
| Publix Supermarket | Private | I, II | 3 | FL GA |
| Grassland Dairy Products | Private | II, IV | 6 | NE UT WI |
| Assoc Milk Producers | Cooperative | I, II, III, IV | 10 | IA MN SD WI |
| Foremost Farms | Cooperative | I, II, III | 11 | MN WI |
| Unilever | Public, UK | III | 5 | MO NV TN VT |
| Chobani | Private | II | 3 | NY ID |
| Sargento | Private | III | 3 | WI |
| Wells Enterprise | Private | II | 4 | IA NJ NY |
| HEB Grocery | Private | I, II | 3 | TX |
| Albertsons (Grocery) Dairy Division | Private | I, II | 9 | AZ CA OR PA WA |
| Masters Gallery Foods | Private | III | 2 | WI |
| Organic Valley | Cooperative | I, II, IV | 4 | OR WI |
| Emmi | Public, Switzerland | II, III, IV | 7 | AR CA WI |
| Fairlife | Private | I | 4 | IN MI NM TX |
| AgriMark | Cooperative | II, III, IV | 4 | MA NY VT |
| Bel Brands | Public | III | 3 | KY SD WI |
| Update Niagra Cooperative | Cooperative | I, II, III | 7 | NY PA |
| Michigan Milk Producers | Cooperative | I, II, III, IV | 3 | IN MI |
| Savencia Cheese | Public | I, III | 7 | CA OA NJ WI |
| United Dairymen of Arizona | Cooperative | I, IV | 1 | AZ |
| Tillamook County Creamery | Cooperative | II, III, IV | 2 | OR |
| Dairy Brands | Private | II | 3 | AZ OH TX |
| Milk Specialties Global | Private | I, IV | 10 | CA IL MN NE WI |
| Southeast Milk | Cooperative | I | 1 | GA |
| T Marzetti | Public | II | 3 | CA KY OH |
| Schuman Cheese | Private | III | 5 | IL NJ WI |
| Bongards Premium Cheese | Cooperative | III | 3 | MN TN |
| Stremicks Heritage Foods | Private | I | 4 | CA MO UT |
| Crystal Creamery | Private | I, II, IV | 2 | CA |
| First District Assoc | Cooperative | III | 1 | MN |
| Winona Foods | Private | III | 2 | WI |
| Rockview Family Farms | Private | I, II, IV | 3 | CA |
| Blue Bell Creameries | Private | II | 3 | AL OK TX |
| BelGioioso Cheese | Private | III | 9 | WI NY |

| Processor/Handler | Ownership | Milk Class | Plants | Plant Location by State |
|---|---|---|---|---|
| Maryland Virginia Milk Producers | Cooperative | I, II, IV | 4 | MD VA |
| Berner Food and Beverage | Private | II, III | 1 | IL |
| St Albans Creamery | Cooperative | I, II, IV | 1 | VT |
| Stonyfield | Public | I, II, III | 1 | NH |
| Smith Food | Private | I, II | 3 | IN MO OH |
| Byrne Dairy | Private | I, II, | 4 | NY |
| Galliker | Private | I, II | 2 | MD |
| Grande Cheese | Private | III | 6 | WI |
| Fage | Private | II | 1 | NY |
| Gehl Foods | Private | I, II | 2 | CA WI |
| Brewster Cheese | Private | III | 3 | ID IL OH |
| Gossner Foods | Private | I, III | 3 | UT ID |
| Shamrock Farms | Private | I, II | 2 | AZ VA |
| Continntal Dairy | Cooperative | IV | 1 | MI |
| Turkey Hill | Private | II | 1 | PA |
| Litehouse | Private | II, III | 3 | ID MI |
| Sartori | Private | III | 2 | WI |
| I & I Snack Foods | Public | II | 2 | FL PA |
| Meijer (grocery) | Private | I, II | 2 | MI OH |
| Super Store Industries | Private | I, II, III | 1 | CA |
| High Desert Milk | Cooperative | IV | 2 | ID |
| Post Holdings | Public | III, IV | 1 | WI |
| Clover Sonoma | Private | I, II | 1 | CA |
| Wawa (convenience stores) | Private | I, II | 1 | PA |
| Mars Ice Cream | Private | II | 1 | IL |
| Johana Foods | Private | II | 2 | NJ |
| Arla Foods USA | Private | III | 1 | WI |
| Aurora Organic Dairy | Private | I, IV | 2 | CO MO |
| Ellsworth Cooperative Creamery | Cooperative | III | 3 | WI |
| KanPak | Private | II | 3 | CT KS NY |
| United Dairymen of Arizona | Private | I, II | 3 | OH PA WV |
| Biery Cheese | Private | III | 2 | OH WI |
| Steuben Foods | Private | I, II | 1 | NY |
| Oruna Ingredients | Cooperative | III | 2 | MN WI |
| Braum's Inc. | Private | I, II | 1 | OK |

| Processor/Handler | Ownership | Milk Class | Plants | Plant Location by State |
|---|---|---|---|---|
| Schwan's Co. | Private | II | 3 | GA MN OK |
| Rich Products Corp | Private | II | 17 | CA CT IL GA OH TN TX |
| Joseph Farms | Private | III | 1 | CA |
| Anderson Erickson Dairy | Private | I, II | 1 | IA |
| Clover Farms Dairy | Private | I, II | 1 | PA |
| Valley Queen Cheese | Private | III | 1 | SD |
| Cloverland Farms | Private | I | 1 | MD |

Source: Dairy Foods Magazine, company reports, WPI