Dairy Economics and Pricing Dynamics

Dairy Products 301

September 11, 2025

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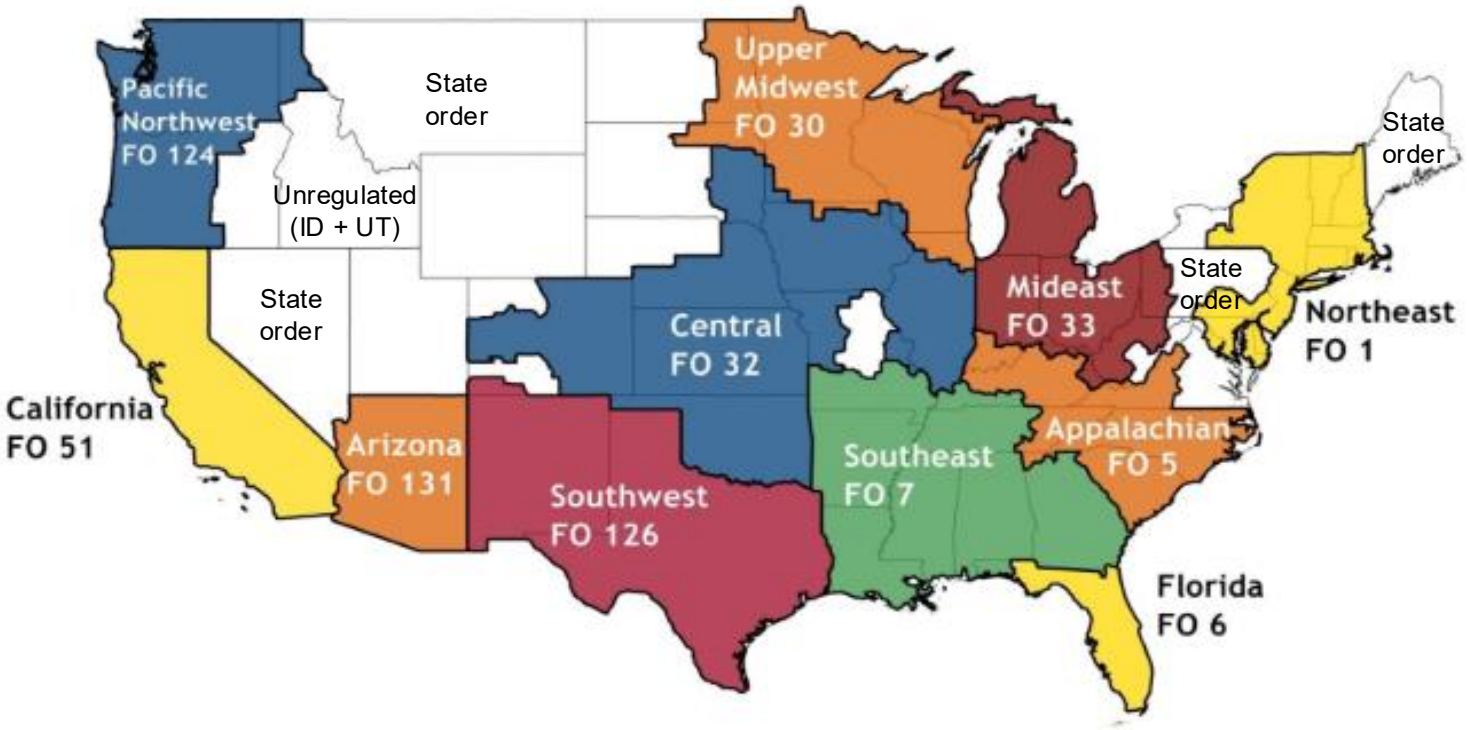
Overview

- Cost Structure of Dairy Product Manufacturing
- Raw Milk Pricing Mechanisms (Class I-IV, FMMO's)
- Global Trends in Filtered Ingredient Markets
- Risk Management Tools and Contracts

Federal Milk Marketing Orders

The Federal Milk Marketing Order is a legal document that specifies the terms under which regulated milk handlers (cooperatives and proprietary plants) must operate when purchasing milk from dairy producers. There are 11 Federal Orders across the country and the geographical location of a Federal Order is determined by the market area of the processor, not the location of the farm.



Federal Milk Marketing Orders

- Federal Orders establish prices at two levels
  - Farm Level – based on level of various milk components and value of those components and average utilization of all milk in the market area
  - Processor Level – based on milk component levels, component values and processor's specific utilization of the milk

- Processors (Plants) that handle Grade A milk are called "handlers".
  - Fluid milk bottlers
  - Supply plants (e.g. cheese plants)
  - Dairy cooperatives

- Dairy farmers who market their milk to a handler are called "producers". Handlers are regulated, but dairy farmers are not.

- Handlers are regulated by being required to pay at least minimum class prices into a Federal Order pool. All handlers within a class pay the same base price for milk, thereby ensuring equal raw product costs.

Milk Classification

One of the central tenets of the FMMO's is classified pricing. The FMMO's establish a minimum price that handlers have to pay each month based on how the milk is used. Each class has a different price with Class 1 being the highest value and Class 3 and 4 having lower prices for milk. The quality of the milk is the same – the FMMO system applies a different price to the milk depending on how it's used.

Classification	Products
Class 1	Fluid milk
Class 2	Ice cream, yogurt, cottage cheese, sour cream
Class 3	Cheese, whey
Class 4	Butter, milk powder

Multiple Component Pricing

All milk prices in Federal Orders are based on component values derived from product price formulas – this is called Multiple Component Pricing (MCP).

The MCP formulas require 3 inputs:

- Yield – how much product can be made from the milk
- Manufacturing cost – how much it costs to turn the milk into a commodity product. The manufacturing cost is also called the make allowance.
- End-Product price – what is the market value of the product

Note: Yield and manufacturing cost are dictated by USDA rules

And utilize a specific product price formula for each component:

(End-Product Price – Make Allowance) x Yield Per Lb of Component

Make Allowances

- In the Federal Order product price formulas, make allowances represent all costs other than the cost of farm milk and other milk inputs necessary to convert milk into a finished product.
- In addition to in-plant costs, the make allowance also includes administrative overhead, costs associated with marketing the finished product, and a value for return on investment.
- The current make allowances went into effect in June 2025:
  - Butter $0.2272/lb
  - Nonfat dry milk $0.2393/lb
  - Cheese $0.2519/lb
  - Dry whey $0.2668/lb
- Make allowance changes must go through the USDA rules making process which often includes a hearing. The process for the current make allowances began in 2023 and included updates to the manufacturing costs with more current data.

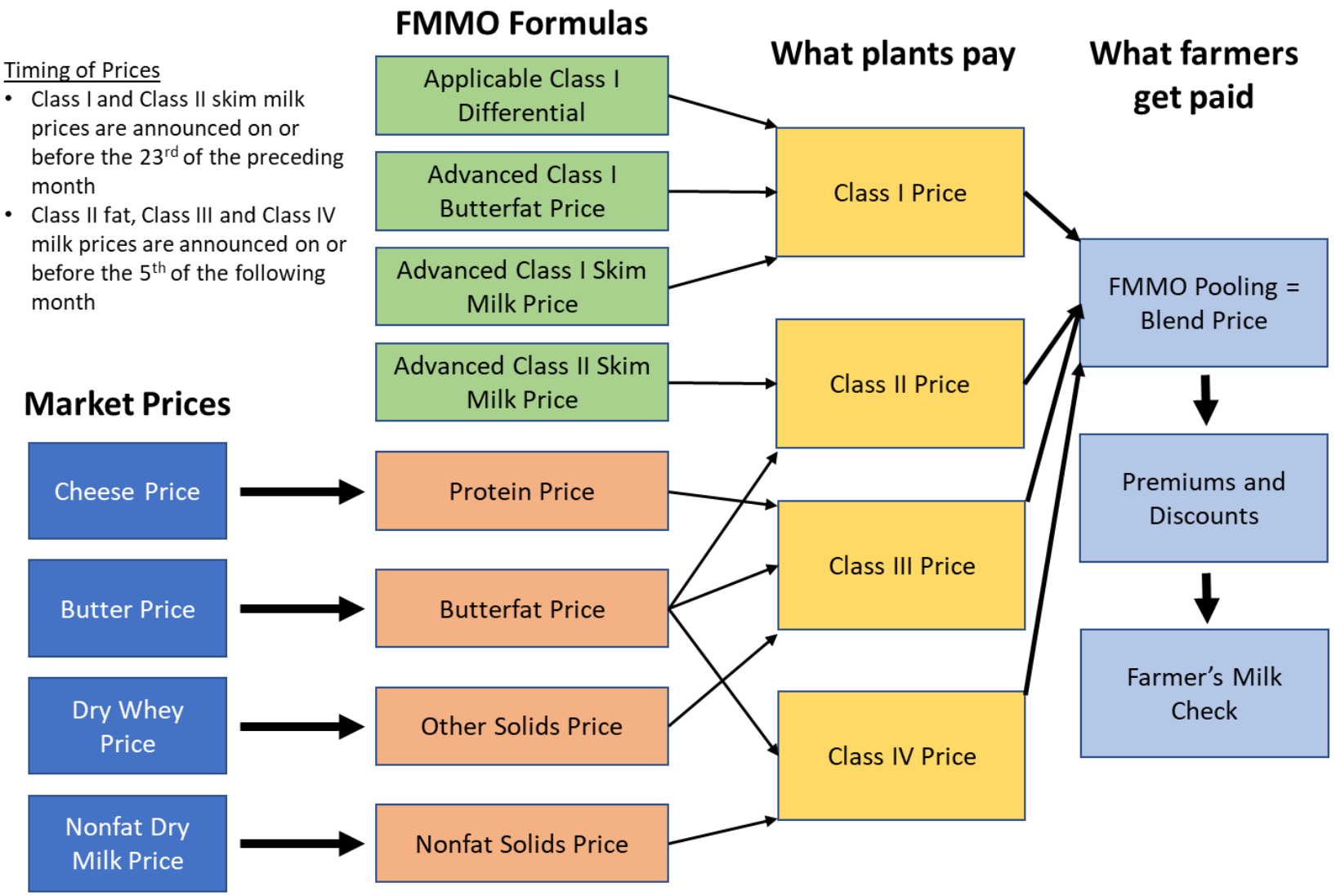
Yield Factors

- The yield factors used in Federal Orders reflect the volume of finished product from processing one pound of component. The USDA accounts for the loss of components between the farm and plant by making adjustments to the yield factors.
- Because the yield of cheese is dependent on both the protein and butterfat in milk, there are two yield factors in the cheese product price formula, one for protein, and one for butterfat, and are based on the Van Slyke Cheese Yield Formula.
- The current yield factors USDA currently uses to determine the pounds of finished product that can be made from each pound of component are:
  - Butter 1.211
  - Nonfat dry milk 0.990
  - Dry whey 1.030
  - Cheese: Protein 1.383
  - Cheese: Butterfat 1.589

Multiple Component Pricing

- There are four component price values that determine the Federal Order class milk prices, derived from commodity product prices for butter, nonfat dry milk, cheese and dry whey utilizing these components:
  - Butterfat – value is based on butter
  - Nonfat solids – value is based on nonfat dry milk
  - Protein – value is based on cheese and butter
  - Other solids – value is based on dry whey
- These component values are used to determine the minimum prices used in all Federal Orders
- Class and component prices are announced for the previous month on or before the 5th of the following month for class 2 butterfat, class 3, and class 4. Advanced prices and pricing factors are announced for the following month on or before the 23rd of the preceding month for class 1 and class 2 SNF.

How Milk Pricing Works



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Protein Trends in Dairy Foods

Protein, Digestion, Vegan and Organic claims are among the fastest growing. Avoidance of Sugar, Hormones, Antibiotics, Lactose and Sat Fat also are growing.

Notable declining claims include Immune Defense -9.0% Omega DHA/EPA/ALA -6.5%, No/Low Trans Fat -4.7% and No/No Added Dairy -3.8%

Humanely Raised

$ Sales	$ Growth
$8,789B	+26.8%

High / Source / More Protein

$ Sales	$ Growth
$12.9B	+13.1%

Prebiotic / Probiotic

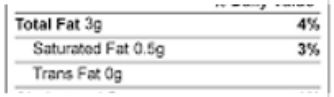
$ Sales	$ Growth
$4.3B	+9.4%

No / Low / Less Sugar

$ Sales	$ Growth
$40.6B	+6.4%

No / No Added / Not Treated with Antibiotics

$ Sales	$ Growth
$15.3B	+6.4%



No / Low / Less Saturated Fat

$ Sales	$ Growth
$2.6B	+6.1%

No / Reduced Lactose

$ Sales	$ Growth
$6.1B	+6.0%

Vegan

$ Sales	$ Growth
$10.2B	+5.7%

No / No Added / Not Treated with Hormones

$ Sales	$ Growth
$34.6B	+5.3%

Organic

$ Sales	$ Growth
$27.6B	+4.6%

Circana.

Circana OmniMarket Integrated Fresh F&B | Total U.S. MULO+ w/C | 52 Weeks Ending Mar 23, 2025

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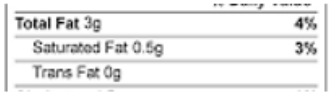
Protein Trends in Dairy Foods

Kosher, 100% Natural and No Hormone claims have the highest absolute dollar growth. Sweetener, Gluten, Protein and Lactose claims remain in the top 10.

Notable declining claims include Dairy No/No Added **-158M**, Calorie No/Low/Less **-82M**,, Unsweetened **-66M** and Trans Fat No/Low **-52M**

Kosher		100% Natural		No / No Added / Not Treated With Hormones		No / Low / Less Sugar		Gluten Free	
$ Sales	$ Growth	$ Sales	$ Growth	$ Sales	$ Growth	$ Sales	$ Growth	$ Sales	$ Growth
$52,680M	+$1,043M	$25,933M	+$866M	$16,828M	+$588M	$4,614M	+$533M	$8,736M	+$509M

Natural Sweetener		High / Source / More Protein		No / Reduced Lactose		No / Low / Less Fat		No Added Sweetener	
$ Sales	$ Growth	$ Sales	$ Growth	$ Sales	$ Growth	$ Sales	$ Growth	$ Sales	$ Growth
$2,857M	+$364M	$3,120M	+$325M	$4,571M	+$323M	$18,010M	+$309M	$1,119M	+$239M



Circana.

Circana OmniMarket Total U.S. MULO+C – 52 Weeks Ending Mar 23, 2025

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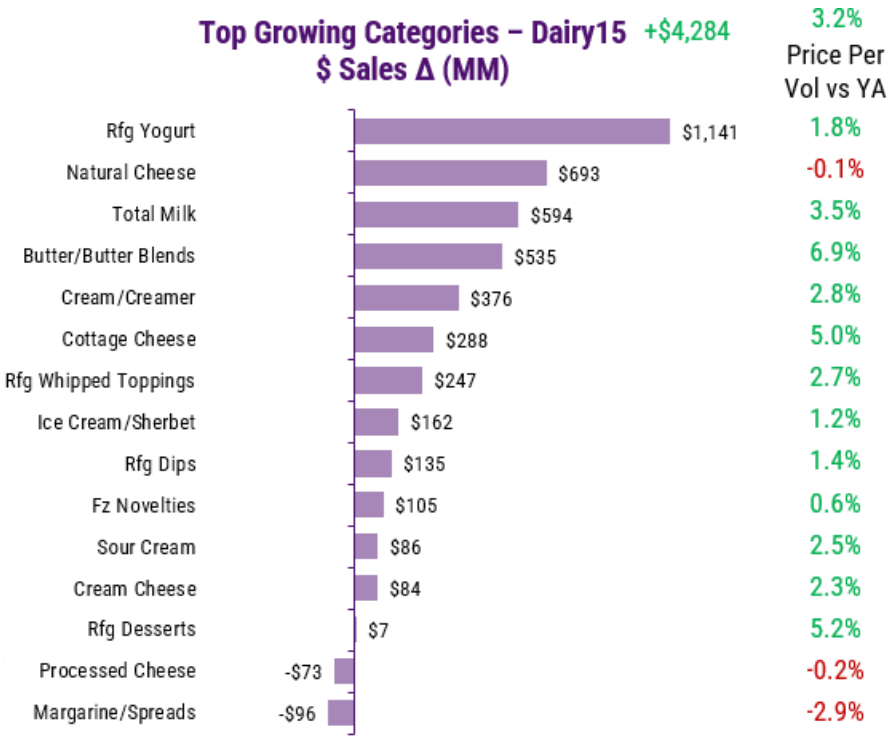
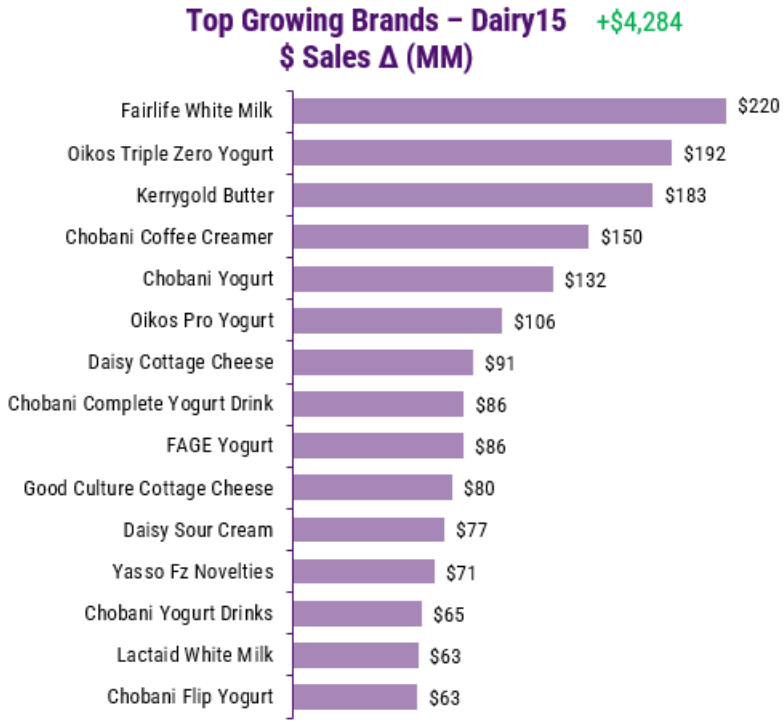
Protein Trends in Dairy Foods

The top growing dairy retail category is yogurt while most of the fastest growing brands are protein-focused – Fairlife, yogurts, and cottage cheese.





Source: Circana 52-weeks ending March 23, 2025

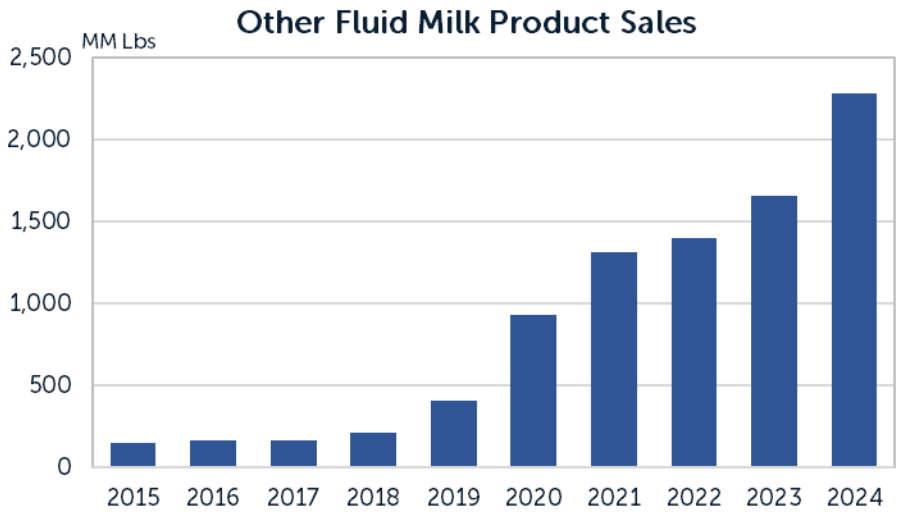
Protein Trends in Dairy Foods

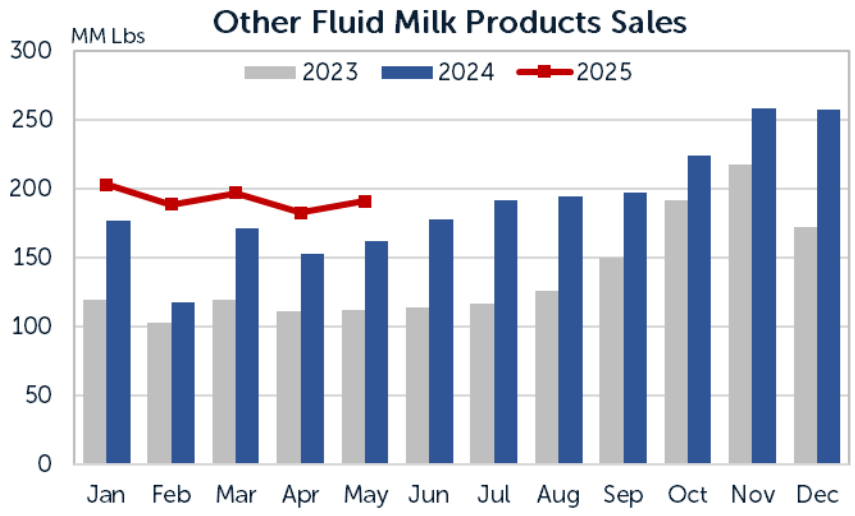
There have been an influx of high protein milk/dairy beverages and shakes

- Fairlife's Core Power continued to lead growth in the $6 billion US protein shake category at retail with dollar sales up 39% and volume up 29% (2024).
- Nurri launched a chocolate protein shake at Costco in Q4 2024 with additional flavors in 2025; expanded into Sam's Club in Q2 2025
- Slate debuted on Shark Tank; rapid expansion for canned drinks, drink mixes, and protein cookie mixes
- The growth of these products has greatly increased the demand for ultra-filtered liquid milk along with whey and milk proteins, and casein/caseinates

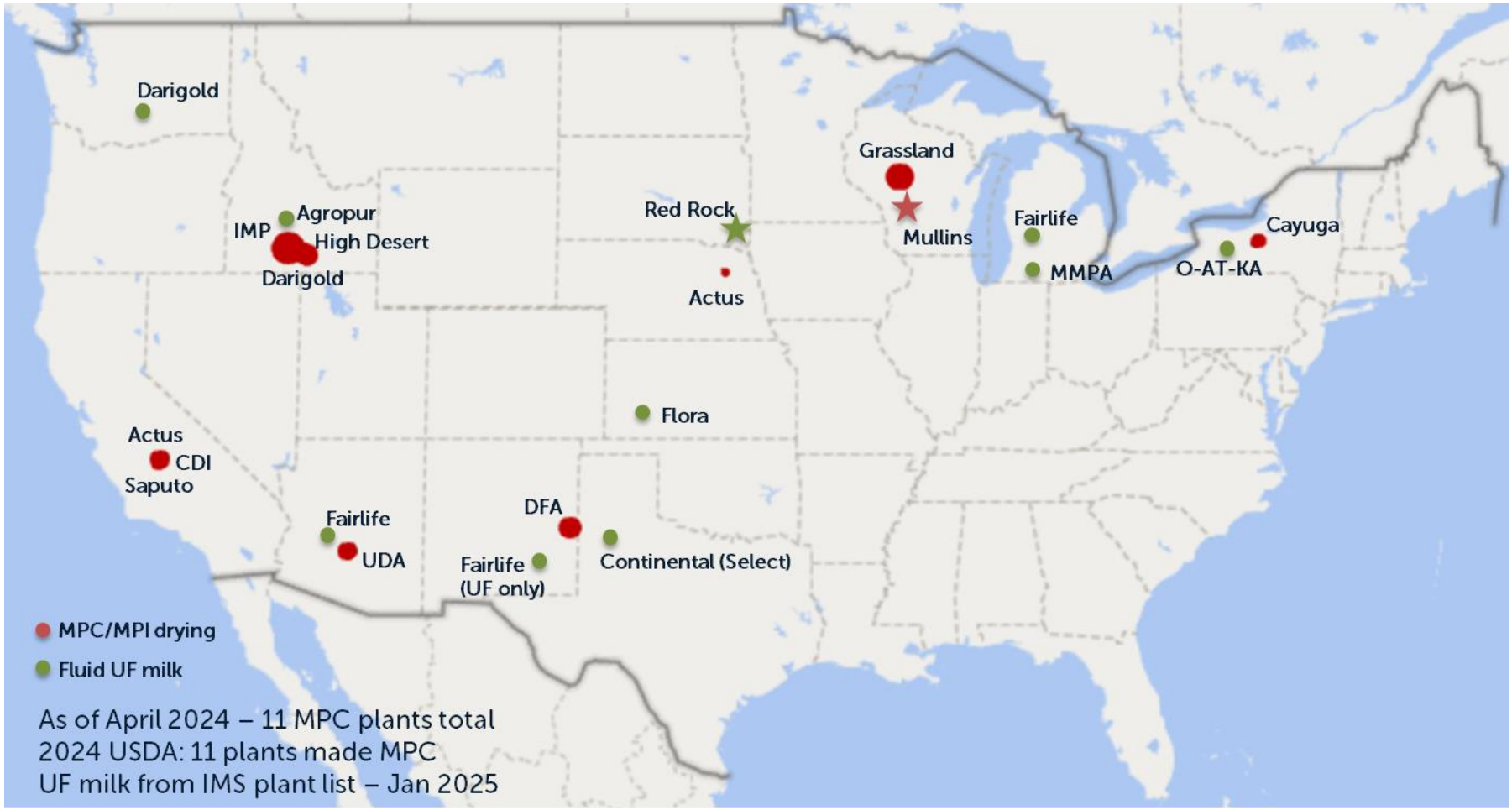
High protein and lactose free milks have been the key driver of growth in the broader fluid milk sector.

- The "other fluid milk products" category had an average growth rate of 20% over the last 5 years and 31% over the last 10 years. This includes a combination of high protein and lactose free beverages (fairlife, Fit, Lactaid).
- In 2025, sales are up 23% (May YTD).
- Sales of fairlife in 2024 were $782 million (+28% vs. 2023) with unit sales up 21% to 165 million (nearly 25% of "other fluid milk" category).





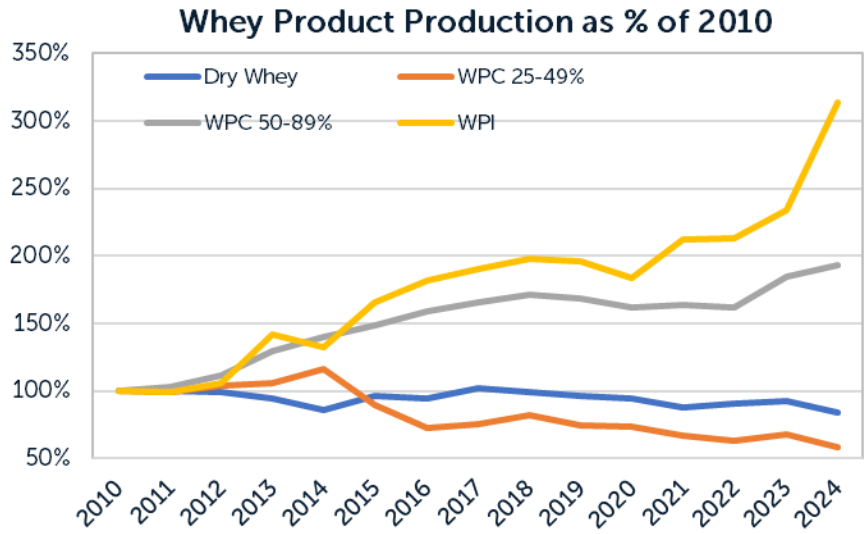
UF Milk + MPC & MPI Plant Locations

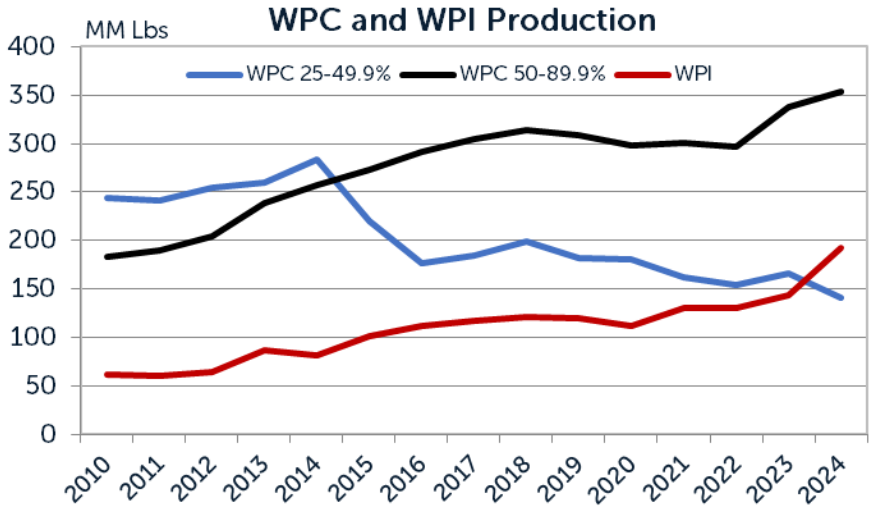


US Whey Product Trends

Whey production trends have favored WPC 80 and WPI

- Over the last 15 years, output of has increased significantly for WPI (+218%) and WPC 80 (+87%) while falling for sweet whey (-16%) and WPC 34 (-42%)
- Note: 2023 production of WPI was under-reported





Risk Management Tools & Contracts

To hedge the price risk for milk and components, there are a variety of futures, options, and swaps available to use. Suppliers can also offer fixed pricing by utilizing the same tools.

Class 2 Milk
- NFDM
- Butter
- Class 4 milk

Class 3 Milk
- Cheese
- Sweet whey
- Class 3 milk

Class 4 Milk
- Butter
- NFDM