


Dairy has a bright future

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High Plains Dairy Conference, Amarillo, Texas, March 6, 2024 Proud Member of the Farm Credit System

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Dairy is an economic driver across the U.S.

California: \$63 billion in economic activity

California: 443,000 jobs

Wisconsin: \$45.6 billion in economic activity

Wisconsin: Each cow is a \$36,000 economic engine

New York: \$42 billion in economic activity

Texas: \$40 billion in economic activity

Iowa: Each cow is a \$25,000 economic engine

Source: USDA. Presentation by Corey Geiger, CoBank. CoBank 2

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Milk matters more than cows when measuring growth



Dairy's growth in 25 years measured by cows:

- 1998 — 9.2 million dairy cows
- 2023 — 9.4 million dairy cows
- 2.6% growth rate for cows

Dairy's growth in 25 years by measuring milk:

- 1998 — 157.4 billion pounds
- 2023 — 226.6 billion pounds
- 44.0% growth rate for milk

Source: USDA. Presentation by Corey Geiger, CoBank. CoBank 3

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Track milk or component production?

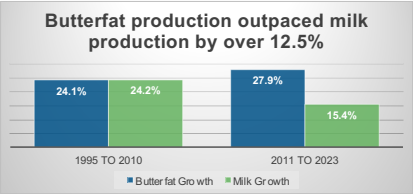
Total U.S. milk output climbed from 196 to 226.6 billion pounds

• 15.4% growth 2011 to 2023

Total U.S. butterfat climbed from 7.3 to 9.3 billion pounds

• 27.9% growth 2011 to 2023

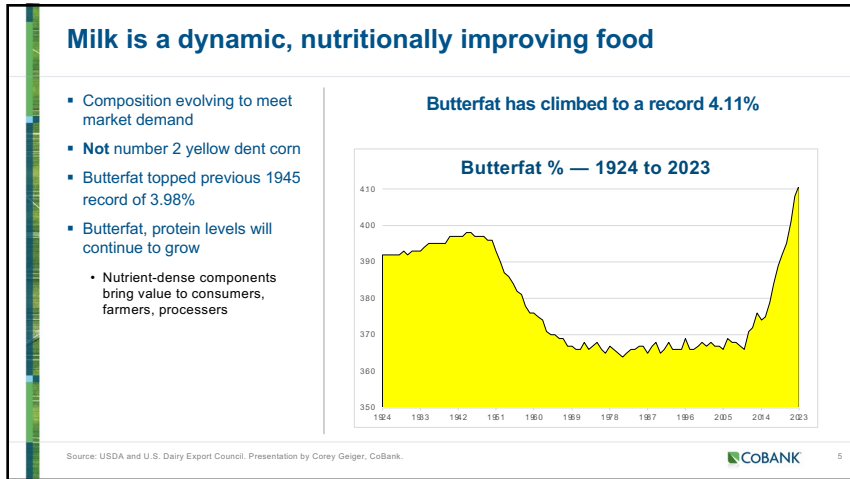
Butterfat production outpaced milk production by over 12.5%



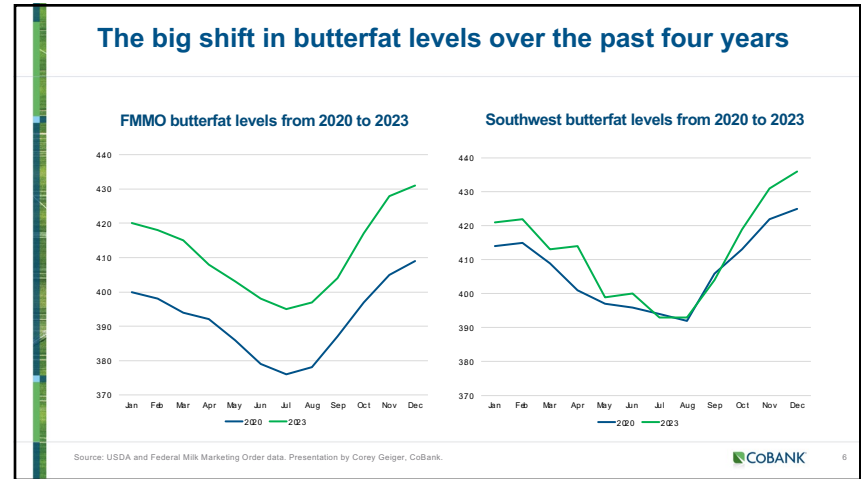
Legend: ■ Butterfat Growth ■ Milk Growth

Source: USDA. Presentation by Corey Geiger, CoBank. CoBank 4

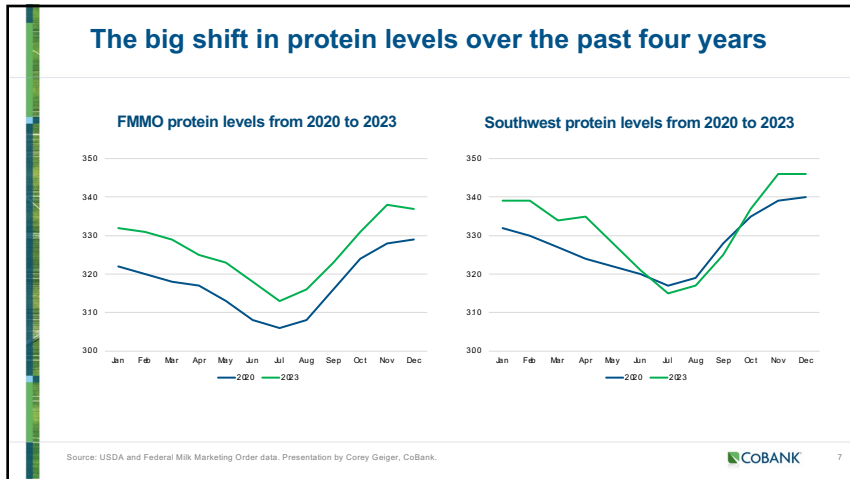
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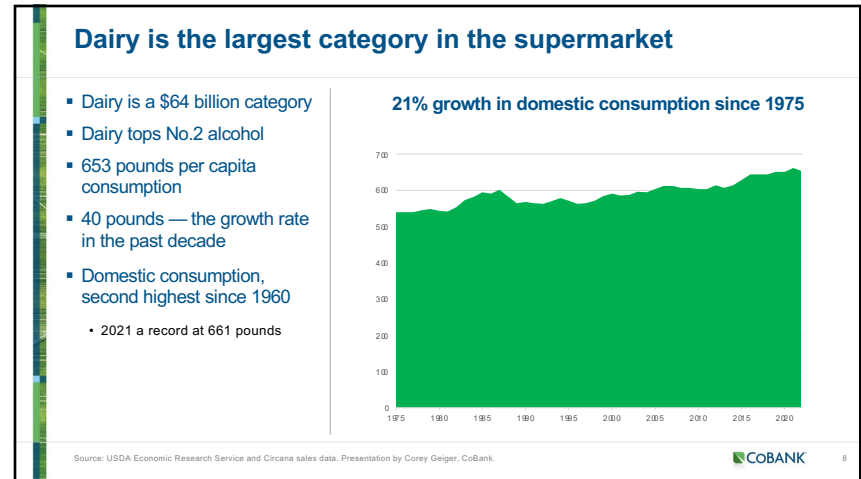
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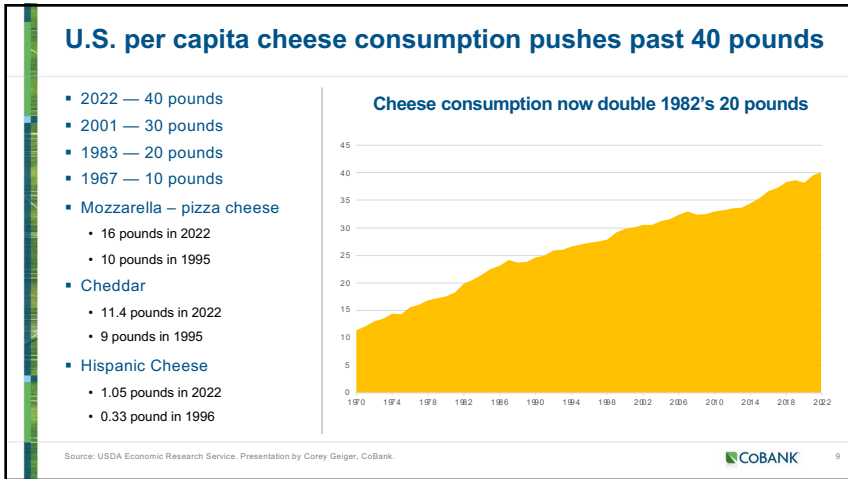
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Cheese is being transformed to entrée hero

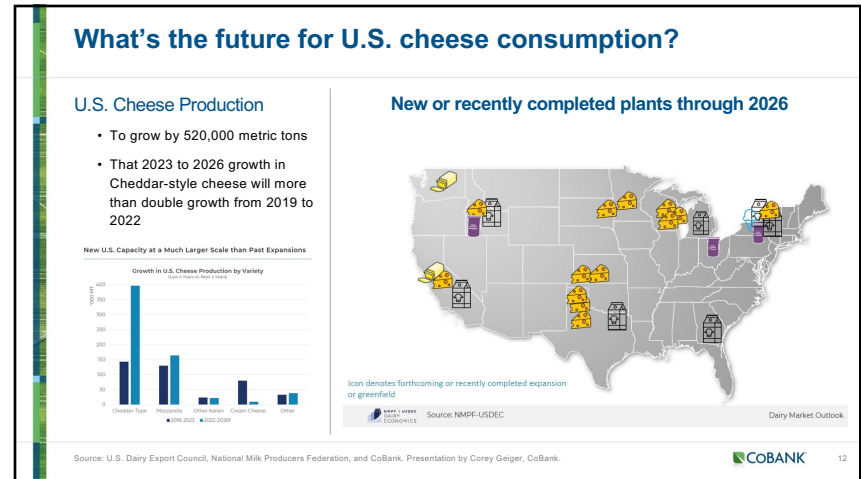
Taco Bell

McDonald's

Domino's

Source: Dairy Management Inc. (DMI). Presentation by Corey Geiger, CoBank.

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TikTok and the power of social media — Cottage Cheese

- Videos appearing in May
 - Sales have pushed past \$1.3 billion
- No signs of fading
 - Sales value (dollars) up 16%
 - Sales volume up 7.7%

Historical perspective

- Once touted as a super food
- Peak sales at 5.2 pounds in 1972
- Sales dropped to 2 pounds in 2022
- A fad or staying power?

It's being added to ice cream, pancakes, and even pasta



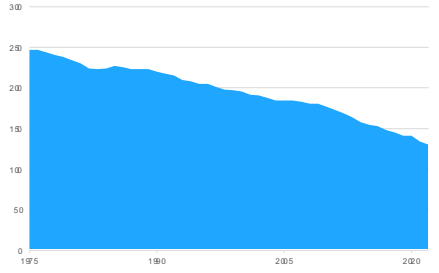
Source: USDA Economic Research Service and Circana sales data. Presentation by Corey Geiger, CoBank.

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The slide in fluid milk consumption continues

- Most fluid categories are down
- Whole milk bucking trends
 - Flavor is in the fat
 - Up 11% since 2010
- Begins with school milk
 - 37 processors, over 90% of schools
 - Agreed to reduce sugar to under 10 grams per 8-ounce serving
- Think beyond the carton
 - Dispenser
 - Aseptic options
- Whole Milk, Healthy Kids Act
 - Allow whole milk, reduced fat back in schools
 - Passed House 330 to 99 vote

Fluid milk consumption down 26.5% since 2010



Source: USDA Economic Research Service. Presentation by Corey Geiger, CoBank.

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Dairy and protein is transforming beverages



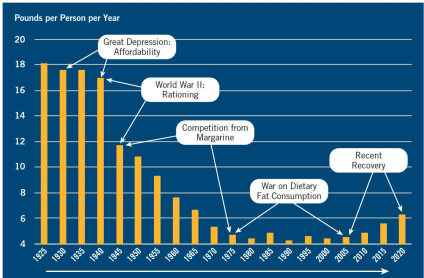
Source: Dairy Management Inc. (DMI). Presentation by Corey Geiger, CoBank.

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What's the upside potential for butter?

- A rebound in taking place
- New science on saturated fats
- Butterfat/milkfat production has outpaced milk
 - Near equal from 1995 to 2010
 - 8% advantage for butterfat from 2011 to 2022
- Butter product imports have grown 10-fold in past decade
- Long-term butter product sales could be poised for growth

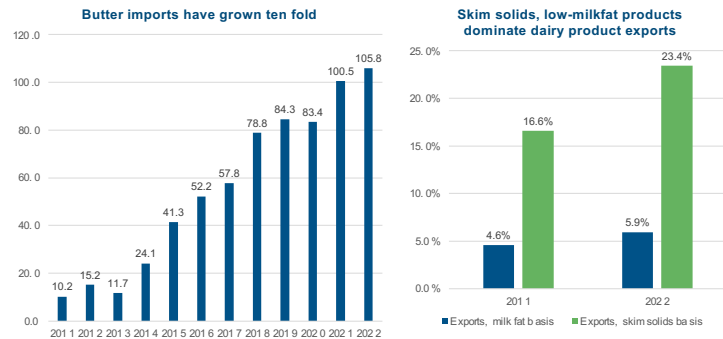
Butter consumption had better days



Source: USDA Economic Research Service and Peter Vitaliano, National Milk Producers Federation. Presentation by Corey Geiger, CoBank.

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U.S. butterfat markets remain underserved



Source: USDA and U.S. Dairy Export Council. Presentation by Corey Geiger, CoBank.

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U.S. is realizing its dairy export potential



- USDEC founded in 1995
- Exports represented 2% to 3% of U.S. milk supply in 1995
- Exports represented 16.5% to 18% of U.S. milk supply in 2023
- 5.5 days/month, cows fill export orders
- This growth took place as U.S. milk grew 45.9% since 1995
 - 2020 sales: \$6.5 billion – a record
 - 2021 sales: \$7.7 billion – a record
 - 2022 sales: \$9.6 billion – 3rd straight record
 - 2023 sales: \$8.1 billion – 2nd highest on record

Source: USDA. Presentation by Corey Geiger, CoBank.

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The dairy wild card — exports and the global economy

- U.S. fell back in 2023
 - 16.5% of U.S. milk in 2023
 - 18% to 19% in 2021 & 2022
 - Both were records years
 - Stronger than the static 15% exports from 2013 to 2020
- China imports 20% of the world's dairy purchases
 - Mired in an economic slump
 - 2021 GDP, 75% of U.S.
 - 2023 GDP, 64% of U.S.
 - Back to 2017 levels

If dairy demand picks up, the U.S. is poised to fill orders



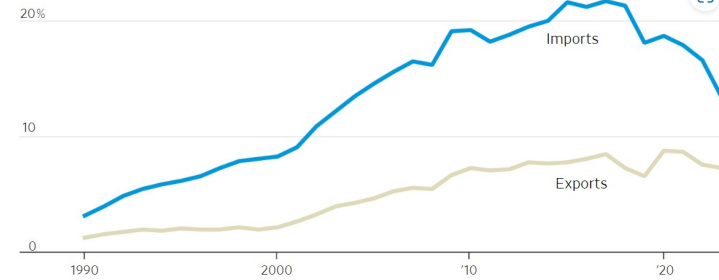
Source: U.S. Dairy Export Council. Presentation by Corey Geiger, CoBank.

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Steep drop in U.S. imports from China

China's share of U.S. goods imports and exports



Source: The Wall Street Journal. Presentation by Corey Geiger, CoBank.

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The dairy triple play — Sexed Semen • Genomics • Beef on dairy

- Sexed semen the start of the triple play
- First introduced in 2003
- Calving ease study
- Sexed semen sales have grown
 - 49% of all semen sold in 2022
 - 7.85 of the 16 million dairy units old in the U.S.
 - More growth projected in 2023 and beyond

27 million births from 1981 – 2014

Source: Council on Dairy Cattle Breeding. Presentation by Corey Geiger, CoBank.

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The dairy triple play — Sexed Semen • Genomics • Beef on dairy

- The dairy cow is most studied domestic animal
- 20% to 25% of U.S. dairy heifers have genomic tests
 - Revealing 70% of genetic ability as a cow while still a calf
- Data collection, accuracy drive predictions
- Genomic science has identified new traits
- Information fuels innovation

Source: Council on Dairy Cattle Breeding and National Association of Animal Breeders. Presentation by Corey Geiger, CoBank.

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Dairy is doing more with less, due to genetic improvement

- Pace of genetic change
 - \$13.50 from 2000 to 2004
 - \$36.90 from 2005 to 2009
 - \$83.33 from 2010 to 2022
- A gain in \$70 per animal
- That's a \$329 million net annual gain to the industry
 - 9.4 million cows
 - 4.7 million heifer calves
 - \$70 per heifer calf

Source: George Wiggins, Council on Dairy Cattle Breeding. Presentation by Corey Geiger, CoBank.

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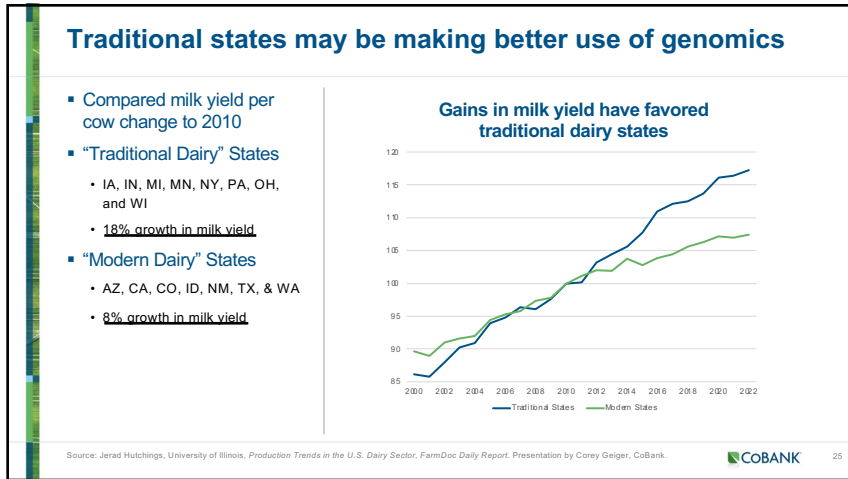
Genetics improve dairy's carbon footprint

An example:

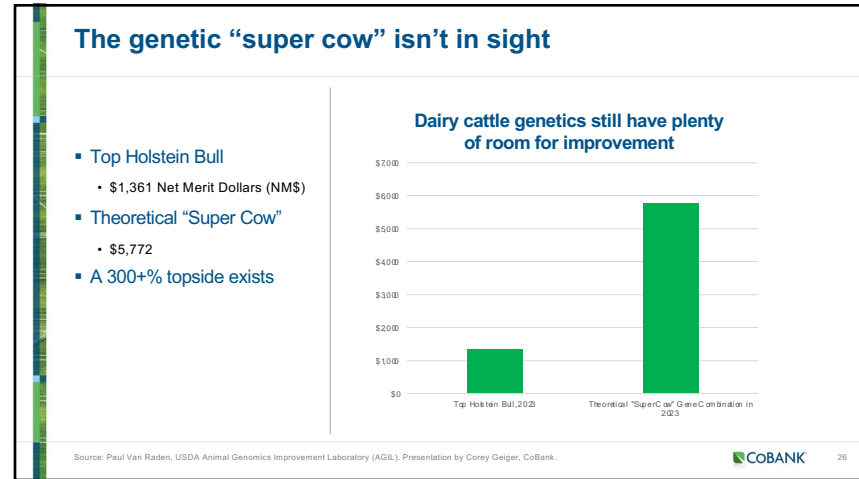
- Solar panels power:
 - Barns with 480 bulls
 - 72 lasers sexing semen running at 30,000 pulses per second, 24 hours a day
- Solar panels cannot compete with genetics for carbon reduction
 - 10-years of solar panels to have same carbon impact as 1 month of genetic gains on semen sold from the 480 bulls
- Genetic gains measured by more production, better health, longer cow life

Source: Nate Zwald, COO, Genus, Chad Dechow, Penn State (graph), and Council on Dairy Cattle Breeding (graph). Presentation by Corey Geiger, CoBank.

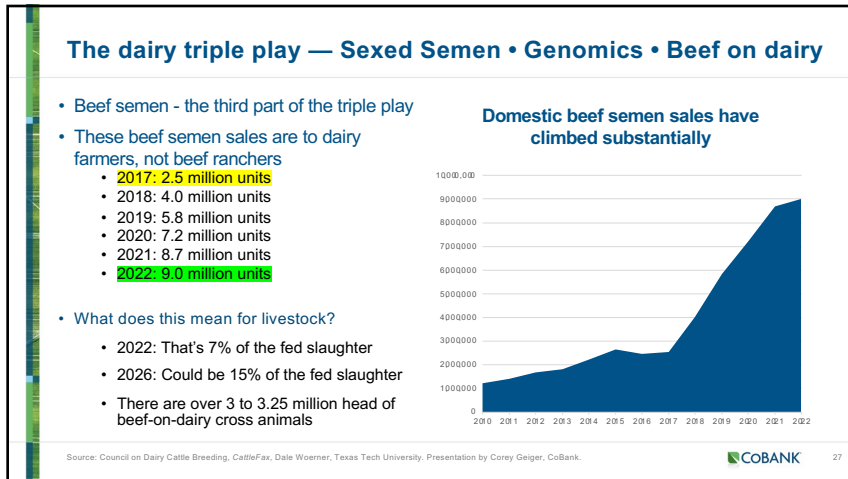
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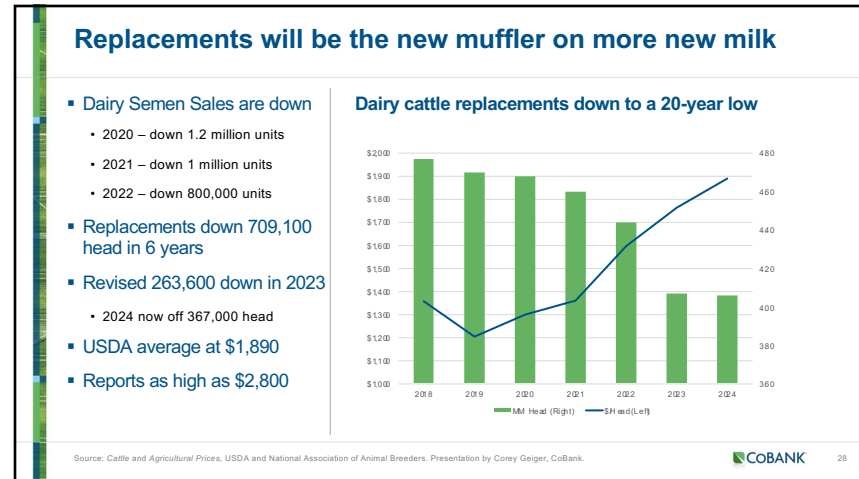
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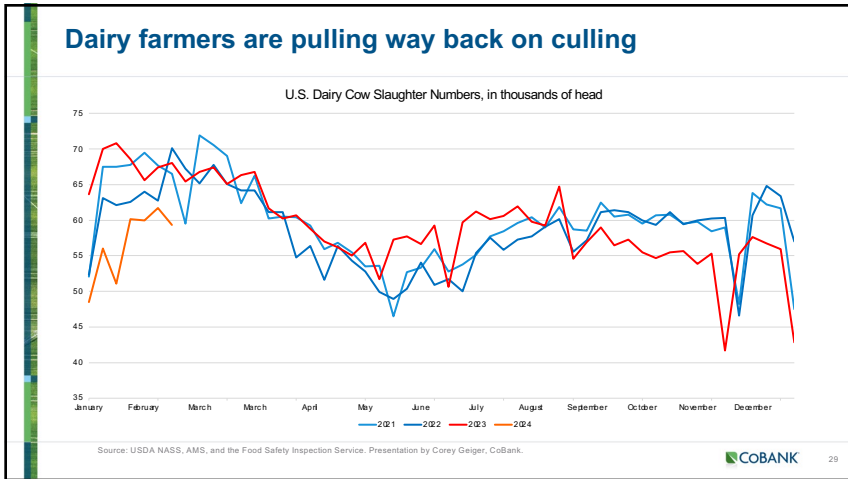
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Agriculture will continue to innovate on energy

- 343 on-farm digesters
- Dairy leads all ag (red)
 - 78% of active digesters
 - Hogs a distant second - 14%
- Compressed natural gas (CNG) is most popular
 - CNG captures carbon credits in California - Low Carbon Fuel Standard Program
- 20% of U.S. dairy cows support methane digesters
 - At \$100/cow, 40 cents per cwt. added

Dairy leads the green energy movement

Source: USDA Economic Research Service and U.S. Environmental Protection Agency (EPA) AgSTAR project. Presentation by Corey Geiger, CoBank.

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Dairy poised to grow green footprint

- Green energy is core to California dairy farms
- California accounts for 18.5% of U.S. milk
- 343 U.S. digesters
 - 120 in California
 - 105 more under construction
- California's dairy digester program delivers 22% of state's GHG reduction

Dairy leads the green energy movement

Manure-based Anaerobic Digesters Operating in the U.S. (Updated through January 2023)

Source: California Dairy Cares, USDA, U.S. Environmental Protection Agency (EPA) AgSTAR project. Presentation by Corey Geiger, CoBank.

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COVID-19 Exasperated Ag Labor Woes

What were the 2 largest years of job creation since WWII?

- 2nd: 2022 – U.S. 4.5 million jobs added
- 1st: 2021 – U.S. 6.7 million jobs added

Total nonfarm payrolls, change from a month earlier

Source: United States Department of Labor and the October 6, 2023, edition of The Wall Street Journal

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Agricultural Employers Labor Solutions: People

- Future of Farm Workforce Modernization?
 - “Call it ‘Food Security’”
 - G.T. Thompson (R-Pennsylvania)
 - Food security:
 - Secures America’s liberty and freedom
 - Factors in legal immigration options
 - Factors in border security
 - Tough sell in 51 to 49 Senate; 222 to 212 House



Source: Labor Department

Source: Corey Geiger interview with G.T. Thompson, United States Department of Labor and the September 23, 2023, *The Wall Street Journal*.

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COVID-19 Exasperated Ag Labor Woes

- Key concerns — Males ages 25 to 54 in labor force
 - 89.3% pre-pandemic — 88.4% post pandemic
 - Labor participation down 1.7% 20 to 24 years old — 0.5% 45 to 54 years old
- H.S. graduation gap: **45,000 fewer boys getting diplomas**
 - Boys more likely to face suspensions or discipline knocking them off track
 - Boys don’t pursue help as often when they face mental health challenge
 - Boys who don’t earn a high school diploma are more likely to end up in jail
 - The gap is as wide as the achievement gap between students from affluent and low-income families
 - The Math: 40-year work career X 45,000 boys = 1.8 million workers

Source: United States Department of Labor and Research by Richard Reeves, *The Brookings Institute*

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Agricultural Labor Solutions: People, Money, & Technology

A solution from neighbors to the West — Idaho LAUNCH

- Nurture homegrown talent in high demand careers:
 - Truck driving
 - Electricians
 - Information Technology
 - Welding
 - Mechanics
 - Plumbing
 - Construction
 - Finance


Source: Idaho State Government Website and personal correspondence by Corey Geiger. Presentation by Corey Geiger, CoBank.

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Agricultural Labor Solutions: People, Money, & Technology

A solution from neighbors to the West — Idaho LAUNCH

- Scholarships for these careers
 - Up to \$8,000 available to graduating high school seniors in 2024 and beyond
 - Idaho’s answer to battle a 2.6% unemployment rate
 - This was a solution developed in a Republican State
 - Lead supporter, Governor Brad Little (shown right)



Source: Idaho State Government Website and personal correspondence by Corey Geiger. Presentation by Corey Geiger, CoBank.

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Pressing Matter of Food Security

- “The prosperity of the city is bound up in the prosperity of the farm.” – former Wisconsin Governor, W.D. Hoard
- Agriculture labor should matter to everyone
- Farm Bill is 80% nutrition, anti-hunger
- Farm labor availability should be important to consumers

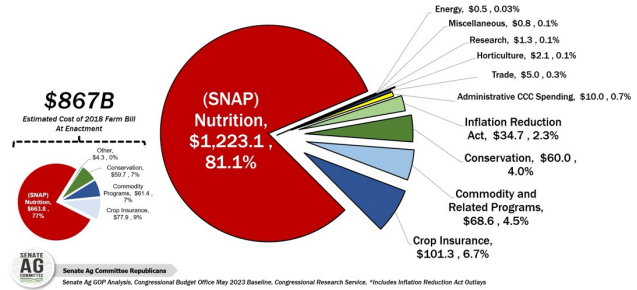
Presentation by Corey Geiger, CoBank.



The “Farm Bill” is really a “Food Bill”

The 2023 Farm Bill Scoring Baseline*

Billion Dollars, Fiscal Year 2024 to 2033, Total Spending \$1.51 Trillion



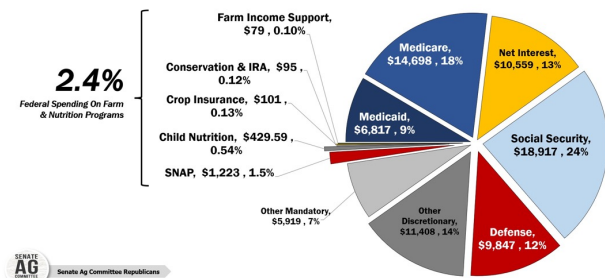
Source: Chuck Conner, President and CEO of the National Council of Farmer Cooperatives. Presentation by Corey Geiger, CoBank.



Deficit reduction must involve the “Big Five”

U.S. Farm & Nutrition Programs, Share Of Spending

Billion Dollars, Fiscal Year 2024 to 2033, Total Mandatory and Discretionary Spending Of \$80.1 Trillion



Source: Chuck Conner, President and CEO of the National Council of Farmer Cooperatives. Presentation by Corey Geiger, CoBank.



Price factors and margins

Butterfat to lead components

- 92% of all U.S. milk priced on components
- 2017 and 2018 — butterfat led milk checks
- 2023 and 2024 — butterfat to lead again
- Protein topped price sheets in the other years.

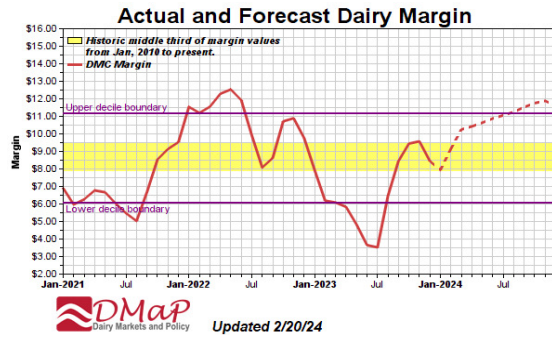
Feed prices to moderate

- Early 2023: \$6.50 per bushel corn
- Early 2024: \$4 per bushel corn on the horizon
- Early 2023: \$500 per ton soybean meal
- Early 2024: \$350 to \$400 soybean meal

Source: USDA World Agricultural Supply and Demand Estimates and CME averages. Presentation by Corey Geiger, CoBank.



Lower feed costs could improve margins on milk



Source: USDA, Farm Service Agency, Dairy Markets and Policy. Presentation by Corey Geiger, CoBank.



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