



Changing Patterns and an Economic Fragility of Milk Production

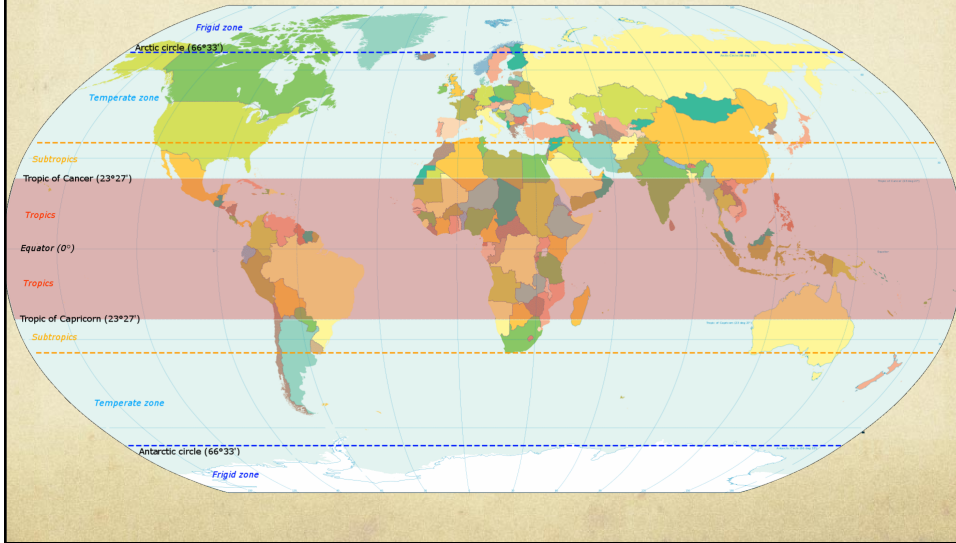


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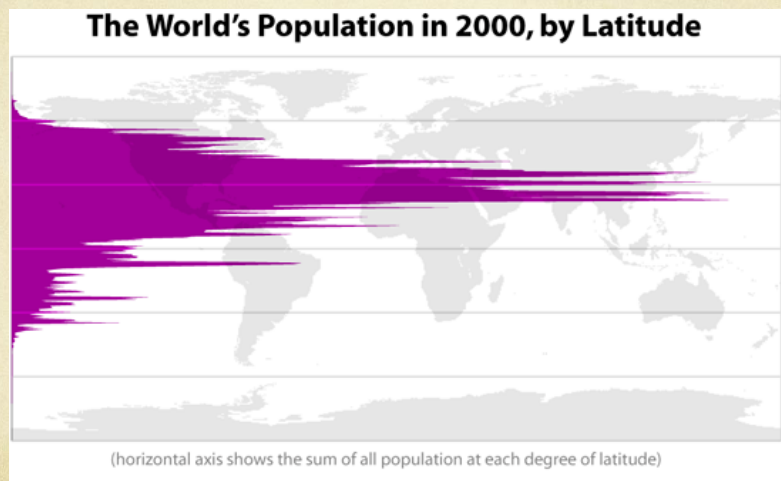
Overview

- Start big, then drill down
 - What is happening in world milk production
 - What is happening in U.S. milk production from states down to county level changes
 - What are implications for production in regions of the U.S.

As We Look at World Maps,
Keep This in Mind.

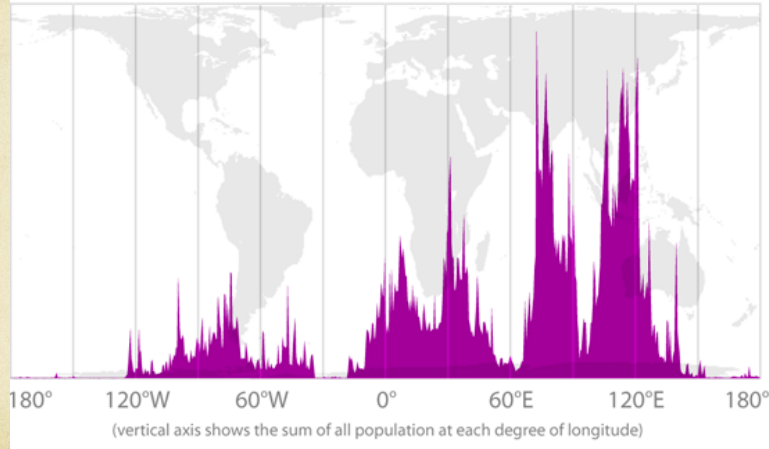


Where does the World Live?



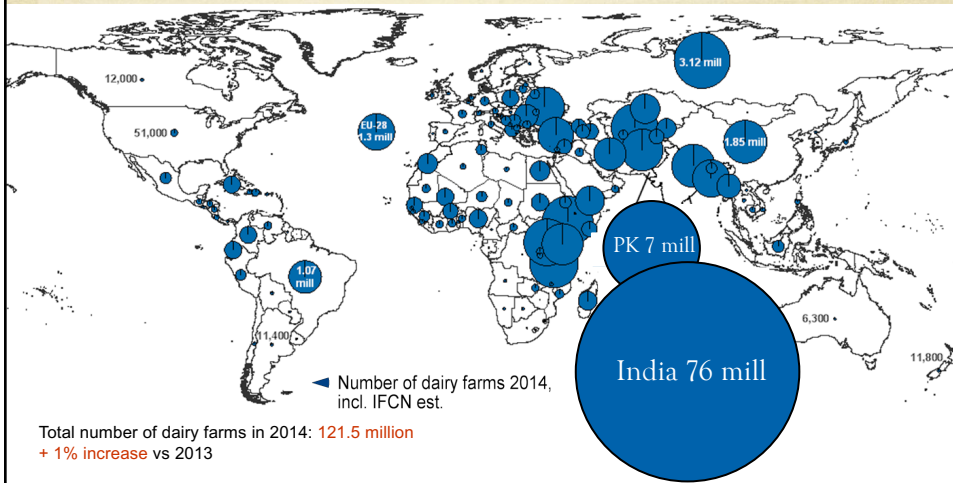
Where does the World Live?

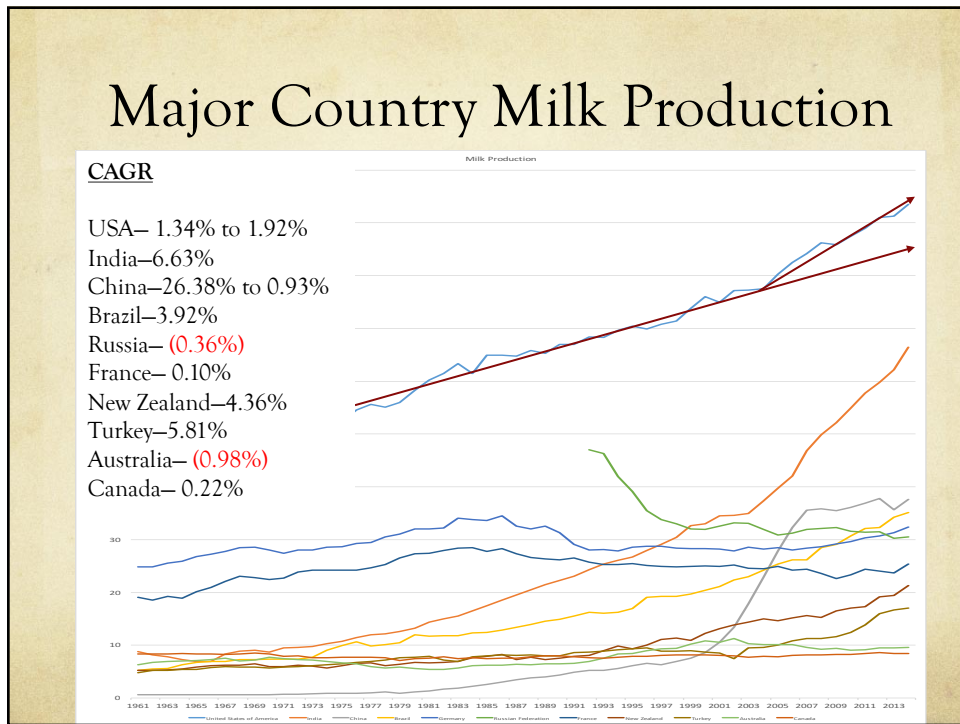
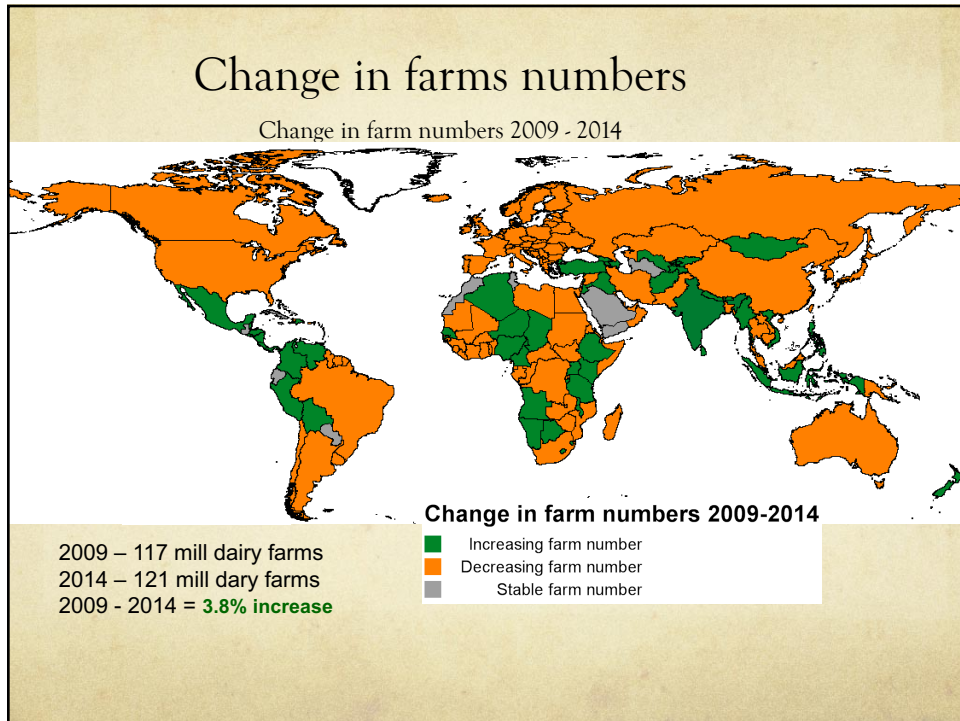
The World's Population in 2000, by Longitude



Where are the farms located?

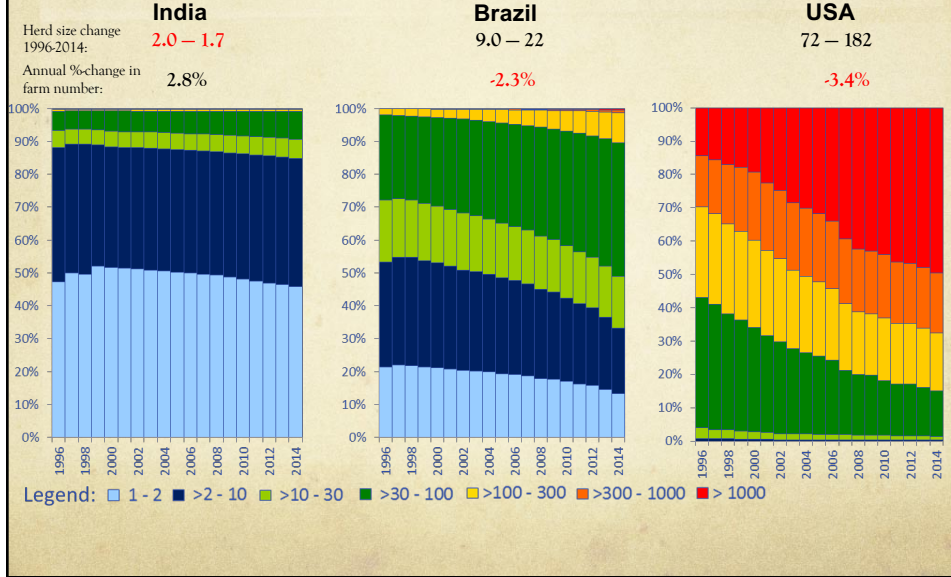
Number of dairy farms 2014, incl. estimates





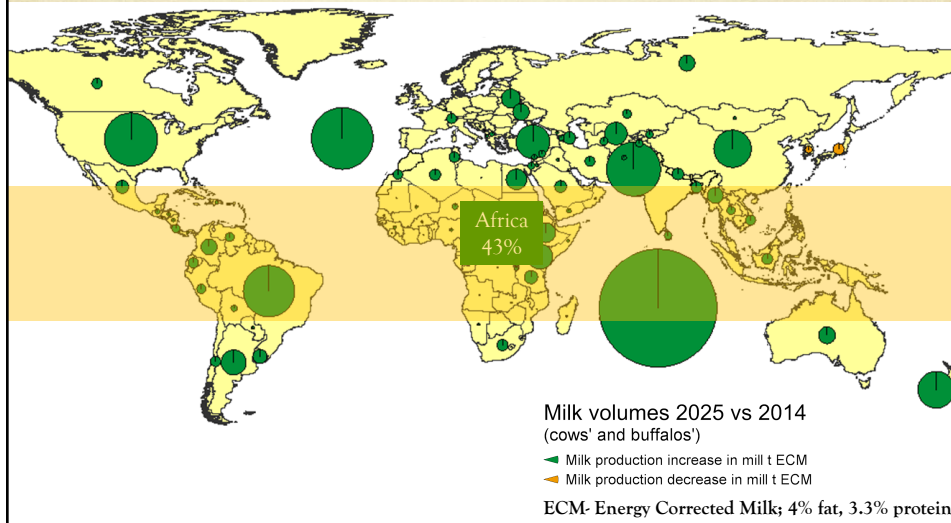
Shares of cows per size classes

Distribution in IFCN standard classes 1996-2014

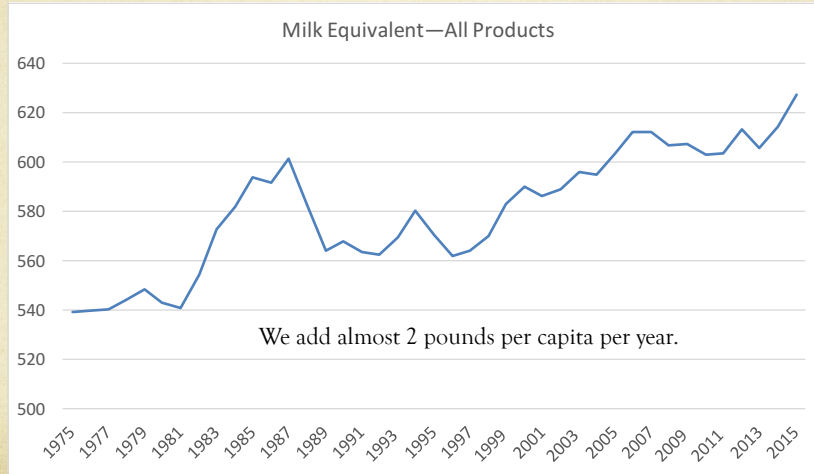


IFCN Projected World milk production growth through 2025

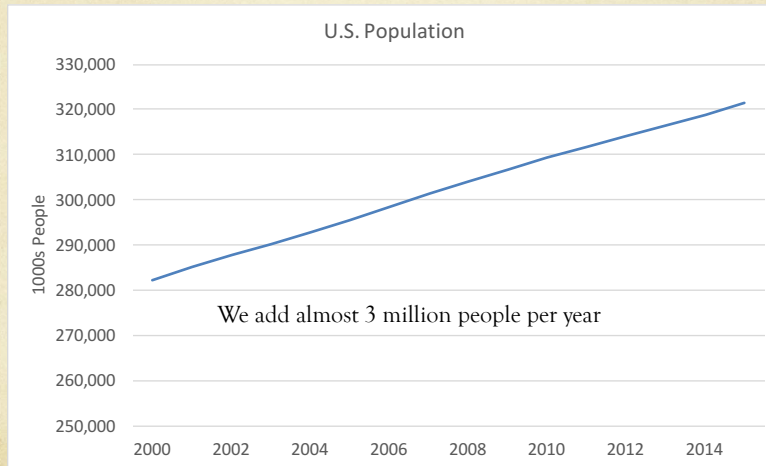
Absolute and % change in milk volumes 2025 vs 2014 mill t ECM



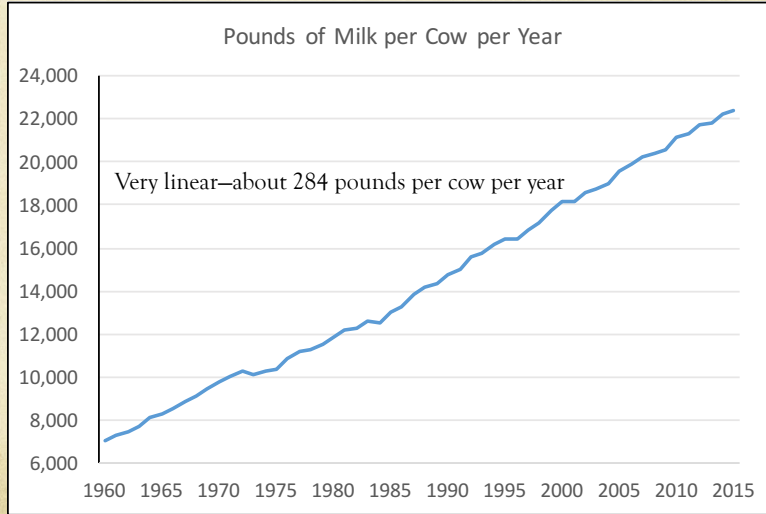
U.S. Per Capita Consumption



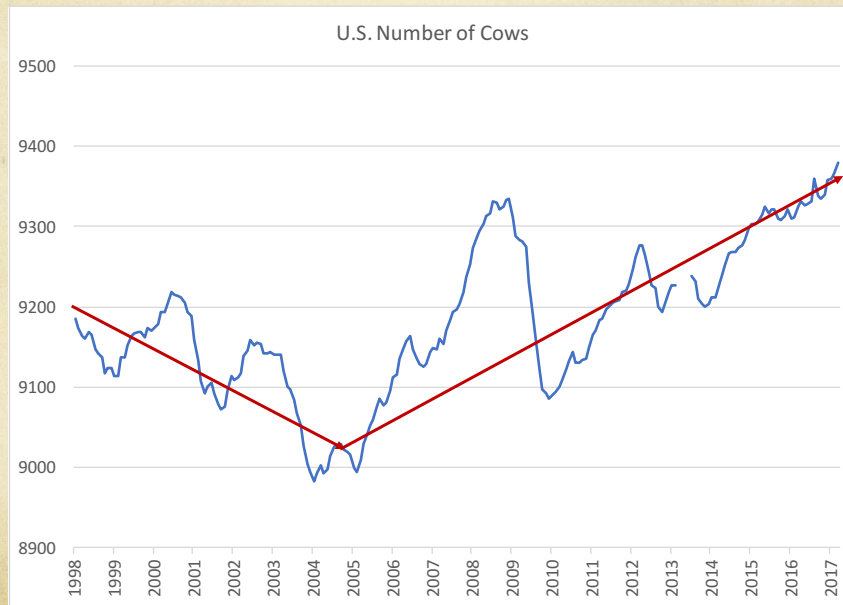
High Impact Trend!



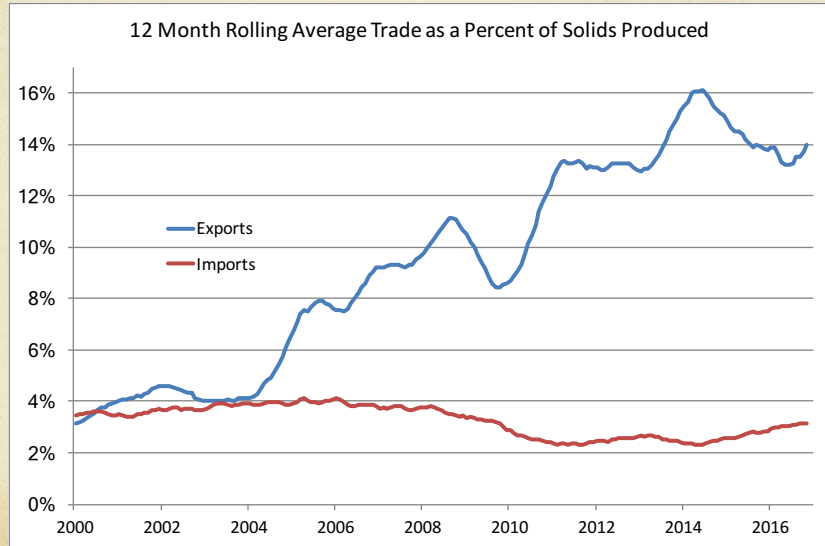
High Impact Trend!



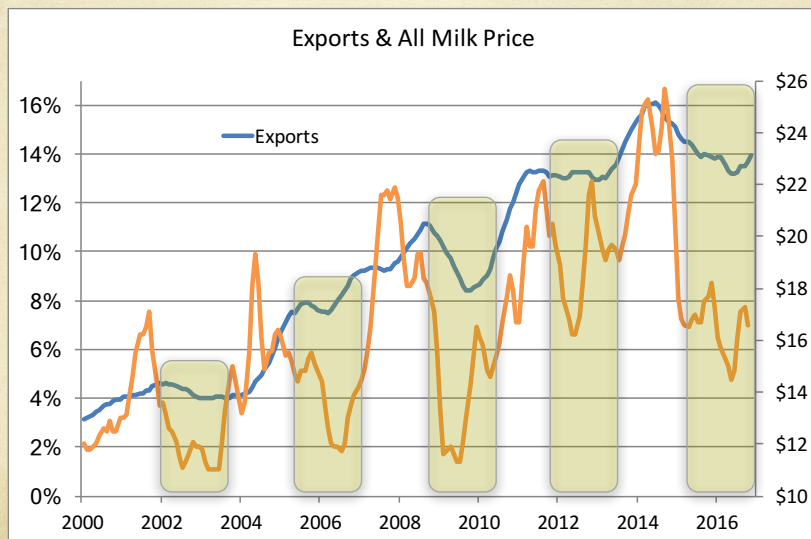
Number of Cows

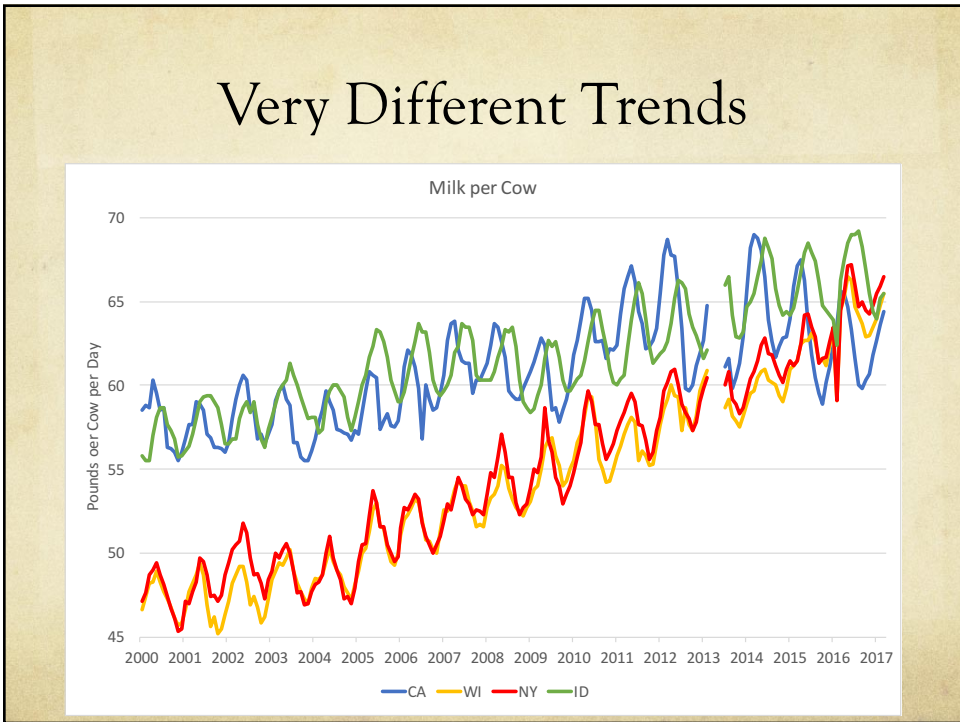
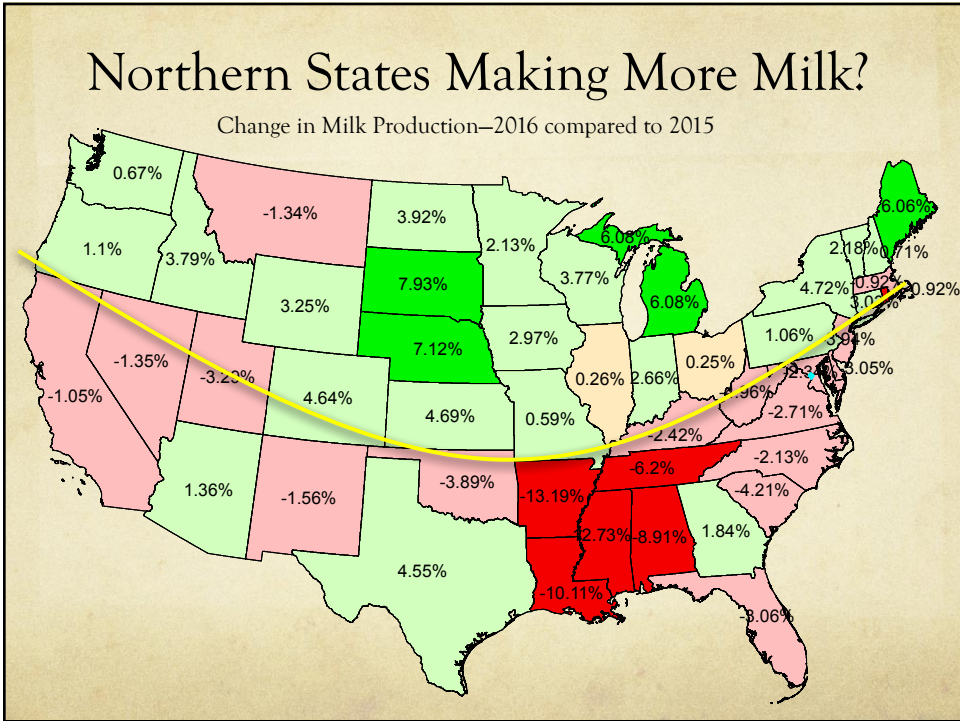


Sustained Growth Needs Exports!

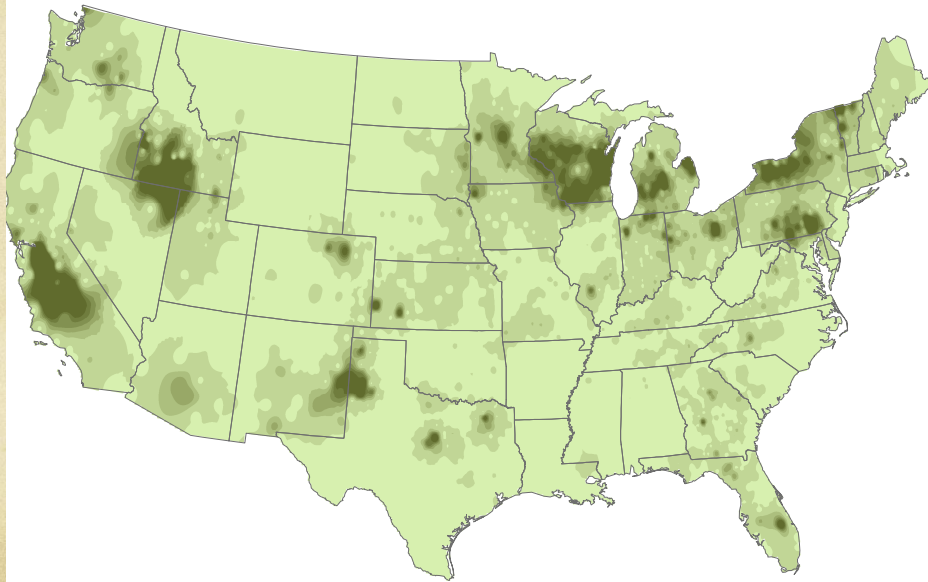


The Importance of Trade

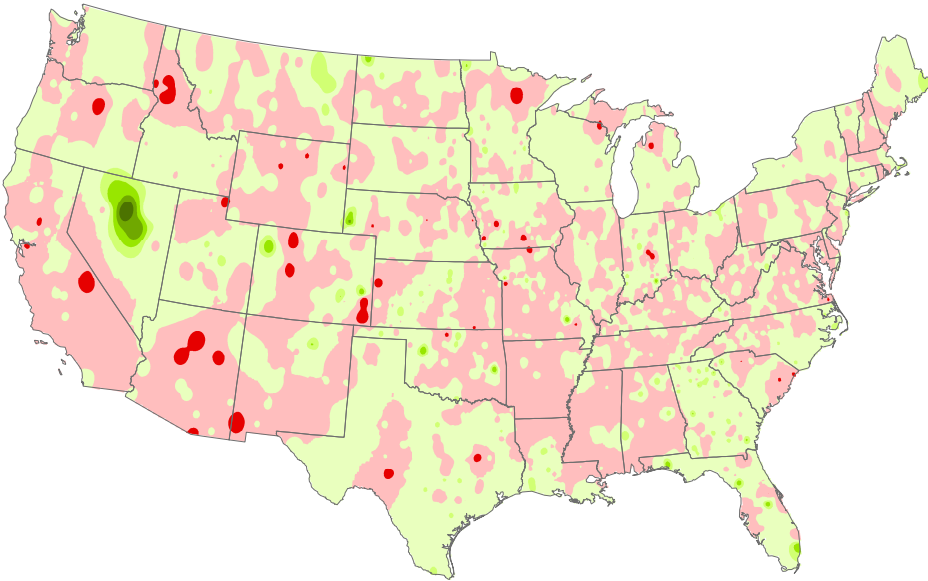




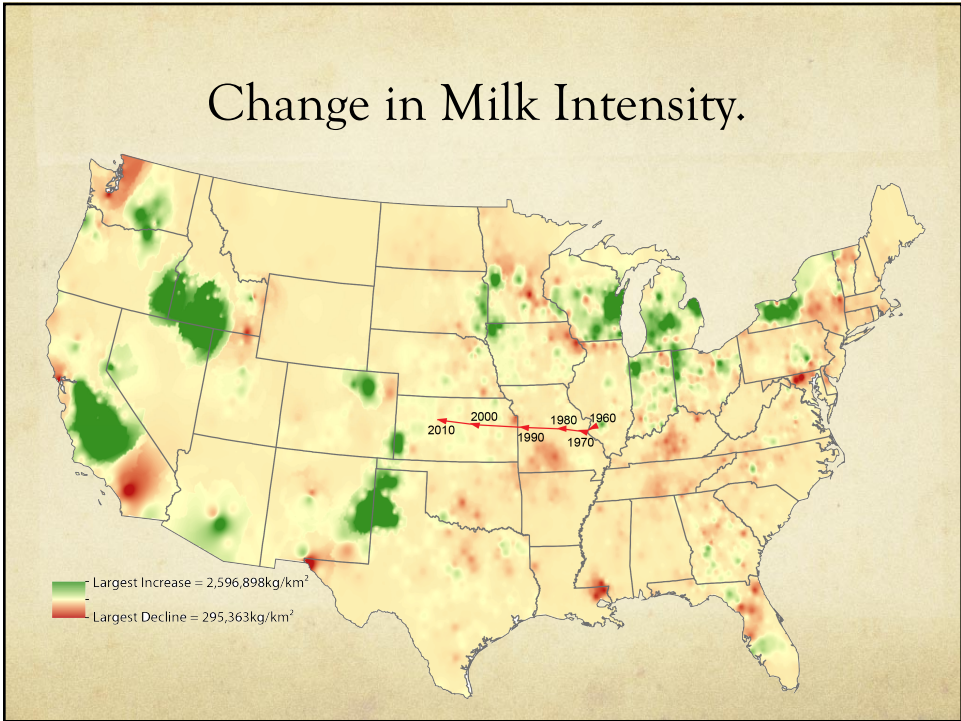
2016 Milk Density



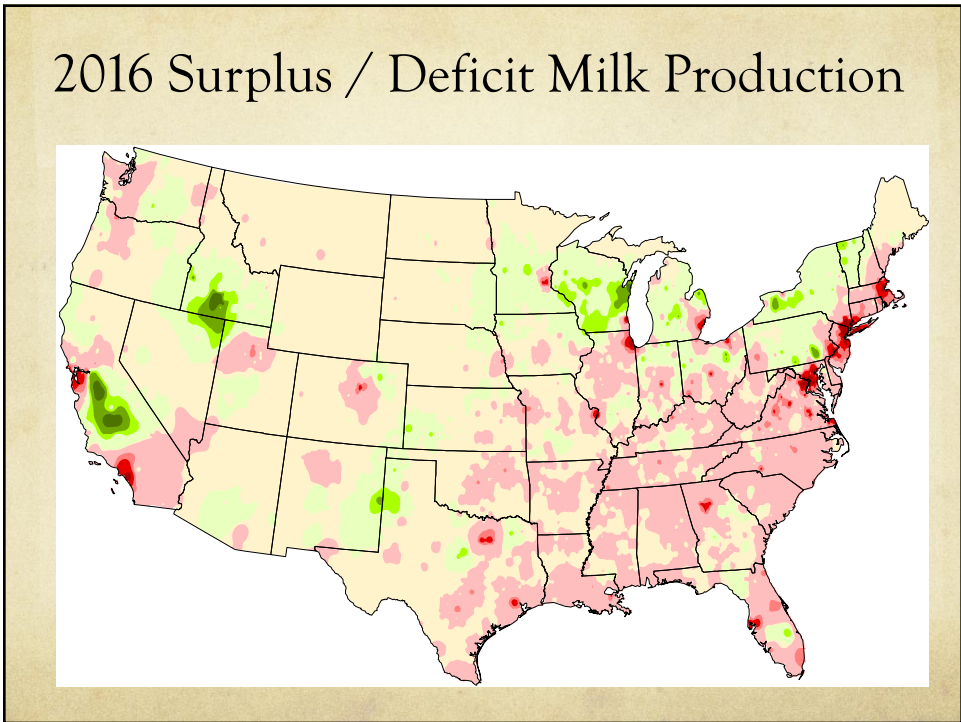
2011-2016 CAGR Milk Production



Change in Milk Intensity.



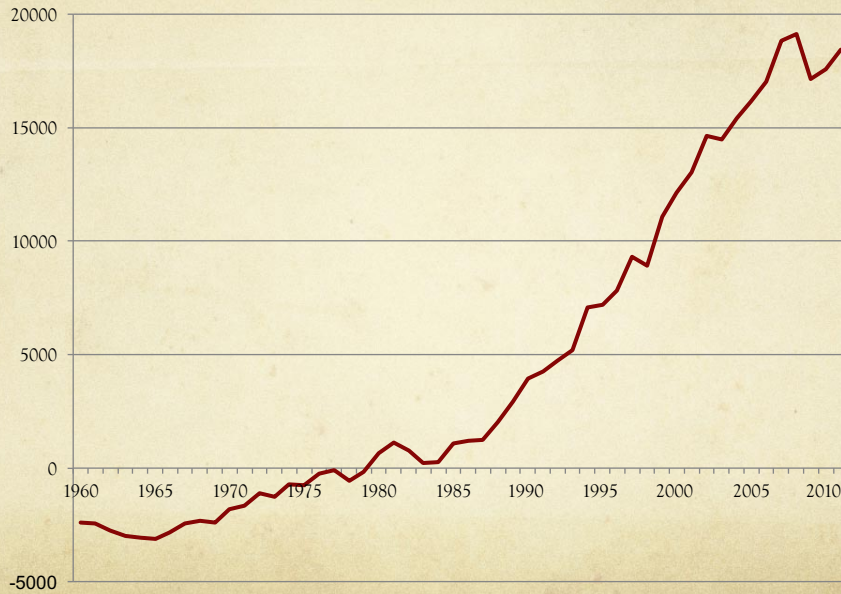
2016 Surplus / Deficit Milk Production



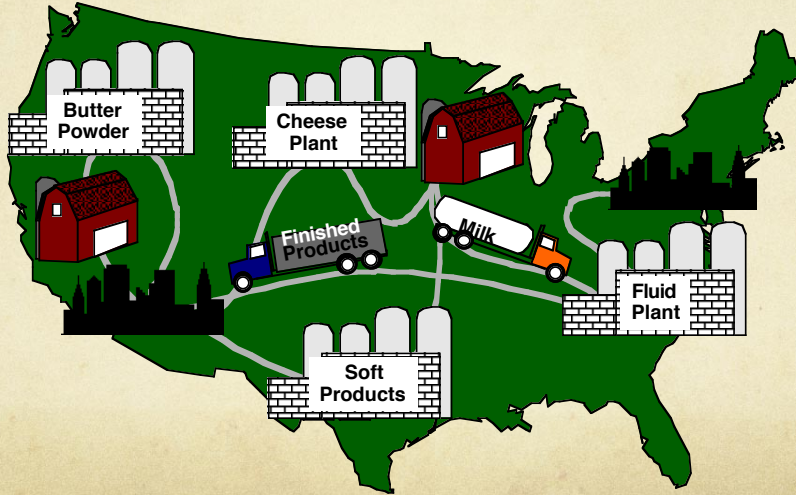
Regional Surplus/Deficit



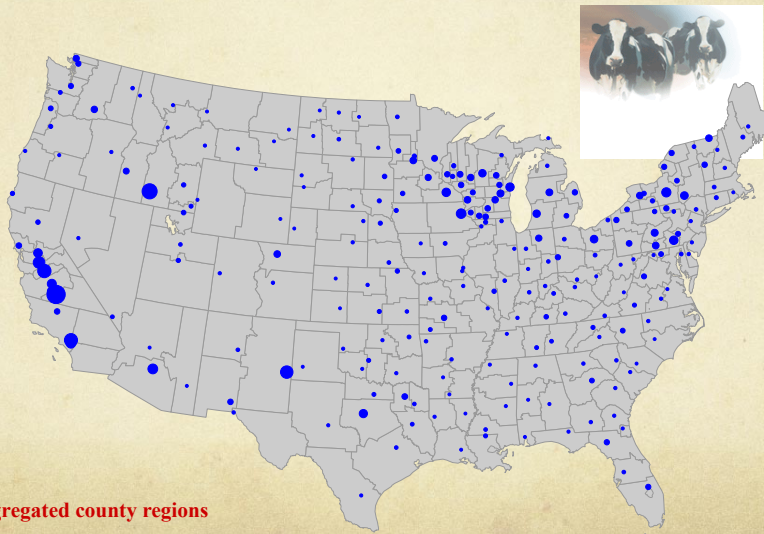
California Net Production



USDSS Conceptual Model



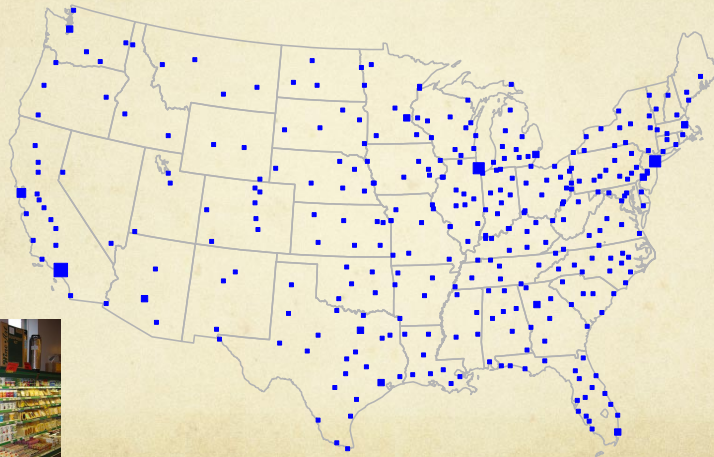
US Milk Supply Locations

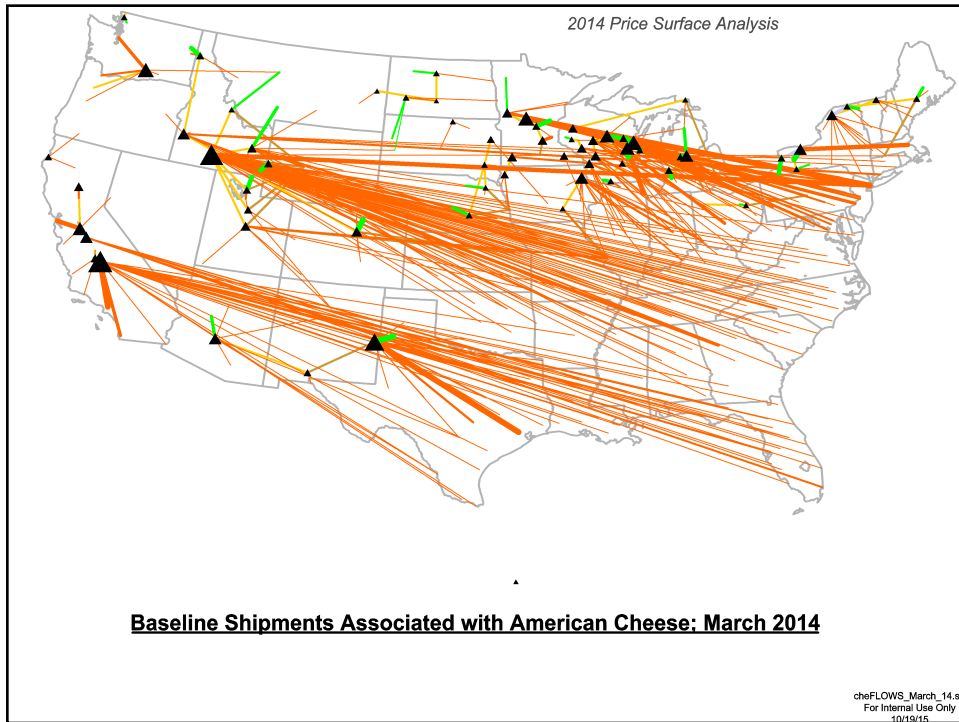
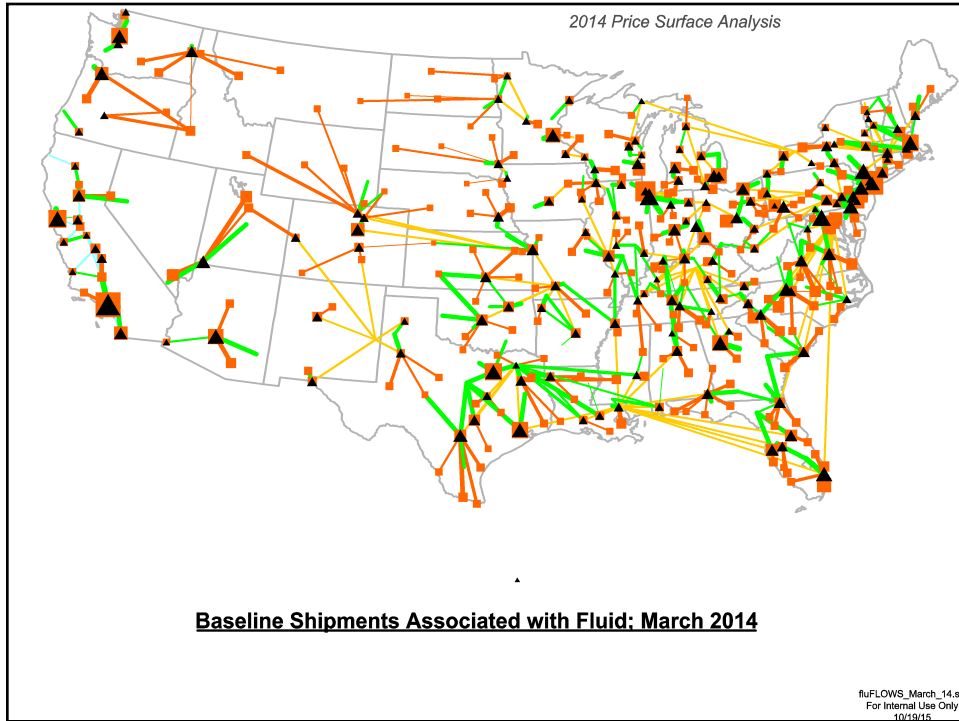


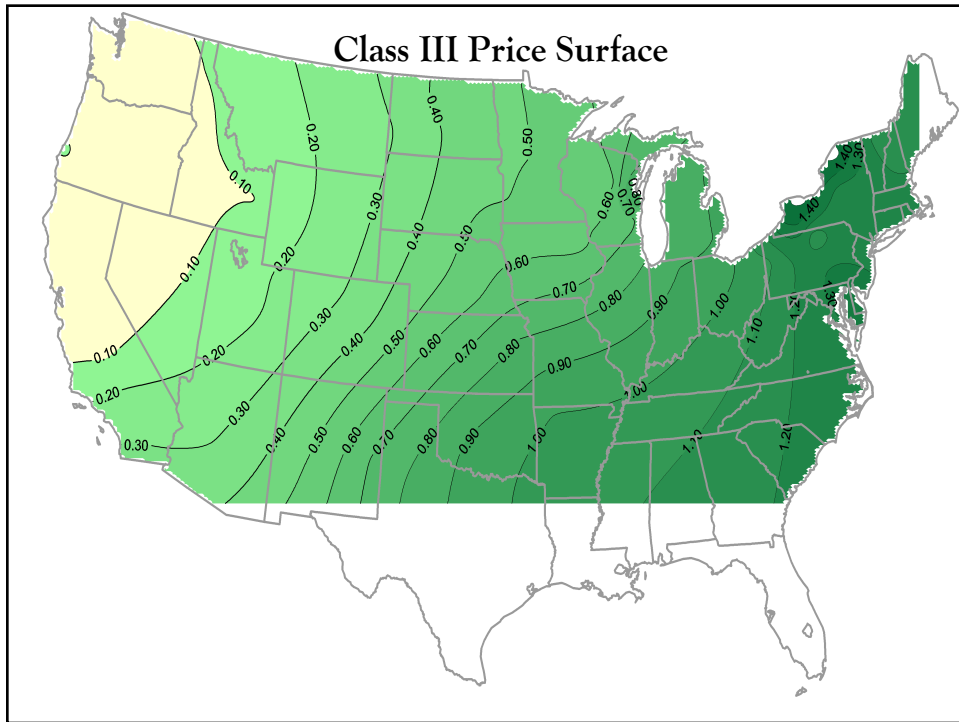
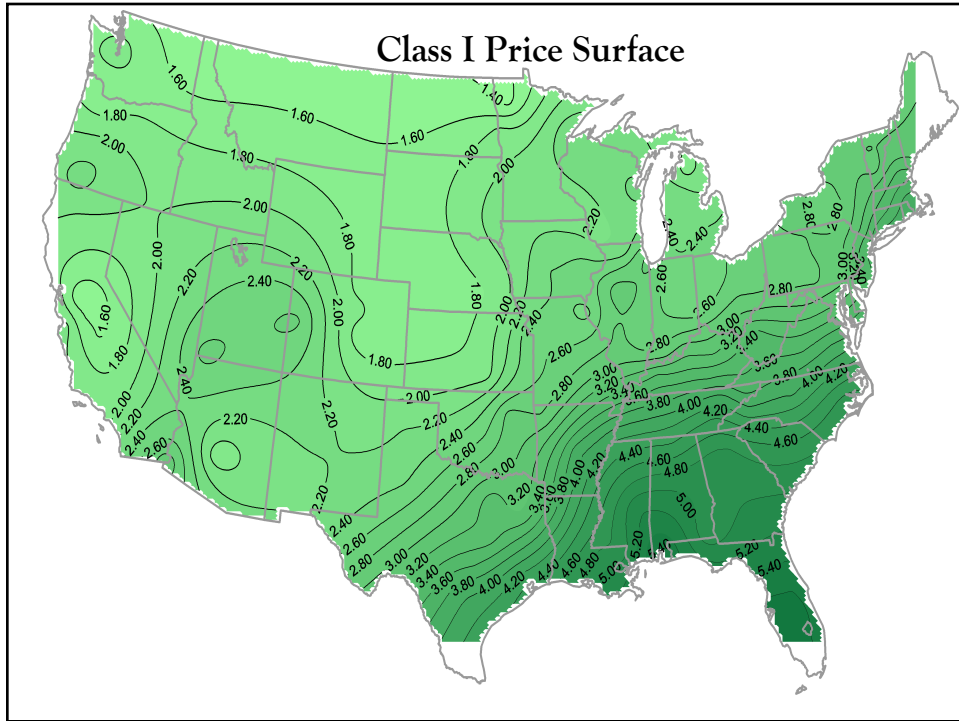
US Plant Locations



US Demand Locations







What Is Happening Over Time?

Western Observations

- Western milk supplies have grown substantially over the past 30 years. They are now very surplus.
- Products from that region need to be nutrient dense and storable to be competitive for exports (out of the region).
 - Cheese, butter and yogurt can come east, but they must be cost competitive with the Upper Midwest
 - Nonfat dry milk, cheese and butter can go west, but they must be cost competitive with Oceania and the EU
- Can yield growth be sustained going forward?

What Is Happening Over Time?

Midwest Observations

- Californication of business models
 - Large scale economies
 - But with differences—i.e., a more significant land base
- Better cow comfort and large land tracts are still available in many regions
- Who is your customer?
 - Domestic sales to east and southeast, but exports can be harder
- Must pay more attention to water and environmental issues

What Is Happening Over Time?

Southeast Observations

- Hugely net deficit in milk production.
 - Implication is for perishable product production
 - Balancing becomes a **very** big issue and cost
- It has felt like a long, slow bleed until you impact infrastructure.
- Will animal genetics play a part to retain and/or increase milk production?
- Will processing technology and transportation play a bigger role in servicing demand in the region?

What Is Happening Over Time?

Northeast Observations

- Modestly net deficit in milk production, but raw milk still moves long distances
- Too costly to process in the major metropolitan areas?
- Milk production growth will be “between the cracks”
 - Few large tracts of land available
 - Implies slower, but steady growth

In Summary...

- It doesn't feel like a steady state anywhere
- The "Field of Dreams" is not reality—
 - If you produce it, they may not come
- Comparative advantage probably has to peel back the layers to our more basic agronomic resources
 - Land, climate and water
- Processing technologies and transportation could be transformational

Questions?