From the desk of the DairyDoc

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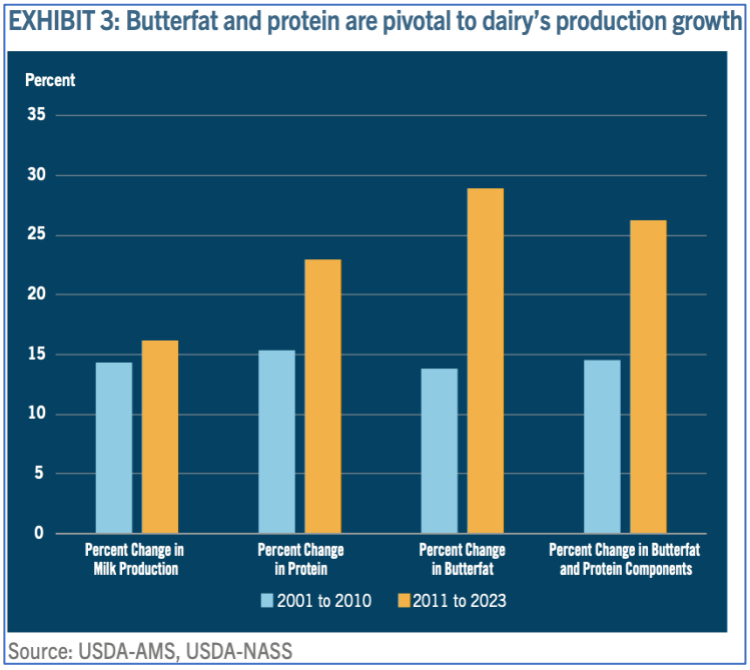
U.S. milk production flat since 2022 but butterfat and protein propel dairy's growth

A recent CoBank report highlights some interesting shifts in production towards a component yields production vs. a historically more volume yields production, which is to date not reflected in the USDA's Milk Production reports. Milk composition had been stable for decades but in 2011 milk composition of butterfat and protein started to grow. While milk production grew by 16.2% protein jumped 22.9% and butterfat bounded 28.9% higher by 2023. The reasons? Much of it obviously is improved cow productivity through refining rations, enhancing ration ingredients, improving genetic selection and genomics, stepping up forage quality and providing better cow comfort. But the key shift has been the increased use of higher component yielding breeds such as Jersey vs. Holstein: from 2000 to 2023 according to data from the National Association of Animal Breeders (NAAB), Holstein semen sales dropped from 92.6% to 82.3% of all semen sales and Jersey semen sales grew from 5.8% to 14.2%. An interesting question not addressed in this report, is what impact has that increased efficiency and shift of carbon to components had on the footprint of the U.S. dairy sector? And subsequently, what percentage of the footprint reduction is due to the breed changes?



Source: CoBank, September 2024. https://www.cobank.com/documents/7714906/7715329/MilkProcessing-Sep2024.pdf/25b3b8c0-cff4-605d-c330-8556705332f2?t=1727471642388

How to accurately calculate Solid-Corrected Milk (SCM)

A way to control milk volume for components (fat and protein) is to adjust the volume using the formula for Solid Corrected Milk (SCM), which some of the international organizations such as IFCN (International Farm Comparison Network) use. For an accurate comparison of milk volumes between countries, milk quantity measured in natural contents is converted into solid-corrected milk (SCM) with the aim of better reflecting the quantity of fat and protein produced. Both milk components are weighted equally. By definition, 1 kg SCM is 1 kg milk with 4% fat and 3.3% true protein. The majority of countries report in their national statistics crude protein that should be converted to true protein. Non-protein nitrogen (NPN) is thereby assumed to account for about 0.19% of the "protein" in a crude protein value (Barbano et al., 1991). The SCM adjustment of milk volume occurs according to a two-step procedure. First, the protein content of the milk is converted into true protein (where necessary):

True protein% = crude protein% - 0.19%

Second, the milk is corrected for milk solid. The formula applied is as follows:

SCM = milk production × (fat% + true protein%)/7.3

Source: Global dairy sector: past development and outlook. Insights from the International Farm Comparison Network (IFCN). Agroscope science No. 193/2024.

World Milk Supply

From the same IFCN report mentioned above here are some interesting depictions on how the world dairy supply is developing.

What stands out is the explosive growth of milk production in East/Southeast Asia and Africa, compared to the limited growth in particular in Western Europe and Oceania.

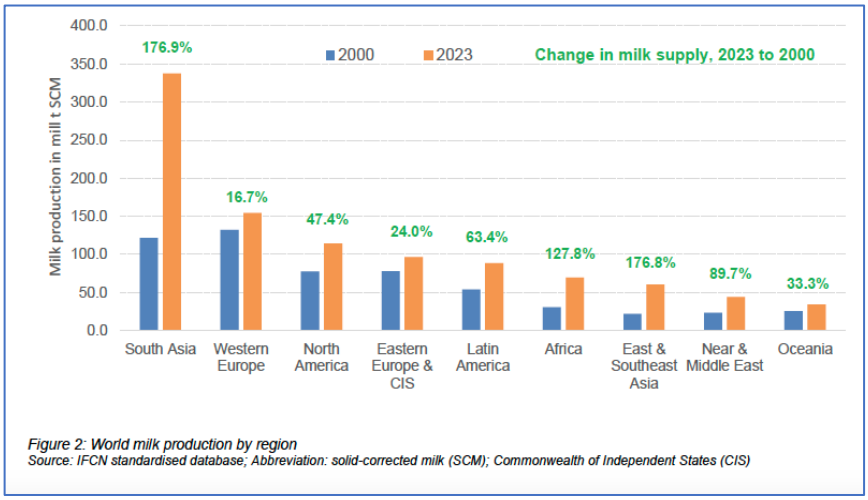
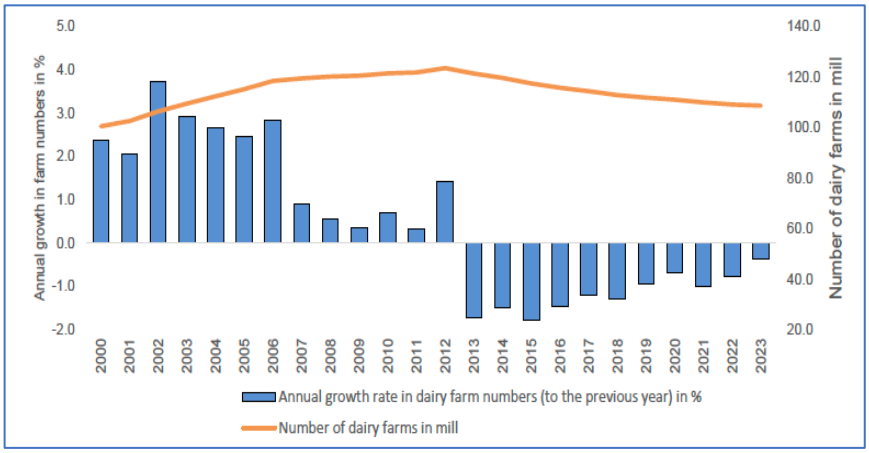


Figure 2: World milk production by region
Source: IFCN standardised database; Abbreviation: solid-corrected milk (SCM); Commonwealth of Independent States (CIS)

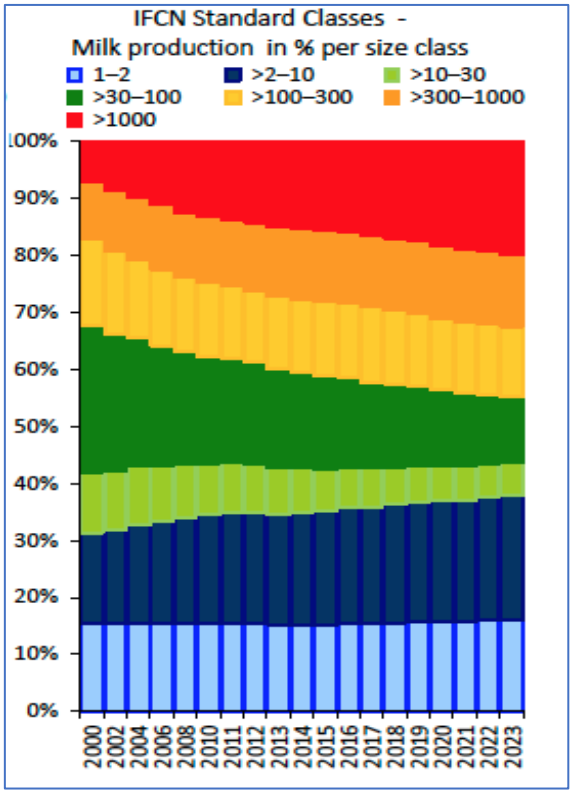
Number of dairy farms

At the same time, consolidation oftentimes mentioned in western production systems in North America and Europe is also a factor across the globe, as the total number of dairy farms worldwide peaked in 2012 and has continued to decline since. Since 2013, the most significant decreases in farm numbers have been observed in China (-87.1%), the Ukrainian formal sector (excluded households) (-56.3%), the EU (-46.2%), and the United States (-44%). However, there are two opposite trends: in developed countries and some developing countries, dairy farm numbers are decreasing, whereas in most developing countries, they continue to increase. This can be explained by household farms quitting the business in developed countries, thus reducing the overall number of farms, whereas in many developing countries, population growth has led to an increase in the number of smallholder farmers (Hemme (2021, 2023).



Milk production in different size classes

While farm numbers are decreasing, farm sizes are increasing worldwide, much like in the U.S. The class with more than 1000 cows grew globally at the fastest pace in this regard. The relative importance of the size class between 300 and 1000 cows also increased in the last two decades, although at a slower pace than the class with more than 1000 cows. The global milk production share accounted for by the size class between 100 and 300 cows remained almost constant in the 20 years of the study period. Whereas the relative importance of the size class between 10 and 100 cows steadily decreased since 2000, the size class between 2 and 10 cows gained substantial importance in terms of global milk production share. Finally, the relative contribution of the size class between 1 and 2 cows remained stable since 2000.



Source: Global dairy sector: past development and outlook. Insights from the International Farm Comparison Network (IFCN). Agroscope science No. 193/2024.