



Sustainable productivity growth and dairy are key to sustainable food systems

Summary

Globally, 2.3 billion people suffer from moderate to severe food insecurity. Nearly 10% of the world's population – 811 million people – are undernourished¹. The global population is expected to bloom to 10 billion people by 2050², requiring a dramatic increase in food production while coping with climate change and natural resource constraints.

Sustainably increasing agricultural productivity is a key solution needed to address these challenges, and U.S. dairy producers are global leaders in efficiently using precious natural resources to produce high-quality and safe nutrient-dense foods.

The importance of efficiency gains and sustainable productivity growth in agriculture is supported by a wide body of evidence and normative work. For example, according to the UN Food and Agricultural Organization's (FAO) 2021 State of Food Security and Nutrition report:

“Addressing low productivity in food production can be an effective way of raising the overall supply of food, including nutritious foods, by reducing food prices and rising incomes, especially for the poorer family farmers and smallholder producers in low-income and lower-middle-income countries, like farmers, pastoralists and fisherfolk.”³

In contrast, evidence shows that reducing agricultural productivity would have significant negative

consequences and risk increasing food insecurity. For example, the U.S. Department of Agriculture (USDA) has found that implementing the European Farm to Fork strategy would dramatically increase the number of people experiencing hunger, with particularly negative consequences on vulnerable groups in low- and middle-income countries (LMICs).⁴

Farm to Fork calls for decommissioning farmland and drastically restricting use of agricultural inputs, which would lower yields, increase commodity prices, and harm farmers' livelihoods. If implemented in Europe alone, USDA estimates the strategy would increase the number of people experiencing food insecurity by 22 million by 2030, while implementing it globally would leave an additional 185 million people without access to consistent, accessible and affordable food.

The vision of producing more nutritious foods using less natural resources by harnessing the power of science, technology and innovation is gaining traction at an international level. As part of the 2021 UN Food Systems Summit, the United States launched a Coalition on Sustainable Productivity Growth for Food Security and Resource Conservation (the SPG Coalition). The SPG Coalition aims to accelerate the transition to more sustainable food systems through agricultural productivity growth that optimizes agricultural sustainability across social, economic, and environmental dimensions. USDEC and other U.S. dairy organizations have signed on as strong supporters of the coalition.

Nutrient-dense dairy foods are critical to sustainable healthy diets

As a uniquely nutrient-dense food, dairy is a cornerstone of global food and nutrition security. Dairy foods are one of the most affordable and accessible sources of high-quality protein, as well as often under-consumed nutrients like calcium, iodine, zinc, vitamin D, and B12 – critical for healthy diets, especially for children, women, and vulnerable populations.

Globally, milk is under-consumed in all regions, with the sharpest differences between current and optimal intake seen in LMICs in Sub-Saharan Africa and Asia.⁵ In the United States, milk, cheese, and yogurt are the top sources of many essential nutrients in children's diets. Dairy foods provide about 52% of the calcium, 51% of the vitamin D and 17% of the protein consumed by Americans.⁶

U.S. dairy leads the world in sustainable productivity growth

The U.S. dairy industry is a global leader in producing more high-quality, nutrient-dense food more efficiently and with less natural resources. With a commitment to continuous improvement, the U.S. dairy industry was able to produce milk using 65% less water, generating 76% less manure and 63% less greenhouse gas emissions (GHGE) compared to 70 years prior.⁹

In 2008, the U.S. dairy industry became the first in the food agricultural sector to conduct a full life cycle assessment (LCA) at a national scale, and it continues to hold itself to the highest standards. In 2020, U.S. dairy industry set ambitious new environmental stewardship goals to achieve greenhouse gas neutrality or better, optimize water usage, and improve water quality by 2050.¹⁰

Environmental efficiency gains in the global dairy sector have also been realized in recent years. The UN Food and Agriculture Organization (FAO) found that GHGE per kilogram of milk produced globally (also known as "emissions intensity") declined by 11% from 2005-2015¹¹ while global milk production rose by 30%.¹² These global gains were largely driven by innovation and efficiency in North America, where the U.S. is the largest dairy producer. North America was the only region in the world to increase production while also reducing absolute emissions, making its GHG intensity for dairy products the lowest in the world.

In low- and middle-income populations that consume mostly plant-based diets, nutrient deficiencies include calcium, iodine, zinc and vitamin B12, which can be provided by dairy foods and ingredients. In addition, many people in LMICs depend on dairy foods as a primary source of high-quality protein.⁷

As populations grow, dairy foods have become an increasingly important source of nutrition in emerging economies and LMICs. From 2010 to 2017, milk consumption increased 30% in Asia (from 277 million to 360 million tons), and more than 11% in Africa (from 45 million to 50 million tons).⁸ Dairy foods will continue to be critical contributors to global food and nutrition security.

U.S. dairy farm emissions average slightly more than 1 kilogram of carbon per kilogram of milk produced, whereas in parts of Africa and other emerging dairy nations, dairy farm emissions can be as much as 20 times higher.¹³

The environmental efficiency gains made by U.S. dairy producers extends beyond reductions in GHGE. A study published in the *Journal of Animal Science* in 2020 found significant environmental achievements in land and water conservation.¹⁴ In 2017, producing a gallon of milk required 30% less water, 21% less land, and a 19% smaller carbon footprint than in 2007.

Significant progress continues to be made. U.S. dairy farmers are innovating to decrease GHGE (including methane), reduce food waste and support healthier, sustainable communities. Feed for dairy cows makes use of food not suitable for human consumption and headed to a landfill, which would otherwise release methane during breakdown and go to waste (like husks humans can't digest and spent brewers grains).

The efficiency of the U.S. dairy sector continues to grow, as new innovations in feed additives and improvements in genetics allow farmers to drive down emissions and decrease the environmental footprint of production. This proven track record of harnessing modern agricultural technology to improve productivity and produce more food with fewer inputs is an exemplary model for dairy producers everywhere.

A sustainable future for all

We continue to strive for a world free from hunger and malnutrition. To do so while protecting our environment for generations to come, we must act now to make our food systems more sustainable, by doing so much more with so much less. This means taking advantage of the best that modern science and agriculture has to offer in improving the productivity of food production. In this way, we can build a truly sustainable food system for all.



References

1. FAO, IFAD, UNICEF, WFP and WHO, "The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets", (2020), <https://doi.org/10.4060/ca9692en>.
2. United Nations, Department of Economic and Social Affairs, Population, "World Population Prospects 2019: Highlights", Division (2019), https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf.
3. FAO, IFAD, UNICEF, WFP and WHO, "The State of Food Security and Nutrition in the World 2021. Transforming food systems for food security, improved nutrition and affordable healthy diets for all", (2021), <https://doi.org/10.4060/cb4474en>.
4. USDA, "Farm to Fork Initiative to Restrict European Union Agricultural Inputs May Increase Food Prices, Further Global Food Insecurity", (2021), <https://www.ers.usda.gov/amber-waves/2021/march/farm-to-fork-initiative-to-restrict-european-union-agricultural-inputs-may-increase-food-prices-further-global-food-insecurity/>.
5. Lancet, "Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017", (2019), [https://www.thelancet.com/article/S0140-6736\(19\)30041-8/full-text](https://www.thelancet.com/article/S0140-6736(19)30041-8/full-text).
6. National Dairy Council, "NHANES 2011-2014 Dairy Foods Messaging", (2018), <http://www.cdc.gov/nchs/nhanes.htm>.
7. Frontiers in Nutrition, "The Chicago Consensus on Sustainable Food Systems Science", (2018), <https://doi.org/10.3389/fnut.2017.00074>.
8. IDF, "Dairy Sustainability Outlook" (2018), <https://fil-idf.org/dairys-global-impact/dairy-sustainability-outlook/>.
9. Journal of Animal Science, "The environmental impact of dairy production: 1944 compared with 2007", (2009), <https://doi.org/10.2527/jas.2009-1781>.
10. U.S. Dairy, "What Is Dairy's Surprising Tie to Renewable Energy?" (2020), <https://www.usdairy.com/news-articles/dairy-renewable-energy-environmental-sustainability>.
11. FAO and GDP, "Climate change and the global dairy cattle sector – The role of the dairy sector in a low-carbon future", (2018), <https://www.fao.org/3/CA2929EN/ca2929en.pdf>.
12. FAO and GDP, "Climate change and the global dairy cattle sector – The role of the dairy sector in a low-carbon future", (2018), <https://www.fao.org/3/CA2929EN/ca2929en.pdf>.
13. IICA and USDEC, "The Importance of Livestock Production and Animal Protein: The Western Hemisphere Perspective", (2021), <http://repositorio.iica.int/bitstream/handle/11324/16954/BVE21068221i.pdf?sequence=2&isAllowed=y>.
14. The Journal of Animal Science, "The effects of improved performance in the U.S. dairy cattle industry on environmental impacts between 2007 and 2017", (2020), <https://doi.org/10.1093/jas/skz291>.