

FOOTNOTES

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- 5 Drewnowski A and The Ecosystem Inception Team. The Chicago Consensus on Sustainable Food Systems Science. *Front. Nutr.* 2017; 4:74. doi: 10.3389/fnut.2017.00074.
- 6 Alvarez-Leon E, Roman-Vinas B & Serra-Majem L. Dairy products and health: a review of the epidemiological evidence. *Br J Nutr* 2006; 96(1): S94-S99
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- 8 Kabunga N. Improved Dairy Cows in Uganda - Pathways to Poverty Alleviation and Improved Child Nutrition. IFPRI Discussion Paper 01328, 2014.
- 9 Food and Agriculture Organization, Global Dairy Platform and IFCN Dairy Research Network, 2018. Dairy Development's Impact on Poverty Reduction. Chicago, Illinois, USA. Licence: CC BY-NCSA 3.0 IGO
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- 11 Food and Agriculture Organization: The State of Food and Agriculture, Moving Forward on Food Loss and Waste Reduction, 2019.
- 12 Jonathan Statham, Harriet Scott, Sian Statham and Judith Acton - RAFT Solutions Ltd, Adrian Williams and Daniel Sandars - Cranfield University, Dairy Cattle Health and Greenhouse Gas Emissions Pilot Study: Chile, Kenya and the UK. Global Dairy Platform, Global Research Alliance on Agricultural Greenhouse Gases, and Dairy Sustainability Framework, 2020.

ADDITIONAL REFERENCES

- The On The Way To Planet Proof program: <https://planetproof-international.eu/527/home.html>
- The Latest US Sustainability Report can be viewed for relevant background information and additional links to valuable GHG references.
- Social media platforms can be utilized in a number of ways to provide motivating and emotion-based communications which transform the basic message contained in rational statements from technical documents and research papers. An example from the Dutch Dairy Association NZO: <https://www.youtube.com/watch?v=Y31dMiHwOag>
- The emission intensity of the dairy sector outputs has dropped between 2005 and 2015 by 11%, according to analysis from the Food and Agriculture Organization (FAO) of the United Nations: <https://dairy-sustainabilityframework.org/wp-content/uploads/2019/02/Global-Dairy-and-GHG-Emissions-Factsheet-English.pdf>. See the full FAO/GDP publication Climate Change and the Global Dairy Sector: <http://www.fao.org/publications/card/en/c/CA2929EN>
- How nutrition and sustainable food systems are inextricably linked: <https://dairygood.org/content/2018/how-nutrition-and-sustainable-food-systems-are-inextricably-linked>
- CFS High Level Panel of Experts (HLPE) Report #12: www.fao.org/fileadmin/user_upload/hlpe_documents/HLPE_S_and_R/HLPE_2017_Nutrition-and-food-systems_S_R-EN.pdf
- FrieslandCampina and other dairy companies recognize the role of a farm family and the importance of biodiversity enhancement: <https://www.frieslandcampina.com/en/sustainability/how-and-for-generations-to-come/>
- US farmers take a long view on the future benefits of sustainable food systems: <https://dairygood.org/content/2019/how-these-dairy-farmers-take-a-long-view-on-sustainability>
- The relationship between animals and the land is important to farmers: <https://www.frieslandcampina.com/en/sustainability/sustainability-in-practice/pasture-grazing-cows-in-meadows/>
- Environmental Sustainability Communications for biodiversity and responsible farming at Arla: <https://www.arla.com/sustainability/our-climate-ambition/>
- Nestle water use improvements: http://www.nestle.com/asset-library/Documents/Library/Documents/Environmental_Sustainability/Water-Management-Report-Mar2007-EN.pdf
- Saputo water management case studies: <http://saputo.com/en/our-promise/case-studies/water>
- Unilever's commitment to water: <https://www.unilever.com/sustainable-living/reducing-environmental-impact/water-use/>
- The "UK Dairy Roadmap" provides information on 10 Years of Environmental Commitment in that country: <https://www.dairyuk.org/publications/the-dairy-roadmap/>
- Dairy Farmers of Canada on-farm program called 'proAction': <https://www.dairyfarmers.ca/proaction#animal-care>
- The Fonterra global approach to animal care: <https://www.fonterra.com/nz/en/what-we-stand-for/environment/animal-welfare.html>
- The Dutch Dairy Association (NZO) has extensive material on the animal care topic: <https://www.nzo.nl/en/sustainability/animal-welfare/> and <https://www.duurzamezuivelketen.nl/>
- FrieslandCampina's approach on animal welfare: <https://www.frieslandcampina.com/en/sustainability/how-and-for-generations-to-come/animal-welfare/>
- Animal care research information: <https://www.cdn.ca/document.php?id=422>
- Arla Foods global commitment to animal care: <https://www.arla.com/company/sustainable-dairy-farming/#animals-1>
- The global dairy sector supports the OIE (World Organisation for Animal Health) Terrestrial Animal Health Code: <https://www.oie.int/en/standard-setting/terrestrial-code/>
- The animal care component of the United States FARM program: <https://nationaldairyfarm.com/dairy-farm-standards/animal-care/>
- Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc: <https://www.ncbi.nlm.nih.gov/books/NBK222318/>
- Dietary Reference Intakes for Calcium and Vitamin D: <https://www.nap.edu/read/13050/chapter/5#91>
- Overview of the Immune Response: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2923430/>
- Methane, Cows, and Climate Change: California Dairy's Path to Climate Neutrality: https://clear.ucdavis.edu/sites/g/files/dgvnsk7876/files/inline-files/CLEAR-Center-Methane-Cows-Climate-Change-Sep-2-20_6.pdf
- Demonstrating GWP*: a means of reporting warming-equivalent emissions that captures the contrasting impacts of short- and long-lived climate pollutants: <https://iopscience.iop.org/article/10.1088/1748-9326/ab6d7e>
- Humans are a bigger source of climate-altering methane, new studies suggest: <https://www.sciencemag.org/news/2020/02/only-humans-can-create-climate-altering-methane-burns-new-studies-suggest>
- Academy of Nutrition and Dietetics, American Academy of Pediatric Dentistry, American Academy of Pediatrics and American Heart Association Recommend Breast Milk, Infant Formula, Water and Plain Milk for Babies and Kids: <https://healthydinshshealthykids.org/parents/>
- Drinks other than Milk or Water Should be Avoided: <https://www.irishtimes.com/news/ireland/irish-news/dietary-guidelines-for-1-to-5-year-olds-call-for-vitamin-d-in-winter-1.4285454>

DAIRY'S ROLE IN A RESPONSIBLE AND SUSTAINABLE FOOD SYSTEM MESSAGE MAP

Please use these messages as a guide when discussing dairy's role with regards to the Environment, Health, Animals and Communities. Feel free to customize to your brand voice and geography.

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GLOBAL DAIRY PLATFORM

An overly simplistic view of plant- versus animal-sourced foods may have unintended consequences for human health.

Nutrient deficiencies exist in low- and middle-income populations that consume mostly plant-based diets.⁵

Animal-sourced foods, including milk, are associated with better growth, cognitive performance and motor development among children in low-income countries.⁶

Plants alone may not be the answer. The EAT-Lancet Report says that if its guidelines are adopted and adhered to, much of the world's population would need to rely on supplements to make up for nutritional shortfalls created by removing animal products from the diet.

Dairy products play a key role in healthy human nutrition and development throughout life, especially in childhood. A number of health professional and government organizations recommend milk and water as the only drinks for children ages one-to-five, and warn against plant-based alternatives because they are nutritionally inadequate.

Eating a balanced diet with a variety of foods, including dairy, provides essential nutrients important in maintaining a healthy immune function. Dairy foods contain high-quality protein and are recommended as part of meal plans because they contribute key essential and under-consumed nutrients.

Dairy foods can help make plant-based diets even better by adding nutrients (such as high-quality protein, calcium and vitamin B12), flavor, texture and satisfaction.

EXPERTS: Dr. Greg Miller, Dr. Mitch Kanter, Others/Regional Experts

Global sustainable development is slowed by Non-Communicable Diseases (NCDs), which include cardiovascular disease, cancer, diabetes and chronic lung diseases. Dairy can help. Research suggests:

Milk intake may be a marker for diet quality because of its high nutrient content¹

There is an inverse relationship between intake of dairy products and hypertension and stroke.²

Dairy products are associated with reduced risk of childhood obesity, type 2 diabetes and cardiovascular disease, particularly stroke, in adults.³

In rural and low-income settings, household milk production increases household milk consumption, resulting in improved child growth and reduced stunting.⁴

For dairy farmers, tending to cows is a labor of love. When you are passionate about working with animals, providing the best possible care comes naturally.

Dairy farming is a 24-hour-per-day, 365-day-per-year commitment in order to make sure cows have everything they need.

Dedication is a must and considerable knowledge is key. Dairy farmers stay abreast of animal science research and on-farm innovations to give dairy cows a better quality of life.

EXPERTS: Brian Lindsay, Others/Regional Experts

Dairy farmers are committed to providing the best possible health, comfort, and care to their animals.

Daily animal care practices include regular feeding, access to water, health monitoring, milking, comfortable housing and rest.

Dairy farmers work closely with veterinary advisors to ensure the health and well-being of their cows.

Many dairy farmers engage feed specialists to make sure they provide all the nutrients cows need to be healthy.

Taking care of dairy cows is good for the environment, too. A recent study found improving cattle health can lead to reduced GHG emissions¹²

A healthy cow that is well taken care of gives high-quality milk and increases farmer income. The health and the well-being of their cows is of great importance to dairy farmers.

TIP: Some organizations have had success using photos and videos to demonstrate animal care.

ANIMALS

CORE MESSAGES

The dairy sector is committed to producing nutritious foods in environmentally sound and responsible ways.

Dairy helps create resilient and sustainable food systems that are equitable, secure and ensure high-quality nutrition for all.

Dairy is delicious, affordable, accessible and part of local food cultures.

Dairy is making progress against the United Nation's Sustainable Development Goals.

Dairy has positive nutritional, economic and societal impacts.

The Dairy Sustainability Framework tracks the dairy sector's continuous improvement in producing nutritious food in a sustainable and responsible way.

COMMUNITIES

Dairy creates strong, resilient, enduring economies.

Dairy can play a role in creating a sustainable future for everyone.

Dairy transforms the lives of individuals, families, communities and entire populations.

According to the FAO, one billion people around the world rely on the dairy sector for their livelihoods.

Six hundred million people live on dairy farms.

Four hundred million people rely on the full-time jobs in support of the dairy industry.

Two hundred forty million are employed, directly or indirectly, in the dairy sector.

There are 133 million dairy farms around the world, and 37 million of them are led by women. Eighty million women are employed in dairying.

The dairy sector positively impacts numerous economic and social factors associated with reducing poverty.

Dairying provides a regular source of food and income and puts farmers in a better position to feed their families and send their children to school.⁸

Dairy cow ownership and/or improvement of production has a positive impact on a range of welfare indicators⁹

Women empowered by dairy farming have increased income and influence over household expenditures, which boosts their social and economic capital.⁹

Dairy farming results in substantial employment generation and value beyond the farm gate, which in turn spurs development and poverty reduction in the local community.¹⁰

EXPERTS: Ernesto Reyes, Others/Regional Experts

The global dairy sector is committed to environmental sustainability, and is already part of the solution to limit climate change. Analysis conducted by the UN Food and Agriculture Organization (FAO) found (comparing data from 2005, 2010 and 2015):

Emission intensity over the 10 years has declined by 11% from 2.8 to 2.5 kg CO₂ eq./kg FPCM.

In response to consumer demand, milk consumption increased 30% globally. But because dairy farming is becoming more efficient, absolute emissions rose 18% and emissions per unit of product declined.

Without the efficiency improvements made by the sector, total emissions from dairy cattle would have increased by nearly 38% globally over this period to deliver the same amount of product. All dairy regions improved due to increased productivity per animal, better animal care and farm management, and higher feed efficiency.

While potent, methane is different from other GHG's in that it is a short-lived climate pollutant. Carbon dioxide stays in the atmosphere for hundreds of years. Approximately 95% of methane breaks down after 12 years. Methane from cows is destroyed at almost the same rate it is produced. Plants extract carbon dioxide from

the atmosphere, storing some as carbon in their roots and releasing the rest when they decompose. Cattle eat these plants and use a portion of that carbon for energy to produce milk and meat. The rest is transformed into enteric methane (natural process of digestion in ruminants) and burped into the atmosphere where it breaks down after 12 years.

The dairy sector contributes less than 3% of global GHG's, while providing versatile and highly nutritious foods.

Dairy farmers are responsible stewards of the land. Providing a growing population with valuable food and nutrients in a sustainable manner requires a commitment by dairy farmers to look after their land and its resources for the long term.

Dairy cows are recyclers. Cattle turn grass, corn stalks, wheat straw and by-products such as distillers' grains and cottonseed meal into high-quality protein for human consumption.⁷ Cow manure is a natural fertilizer which contributes nutrients to the soil to nourish future crops.

Water reduction efforts are successfully decreasing water use for the volume of dairy foods produced.

The dairy sector uses water for animal feed, animal care and processing. Research into more efficient ways of producing crops and milk have contributed to the recycling of water for additional uses, thereby reducing the need for new water.

Dairy farmers enhance the soil quality on their farms through the addition of manure, use of cover crops and reduced soil tillage, among other things. In doing so they promote clean air and water.

The dairy sector is committed to reducing food waste. Dairy is one of the least-wasted food commodities globally.¹¹

The dairy sector is working to reduce the environmental impact of our packaging by increasing the share of renewable materials and developing packaging that is recyclable.

EXPERTS: Brian Lindsay, Dr. Frank Mitloehner, Dr. Frédéric Leroy, Others/Regional Experts