U.S. Dairy's Path to Environmental Solutions

As technology and society change, dairy farmers adapt, evolve and embrace technologies to meet the needs of our evolving communities and consumers. This presents an opportunity to boldly chart the course for an economically, socially, and environmentally sustainable future for U.S. dairy – a future in which dairy is an environmental solution.

With increased environmental demands, the 2050 Environmental Stewardship Goals were created to demonstrate dairy's leadership and build trust. The Net Zero Initiative (NZI) provides a roadmap for this journey. Together, farmers, cooperatives, processors and others in the dairy industry have partnered with the Innovation Center for U.S. Dairy to develop these goals to focus on the shared aspiration of dairy as an environmental solution. These goals are a continuation of dairy's deep-rooted commitment to the environment, honor dairy's legacy and ensure dairy's essential role in society and market competitiveness long into the future.

By 2050 the U.S. dairy industry collectively commits to:

- Achieve greenhouse gas (GHG) neutrality
- Optimize water use while maximizing recycling
- Improve water quality

Achieving these goals will allow the dairy community to thrive for generations to come.

Mitigating Dairy's Environmental Footprint Estimated GHG contribution of each "print" to the total: **ENERGY 6%** ENTERIC METHANE 35% Feed (26%) Enteric (35%) Manure (33%) -Energy (6%) · Renewable energy: · Diet management - Renewable electricity · Genetic improvement - Renewable natural gas · Herd management - Renewable energy from wind · Cow comfort and well-being and solar sources Feed additives Energy efficiency: - LED lighting - Variable speed pumps · No/low-till farming - Milk pre-cooling technology · Cover crops - Soft start motors · Nutrient management · Replacement of fossil-fueled engines · Precision agriculture with electric motors · Water use efficiency MANURE 33% Anaerobic digestion · Nutrient and water · Manure storage (cover and flare) (includes manure and corecovery digestion of food waste) · Drying technology · Renewable fertilizers (elimination of lagoons)

Dairy farmers' responsibility to their land and to their animals is fundamental to U.S. dairy's legacy. NZI breaks down barriers to empower all farms to reduce their environmental impact - in an economically viable way that positions them to thrive for generations to come.

NZI provides support and opportunities to enable farms of all sizes, geographies and management practices to reduce their environmental impact. This support will look different for different farms, based on individual needs and desires.

NZI is led by six national dairy organizations













S.S. DAIR

Featured NZI Programs and Partnerships

Dairy Soil & Water Regeneration

Involves eight farms spread across the four major dairy regions and eight research institutions and focuses on three dairy feed production research gaps:

- Soil carbon sequestration for regional dairy feed rotations
- Soil health and water benefits
- Environmental, agronomic and delivery outcomes of new manure-based fertilizer products



Greener Cattle Initiative

An industry-oriented program that supports the development of commercially feasible solutions to reduce methane emissions from dairy and beef cattle. The program is a vehicle for collaboration and exposure to new ideas while leveraging resources and de-risking R&D. It focuses on:

- Feed additives
- Genetics
- Feed reformulation
- Technology





SOIL HEALTH



PLATTEVILLE

TEXAS A&M GRILIFE RESEARCH



Research Institution



Four Dairy Regions ~80% of U.S. Milk Production

Dairy Scale for Good

Partnering with commercial dairies to demonstrate the ability to significantly reduce greenhouse gas emissions and improve water quality and quantity, while increasing and diversifying on-farm revenue. Nestlé and Starbucks have both launched on-farm pilots in partnership with this initiative. This initiative will pursue:

- New technology and practice change due diligence
- Profit and loss modeling

- De-risking through demonstration
- Ecosystem services market building





Dairy Feed in Focus

Intended to achieve reduced GHG emissions and improved soil health and water quality through pilots, replication and scaling the adoption of practices in feed/forage production and feed efficiency on farms. Through participation in the project, farmers will receive:

- Educational resources
- Technical support
- Financial incentives
 (with value chain partners)







