

How

COWS

can help us fight

**CLIMATE
CHANGE**

Bovaer[®]

The proven solution to immediately
reduce enteric methane from dairy
and beef cattle



DSM

BRIGHT SCIENCE. BRIGHTER LIVING.

An urgent focus on methane

At COP26 in Glasgow, more than 100 countries recognized methane reduction as the single most effective strategy to keep the goal of limiting warming to 1.5°C within reach. And there's no time to lose. Rapidly reducing methane emissions from energy, agriculture, and waste can achieve near-term climate goals — with additional benefits for public health and agricultural productivity.

That's why nations representing 70% of the global economy have signed the Global Methane Pledge, a collective effort to reduce global methane emissions at least 30% from 2020 levels by 2030. It's estimated that this alone could eliminate over 0.2°C warming by 2050.



“We have to cut emissions fast. And methane is one of the gases we can cut fastest. Doing that will immediately slow down climate change.”

— European Commission President Ursula van der Leyen, Nov. 2021

The world will continue to warm as long as CO₂ is being pumped into the atmosphere. But curbing emissions of methane and other powerful greenhouse gases might reduce the sting.”

— Nature, August 2021

Taking action to reduce emissions

As population and income levels grow, so do the demands we place on our planet. Developing more sustainable ways is a responsibility we all share. More and more consumers are demanding sustainable options, and food companies are responding. Governments are setting ambitious goals to reduce emissions, and farmers are ready to take action.

Dairy Net Zero

80+ organizations representing 30% of global milk production have declared their support for the **Global Dairy Platform's** Pathways to Dairy Net Zero movement.

Sustainable Beef

The **Global Roundtable for Sustainable Beef** has committed to reducing the net global warming impact of beef by 30% by 2030.

Consumer preferences are shifting

70% want retailers to be more transparent about sustainability

66% would pay more for sustainable brands



Cows can make a difference

Cows have an important role to play in the ecosystem. They digest tough, fibrous plants to produce high-quality nutrients that we need, all while supporting carbon sequestration. Beef and dairy products provide essential, affordable nutrition to billions. And, globally, a billion lives are tied to dairy production alone. Nourishing a growing population while reducing the environmental costs of farming will take smart science and innovative solutions.



Bovaer® at a glance

Bovaer® is a feed additive that reduces enteric methane emissions, contributing to a significant and immediate reduction of the environmental footprint of meat, milk, and dairy products.

Average reduction of

30%

less methane emissions from dairy cows

45%

less methane emissions from beef* cattle

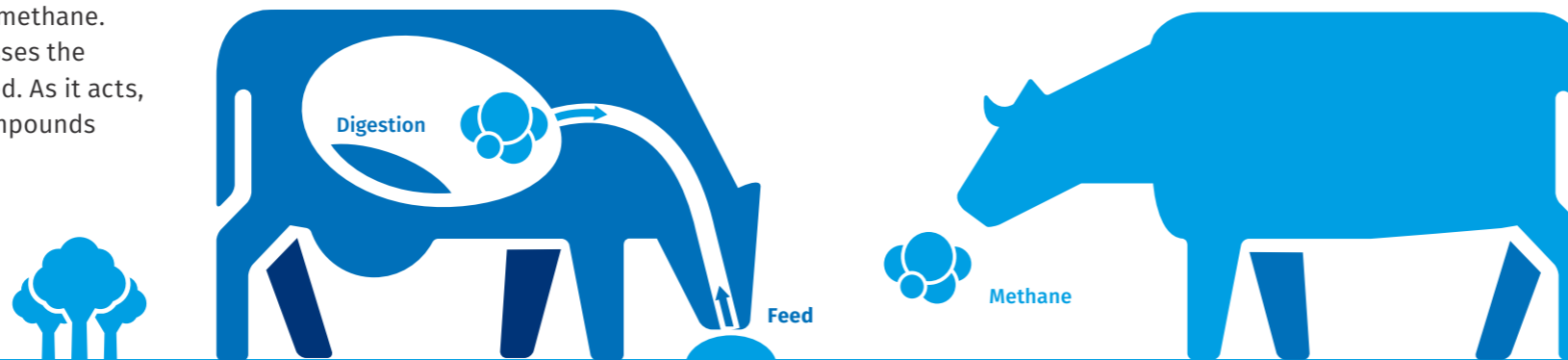
Read more on Bovaer® and its impact at dsm.com/bovaer

* Finishing feedlot beef cattle

Bovaer® the proven solution to immediately and significantly reduce enteric methane from dairy and beef cattle

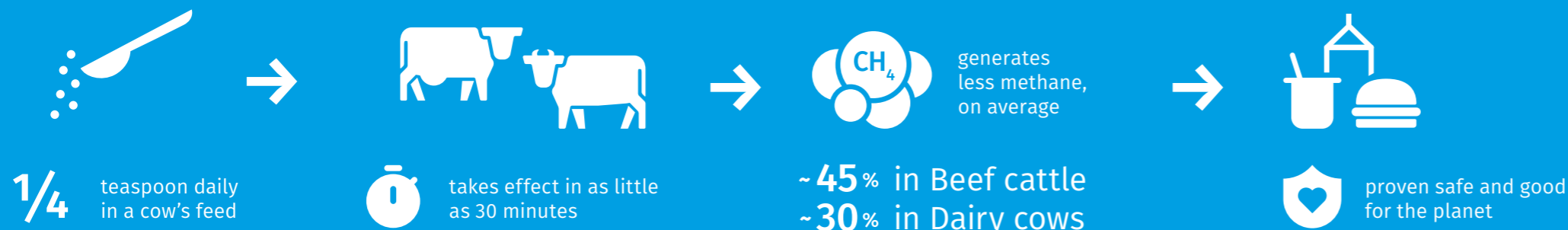
How it works?

In a cow's rumen, microbes help break down food. This releases hydrogen and carbon dioxide. An enzyme combines these gases to form methane. Bovaer® is a feed additive that suppresses the enzyme, so less methane gets generated. As it acts, Bovaer® is safely broken down into compounds already naturally present in the rumen.

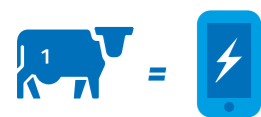


20%

of all methane emissions come from ruminants (beef/dairy cows, goats, and sheep).



Bovaer® saves about 1 ton of CO2e per dairy cow every year



Feeding Bovaer® to 1 cow saves the equivalent of 127,000 smartphone charges.



Feeding Bovaer® to 3 cows is like taking 1 family-sized car off the road.



Feeding Bovaer® to 1 million cows is like planting a forest of 45 million trees.

Bovaer® impact can easily be recognized

Farmers can easily track their impact and communicate this in the value chain.

A simple methodology is available to calculate the methane savings. An app can be used for documentation and verification. Carbon footprint and credit methodologies are available amongst others under both Gold Standard and Verra.

Bovaer® FAQs

What is Bovaer® made of?

Bovaer® is made from two ingredients: nitrate and a bio-based alcohol. After suppressing methane production in the stomach, Bovaer® is broken down into the same natural compounds again, which are already present and processed by the cow's normal digestive and metabolic processes.

How is Bovaer® made?

Bovaer® is made by heating two ingredients (see above) to bind them temporarily together, resulting in a liquid form. The liquid is then transformed into a powder for convenient use as a feed additive.

What is the environmental impact of production?

Our manufacturing process generates small amounts of CO₂. This is equal to just 2.4% of the CO₂e that is actually saved through incorporating Bovaer® in a dairy cow's diet and subsequent reduced methane formation. The total net carbon-equivalent saving of feeding Bovaer® is approximately 1 ton per cow per year.

Who has evaluated Bovaer®?

Amongst others, Bovaer® received a positive European Food Safety Authority (EFSA) opinion for use in the European Union. The EFSA opinion confirms that it reduces enteric methane emissions from dairy cows and is safe for the animal and the consumer. EU member states subsequently approved its marketing in the EU. This marks the first time a feed additive authorized for environmental benefits can be sold in the EU.

Where is Bovaer® produced?

Bovaer® is currently manufactured in Germany. An additional large-scale production facility in Scotland will be operational in 2025.

How can I purchase Bovaer®?

Bovaer® is available through the usual channels or through contact with your regional DSM office.

For further information, please contact your regional DSM office or info.bovaer@dsm.com

Now available: A proven solution

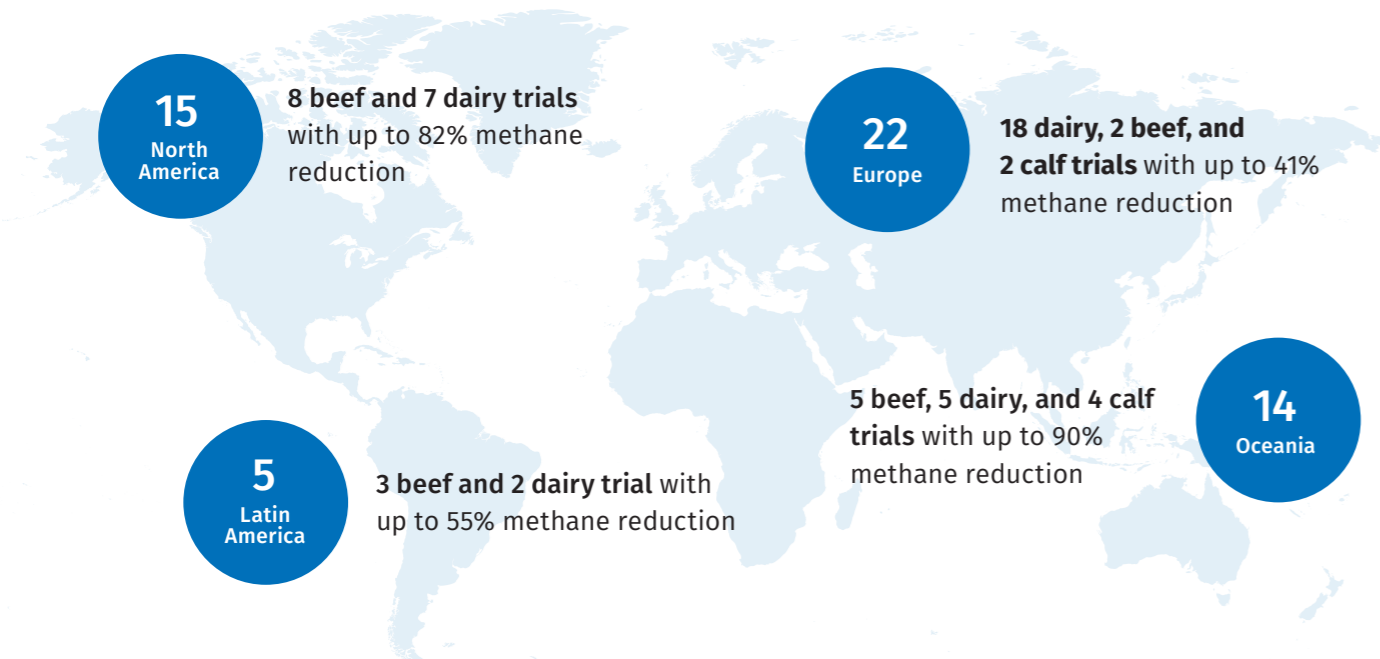
Bovaer® is the most extensively studied and scientifically proven solution to the challenge of burped methane to date. It is now authorized and available for sale in over 35 countries, including the EU/EEA, Australia, Brazil, Chile, Pakistan, Switzerland and Turkey.

50+ Peer reviewed scientific studies
50+ On-farm trials
15+ Trial countries

Bovaer® has already saved

2,000

tons of CO₂e through trials alone



What people are saying

“10 Breakthrough Technologies Can Help Feed the World Without Destroying It”

World Resources Institute

“...one promising exception is a compound called 3-nitrooxypropanol, which reduces methane emissions by 30%”

Bill Gates, How to Avoid a Climate Disaster

“Cutting farming-related methane emissions is key in our fight against climate change and today's approval (of Bovaer®) is a very telling example of what we can achieve through new agricultural innovations.”

Stella Kyriakides, EU Commissioner for Health & Food Safety

Creating brighter lives for all

For years, DSM has supplied science-based products, services and groundbreaking innovations fundamental to the health, well-being and sustainability of people and animals. With growing demand for sustainable animal protein that is safe, nutritious and affordable, we're helping the industry transition to a more sustainable future to meet this complex challenge.

DSM's Food System Commitments includes a double-digit reduction of on-farm livestock emissions by 2030. The market introduction of Bovaer® is a major step toward delivering on this commitment.

By helping to reduce the methane impact of cattle farming, we are helping to solve a major global sustainability challenge: supplying consumers with sufficient animal protein in a way that is **farm wise and climate friendly**.

The journey of Bovaer®

- **2008** DSM initiates Climate Change Induced Innovation program
- **2010** Product first formulated
- **2011** First study results in cattle
- **2016** Registration trials begin
- **2019** Market authorization requests filed
- **2019** Bovaer® product brand introduced
- **2021** First market authorizations received
- **2022** Commercially available in 35+ countries
- **2025** Additional large-scale production facility opens



Founded in 1902, Royal DSM is a global, purpose-led company in Health, Nutrition & Bioscience. Our 23,000 employees worldwide work to apply science to improve the health of people, animals and the planet.

Learn more at dsm.com/bovaer

Questions? info.bovaer@dsm.com

Bovaer[®]

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