

Background information on Bovaer[®], the feed additive that enables farmers to achieve consistent methane emission reductions by on average 30% for dairy cows and on average 45% for beef cattle

Royal DSM, a global science-based company active in Health, Nutrition and Biosciences, is making fast progress on bringing Bovaer[®] to the market. Bovaer[®] is a feed additive that enables farmers to consistently and conveniently reduce methane emissions from dairy, beef, and other ruminant herds. DSM works with authorities, scientific, and private partners from across the value chain and in multiple geographies on the application of Bovaer[®] in various farming systems, and the development of solutions to demonstrate the usage and measure the impact of Bovaer[®]. The latter will ensure that farmers and dairy companies can be recognized for the positive contribution they make. The estimated CO₂e saved with Bovaer[®] so far globally is 30.000 tons.

Bovaer[®] is a first result of DSM's Project Clean Cow, a research and development journey of more than 10 years. The additive is the most extensively studied and scientifically proven solution to the challenge of enteric methane emissions to date. Over the past 10+ years, 60 on-farm beef and dairy trials across 18 countries and in various feeding systems have been conducted. These trials showed that Bovaer[®] can consistently achieve an enteric methane reduction of on average 30% from dairy cows, and on average 45% from beef cattle, with some trials demonstrating reductions as high as 90%. In addition, more than 60 peer-reviewed studies have fully clarified and proved its mode of action. In this way, Bovaer[®] is a firm proof-point of DSM's purpose-led, performance-driven strategy, building on DSM's other science-based, sustainable, and scalable solutions that respond to global challenges. Click [here](#) for an overview over the peer-reviewed studies.

How Bovaer[®] helps address climate change

Methane is a greenhouse gas that, like CO₂, contributes to climate change. It is short-lived, but 28 times more potent than CO₂. Ruminants (mainly cows) emit about 20% of all methane gasses globally: it is a natural byproduct of their digestion and is released into the atmosphere through burping. Reducing global methane emissions from cows will therefore have an immediate impact that can already help slow the pace of global warming in the next decade, facilitating longer-term action on CO₂ reduction.

Just a quarter teaspoon of Bovaer[®] per cow per day suppresses the enzyme that triggers methane production in a cow's rumen. The additive takes effect immediately and is safely broken down in the cow's normal digestive system into compounds already naturally present in the cow's stomach. As soon as it is no longer fed, full methane production resumes and there are no lasting effects in the cow. Bovaer[®] therefore helps significantly and immediately reduce the environmental footprint of meat, milk, and dairy products – key sources of high quality and affordable protein around the world. In this way, Bovaer[®] can significantly contribute to various UN Sustainable Development Goals, including Climate Action and to delivering on global and national climate ambitions, including the [Global Methane Pledge](#) (30% methane reduction by 2030 vs 2020) which over 150 countries signed onto.

The [Global Methane Assessment](#) by the Climate and Clean Air Coalition and the UN Environment Programme shows that drastically cutting methane emissions is one of the most effective and particularly quickest ways to reduce global warming. Cutting methane emissions by 45% globally, could avoid 0.3 degrees of warming by 2045, according to the report.

Bovaer® market introduction

Across the globe, DSM is working with partners from the beef and dairy value chain to introduce Bovaer® into the market. These activities include large-scale pilots to further gain practical on-farm experience.

Currently, Bovaer® is now authorized and available for sale in over 45 countries, including the EU/EEA, Argentina, Australia, Brazil, Chile, Mexico, Pakistan, Switzerland, Thailand, Turkey and Uruguay.

We welcome the inclusion in the Cool Farm Tool (an international carbon footprinting tool used by many multinational dairy and beef companies), which will make it much easier for farmers and processors worldwide to get recognized for the methane reductions they achieved.

Europe:

In the EU, Bovaer® is the first ever approved feed additive with environmental impact, confirming its impact on methane emissions and its safety for animals, consumers and the environment.

In the Netherlands, FrieslandCampina has implemented Bovaer® at 160 dairy farms with 20.000 cows in the second half of 2022 and will based on the success to date be continued in 2023. The trial confirmed the product was easy to implement on farm and at scale and that there was no impact on milk production, milk composition, animal health or welfare. Earlier, DSM set up a trial at the Dairy Campus Leeuwarden in cooperation with a consortium from across the Dutch dairy value chain. The trial's aim was to gather all information necessary for Bovaer®'s accreditation by the Carbon Footprint Monitor/Climate Module of the Dutch "Kringloopwijzer" (Annual Nutrient Cycling Assessment). The results, published in January 2021, show a reduction in enteric methane emissions of 27-40% per cow . Bovaer® has now been included in the Kringloopwijzer in the Netherlands. The knowledge gained in the trial will be applicable across Europe, enabling DSM to advise farmers on the best application of Bovaer®, and governments and inventory organizations to adequately account for enteric methane reductions.

In Denmark, Sweden, Germany and Belgium, Arla Foods is supplementing Bovaer® to 15,000 dairy cows across more than 50 farms. During the on-farm pilots, farmers will receive Bovaer® from their feed suppliers and mix it into the feed for their dairy cows. The results from the Danish farms was very positive resulting in more than 30% methane reduction and as expected no impact on milk production, composition or animal health and welfare.

In Belgium, Danone has embraced Bovaer® as one of the solutions to realize carbon neutral Actimel in Belgium. The Flemish government financially supports farmers to use methane reducing feed, including Bovaer®.

In France and Slovakia, Bel Group started a pilot programme aiming to reduce methane emissions from dairy cows using Bovaer®.

In Finland, VALIO, the largest global dairy cooperative company in Finland, conducts a large-scale pilot with Bovaer® to develop sustainable dairy products. In the joint project, Bovaer® is implemented with 3,100 dairy cows at 43 farms.

In the Netherlands, CONO Kaasmakers started a pilot with Bovaer®. This pilot is part of their climate program to achieve the emission of greenhouse gases. By 2030, aim is the entire cheese chain, from cow's mouth to shop shelf, to be climate-positive.

Latin America:

In Argentina, Brazil, Chile, Costa Rica, Uruguay and Mexico DSM has received full regulatory approval to commercialize Bovaer® and DSM is now gradually scaling up its commercialisation activities and preparing its supply chain in these countries.

In Brazil Bovaer® supports the first Carbon Neutral milk brand NoCarbon to minimize its carbon footprint.

In November 2021, DSM signed a collaboration agreement with JBS to implement a development program with the goal of reducing enteric methane emissions from cattle on a global scale with Bovaer®.

Oceania:

In Australia, the North Australian Pastoral Company (NAPCo) will use Bovaer® for its flagship Net Zero beef product line: Five Founders, and throughout the NAPCo supply chain. NAPCo and DSM have signed a long-term collaboration and supply agreement for the use Bovaer®.

In Australia, Coles together with Mort&Co feedlot, started a pilot with Bovaer, aiming to greatly reduce methane emissions from cattle.

Bovaer® development

In November 2022 construction started on the Bovaer® large scale production facility in Dalry, Scotland. This plant, when completed, will enable to significantly increase Bovaer®'s global production, and in turn, its impact.

About DSM

Royal DSM is a global, purpose-led company in Health, Nutrition & Bioscience, applying science to improve the health of people, animals and the planet. DSM's purpose is to create brighter lives for all. DSM's products and solutions address some of the world's biggest challenges while simultaneously creating economic, environmental and societal value for all its stakeholders – customers, employees, shareholders, and society at large. The company was founded in 1902 and is listed on Euronext Amsterdam. More information can be found at www.dsm.com.