

# Climate solutions in the agricultural sector: *An avoided emissions case study*

Agri-food company Ajinomoto produces biostimulants that increase rice yields with less need for fertilizer.

## → ~50% reduction in fertilizer use

through the use of biostimulants compared to the typical fertilizer application.



Up to **2477 kg CO<sub>2</sub> eq.** avoided per hectare of rice grown each year through the use of Ajinomoto biostimulants.

## Capturing avoided emissions

### — assessment details

- **Functional unit (FU):** Production of 1 kg of rice.
- **Impact – emissions avoided:** 0.51 kg CO<sub>2</sub> eq./FU
- **Time period:** Year-on-year.
- **Scope:** Trial of biostimulants conducted at a commercial rice farm in Thailand.
- **System boundaries:** Full life cycle emissions of the biostimulants and fertilizers.

Use this document to support your understanding of avoided emissions calculations and disclosure as outlined in the WBCSD Guidance on Avoided Emissions:



## The reference scenario

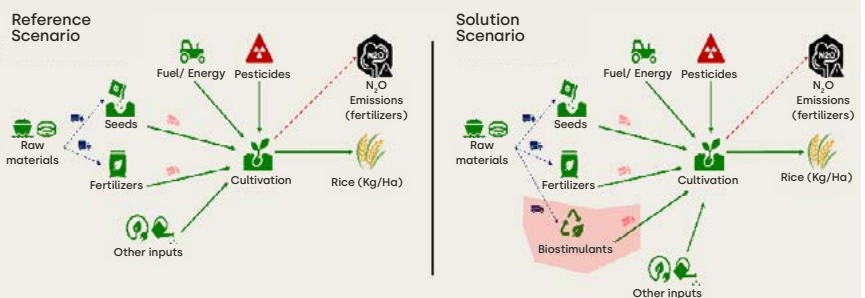
- Farming using synthetic fertilizers where no biostimulants or other additives are being used.
- Paddy rice farmers participating in a field trial at a rice farm in Thailand apply the full recommended dose of synthetic fertilizers to their crop.
- Globally, fertilizers account for approximately 5% of greenhouse gas emissions, with around one-third from production (CO<sub>2</sub> emissions) and two-thirds arising after application (primarily N<sub>2</sub>O emissions).\*

## The low-carbon scenario

- Biostimulants are formulations containing bioactive organic compounds that stimulate natural plant processes. They improve nutrient uptake and nutrient-use efficiency, increase tolerance to abiotic stress and enhance crop quality and yields.
- Ajinomoto biostimulants (Agriful, Tecamin Max and Fertigrain Foliar) are applied to rice crops in the trial area alongside a reduced dose of synthetic fertilizers. Farmers were able to reduce fertilizer use by 50% over the cultivation cycle of around three months, while increasing yields by 11%.
- Using less fertilizer avoids some of the CO<sub>2</sub> eq. emissions associated with fertilizer production, transportation and field application. And the yield increase results in higher output per hectare, which improves the emissions efficiency per unit of food produced.



## How it works



The solution reduces farmers' Scope 1 emissions (less direct N<sub>2</sub>O emissions), as well as Scope 3 emissions for farmers and agribusinesses (raw materials).

### WBCSD Avoided Emissions Eligibility Gates

- Gate 1: Climate Action Credibility
- Gate 2: Climate Science Alignment
- Gate 3: Contribution Legitimacy

### What share of Ajinomoto's revenue does this solution represent?

These solutions are part of Ajinomoto's Bio & Fine Chemicals business within the Healthcare and Others segment and are positioned within its Green / agri-solutions growth area. While currently a small share of Group revenue, biostimulants are an important development area for the company.

### Social and environmental side effects

It is possible that higher productivity could incentivize land expansion, as observed with other yield-enhancing practices like precision agriculture.

Third-party verification  
None.

\* Source: [Greenhouse gas emissions from nitrogen fertilizers could be reduced by up to one-fifth of current levels by 2050 with combined interventions | Nature Food](#)