



Knowledge grows

Plant Biostimulants

a vital solution for sustainable agriculture and a resilient food system



Plant biostimulants: a vital solution for sustainable agriculture and a resilient food system

How can biostimulants contribute to climate-smart agriculture?

Biostimulants improve nutrient use efficiency and crop quality by stimulating the natural processes in plants when they need it the most. This allows plants to achieve optimal yields in situations where the environmental conditions are not ideal, enabling farmers to be both profitable and sustainable.



Robust

Biostimulants promote strong and healthy growth in plants.



Resilient

Biostimulants increase tolerance to abiotic stress, such as drought and extreme temperatures.



Responsive

Biostimulants can be adapted to farmer needs and can be used throughout the crop cycle.



How can biostimulants enable farmers to achieve sustainable agriculture?

In combination with organic and mineral fertilizers, biostimulants can make a real difference for farmers who need to adopt climate-positive practices while tackling food loss and waste and ensuring farms' profitability.



Nutrient use efficiency: Biostimulants improve nutrient use efficiency by supporting better root development so that plants can absorb more nutrients and water or by improving nutrient availability in soil. All these functions can contribute to reducing nutrient losses to the environment and optimizing fertilizer use.



Resistance/tolerance to climate change: Biostimulants can enhance plants' tolerance to abiotic stress, such as drought or extreme temperatures. The use of biostimulants can therefore help mitigate the negative impact of climate change and extreme weather events. This is important for farmers who need to increasingly adapt their practices to changing and challenging climatic conditions.



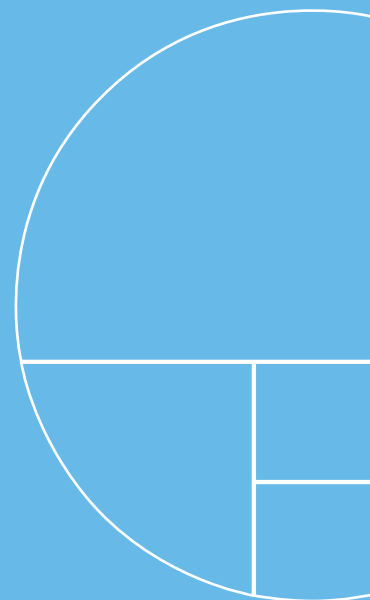
Soil health: Some biostimulants can improve soil health and fertility by improving soil parameters and functions. This can also have a positive impact on soil restoration and water use efficiency, a key contribution that ensures long-term soil fertility.



Crop quality: Biostimulants can improve crop quality and contribute to more vigorous and healthy plants, which in turn can lead to less food waste. At the same time, they can improve the quality and quantity of the yield and therefore keep the farmer's business profitable and sustainable. Tackling food loss and waste is key to achieving a sustainable food system.

Biostimulants are complementary to fertilizers. While fertilizers are food for plants, biostimulants are like vitamins for plants. Biostimulants should therefore be considered as one of the solutions in an integrated crop management toolkit focusing on sustainability along with fertilizers, biologicals, plant protection products, and digital tools.

Yara is uniquely positioned to provide a complete offering of crop nutrition solutions, including fertilizers (granular, water-soluble, foliar, seed treatment), biostimulants, and digital tools; enabling farmers to keep their business profitable and sustainable.



Product portfolio



YaraVita™ ACTISIL™

YaraVita ACTISIL is a liquid formulation for foliar applications based on choline-stabilized orthosilicic acid (ch-OSA®) and calcium. It was developed to help the plant remain vigorous in hostile growing conditions in order to improve yield quality and quantity.

Product features and benefits

- Patented formulation that ensures stability and efficacy
- Strengthens cell walls
- Improves shelf life
- Enhances abiotic stress tolerance



YaraVita™ BIOMARIS™

YaraVita BIOMARIS is a highly concentrated liquid formulation for foliar applications based on bioactive compounds extracted from the algae *Ascophyllum nodosum*. Due to its high concentration of bioactive compounds, it can be used to promote plant growth and fruit development and mitigate the effect of abiotic stress conditions.

Product features and benefits

- Improves vegetative productive balance
- Promotes fruit development
- Enhances abiotic stress tolerance



Product portfolio continues overleaf



Product portfolio



BIOTRYG™
Biostimulant technology

YaraVita™ BIONUE™

YaraVita BIONUE is a suspension concentrate formulation for foliar and soil applications based on a blend of nutrients and humic substances from leonardite. It was developed to enhance tolerance to abiotic stress, increase nutrient uptake, root and vegetative growth and improve the efficiency of the rhizosphere.

Product features and benefits

- Naturally processed in order to include all the bioactive components of leonardite
- Improves nutrient uptake
- Promotes root and vegetative growth
- Increases rhizosphere efficiency
- Enhances abiotic stress tolerance



YaraVita™ BIOTRAC™

YaraVita BIOTRAC is a liquid formulation for foliar applications based on a blend of nutrients and bioactive components extracted from the algae *Ascophyllum nodosum*. It was developed to alleviate the impact of abiotic stress conditions and help the plant during periods of high metabolic demand in order to enhance flowering, fruit set and improve yield quality and quantity.

Product features and benefits

- Promotes vegetative growth
- Improves flowering and fruit set
- Enhances abiotic stress tolerance



YaraVita™ SEEDLIFT™

YaraVita SEEDLIFT is a suspension concentrate formulated with a balance of nutrients intended to promote seed germination and deliver the starting nutrients that are required in the early stages of growth in most crops. The addition of bioactive compounds from *Ascophyllum nodosum* is intended to strengthen plant resistance to abiotic stress conditions and help young plant development.

Product features and benefits

- Supports seed germination
- Delivers critical nutrients for a robust start
- Promotes root development
- Enhances abiotic stress tolerance



About Yara

Yara grows knowledge to responsibly feed the world and protect the planet. Supporting our vision of a world without hunger and a planet respected, we pursue a strategy of sustainable value growth, promoting climate-friendly crop nutrition and zero-emission energy solutions. Yara's ambition is focused on growing a climate positive food future that creates value for our customers, shareholders and society at large and delivers a more sustainable food value chain.

To achieve our ambition, we have taken the lead in developing digital farming tools for precision farming, and work closely with partners throughout the food value chain to improve the efficiency and sustainability of food production. Through our focus on clean ammonia production, we aim to enable the hydrogen economy, driving a green transition of shipping, fertilizer production and other energy intensive industries.

Founded in 1905 to solve the emerging famine in Europe, Yara has established a unique position as the industry's only global crop nutrition company. We operate an integrated business model with around 17,000 employees and operations in over 60 countries, with a proven track record of strong returns. In 2020, Yara reported revenues of USD 11.6 billion

www.yara.com

Yara International ASA
Drammensveien 131
N-0277 Oslo
Norway
Tel: +47 24 15 70 00
www.yara.com

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