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# POSITION PAPER

# Multiple-use components in plant biostimulants

The European Biostimulants Industry Council (EBIC) supports the use of components (seaweed extracts, hydrolysed proteins, microorganisms, etc.) in multiple formulations to fulfil different plant biostimulant, fertiliser or plant protection functions.

As stated in the EU Fertilising Products Regulation (FPR) [Regulation (EU) 2019/1009], the function of a product, what is claimed on the product label, "shall be supported by the product's mode of action, the relative content of its various components, or any other relevant parameters" (application mode, rate or timing), not simply by the presence of certain components that could be used in different products subject to different regulatory frameworks.

## Introduction

**A single component** can be incorporated into **different products** that fulfil a **range of functions**. However, there is often **resistance in the marketplace and from regulators** to the presence of certain components in **products used in similar contexts but for different functions**, and subject to **different regulatory frameworks** with different evaluation processes. This is often the case with products used in agricultural production, such as plant protection products (PPPs), plant biostimulants and fertilisers.

Depending on the crop or plant parts to which a formulation is applied and the conditions of use (dose, type of application, timing, etc.), a product can fulfil different functions that can be claimed on the product label (Figure 1).

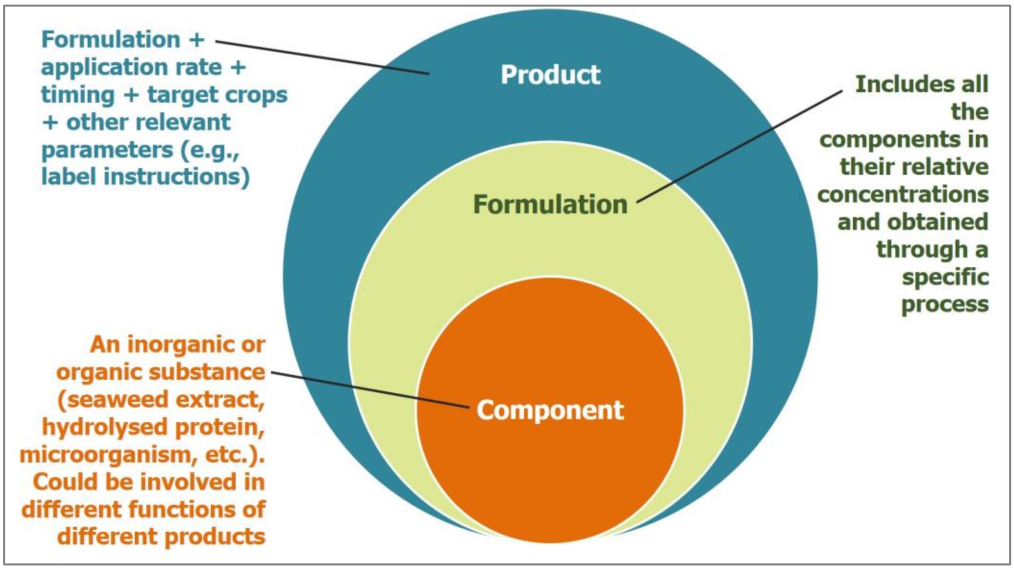


*Figure 1: The difference between a component and a product*

The FPR defines **plant biostimulants** as products that stimulate plant nutrition processes independently of their nutrient content by improving one or more of the following characteristics of the plant or plant rhizosphere: nutrient use efficiency; tolerance to abiotic stress; quality traits and/or the availability of confined nutrients in the soil or rhizosphere. **To place a plant biostimulant product on the market**, the FPR notes that the producer should **demonstrate that the product fulfils each of the plant biostimulant functions that are claimed on the label**. Harmonised standards on how to justify biostimulant claims [technical specifications (TS) 17700-1, 17700-2, 17700-3, 17700-4, 17700-5] are currently being developed in collaboration with the European Committee for Standardization (CEN), to prove compliance with the requirements of the FPR.

## Examples of multiple-use components in agriculture

The concept of multiple-use components is not new and is already applied across many other industries such as food[1], feed, medicine or cosmetics. Indeed, combining existing and/or new components to explore new product functions is crucial for innovation. Quite a few examples already exist of components that are part of products with multiple agricultural functions.

**Urea** is a very commonly used nitrogen fertiliser that has also been approved as an insecticide active substance according to the Plant Protection Products (PPP) Regulation [Regulation (EC) 1107/2009]

**Copper** is an essential plant nutrient and therefore functions as fertiliser (Brennan, 2006; Malhi and Karamanos, 2006). It was included under many different formulations in the previous inorganic fertilisers Regulation (EC) 2003/2003 and is also included in the FPR. However, it is also widely known to have fungicidal effects (Behlau et al., 2021), and is approved as an active substance under the PPP regulation.

**Iron sulphate** is a known herbicide and is also often used as a fertiliser (Salahi et al., 2017; Shahrokhi et al., 2012), fulfilling the requirements of the fertiliser Regulation (EC) 2003/2003.

**Mono-potassium phosphate (MKP)** is a fertiliser that provides water-soluble P and K (Hopkins et al., 2010; Nerson et al., 1997), therefore falling under Product Function Category (PFC) 1 in the FPR. At the same time, it has been reported to have a fungicidal effect against powdery mildew, downy mildew and some rusts on a variety of crops (Reuveni et al., 1998; Reuveni et al., 2000), so it is sometimes mixed with fungicides in foliar spraying programs.

**Maltodextrin** is approved as an insecticide active substance under the PPP regulation (because it gums up insect jaws) but is also an important (inert) carrier substance for certain PPPs and plant biostimulants.

**Hydrolysed proteins** have well reported plant biostimulant effects (Ceccarelli et al., 2021; Colla et al., 2017; Paul et al., 2019), but they are also approved as an insecticide active substance under the PPP regulation.

**Phosphites** (or phosphonates) are approved as a fungicide active substance, and they are also common components of plant biostimulants products. The foliar application of phosphite has been demonstrated to enhance root growth and development in a range of crops, typically increasing biomass by around 30% in the absence of plant diseases (Swarup et al., 2020). Despite their biostimulant effects, phosphites were the only component explicitly banned for use in fertilising products (Annex I, part II, point 6 in the FRP).

1 Case C-319/05, Commission v. Germany, Judgement of the Court (First Chamber), 15 November 2007

**Microorganisms**: Mycorrhizal fungi were among the first microorganisms accepted as components of plant biostimulants because they help plants in the uptake of nutrients and water. However, recent research shows these microorganisms are also able to induce plant defense responses (Cameron et al., 2013; Dalia et al., 2019). This multiple mechanism of action is also observed for other microorganisms like *Rhizobium* spp. (Ranjbar Sistani et al., 2017) and *Azospirillum sp.* (Tortora et al., 2012), which have also been listed as components for plant biostimulants in the FPR.

In addition, many strains of bacteria in genera such as *Bacillus* (Radhakrishnan et al., 2017) or *Pseudomonas*; or fungi in the genus *Trichoderma* (López-Bucio et al., 2015) have been shown to have biostimulant effects on plants. Product formulations that incorporate these strains have been extensively tested for their plant biostimulant effects under greenhouse and field conditions (Roberti et al., 2015), and many have been commercialised as plant biostimulant products under national fertiliser legislations in the EU. At the same time, strains from these genera have been approved as fungicide active substances under the PPP regulation, providing a clear example of multiple use components.

## The multiple-use component concept in a nutshell

A product's function can only be evaluated in the way it is **intended to be used** and not at the component level and/or formulation level, because different formulations, target crops, modes of use, application rates, doses and timing of applications can trigger different functions.

The addition of a specific component to a product does not, in itself, define the product function, or the subsequent legal framework. Two plant biostimulant products could share some components in their formulation, but be applied to different crops or plant parts, at different rates and/or at different times during the crop cycle, to fulfil different biostimulant functions. Or the same component could be present in a plant biostimulant product and a fertiliser, and the function of the product could be completely different. Similarly, the same component might be found in a plant biostimulant and a PPP even though the two products provide different functions.

**The multiple-use concept has been explicitly recognised in the context of the FPR**, as expressed in question 1.3 in the European Commission Frequently Asked Questions (FAQ) document[2] (Figure 2) and in the Commission Delegated Regulation (EU) 2021/1768[3], which states that "an EU fertilising product may contain an active substance within the meaning of Article 2(2) of Regulation (EC) No 1107/2009[4] only if that EU fertilising product does not have a plant protection function within the meaning of Article 2(1) of that Regulation".

Therefore, the intended use and function of the product are enough to fulfil the definition of the correspondent Product Function Category (PFC) in the FPR, as long as they can be sufficiently demonstrated. The absence of a PPP effect for all the product's components is not a condition for satisfying the requirements of the PFC, even if the product contains a component approved as an active substance under the PPP regulation.

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[2] FAQs related to Regulation (EU) 2019/1009 on fertilising products (the 'Fertilising Products Regulation'). Last update 20/07/21: https://ec.europa.eu/docsroom/documents/46391/attachments/1/translations/en/renditions/native

[3] Commission Delegated Regulation (EU) 2021/1768 amending, for the purpose of its adaptation to technical progress, Annexes I, II, III and IV to the FPR: https://eur-lex.europa.eu/eli/reg_del/2021/1768/oj

[4] Regulation (EC) No 1107/2009 concerning the placing of plant protection products on the market: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32009R1107

> *1.3 Does the FPR cover fertilising products containing substances or microorganisms which have a pesticide effect, such as copper compounds or calcium cyanamide?*
>
> Products that fall under the scope of the PPPR are automatically excluded from the scope of the FPR. But this rule cannot apply directly to substances or microorganisms with a known pesticidal or other plant protection effect. If a fertilising product, which complies with all requirements set in the FPR, happens to contain a substance or microorganism known to have a pesticidal or other plant protection effect, it could still be covered by the FPR, as long as this fertilising product does not have a pesticidal or other plant protection function within the meaning of the PPPR.
>
> Function is described in Article 2 of the PPPR. This does not mean that a substance or a microorganism does not possess any intrinsic pesticide property.

*Figure 2: Screenshot from the FAQs related to Regulation (EU) 2019/1009. Source: EU Commission.*

## Conclusion

EBIC supports the use of components (seaweed extracts, hydrolysed proteins, microorganisms, etc.) in multiple formulations to fulfil different plant biostimulant, fertiliser or plant protection functions.

Being able to combine components in different formulations to fulfil different product functions is crucial for innovation in the plant biostimulants industry. Scientific experiments and years of experience in the field have proven that certain components of plant biostimulants can have multiple effects and contribute to different product functions when they are used in combination with other components under certain conditions.

To provide the predictability necessary for the market to function properly, it is critical that conformity assessment bodies, Member States, and other actors respect the multiple-use concept, in line with the FAQ document and the first technical amendment to the FPR, when considering products under the FPR and national rules. This means allowing the use of certain components that have been approved as active substances of PPPs in plant biostimulant products, which will be placed on the market in accordance with the FPR or the respective national rules.

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## ABOUT EBIC

The European Biostimulants Industry Council (EBIC) promotes the contribution of plant biostimulants to make agriculture more sustainable and resilient and in doing so promotes the growth and development of the European Biostimulant Industry. Our mission is to ensure biostimulant technologies are valued as integral to sustainable agriculture, while securing an enabling regulatory framework for all of them.

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