

Biostimulants

Methods Forum 2019

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Biostimulant Description

- 2018 US Farm Bill
 - (c) Plant biostimulant.—For the purposes of the report under subsection (a), the Secretary—
 - (1) shall consider **“plant biostimulant”** to be a substance or micro-organism that, when applied to seeds, plants, or the rhizosphere, stimulates natural processes to enhance or benefit nutrient uptake, nutrient efficiency, tolerance to abiotic stress, or crop quality and yield; and
 - (2) may modify the description of plant biostimulant, as appropriate.

Biostimulant Definition

- EU definition in proposed fertilizer regulation
 - "plant biostimulant" means a product stimulating plant nutrition processes independently of the product's nutrient content with the sole aim of improving one or more of the following characteristics of the plant *or the plant rhizosphere*:
 - (a) nutrient use efficiency;
 - (b) tolerance to abiotic stress;
 - (c) quality traits;
 - (ca) *availability of confined nutrients in soil or rhizosphere.*

What is a Biostimulant?

- Plant extracts
- Beneficial Bacteria
- Beneficial Fungi
- Protein hydrolysates and amino acids
- Chitosan and other biopolymers
- Humic, fulvic and other organic acids
- Inorganic compounds

What is a Biostimulants function?

- Increase plant/root growth
- Nutrient use efficiency
- Mineralize nutrients in the soil
- Help plant resist abiotic stress
- Increase crop quality

The Label

- **CONTAINS NON-PLANT FOOD INGREDIENTS**

- Humic Acid.....10%
- Bacillus Subtilis..... 1.5×10^9 cfu/g
- Soy Protein Hydrolysate.....65%
- Kelp extract.....25%

Qualify and Quantify

- **Qualify** – “What” it is.
- **Quantify** – “How much” is there.

Methods

- Humic acid
 - AAPFCO reviewed methods
- Bacillus Subtilis
 - Qualify – PCR?
 - Quantify – culture?
- Soy Protein Hydrolysate
 - How do you test to see if it is a hydrolysate?
 - How do you know it is from soy?
 - How do you know how much you have?
- Kelp Extract
 - Are all extracts created equal?
 - Does species make a difference?