Quality claims are essential for the biostimulants industry

2 June 2014

www.biostimulants.eu
The general reference to quality is in line with the spirit of the New Approach’s specification of minimal product characteristics. The general reference to quality in the definition is complemented by specific product claims (and justification thereof) made by the producer.

The two-level approach to elaborating what is meant by quality also allows producers to take into account crop-specific aspects of quality. For example, high-quality peas would have high sugar content and low starch content, whereas it would be the opposite for high-quality potatoes.
The definition that has been used in FWG since June 2014 was developed through a multistakeholder process. Although EBIC drove the process, it reflected feedback from academics, the Commission (DGs Enterprise and SANCO), member state representatives to the FWG and complementary industries.
EBIC principles for defining biostimulants

• Should be based on the functional use of the product (claim)
• Should refer only to the inherent attributes of the products, i.e. not a contrast with any other definitions
• Should not be related to any particular jurisdiction, i.e. the definition should refer to the products and not any existing legislation
Some examples of existing dual use products/substances:

Liming materials are both a soil amendment and a possible source of Mg and/or Ca.

Urea is one of the most common fertilizers and also registered as a PPP active ingredient.

Copper salts can be used for fertilization or PPP properties.
‘Biostimulants are defined more by what they do than by what they are, since the category includes a diversity of substances.’

Prof. Patrick du Jardin
Université de Liège - Gembloux

This functional use approach was confirmed by Prof. du Jardin’s report in 2012. NB. The fact that the substances are not specified in the definition does not mean they are unknown substances. At this point in time, there are few or no novel molecules incorporated in biostimulants.

Under the New Approach, you won’t «know» in advance what fertilizer products are either – you have the basic criteria and then whatever products fits the criteria can be accepted.
The basis of the definition developed under the leadership of EBIC is the main effects of biostimulants, the outcomes and the spillover benefits.

Secondary effects (spillover benefits) are not considered to be what defines the products, although they may be part of the commercial logic that helps convince farmers to invest.

Spillover effects include:
• Greater water use efficiency
• Better baseline health and vigor mean that plants are less likely to succumb to pests and diseases.
• When crop protection is needed, plants may be able to recover faster. (Even fertilizers contribute indirectly to plant protection; the annex to the Directive on the Sustainable Use of Pesticides, which acknowledges the supporting role that fertilizers, irrigation and other production techniques play in IPM).
The working definition accepted by the FWG in June 2012

“Plant biostimulants means a material which contains substance(s) and/or micro-organisms whose function when applied to plants or the rhizosphere is to stimulate natural processes to enhance/benefit nutrient uptake, nutrient efficiency, tolerance to abiotic stress, and crop quality, independent of its nutrient content.”

Note that plant biostimulants are not necessarily organic. Approval for use in organic production is a separate process.
Particular notes on the wording

✓ EBIC was asked at the March 2012 FWG if it could include micro-organisms that make soil nutrients more available without a direct effect on plants (to simplify the regulatory architecture)

✓ Effects occur when applied to the plant or its microbiome – the “natural processes” in question might be in the soil, not just in the plant

✓ “independent of its nutrient content” was retained due to a MS request at the June 2012 FWG to acknowledge that nutrients might be present, but the main effect is not a nutritional effect
Does the definition make inappropriate classification of products likely?

✓ There would be no incentive to claim a fertilizer is a biostimulant because the steps for placing a fertilizer on the market will be much simpler.

✓ It is already illegal to make PPP claims for a product that has not been properly authorized as such (DIRECTIVE 2009/128/EC).

✓ EBIC advocates that the completeness check include a verification that claims being made are appropriate for a biostimulant.
A range of inputs are acknowledged to enhance crop quality

The International Fertilizer Industry Association (IFA) defines fertilizers as “any solid, liquid or gaseous substances containing one or more plant nutrients in known amount, that is applied ...to maintain soil fertility, improve crop development, yield and/or crop quality.” [emphasis added]

Biostimulants do not have a monopoly on enhancing crop quality, but it is a significant added value of many biostimulant products.
In many cases, these quantifiable quality traits act as a useful proxy for demonstrating the effect of a biostimulant product and are much more accessible for small and medium-sized enterprises than research into specific modes of action of the biostimulant(s). Quality can be demonstrated by measurable parameters like Brix degree, Caliber, Color, Dry matter, Protein content and Zeleny, making the efficacy assessment possible.

Furthermore, because many (and an increasing number) of biostimulant products are complex, multicomponent products, it is extremely difficult to isolate the various modes of action from one another, but it is possible to observe that they are not related to plant protection actions and to isolate the impact of the plant biostimulant component from, for example, a fertilizer component. (The Consiglio per la Ricerca e la sperimentazione in Agricoltura – ENTECRA – in particular has done useful research into this methodology.)

### Measurable ways biostimulants can enhance crop quality

<table>
<thead>
<tr>
<th>Sensory</th>
<th>Nutritional content</th>
<th>Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Minimizing the presence of unwanted elements such as heavy metals (by inhibiting their uptake)</td>
<td>Inherent tolerance to storage (excluding exogenous factors like fungicidal protection, etc.)</td>
</tr>
<tr>
<td>-- Size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- Form</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- Color</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- Defects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taste</td>
<td>Protein</td>
<td>Tolerance to handling</td>
</tr>
<tr>
<td>Texture</td>
<td>Minerals (including micronutrients)</td>
<td>Persistence of other quality traits through transformation</td>
</tr>
<tr>
<td></td>
<td>Vitamin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nutraceuticals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carbohydrates</td>
<td></td>
</tr>
</tbody>
</table>
Sanitary quality attributes are outside the scope of biostimulants

- Control of and/or tolerance of pathogens (thus diminishing any negative effects on quality attributes)
- Reducing/eliminating toxicity due to pathogens, microtoxins or natural plant defenses
Becase of the survey design, we know that the numbers are probably an underrepresentation of the true situation.
EBIC at a glance

- 11 members in June 2011 → 46 members today
- Dedicated to creating a **truly European market for biostimulants** to achieve:
  - More sustainable agriculture
  - Innovation-based job creation
- Milestones:
  - Secured the place of **biostimulants in the revised fertilizer regulation**
  - Negotiated a regulatory **definition** with EU authorities and other stakeholders
  - Co-designed (with authorities) an **innovative regulatory framework** for ensuring safety and quality and fostering continuing innovation and competition
  - Recognized as the **global reference** for the biostimulant industry
EBIC wants there to be a robust risk assessment framework because the credibility of the products is critical for future market development.
Companies generally come from 1 of 3 backgrounds:

1. Fertilizer companies seeking to diversify product portfolios with more added value
2. PPP companies seeking to diversify their product portfolio and leverage their R&D expertise in this young domain
3. Technology-centred companies that see agriculture as one of several possible markets for their core technology (e.g. micro-organisms also incorporated in industrial, environmental and/or consumer products)
To learn more about EBIC
www.biostimulants.eu

Presented by
David Carden, Valagro
d.carden@valagro.com