

Don't Miss the Florida Citrus Show -- Jan. 24-25 (<http://www.citrusshow.com/>)

# Microbial-based Biostimulants: Big Potential in Small Packages



By Matt Kleinhenz (<http://www.growingproduce.com/author/mkleinhenz/>)

| November 13, 2017

There is no shortage of interest in or questions and opinions about biostimulants. Many are working to develop them as key tools in grower toolboxes and to help growers use them effectively. One part of the effort is focused on identifying microbes that enhance crop growth under a range of conditions, including ones that ordinarily reduce yield (e.g., low soil moisture and/or fertility). The other part focuses on identifying methods that allow plant-microbe interactions to be most useful to growers.

SUBSCRIBE TODAY FOR

**Vegetable** **NEWS**  
GROWER.

**Subscribe** >

**LATEST STORIES**

Almond Grower for Nearly a Half-

ADVERTISEMENT

Why the fuss? The science is promising. Years of experiments in controlled environments suggest that the potential upside in production will be real, i.e., that inoculated crops will outperform non-inoculated ones. While some are already convinced, others need more proof collected on farms and in more ‘real-world’ situations. They also point to the dozens of products and the lack of information about them and see a need to create grower-friendly resources similar to ones available for biopesticides. It can be difficult to know when or even, if, a biostimulant is working. So, reliable protocols for assessing their effects in field and high tunnel systems are needed.

Discussion helps and there is plenty taking place. I have been fortunate to hear from many growers, suppliers, grower advisors, and researchers regarding their views on biostimulants, especially as we discuss the current situation and steps that may help more growers obtain greater value from their investments in biostimulants. Some of the comments shared most often



(mailto:7subscribed@mindgarden.com)  
based+Biostimulants%5A+Big+Potential+in+Sma  
body=Check  
out  
this  
site  
http%3A  
%2F%2Fwww.growingproduce.com%2Fvegetable:  
based-  
biostimulants-  
should-  
you-  
use-  
them-  
in-  
your-  
production%2F)

Century Honored  
(http://www.growingproduce.com  
7subscribed@mindgarden.com)  
century-honored/) |  
Posted by David Eddy  
(http://www.growingproduce.com/author  
/david-eddy/) | January 17, 2018

Ways Farmers Can Avoid Being  
Left Out in the Cold by ICE  
(http://www.growingproduce.com  
www.growingproduce.com%2Fvegetable:  
citrus/ways-farmers-can-avoid-  
being-left-out-in-the-cold-by-ice/)  
By Frank Giles  
(http://www.growingproduce.com/author  
/frank-giles/) | January 17, 2018

Top Spot in Citrus Production  
Worth the Fight  
(http://www.growingproduce.com  
/citrus/top-spot-in-citrus-  
production-worth-the-fight/)  
By Paul Rusnak  
(http://www.growingproduce.com/author/paul-  
rusnak/) | January 16, 2018



---

are summarized below.

### Grower Perspectives on Microbial-based Biostimulants

- They can't hurt and they may help ... they act as insurance
- Their (low) cost makes their possible upside appealing
- Everyone can't be wrong. Popularity = efficacy
- I hear good things about beneficial microbes and their effects on crops and farms. I want to promote soil life but it's difficult. These products may help with that, maybe even deliver microbes my crops truly need (if the R&D is on target).
- Which one? When, where, and how to use? Will it work? Interactions with other inputs, practices? There are many unanswered questions
- Suppliers are the only ones with information. I don't have time to talk with all of them at length. Besides, they have skin in the game. I need more, easy-to-use, third-party information.

### Supplier Perspectives on Microbial-based Biostimulants

- Products have high potential but must be handled and used properly to obtain benefits ... experience and information are needed
- Improper handling and/or use are too often the cause of product performance 'failure' on farms and in research

---

## Researcher/Advisor Perspectives on Microbial-based Biostimulants

- These are interesting, potentially useful inputs. This is a “prescriptive” and adaptable use of crop-microbe interactions
- Many growers are curious about them, so I need to know about them
- As a new area of inquiry, how does their use relate to what I do and already know? (more disciplines are involved)
- These products are unreliable; doubtful efficacy and/or ROI, and use is not built on accepted knowledge of crop-microbe interactions
- There is little, marginally useful third-party information, and there is no clear mechanism to develop more
- They’re snake oils

Clearly, everyone sees the potential for bringing new tools like biostimulants into specialty crop production — if they perform as many people expect they can. For that to happen, we have a lot of work ahead of us to make sure we select, use, and evaluate the effectiveness of microbial-based biostimulants more effectively.

Four recommendations for getting the most from microbial-based biostimulants:

1. Select products and the crops you plan to use them on carefully. Look for


---


products containing microbes more proven to be effective. Apply to crops that these specific microbes may benefit.


2. Store, handle, and prepare these biostimulant products properly. Make sure you know the expiration/best-by date. Storage in dark conditions with consistent and moderate temperatures is often best. Be sure you are following the label to prepare the products for application.
3. As you would with a crop protection application, be sure to pay attention to application factors. Timing, placement, soil condition, and rate will all have a significant impact on your potential success when using biostimulants.
4. Remember that while the potential benefits of biostimulants in vegetable and fruit production seem exciting, we are still learning about these products and how they do — and don't — work. You can be a part of that process. Get involved. Participate in evaluations. Listen, read, and observe. And most importantly, speak up. Ask tough questions and share your experiences. The more information we can gather collectively, the faster we can begin to make the best recommendations to help you with your production.


Biostimulants have the attention of many in research and extension. USDA, SARE, industry, and other support allowed my team to setup its Bugs in a Jug Webpage (<https://u.osu.edu/vegprolab/research-areas/vegebiostimsferts/>) as a portal to reliable research- and experience-based information regarding


microbe-containing biostimulants and biofertilizers and their use in commercial vegetable production. The effort is also linked to the Microbial Based Solutions for Agriculture program in the Center for Applied Plant Sciences at The Ohio State University and to ongoing work at the University of Tennessee. Please take a look, check out various resources (databases, recordings) and/or sign up for the listserv so you can be part of the discussion as we build on our understanding of biostimulants.


 Email (<http://www.growingproduce.com/vegetables/microbial-based-biostimulants-should-you-use-them-in-your-production/?share=email&nb=1>)

 Print (<http://www.growingproduce.com/vegetables/microbial-based-biostimulants-should-you-use-them-in-your-production/#print>)

 Facebook (<http://www.growingproduce.com/vegetables/microbial-based-biostimulants-should-you-use-them-in-your-production/?share=facebook&nb=1>)

 Google (<http://www.growingproduce.com/vegetables/microbial-based-biostimulants-should-you-use-them-in-your-production/?share=google-plus-1&nb=1>)

 LinkedIn (<http://www.growingproduce.com/vegetables/microbial-based-biostimulants-should-you-use-them-in-your-production/?share=linkedin&nb=1>)

 Twitter (<http://www.growingproduce.com/vegetables/microbial-based-biostimulants-should-you-use-them-in-your-production/?share=twitter&nb=1>)

Matt Kleinhenz is a professor in the College of Food, Agricultural and

Environmental Sciences, Horticulture & Crop Science at The Ohio State University. See all author stories here. (<http://www.growingproduce.com/author/mkleinhenz/>)

## Comments

## RELATED POSTS



(<http://www.growingproduce.com/fruits/new-improved-lure-stink-bug-detected/>)

### New, Improved Lure for Stink Bug Detected

(<http://www.growingproduce.com>)



(<http://www.growingproduce.com/vegetables/biostimulants-making-big-strides-as-it-seeks-organization/>)

### Biostimulants Making Big Strides as It Seeks

## /fruits/new-improved-lure-stink-bug-detected/)

Posted by David Eddy  
(<http://www.growingproduce.com/author/david-eddy/>) | January 9, 2018



(<http://www.growingproduce.com/sponsor/inocucor/inocucor-microbial-crop-inputs-improve-yields-shorten-growing-periods-and-enrich-soil-2/>)

## Inocucor microbial crop inputs improve

## Organization (<http://www.growingproduce.com/vegetables/biostimulants-making-big-strides-as-it-seeks-organization/>)

By Frank Giles  
(<http://www.growingproduce.com/author/frank-giles/>) | November 13, 2017



yields, shorten growing periods and enrich soil.  
(<http://www.growingproduce.com/sponsor/inocucor/inocucor-microbial-crop-inputs-improve-yields-shorten-growing-periods-and-enrich-soil-2/>)

Sponsor Inocucor  
(<http://www.growingproduce.com/sponsor/inocucor/>)

## So What Exactly Are Biostimulants, Anyway?



Posted by Richard Jones (<http://www.growingproduce.com/author/rjones>)

SUBSCRIBE TODAY FOR

/ | November 13, 2017

**Vegetable GROWER NEWS**

(mailto:?subject=So+What+Exactly+Are+Biostim

body=Check  
Email Address

out

this

site

http%3AALATEST STORIES

%2F%2Fwww.growingproduce.com%2Fvegetable:

what- Almond Grower for Nearly a Half-Century Honored

exactly- (http://www.growingproduce.com  
are- /nuts/almond-grower-nearly-half-century-honored/)

biostimulants

anyway%2F)  
Posted by David Eddy  
(http://www.growingproduce.com/author/david-eddy/) | January 17, 2018

Biostimulants are one of the hottest new topics of discussion in specialty crops. Some people look at these products as fertilizers. Others see them as plant health, drought tolerance, or pest protection enhancers. The truth is, at this point, there's no one set definition from regulatory bodies like EPA, or even among the companies producing and supplying these products to fruit and vegetable growers. That's led to a lot of uncertainty about whether some of these tools even work, and if they do, how, when, and where they should be

Ways Farmers Can Avoid Being Left Out in the Cold by ICE  
(http://www.growingproduce.com/vegetables/ways-farmers-can-avoid-being-left-out-in-the-cold-by-ice/)

By Frank Giles  
(http://www.growingproduce.com/author/frank-giles/) | January 17, 2018

used.

---

#### ADVERTISEMENT

---

BPIA — the Biological Products Industry Alliance — is looking to bring some clarity to the discussion. This association, whose mission is to promote the responsible development of safe and effective biological products as beneficial tools for agriculture, horticulture, public health, and consumers, has put together an excellent primer on what plant biostimulants are and how they work (<http://www.bpia.org/solutions-provided-by-biological-products-biostimulants/>).

Some of these (humic acid or seaweed extract, for example) are probably products you know in some form or fashion. Others, like plant growth promoting rhizobacteria, may be less familiar. But this quick guide will answer a lot of your questions (<http://www.bpia.org/solutions-provided-by-biological-products-biostimulants/>) and help you begin to understand how you might consider incorporating some of these tools in your production.

Top Spot in Citrus Production  
Worth the Fight  
(<http://www.growingproduce.com/citrus/top-spot-in-citrus-production-worth-the-fight/>)

By Paul Rusnak

(<http://www.growingproduce.com/author/paul-rusnak/>) | January 16, 2018

---

Richard Jones is the group editor for American Vegetable Grower, American Fruit Grower and Florida Grower magazines. See all author stories here.

(<http://www.growingproduce.com/author/rjones/>)

---

## Comments

## RELATED POSTS



(<http://www.growingproduce.com/fruits/new-improved-lure-stink-bug-detected/>)



(<http://www.growingproduce.com/vegetables/biostimulants-making-big-strides-as-it-seeks-organization/>)

## New, Improved Lure for Stink Bug Detected

(<http://www.growingproduce.com/organization>

/fruits/new-improved-lure-stink-bug-detected/)

Posted by David Eddy

(<http://www.growingproduce.com/author/david-eddy/>) | January 9, 2018

## Biostimulants Making Big Strides as It Seeks

Organization

(<http://www.growingproduce.com>

/vegetables

/biostimulants-making-big-strides-as-it-seeks-organization/)

By Frank Giles

(<http://www.growingproduce.com/author/frank-giles/>) | November 13, 2017



(<http://www.growingproduce.com/sponsor/duPont-crop-protection/potato-leafhopper/>)

## Potato Leafhopper

---

(<http://www.growingproduce.com/sponsor/dupont-crop-protection/potato-leafhopper/>)

Sponsor DuPont Crop Protection  
(<http://www.growingproduce.com/sponsor/dupont-crop-protection/>)



The leader in profits, production and  
education for produce

© 2018 Meister Media Worldwide

About (<http://www.growingproduce.com/about/>) |

Contact (<http://www.growingproduce.com/contact/>) |

Advertise (<http://www.growingproduce.com/advertise/>) |

Subscribe (<http://www.growingproduce.com/subscribe/>)

loading