

## Features

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## The Magic of Bacillus

Katie Gustafson



With consumers' growing demand for environmentally friendly and effective solutions for their homes and gardens, garden centers have been steadily expanding their plant health product selection to include more biorational products. Some of the most popular biorationals include products using the Bacillus bacteria. To learn more, Magic Gardener's Katie Gustafson caught up with Dr. Daniel Zommick, the Global Technical Development Manager at

Valent BioSciences, with over 10 years of experience working with Bacillus-based biorational products.

**Katie Gustafson (KG): What is Bacillus?**

**Daniel Zommick (DZ):** Bacillus species is a group of naturally occurring soil bacteria commonly used in biorational products to selectively control insect pests, support plant growth and/or protect against plant diseases. These living powerhouses can be used in biological inoculants, root dips, soil drenches and foliar sprays—often alongside mycorrhizal fungi or biostimulants to enhance overall plant health.

Bacillus-based products also tend to be OMRI-listed for organic use, and friendly to people, pets and the planet.



**KG: How can a retailer choose a high-quality Bacillus product?**

**DZ:** When it comes to choosing the right Bacillus-based product for your retail operation, trust in the manufacturer is more important than anything. Unlike chemical pesticides with a clearly defined, easily measured active ingredient, Bacillus-based products can vary widely in quality regardless of what the label says. Because they're made through fermentation, you can think of choosing the right biological like picking the right wine for dinner. You may like chardonnay, but each winery will have its own twist that may

or may not work for you.

For biorationals, it's important to look at these three things:

1. Quality control of the manufacturer—Choose products manufactured by companies with a good reputation. For example, Magic Gardener Bacillus-based products are backed by more than 50 years of experience in biorationals. Just like with a fine wine, the winemaker ultimately makes the difference in taste and enjoyment!
2. Proven, registered strains—Check if the label lists a specific strain number. For instance, the Bacillus found in Magic Gardener Biofungicide is *Bacillus amyloliquefaciens* strain PTA-4838. Knowing the

exact bacterial strain used in a product can be a sign of transparency and formulation expertise; if that information isn't provided, it may be worth asking for more details.

3. Good formulation and shelf stability—*Bacillus* are living organisms, so having the right formulation is essential to ensure they can provide effective control year after year. Look for a product with a shelf life of 24 months or more. This ensures that the product is shelf stable and gives your customer more than one season's use of the product.

**KG: Why is the *Bacillus* strain important?**

**DZ:** The bacterial strain makes all the difference when choosing a biorational pest control product because each strain will target different pests and can have a completely different profile of tools to control those pests.

For example, the *Bacillus* strain in Magic Gardener Caterpillar Control and Magic Gardener Fungus Gnat Killer are both *Bacillus thuringiensis*. However, the pests they control are completely different. Caterpillar Control contains *Bacillus thuringiensis subsp. kurstaki* (Btk) strain ABTS-351 and provides control over lepidoptera (caterpillar) pests. Fungus Gnat Killer contains *Bacillus thuringiensis subsp. israelensis* strain AM65-52 and controls fungus gnat larvae.

**KG: Can you break down the main types of *Bacillus* and how they are used?**

**DZ:** I have a chart for that! Take a look (and remember to always follow label recommendations).

	<i>Bacillus thuringiensis subsp. kurstaki</i>	<i>Bacillus thuringiensis subsp. aizawai</i>	<i>Bacillus thuringiensis subsp. israelensis</i>	<i>Bacillus amyloliquefaciens (formerly B. subtilis*)</i>
<b>Pest Spectrum</b>	Broad spectrum of caterpillar pests in fruits, vegetables and ornamentals. (Family: Lepidoptera)	Wax moth in stored bee hives. ( <i>Galleria mellonella</i> )	Fungus gnats and mosquitoes. (Family: Diptera)	Fungal and bacterial disease of fruits, vegetables and ornamentals.
<b>Application</b>	Foliar spray	Spray or dip combs	Soil drench	Foliar spray; some can be drenched
<b>How it works</b>	Insects ingest insecticidal crystals and spores that stop them from feeding.	Insects ingest insecticidal crystals and spores that stop them from feeding.	Insects ingest insecticidal crystals and spores that stop them from feeding.	Prevents spore germination and/or mycelial growth of plant diseases.
<b>When to apply</b>	Apply when caterpillars are small and actively feeding. Apply weekly as needed until pests are controlled.	Apply to combs going into storage.	Apply preventatively or when fungus gnats are present. Continue weekly applications until pests are controlled.	Must be applied preventatively before symptoms are visible or to prevent the spread of the disease if symptoms are evident.
<b>Tips for success</b>	For best results, scout plants regularly to time applications when caterpillars are small.	Only apply when bees are not present on combs.	Apply during watering on a regular schedule to prevent fungus gnat outbreaks.	Biofungicides cannot cure diseases and must be used preventatively or to limit the spread of diseases.



\* Science doesn't stand still and bacteria can be reclassified under different names. It's like discovering your favorite garden helper got a new last name: still the same friendly bacteria family, just reclassified by science.

**KG: What do you want garden center retailers to learn today from this article?**

**DZ:** Overall, it's important to know that Bacillus products are powerful biological allies for healthier plants and happier customers. By choosing the right strain and quality formulation, garden centers can deliver effective, sustainable solutions that meet the growing demand for eco-friendly gardening. **GP**

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*Katie Gustafson is the marketing communications manager for Magic Gardener, a new, biological plant health product line for the garden center industry brought to you by Mycorrhizal Applications. Order Magic Gardener now through your favorite distributor for spring delivery. For questions, reach out to the Mycorrhizal Applications team at [inquiries@mycorrhizae.com](mailto:inquiries@mycorrhizae.com).*