



An Overview: Biological Crop Protection

Beneficial microbes have co-existed with humans forever, but recent advances in science are presenting new ways to bring biological crop protection to the forefront of agriculture.

The Basics

- // **What:** Biological products are derived from naturally-occurring sources and provide new ways to control pests and diseases, or to stimulate plant growth, which helps crops thrive.
- // **Why:** Biologicals give farmers more options in managing pests and diseases while providing alternatives to chemical treatments and satisfying consumer demand for residue-free food.
- // **How:** Biologicals have unique modes of action that are useful in managing resistance against pests and diseases, or in helping plants make the most of their natural environment.

The Background

Biological crop protection has seen a dramatic rise in popularity in recent years. Inspired and developed from naturally occurring sources, biologicals have unique plant protection qualities that complement conventional chemical products and other farm practices. Biologicals are gaining increasing acceptance as a key part of crop protection because they offer unique ways of controlling pests and diseases and provide new resistance management options for farmers worldwide. Due to their recognized safety to people, wildlife and the environment, when used as directed, biologicals offer more choices for both farmers and consumers.

To meet the needs of farmers and to contribute to global food supplies, Bayer has been investing in the development of high-quality biologicals for over a decade. As part of Bayer's range of tailored agronomic solutions, "Biologicals by Bayer" innovations will help reduce agriculture's ecological footprint while enabling farmers to better manage pest resistance.

The Highlights

Though there are few crops, there are many threats.

- // A farmer's crop may compete with up to 10,000 species of insects, 3,000 types of nematodes and 50,000 diseases caused by bacteria, fungi and viruses.¹
- // Globally, farmers lose 30 to 40 percent of their crops because of pests and diseases.²
- // Even after being successfully harvested, our food isn't completely safe. Many insects and diseases can ruin stored food before it can even be distributed.

Crop protection can be done naturally.

- // Biologicals are derived from naturally occurring plant, bacterial, viral and fungal sources, some of which may even be found in your own backyard.
- // Plant extracts and microbial organisms have been used for centuries to control pests,³ but recent advances in our understanding are discovering new ways to protect crops.
- // Biologicals work in many ways. They can fight pests directly, colonize the roots of plants to act as a barrier against pests or stimulate the plant to vigorously grow and defend itself.
- // Although not all biologicals are certified as organic products, most share the same basic characteristic of being naturally sourced and include a favorable safety profile.

References

1. CropLife International. <https://croplife.org/news/why-we-need-crop-protection-products/>
2. FAO. <http://www.fao.org/docrep/014/i2215e/i2215e.pdf>
3. O'Neil & Dara. <http://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=26249>



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The Highlights

Biological crop protection introduces more tools in the toolbox.

- // Effective crop protection requires many different tools, and biologicals are a perfect fit in today's integrated management programs to complement traditional control methods.
- // Biologicals have unique modes of action, and they help prevent resistance development by keeping pests and diseases off-guard, keeping plants healthy and making farmers happy.
- // In addition to offering effective pest control, some biologicals act symbiotically with the crop to increase growth, improve nutrient uptake and prime the plant's natural defenses.
- // Biologicals are not a compromise between organic and conventional agriculture, but instead they embrace the full toolkits of both to enable more sustainable farming solutions.

Biological crop protection gives people more choices.

- // Farmers need more options for pest management so that they can continue to protect their crops at a reasonable cost – and biologicals help them meet this need.
- // Consumers want to know the products used to grow crops are safe for people, wildlife and the environment, and biologicals help address their desire for residue-free foods.
- // Biologicals can help meet the rising consumer demand for healthy, sustainably-sourced foods and offset the increasing scrutiny placed on chemical crop protection tools.
- // Biologicals offer food retailers more choices to meet shifting consumer demand for foods that are naturally sourced, safe and sustainable.

Key Things to Remember

- // Biological crop protection products are derived from naturally-occurring plant, bacterial, viral and fungal sources, some of which may even be found in your own backyard.
- // Biologicals work in many ways. They can fight pests directly, colonize the roots of plants to act as a barrier against pests or stimulate the plant to vigorously grow and defend itself.
- // Effective crop protection requires many different tools, and biologicals are a perfect fit in today's integrated management programs to complement traditional control methods.