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## ROLE OF AGRICULTURAL BIOLOGICALS IN MODERN CROP PRODUCTION AND PROTECTION

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### **Background:**

One of the fastest-growing segments in agricultural inputs is biological products. Agricultural biologicals are a diverse group of products derived from naturally occurring microorganisms, plant extracts, beneficial insects or other organic matter and the biochemical byproducts they produce (like organic acids, proteins, enzymes). These biochemicals are the key functioning components of our commercial product technology, interacting with the plant-soil system to increase the availability and uptake of nutrients that are applied in the form of fertilizers or that are present already in the soil or in crop residues. They are typically broken down into two or three major categories according to their use in agriculture:

- Biostimulants (plant growth/productivity enhancement products)
- Biopesticides (plant protection or biocontrol products)
- Biofertility (plant nutrition products)

### **What are the key benefits of biologicals in agriculture?**

Supporting Sustainable Agriculture with a new generation of biologically sourced tools for plant nutrition and protection. Biologicals are an essential tool in sustainable agriculture. They are a functional component to an effective Integrated Pest Management (IPM) strategy and contribute to environmentally responsible production systems. Agricultural biologicals offer a way to address these issues and provide a sustainable, “green” approach to the challenge of producing enough crops to keep up with an increasing demand for food and fuel.

### **Are biological products as effective as chemical crop protection products?**

“Biologicals,” represent a broad category of plant protection products that are derived from living organisms. Biologicals won’t replace chemical crop protection products but they do complement each other when used with an effective IPM strategy. They can provide a more holistic approach for growers to maximize crop yields, improve equality and minimize pest resistance. Additionally, some biologicals take longer to act on the target disease or pest, but their effects may be longer lasting. Many biologicals are best used as a preventative and may perform the best when applied early in the season. Farmers can apply biologicals with the same equipment used for their chemical products directly to plants or to the soil in which the plants are grown, or as a seed treatment.

### **What crops are biologicals used on:**

Biologicals are used throughout the world with a wide range of fruits, vegetables and tree-nuts, as well as row and field crops. Biologicals are versatile and work in both organic and conventional crop production systems.

### **Crop Yield and Quality:**

Biologicals help improve crop yields and quality. This helps growers deliver healthy and affordable feed and food products to consumers around the world. Biologicals help with resistance management because of their different modes of action which results in increased yields and farm profitability over the long term.

### **Flexibility in Spray Programs:**

Biologicals offer growers convenience and flexibility in spray timing due to short re-entry (REI) and pre-harvest intervals (PHIs). Short re-entry means that farmers can go into the field or greenhouse immediately or within a short period after a biological crop protection product application. Short PHIs refer to the wait time between application and harvest. Having short ones allow harvest and shipping schedules to be better maintained. Growers can also more easily manage the differences in residue requirements when getting their products to the food value chain.

### **Are biologicals considered organic?**

No Biological crop protection products are not necessarily considered to be organic, but they can be a valuable tool for organic growers. Biologicals can be certified by

independent certification bodies for use as inputs for organic agriculture. The rules for use vary by regulation, but despite the products themselves not being organic, they still can function as a pesticide available to organic growers.

### **How are biological products regulated?**

The regulatory environment for biologicals differs between countries and regions. Generally, authorities around the world recognize that biological plant protection products are beneficial but different from chemical plant protection products. Even so, this recognition has not necessarily lead to consistent approaches in regulatory requirements or review processes. In some countries, biologicals are registered under specific legislation, or they may be registered in a similar manner to chemical plant protection products. Sometimes there are reduced data requirements and other times, there may be no well-defined process at all for their registration at all. Biologicals typically do not linger in the environment. Since they rapidly degrade, possible harmful exposure risk to humans and the environment is reduced. Biological products are often exempted from Maximum Residue Limits (MRLs) – helping to improve the global marketability of crops treated with biologicals. Yes! Biologicals go through stringent registration and science-based risk assessment to make sure they are safe for humans and the environment. All crop protection products, whether biological or chemical, must meet the highest safety criteria to be approved for use.

Agricultural biologicals (or biologics) are beneficial crop production and protection tools that are derived from natural materials, contain them, or use naturally-occurring processes. They use nature's own defences to help safeguard plants against pests. Ag biologicals are an important part of our commitment to encourage diversity in modern agricultural practices by providing a broad range of solutions to support farmers. Our collection of more than 125,000 microbial strains allows us to use genetic diversity to develop new and beneficial products for farmers all over the world.

As we have for over two decades, we continue to invest in rigorous scientific research focused on developing new products rooted in biology and biochemistry. Our goal is to improve the performance of plant nutrition programs and provide growers with the tools they need to increase productivity and sustainability. The growth of the agricultural biologicals market is driven by various factors, including the need for new innovations to meet the food needs of a growing world population, an increasing demand for agricultural sustainability,

consumer interest in organic products, weed and insect resistance to chemicals used in agriculture and concerns about the environmental impacts of current agricultural practices.

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