

Press Release



BASF launches several formulations of Velondis biofungicide

New BASF biofungicide contains patented University of Delaware beneficial microbe to help plants fight fungal disease.

RESEARCH TRIANGLE PARK, NC, and NEWARK, DE, January 4, 2018 — BASF's new Velondis® brand biofungicide seed treatment formulations have received registrations from the Environmental Protection Agency (EPA). With potential applications in agriculture, horticulture and forestry, the products are designed to boost the protection of seedlings and plants from key soil-borne diseases.

The bacteria in Velondis produce a beneficial biofilm and antimicrobial components that promote systemic resistance within the plant, resulting in suppression of disease organisms that attach to root systems. Two of the Velondis biofungicides have additional components that help plants produce a more vigorous root system, resulting in improved plant growth and yield potential.

"Velondis biofungicides mark a major step for BASF in the use of natural biologicals to help plants fight disease," said Justin Clark, BASF, Technical Marketing Manager. "We plan to use this new active ingredient in a number of different products and applications to help improve disease control and increase crop yield potential."

A key microorganism incorporated in the new Velondis formulations is a unique strain of *Bacillus subtilis*, a natural, beneficial bacterium that lives on the surface of roots and the surrounding soil, or rhizosphere.

Scientists at the University of Delaware's (UD) College of Agriculture and Natural Resources and the Delaware Biotechnology Institute (DBI) conducted research on the beneficial bacterium with initial support from USDA HATCH funds, and additional funding from DBI, the National Science Foundation and BASF. The University's Office of Economic Innovation and Partnerships also provided funding and significant intellectual property management.

Janine Sherrier, Ph.D., professor of plant and soil sciences, and colleague Harsh Bais, Ph.D., associate professor of plant and soil sciences at UD, were the lead inventors on the patent, which the University has licensed exclusively to BASF. The two professors, along with co-inventor Venkatachalam Lakshmanan, Ph.D., led collaborative research teams studying the microorganism.

"At the University of Delaware, we're able to pursue early discovery work, with the ultimate aim of providing safe and effective tools for growers," said Sherrier. "The translation of basic research into commercial products is an arduous path, so we are pleased that our work has resulted in the development of new products for agriculture such as Velondis biofungicides."

Velondis biofungicides will be used in different facets of agriculture and will initially be labeled for use with soybeans in spring 2018. Growers can learn more about Velondis biofungicides by visiting BASF Ag Products or by contacting their local BASF representative.

About BASF's Crop Protection division

With a rapidly growing population, the world is increasingly dependent on our ability to develop and maintain sustainable agriculture and healthy environments. BASF's Crop

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Protection division works with farmers, agricultural professionals, pest management experts and others to help make this possible. With their cooperation, BASF is able to sustain an active R&D pipeline, an innovative portfolio of products and services, and teams of experts in the lab and in the field to support customers in making their businesses succeed. In 2016, BASF's Crop Protection division generated sales of €5.6 billion. For more information, please visit us at www.agriculture.basf.com or on any of our social media channels.

About BASF

BASF Corporation, headquartered in Florham Park, New Jersey, is the North American affiliate of BASF SE, Ludwigshafen, Germany. BASF has more than 17,500 employees in North America, and had sales of \$16.2 billion in 2016. For more information about BASF's North American operations, visit www.basf.us.

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 114,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into five segments: Chemicals, Performance Products, Functional Materials & Solutions, Agricultural Solutions and Oil & Gas. BASF generated sales of about €58 billion in 2016. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (BAS). Further information at www.basf.com.

About the University of Delaware

Tracing its heritage to 1743, the University of Delaware combines a rich tradition of excellence in teaching and research with a daring, can-do spirit that's been a hallmark since our first alumni signed the Declaration of Independence. UD is recognized nationally as both a distinguished research university—among the top three percent in the U.S.—and as an engaged university for our deep commitment to public service with positive impact. A leader in problem-based learning, we offer more than 100 undergraduate and graduate programs from our vibrant campus located in Newark, Delaware, one of the best small cities in America. Visit us at www.udel.edu.