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Velifer® Biological Insecticide

Worldwide Technical Information Brochure

contents

Preface: *This technical brochure provides general information about Velifer® biological insecticide, based on the active ingredient* Beauveria bassiana *strain PPRI 5339, developed and marketed by BASF. This information is being distributed to different countries where registrations and approved uses will vary. BASF emphasizes that Velifer® biological insecticide must be used in accordance with local regulations. The laws of each country govern the use of Velifer® biological insecticide. Please refer to the approved product label in your country for further information.*

The product discussed in this technical brochure may not be registered in your country or available for sale. Accordingly, this educational material is provided for informational purposes only and is not intended to promote the sale of the product. Any sale of this product after registration is obtained shall be solely on the basis of approved product labels, and any claims regarding product safety and efficacy shall be addressed solely by the label.

Introduction

Velifer® biological insecticide is a new biological product that effectively controls multiple pests, including whiteflies. It will be an invaluable tool for growers, who are increasingly turning to biological control to help with resistance management and to meet the sustainability requirements customers and consumers are demanding.

The active ingredient of Velifer® biological insecticide is *Beauveria bassiana* strain PPRI 5339, a beneficial fungus that grows naturally in soil. It is a parasite of various arthropod species and kills or seriously disables them. Velifer® biological insecticide is a direct contact insecticide containing fungal spores that work by being deposited onto the pest target by spray. The proprietary strain of *Beauveria bassiana* PPRI 5339 is sold in South Africa under the brand name Broadband®, where it is successfully helping farmers reduce target pest populations on their vegetable and fruit crops.

As a biological control, Velifer® biological insecticide offers several advantages for greenhouses. Sustainability has become an integral part of the ornamentals market, and biologicals help greenhouses meet the demands of garden centers, florists and other retailers, who in turn are responding to end users' demands for sustainably produced products. Biologicals are developed from natural ingredients, which leads to more favorable environmental profiles.

Biological products like Velifer® biological insecticide also promote safety and productivity. Many biological products require no special protective gear or equipment. They also have limited or no re-entry intervals after application. Velifer® biological insecticide is practically non-toxic to bees and other beneficial invertebrates under normal greenhouse conditions following label directions.

Resistance is highly unlikely with Velifer® biological insecticide due to the complex nature with which *Beauveria bassiana* interacts with the target pest. By contrast, pests can develop resistance to chemicals over time. By using Velifer® biological insecticide in rotation with chemicals, growers not only reduce resistance but also extend the life of their chemicals.

Key Features and Benefits:

- Biological product based on a naturally occurring beneficial fungus
- Active against all life stages of the target pest
- Works in a manner that complements chemical solutions
- Resistance development is highly unlikely
- No known adverse symptoms of phytotoxicity
- Does not affect beneficial insects

above:
Velifer® biological insecticide contains a beneficial fungus, providing growers a sustainable solution that also complements traditional chemicals.

product description

Active Ingredient:	*Beauveria bassiana* strain PPRI 5339
Formulation:	Oil Dispersion (OD)
Specification:	8 x 109 spores/ml (8 billion spores/ml)
Shelf Life:	8 months at room temperature (25°C). Storage stability studies running. 21 months when refrigerated.

Biological Profile

Mode of Action

Beauveria bassiana is a naturally found, soil-borne beneficial fungus. It is an entomopathogenic fungus, which is an organism that is parasitic to insects and kills or disables them.

Velifer® biological insecticide contains *Beauveria bassiana* strain PPRI 5339. An individual application affects all life stages, but L1-L2 larvae are most susceptible. Velifer® biological insecticide is a direct contact insecticide. After it comes into contact with the cuticle of the target pest, the fungal spores puncture the cuticle, and fungal strands (known as mycelium) enter the insect's hemolymph. The fungus proliferates in the insect's body, resulting in death or disabling within 48 to 72 hours.

Efficacy

Velifer® biological insecticide has been thoroughly tested on its efficacy at controlling target pest populations, including whiteflies. Additionally, by partnering with traditional chemicals, it can become a valuable tool in a greenhouse's integrated pest management (IPM) program. Pests can develop resistance to chemicals, but resistance is highly unlikely with Velifer® biological insecticide because of its nature and activity. Growers can also extend the life of their chemicals by using biological control in rotation with chemicals.

Selectivity

In trials conducted on 85 varieties of ornamentals, Solanaceae, Cucurbitaceae and strawberries, Velifer® biological insecticide was shown to be highly selective. No adverse symptoms of phytotoxicity were observed in any of the trials, which were conducted during light and dark periods. No spray deposits were observed.

above:
Velifer® biological insecticide controls all life stages of whiteflies, with the fungus proliferating in their bodies after direct contact.

above:
Velifer® biological insecticide is an oil dispersion that is applied as a foliar spray.

Formulation and Use

Velifer® biological insecticide is a liquid (oil dispersion) formulation that controls major greenhouse pests. Refer to the label and local use guidelines for recommended application rates.

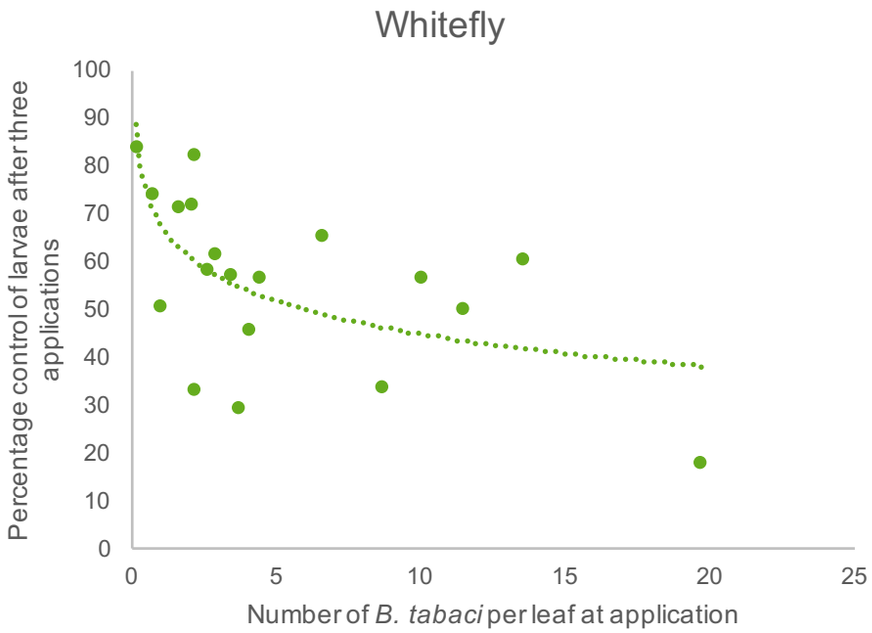
Velifer® biological insecticide is applied as a foliar spray to greenhouse-grown ornamentals. It should be applied early in the growing season when target insect pests are first observed. Recommended application timing is in the afternoon or early evening, when sunlight is less intense and pests tend to be less active. For greenhouses, a minimum of three applications are recommended, with applications occurring every 4 to 14 days depending on pest pressure.

Velifer® biological insecticide is a contact insecticide and must be applied in an application volume sufficient for uniform coverage, but not to the point of runoff. It should be used in an IPM program that includes other tools such as conventional insecticides.

Toxicological Profile

Velifer® biological insecticide is practically non-toxic to bees and other beneficial invertebrates under normal greenhouse conditions following label directions.

right:
In trials it has been observed that pest threshold at application is an important factor in determining level of control of a Velifer® biological insecticide program.



Safety, Stewardship and First Aid Measures

Safety Instructions

- Avoid contact with eyes or clothing. Wear long-sleeved shirt, long pants, shoes and socks, and protective eyewear.
- Avoid breathing spray mist or dust.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing.
- Wash thoroughly with soap and water after handling.

Storage Notes

Store only in the original container. Keep container closed when not in use and in a location that avoids temperature extremes. For longer shelf life, refrigerated storage is recommended. Do not store near food or feed.

Disposal

To avoid wastes, use all of the product by application according to label directions. If leftover product cannot be avoided, arrange for remaining product to be discarded at a waste disposal facility or through a pesticide disposal program (such programs are often run by state or local governments or by industry).

First Aid Measures

If in eyes:

- Hold eye open and rinse slowly and gently with water for 15 to 20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for treatment advice.

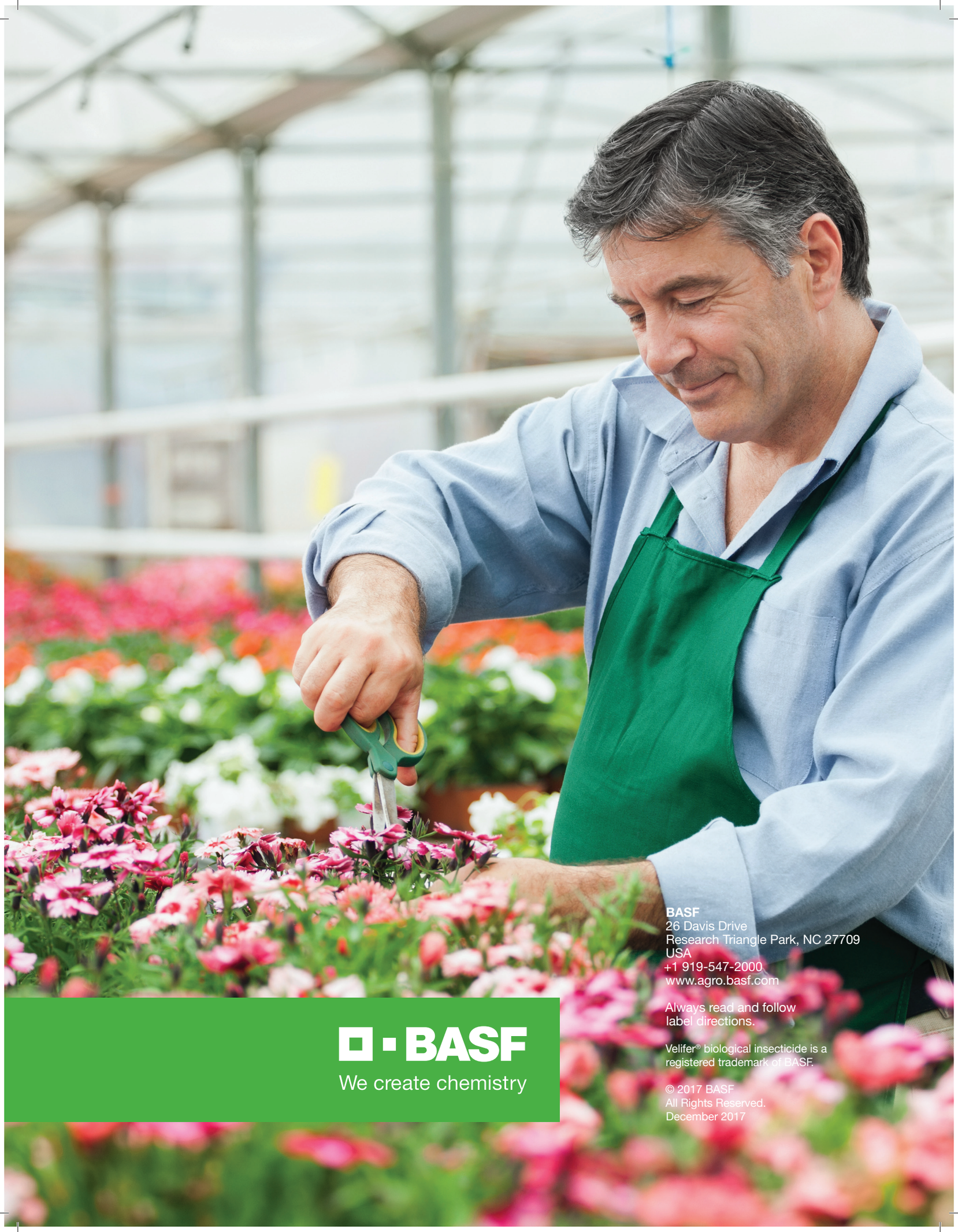
If inhaled:

- Move the affected person to fresh air.
- If the person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for treatment advice.

Poison Information Centers at BASF

Information on symptoms of poisoning or injury incurred while using BASF crop products may be obtained from the following numbers:

BASF Contact Information
Technical Emergency Center
Telephone: (49) 621 60 43333 (day and night)
Fax: (49) 621 60 – 92664



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Always read and follow label directions.

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