

PMRA Approved
2019-1565
2019-05-23

Botector®

Biological fungicide for the suppression of grey mold (*Botrytis cinerea*) in grapes, berries, fruiting and leafy vegetables, ornamentals, herbs and spices, for the suppression of anthracnose fruit rot (*Colletotrichum acutatum*) and partial suppression of phomopsis leaf blight (*Phomopsis obscurans*) in berries.

**COMMERCIAL
WETTABLE GRANULE**

ACTIVE INGREDIENT:

Aureobasidium pullulans DSM 14940 and DSM 14941 5 x 10⁹ CFU/g

REGISTRATION NO. 31248 PEST CONTROL PRODUCTS ACT

**KEEP OUT OF REACH OF CHILDREN
READ THE LABEL BEFORE USING**

**CAUTION:
POTENTIAL SENSITIZER**

MANUFACTURER/REGISTRANT

bio-ferm GmbH
Erber Campus 1
3131 Getzersdorf, Austria

DISTRIBUTOR

Nufarm Agriculture Inc.
Suite 350, 2618 Hopewell Place
Calgary, Alberta T1Y 7J7
Product Information: 1-800-868-5444

Net Contents: 0.4 kg / 1.0 kg / 1.2 kg
Date of Manufacture:

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NOTICE TO USER:

This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label.

FIRST AID:

If swallowed:

Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing:

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control centre or doctor for treatment advice.

If inhaled:

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

If in eyes:

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

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

TOXICOLOGICAL INFORMATION: Treat symptomatically.

PRECAUTIONS:

KEEP OUT OF REACH OF CHILDREN. May cause sensitization. Avoid contact with eyes, skin and clothing. Avoid inhaling/breathing mists. Wear waterproof gloves, a long-sleeved shirt, long pants, a NIOSH approved respirator for biological products, and shoes plus socks when handling, mixing/loading or applying the product and during all clean-up and repair activities.

Do not re-enter or allow re-entry into treated areas for 4 hours unless wearing appropriate personal protective equipment, including a long-sleeved shirt, long pants, shoes plus socks, waterproof gloves, and a NIOSH approved respirator for biological products. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before re-use.

GENERAL: Apply only when the potential for drift to areas of human habitation or areas of human activity such as houses, cottages, schools and recreational areas is minimal. Take into consideration wind speed, wind direction, temperature, application equipment and sprayer settings.

ENVIRONMENTAL HAZARDS:

As this product is not registered for the control of pests in aquatic systems, DO NOT use to control aquatic pests.

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

DO NOT allow effluent or runoff from greenhouses containing this product to enter lakes, streams, ponds or other waters. For guidance contact the Provincial Regulatory Agency.

DO NOT apply by air.

The spray solution should be used within 8 hours of being prepared.

To reduce runoff from treated areas into aquatic habitats avoid application to areas with moderate to steep slope, compacted soil or clay.

Avoid application when heavy rain is forecast.

Contamination of aquatic areas as result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

STORAGE:

To prevent contamination store this product away from food or feed. Store in a dry area inaccessible to children. Store in original container only. Keep container closed when not in use. Maximum storage period of 18 months at room temperature (20°C) or 30 months at cool storage (8°C) from date of manufacture.

DISPOSAL:

1. Triple- or pressure rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Follow provincial instruction for any required additional cleaning of the container prior to its disposal.
3. Make the empty container unsuitable for further use.
4. Dispose of the container in accordance with provincial requirements.
5. Dispose unwanted product in accordance with municipal or provincial regulations. For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

DIRECTIONS FOR USE

General description of the product and basic use information

Botector is a preventive biological fungicide for the

- suppression of grey mold (*Botrytis cinerea*) in grapes, berries, fruiting and leafy vegetables, ornamentals, herbs and spices.
- Suppression of anthracnose fruit rot (*Colletotrichum acutatum*) and partial suppression of phomopsis leaf blight (*Phomopsis obscurans*) in berries

The product contains two strains of *Aureobasidium pullulans* (DSM 14940 and DSM 14941), which provide suppression or partial suppression of grey mold and other labelled diseases. Apply Botector as a foliar spray alone or in alternating spray programs with other registered crop protection products. Heavy rainfall, or irrigation shortly after application of the product may require a retreatment. Apply preventatively preferably in the morning or evening hours and during cool temperatures. Apply Botector as a foliar spray using standard spraying equipment.

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INTEGRATED PEST MANAGEMENT (IPM)

Integrate Botector into an overall pest management strategy to reduce the use of chemical fungicide and chemical resistance. Follow practices known to reduce disease development. Observe forecast system, if available. Consult local agricultural authorities for specific IPM strategies developed for your crop(s) and location.

FRAC Code: NC (not classified)

CROP TOLERANCE:

Botector does not cause any phytotoxicological reaction if used according to label recommendation.

USE RATE DETERMINATION

Read carefully and follow all label directions, recommendations, use rates and restrictions. Application of Botector prior to the disease onset or in the early stages of the disease development provides the best results for management of the target plant disease. Use the specified maximum label rates and shorter spray intervals for conditions conducive to rapid disease development. For proper application, determine the surface area to be treated, the label use rate and select appropriate water amount to ensure good canopy penetration and coverage of plant parts to be protected. Spray plants to the point of running-off. Prepare only the amount of spray solution required to treat the measured acreage.

PREHARVEST INTERVAL:

Not applicable. Botector can be applied up to and including the day of harvest.

MIXING INSTRUCTIONS

Clean tank before using. Botector must be diluted in water. Keep the water temperature below 25°C. Fill the spray tank partially with clean water and begin agitation. Add the specific amount of Botector. To obtain a proper spray concentration, the tank has to be filled up to the necessary volume. The mixture should be stirred during application. Already mixed spray solution should not stand overnight or for more than 8 hours, to assure viability of *Aureobasidium pullulans*. Do not store unused product in the tank.

COMPATIBILITY:

The active ingredient, *Aureobasidium pullulans*, may be compatible with certain commonly used pesticides, but since sensitivity has not been evaluated for all pesticides, keep a spraying interval of 3 days before and after a Botector application. Please refer to www.bio-ferm.com/en/products/botector/ for more details.

Botector suppresses the following diseases, unless otherwise indicated.

Application Table:

Crop	Disease	Application Rate*	Number of applications per year or crop cycle (min. interval in days)	Timing
Field				
Grape	Grey mold (<i>Botrytis cinerea</i>)	1 kg/ha in 1,000 L/ha water volume, to be adapted according the phenological development stage	4	BBCH 68-89 *
Blackberry, Blueberry, highbush, Blueberry, lowbush, Cranberry, Currant, black, Currant, red, Elderberry, Gooseberry, Huckleberry, Jostaberry, Raspberry, black, Raspberry, red, Strawberry	Grey mold (<i>Botrytis cinerea</i>)	1 kg/ha in 500-2000 L of water/ha	6 (Repeat as needed on a 7-10 day interval up to harvest.)	Preventive, if climatic conditions are favorable for infection as well as at first sign of disease onset.
Blueberry, highbush Blueberry, lowbush Strawberry	Anthrachnose fruit rot (<i>Colletotrichum acutatum</i>)	1 kg/ha in 500-2000 L of water/ha	6 (Repeat as needed on a 7-10 day interval up to harvest.)	Preventive, if climatic conditions are favorable for infection as well as at first sign of disease onset.
Strawberry	Partial suppression of Phomopsis leaf blight (<i>Phomopsis obscurans</i>)	1 kg/ha in 500-2000 L of water/ha	6 (Repeat as needed on a 7-10 day interval up to harvest.)	Preventive, if climatic conditions are favorable for infection as well as at first sign of disease onset.
Tomato Eggplant Pepper, bell Pepper, nonbell	Grey mold (<i>Botrytis cinerea</i>)	1 kg/ha in 500-2000 L/ha water volume	5 (Repeat as needed on a 7-10 day interval up to harvest.)	Preventive, if climatic conditions are favorable for infection as well as at first sign of disease onset.
Lettuce, head and leaf Endive Radicchio (red chicory)	Grey mold (<i>Botrytis cinerea</i>)	1 kg/ha in 500-2000 L/ha water volume	weekly (Repeat as needed on a 7 day interval up to harvest.)	Begin preventive applications soon after emergence or transplant, if climatic conditions are favorable for infection

				as well as at first sign of disease onset.
Greenhouse				
Strawberry	Anthracnose fruit rot (<i>Colletotrichum acutatum</i>)	1 kg/ha in 500-2000 L/ha water volume	6 (Repeat as needed on a 7-10 day interval up to harvest.)	Preventive, if climatic conditions are favorable for infection as well as at first sign of disease onset.
	Partial suppression of Phomopsis leaf blight (<i>Phomopsis obscurans</i>)			
	Grey mold (<i>Botrytis cinerea</i>)			
Tomato Eggplant Pepper, bell Pepper, nonbell	Grey mold (<i>Botrytis cinerea</i>),	1 kg/ha in 500-2000 L/ha water volume	5 (Repeat as needed on a 7-10 day interval up to harvest.)	Preventive, if climatic conditions are favorable for infection as well as at first sign of disease onset.
Lettuce, head and leaf Endive Radicchio (red chicory)	Grey mold (<i>Botrytis cinerea</i>)	1 kg/ha in 500-2000 L/ha water volume	weekly (Repeat as needed on a 7 day interval up to harvest.)	Begin preventive applications soon after emergence or transplant, if climatic conditions are favorable for infection as well as at first sign of disease onset.
Greenhouse and Field				
Parsley	Grey mold (<i>Botrytis cinerea</i>)	1 kg/ha in 500-2000 L/ha water volume	weekly (Repeat as needed on a 7 day interval up to harvest.)	Begin preventive applications soon after emergence or transplant, if climatic conditions are favorable for infection as well as at first sign of disease onset.
Herbs and Spices: Allspice, Angelica, Star anise, Annatto (seed), Balm, Basil, Borage, Burnet, Camomile, Caper	Grey mold (<i>Botrytis cinerea</i>)	1 kg/ha in 500-2000 L/ha water volume	weekly (Repeat as needed on a 7 day interval up to harvest.)	Begin preventive applications soon after emergence or transplant, if climatic conditions are favorable for infection as

<p>buds, Caraway, Black caraway, Cardamom, Cassia (bark and buds), Catnip, Celery seed, Chervil (dried), Chive, Chinese chive, Cinnamon, Clary, Clove buds, Coriander leaf (cilantro or Chinese parsley), Coriander seed (cilantro), Costmary, Culantro (leaf or seed), Cumin, Curry (leaf), Dill (seed), Epazote, Fennel Seed (common and Florence), Fenugreek, White ginger flower, Grains of Paradise, Horehound, Hyssop, Juniper berry, Lavender, Lemongrass, Lovage (leaf and seed), Mace, Marigold, Marjoram (including oregano), Mexican oregano, Mioga flower, Mustard (seed), Nasturtium, Nutmeg, Parsley (dried), Pennyroyal, Pepper (black and white), Pepper leaves, Peppermint, Perilla, Poppy (seed), Rosemary, Rue, Saffron, Sage, Savory (summer and winter), Spearmint, Stevia leaves, Sweet bay, Tansy, Tarragon, Thyme, Vanilla, Wintergreen, Woodruff, Wormwood.</p>				<p>well as at first sign of disease onset.</p>
<p>Ornamentals, grown Outdoors, in Greenhouses or in Protected Environments</p>				
<p>African violet, Asters, Begonia, Chrysanthemum, Cyclamen, Cymbidium, Dahlia, Fuchsia, Gerbera, Geranium, Gladiolus, Hydrangea, Marigolds, Orchids, Pansy, Pelargonium, Petunia,</p>	<p>Grey mold (<i>Botrytis cinerea</i>)</p>	<p>1 kg/ha in 500-2000 L/ha water volume</p>	<p>weekly (Repeat as needed on a 7 day interval up to harvest.)</p>	<p>Begin preventive applications soon after emergence or transplant, if climatic conditions are favorable for infection as well as at first sign of disease onset.</p>

Poinsettia, Primrose, Primula, Ranunculus, Rose, Snapdragon, Zinnia				
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Note: Botector will suppress the above listed diseases under low to moderate disease pressure; however it may only partially suppress these diseases under high disease pressure.

* **Application timing for grapes:** Botector should be applied preventatively within the recommended growth stages. Botrytis infection starts, depending on weather conditions, already during the flowering period or later, throughout the vegetation period. Therefore, to ensure suppression of grey mold infection on grapes, applications at the following stages of grapevine are recommended:

BBCH	Phenological Stages	Sensitive stage
68	80% of flower hoods fallen	versus latent infection and infection of flower residues, depending on weather conditions
77	begin of bunch closure	versus stalk- and berry-infection
85	start of berry softening	versus berry-infection (susceptible grapes)
85-89	during ripening	versus berry infection (susceptible grapes, depending on weather conditions)

Application equipment:

Apply Botector as a foliar spray into the whole canopy of grapevine using standard spraying equipment.