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BOTANIGARD 22WP

Wettable Powder Mycoinsecticide

For use in controlling Whitefly, Aphids, and Thrips in Greenhouse Ornamentals, Vegetables, Herbs, Strawberries and Cannabis (marihuana) produced commercially indoors and Aphids on Greenhouse Wasabi.

COMMERCIAL
WARNING – EYE IRRITANT
CAUTION – SKIN IRRITANT
POTENTIAL SENSITIZER

READ THE LABEL BEFORE USING

ACTIVE INGREDIENT: *Beauveria bassiana* strain GHA.....4.4 x 10¹³ conidia / kg

KEEP OUT OF REACH OF CHILDREN

REGISTRATION NUMBER 29321 PEST CONTROL PRODUCTS ACT

Warning: This product contains the allergen sulfite.

NET CONTENTS: 500 grams

Lam International Corporation (LVM)
P.O. Box 4109, Butte, MT 59702, USA
Phone: BioWorks (North American Distributor) 1-800-877-9443

GENERAL INFORMATION:

BotaniGard 22WP contains live spores of the naturally occurring fungus, *Beauveria bassiana* strain GHA. BotaniGard 22WP is a mycoinsecticide formulated to control whiteflies, aphids, and thrips in greenhouse ornamentals, vegetables, herbs, strawberries, and cannabis (marihuana) produced commercially indoors. Also controls aphids on greenhouse wasabi. Both conventional spray application and pollinator biocontrol vector application methods can be used to deliver this product. Spores are alive and may be harmed by storage at high temperatures or contact with water for more than 24 hours.

MODE OF ACTION AND APPLICATION TIMING:

Begin treatment of crops at the first appearance of the insect pest. Typically, it takes 7-10 days after the first spray to see control. BotaniGard 22WP is most effective when used early, before high insect populations develop. Reapply as necessary under a pest management program that includes close scouting. Intense pest outbreaks may require a combination of BotaniGard 22WP with a compatible insecticide.

If using the spray application method, application rates, frequency, spray coverage and insect pest numbers will impact the speed at which acceptable control is achieved. Follow specific use directions below.

If using pollinator biocontrol vector application method, bee activity, the frequency at which the inoculum is renewed (if necessary), the number of hives with dispensers and insect pest density will influence the speed at which an acceptable level of control is achieved. Follow specific use directions below.

For Cannabis (Marihuana), use the following application methods:

SEEDING /ROOTING:

- Apply as a dip to cuttings and at transplant to target all life stages

SEEDING THROUGH FLOWERING:

- Apply as a drench to soil dwelling stages
- Apply as a foliar spray when winged adults are present

MOTHER PLANTS:

- Apply as a drench to soil dwelling stages
- Apply as a foliar spray when winged adults are present

See specific use directions in the sections below.

PRECAUTIONS:

KEEP OUT OF REACH OF CHILDREN. May cause sensitization. Causes eye irritation. **DO NOT** get in eyes. May irritate skin. Avoid contact with skin and clothing. Avoid breathing vapours (dust or spray mist). Wash thoroughly with soap and water after handling.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

Applicators and other handlers must wear: Coveralls over long-sleeved shirt and long pants, shoes plus socks, water-proof gloves, eye goggles and a minimum of a NIOSH-approved particulate filtering facepiece respirator with any R or P filter or a NIOSH-approved powered air-purifying respirator. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS:

Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

ENVIRONMENTAL PRECAUTIONS:

When using the spray application method, DO NOT apply this product while bees are actively foraging. Minimize overspray to reduce harmful effects on bees in greenhouses. May be harmful to beneficial insects. Avoid direct contact with beneficial insects when using spray applications. In order to be protective of beneficial insects, minimize overspray in the greenhouse.

When using the pollinator biocontrol vector application method, follow instructions for blending the product with corn starch as outlined below. DO NOT use undiluted product as full strength powder may be harmful to bees. When used according to the label, this application method is compatible with the use of *Aphidius coleman*, *Amblyseius swirskii*, *Encarsia Formosa*, *Eretmocerus eremicus*. Do not use in the presence of *Orius insidiosus*.

This product contains aromatic petroleum distillates which are toxic to aquatic organisms.

FIRST AID:

DANGER. This product contains petroleum distillates.

IF SWALLOWED:

- Call a poison control center or doctor immediately for treatment advice.
- Do not induce vomiting unless told to do so by a poison control center or doctor.
- Do not give **any** liquid to the person.
- 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 center 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 center 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 center or doctor for treatment advice.

Seek medical attention IMMEDIATELY if irritation occurs and persists or is severe. Take container label, or product name and Pest Control Product Registration Number with you when seeking medical attention.

TOXICOLOGICAL INFORMATION:

No specific antidote available. Treat the patient symptomatically.

PRE-HARVEST INTERVAL:

Pre-harvest interval for BotaniGard 22WP is zero (0) days. BotaniGard 22WP can be applied up to the day of harvest.

STORAGE:

Do not contaminate water, food or feed by storage or disposal. Store at room temperature (25° C) for no more than 9 months, or at 35° C for no more than 3 months. Tightly reclose the container of unused product. Do not contaminate unused product with water.

CROPS ON WHICH BOTANIGARD 22WP MAY BE USED:

BotaniGard 22WP can be used on ornamentals, vegetables, herbs, strawberries, and wasabi produced in greenhouses; and cannabis (marihuana) that is produced commercially indoors.

PESTS CONTROLLED:

BotaniGard 22WP will effectively control whiteflies, aphids, and thrips in a greenhouse environment; and rice root aphids on cannabis (marihuana) produced commercially indoors.

DISPOSAL:

1. Triple or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Follow provincial instructions 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. For information on the 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.

SPRAY APPLICATION METHOD**DIRECTIONS FOR USE****RESTRICTED ENTRY INTERVAL (REI):**

DO NOT enter or allow worker entry into treated areas for 4 hours or until sprays have dried, unless wearing waterproof gloves, long-sleeved shirt, long pants and socks with shoes a minimum of a NIOSH-approved particulate filtering facepiece respirator with any R or P filter or a NIOSH-approved powered air-purifying respirator with an HE filter.

MIXING AND APPLICATION:

To mix, fill spray tank with half the desired amount of water and start agitation. Use a measuring spoon, cup or calibrated container to add the appropriate amount of BotaniGard 22WP to obtain the required concentration to spray tank and mix thoroughly. Add remainder of desired amount of water.

Triple rinse empty BotaniGard 22WP container with water and add rinse water to spray tank. For best results, continue agitation during spraying. Do not mix more BotaniGard 22WP than needed for that day. Do not mix BotaniGard 22WP the day before application. Spores will die if left overnight or longer in the spray tank.

DO NOT allow effluent or runoff from greenhouses containing this product to enter lakes, streams, ponds or other waters.

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

DO NOT apply this product to freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs, and wetlands) and estuarine/marine habitats.

CAUTION: BotaniGard 22 WP contains live spores. Use of this product in an integrated pest management (IPM) program must take into consideration that fungicides, some insecticide formulations, and some wetting agents and spreaders may kill the spores.

APPLICATION FREQUENCY:

Apply BotaniGard 22WP at 5- to 10-day intervals. High insect populations, especially whitefly and aphids, may require application at 2- to 5-day intervals. Repeat applications for as long as pest pressure persists. There is no limit on the number of applications or total amount of BotaniGard 22WP which can be applied in one season.

DO NOT tank mix BotaniGard 22WP with any fungicide, insecticide or adjuvant.

GREENHOUSE ORNAMENTALS, VEGETABLES, HERBS AND STRAWBERRIES:

Spray to wet, but avoid runoff

Insect	Rate
Whiteflies, Aphids	250-500 g per 400 Litres spray volume
Thrips	500 g to 1 kg per 400 Litres spray volume

GREENHOUSE WASABI:

Spray to wet, but avoid runoff

Insect	Rate
Aphids	250-500 g per 400 Litres spray volume

CANNABIS (MARIHUANA) PRODUCED COMMERCIALY INDOORS:

Spray to wet, but avoid runoff

Insect	Rate
Whiteflies, Aphids	250-500 g per 400 Litres spray volume
Thrips	500 g to 1 kg per 400 Litres spray volume
Rice Root Aphids	500 g to 1 kg per 400 Litres spray volume as a foliar spray High pest pressure: apply 2-3 times, 3-5 days apart Low pest pressure: every 7-10 days It is recommended that foliar application is suspended 3-4 weeks prior to harvest No limit to the number of applications

CAUTION: Use of BotaniGard 22WP, especially at higher application rates, may result in commercially unacceptable visible residues. To minimize the risk of unacceptable visible residues on crop, test product by treating a small portion of the crop to determine if visible residues are acceptable.

PRE-PLANT DIP APPLICATION METHOD

For greenhouse ornamental cuttings, including poinsettia; and rice root aphid control in cannabis (marihuana) produced commercially indoors

DIRECTIONS FOR USE

The Pre-plant Dip application method does not require an REI.

Applications of BotaniGard 22WP may be used as pre-plant dips for cuttings.

- To prepare dip suspension, thoroughly mix 1.25 g of BotaniGard 22WP with 1 Litre of water (125 g/100 L water).
- For control of Rice Root Aphid for cannabis (marihuana) produced commercially indoors, thoroughly mix 2.5 g of BotaniGard 22WP with 1 Litre of water (125 g/50 L water).

To maximize efficacy:

- Agitate dip suspension throughout use to keep product in suspension.
- Prepare a new dip suspension regularly to avoid potential accumulation of plant pathogens.
- Prepare only as much dip suspension as can be used in one day. Do not use dip suspension for more than one day. Conidia/Spores suspended in water for more than 24 hours will die.
- Disinfect the dipping tank and equipment before a new dip suspension is prepared
- Place unrooted cuttings in a mesh immersion tray with a lid.
- Ensure the cuttings are not packed too tightly in tray to promote maximum surface area coverage.
- Immerse the tray completely, gently moving the tray around in the suspension for at least 5 seconds to allow the suspension to completely saturate all surfaces.
- Verify that there are no dry surface areas after dipping.
- After immersion cover and allow cuttings to dry before planting.
- Avoid exposing dipped cuttings to full sun.
- Do not use on stressed/wilting cuttings.
- Do not use without determining crop sensitivity (phytotoxicity) first.

Insect	Rate
- Whiteflies (reduces numbers)	1.25 g/L Dip suspension
- Rice root aphid	2.50 g/L Dip suspension

DRENCH APPLICATION METHOD

For rice root aphid control in cannabis (marihuana) produced commercially indoors

DIRECTIONS FOR USE

RESTRICTED ENTRY INTERVAL (REI):

DO NOT enter or allow worker entry into treated areas for 4 hours or until sprays have dried, unless wearing waterproof gloves, long-sleeved shirt, long pants and socks with shoes a minimum of a NIOSH-approved particulate filtering facepiece respirator with any R or P filter or a NIOSH-approved powered air-purifying respirator with an HE filter.

BotaniGard 22WP may be applied as a drench treatment at 0.5-1 kg product per 400 Litres spray volume for control of rice root aphids on established plants.

High pest pressure: apply 2-3 times, 3-5 days apart

Low pest pressure: every 7-10 days.

Apply this product only through hand-held calibrated irrigation equipment such as a hand-held wand with injector. DO NOT apply this product through drip irrigation systems.

To maximize efficacy:

- Agitate drench suspension throughout use to keep product in suspension.
- Prepare only as much drench suspension as can be used in one day. Do not use drench suspension for

- more than one day. Conidia/spores suspended in water for more than 24 hours will die.
- Disinfect the tank and irrigation equipment used to prepare and apply the drench before a new suspension is prepared.
 - Ensure growing medium is moist prior to application to facilitate the movement of spores throughout the substrate.
 - Apply sufficient volume to ensure thorough wetting of the growing medium but not to the point of leaching.
 - Ensure uniform distribution of applied product.

POLLINATOR BIOCONTROL VECTOR APPLICATION METHOD

For greenhouse ornamentals, vegetables, and herbs

For suppression of whiteflies, aphids, and thrips in bumble bee pollinated greenhouse crops.

DIRECTIONS FOR USE

Wear a minimum of a NIOSH-approved particulate filtering facepiece respirator with any R or P filter or a NIOSH-approved powered air-purifying respirator with an HE filter when preparing the BotaniGard 22WP inoculum.

No REI is applicable during delivery of BotaniGard 22WP through pollinator vector application method.

Introduction

This application method uses a microbial inoculum dispenser that is attached to the front of a bumble beehive. As bumble bees exit the hive through the dispenser, BotaniGard 22WP accumulates on their legs and body hairs. The bumble bees then transport and deposit the product on plant foliage, flowers and fruit during foraging and grooming. This continuous delivery of the bioinsecticide to the target sites on the plants enables management of whiteflies, aphids and thrips in bumble bee pollinated greenhouse crops.

The pollinator biocontrol vector application method facilitates the deposition of BotaniGard 22WP directly on the plant where the pests are found, reduces loss to ground deposition, continuously exposes the pest to the product, and limits aerosol concentration. Furthermore, this application method provides value added benefit to normal crop pollination, combining pollination with simultaneous pest control.

This application method can be used to deliver BotaniGard 22WP with bumble bees for the management of pests.

Precautions and compatibility with other IPM practices

Beauveria bassiana (GHA strain) has a broad insect host range, which can include bees. Therefore, the product must be diluted as described below.

When used as directed the impact on bees is minimal, and the technology is compatible with the release of the greenhouse biological control agents:

- *Aphidius coleman*
- *Amblyseius swirskii*
- *Encarsia formosa*
- *Eretmocerus eremicus*

Do not release *Orius insidiosus* in the presence of bee vectored BotaniGard 22WP.

As this application method relies on active bumble bee hives, it is important to ensure climatic conditions are conducive to optimize bee activity, plant growth and fruit development.

Wear a mist filtering respirator with NIOSH standards of at least N-95, R-95, or P-95 when preparing the BotaniGard 22WP inoculum.

Preparation of product

Prepare in preparation or pesticide storage room as follows:

- To dilute the product, mix the BotaniGard 22WP with corn starch (carrier) at a ratio of 3 parts product with 7 parts carrier.
- Use corn starch that has been sieved or ground to a particle size of less than 125 µm.
- Mix the inoculum in a litre sealable container.
- Thoroughly stir the inoculum in the container to ensure even mixing of the product with the carrier.
- For optimal efficacy of the inoculum, the corn starch should be kept as dry as possible. Therefore, purchase corn starch in a sealed package.

Filling of dispenser and maintenance

- Attach a suitable microbial product dispenser to the beehive.
- Fill inoculum in dispenser in the preparation or grower's pesticide storage room.
- Evenly distribute the product in the inoculum tray so it is 3-5 mm in depth.
- Check the product at least on a weekly basis to determine if the inoculum still in a powder form.
- The inoculum in the dispensers should be changed weekly or sooner if the surface becomes too hardened for the bees to pick up the inoculum.
- Discard microbial dispenser contents according to disposal instructions.
- The number of hives with dispensers will vary according to pest level, but not all hives require a dispenser. Dispensers should be rotated amongst the hives.
- Attach dispensers to the hives when bee activity is low (preferably in the early morning or later evening).
- Avoid attaching dispenser to old hives with low bee activity.
- If bee activity is decreasing in a hive with a dispenser, remove the dispenser immediately.

Required number of dispensers

- It is recommended that dispensers be attached to 5-10 hives per hectare (2-4 hives per acre) to provide an acceptable rate of product deposition.
- After 3-4 weeks, the grower should assess control efficacy by checking for pest density levels and plant/fruit damage. If required, the number of hives with dispensers can be increased, decreased or remain the same.

NOTICE TO USER:

This pest control product is to be used only in accordance with the directions on this label. It is an offence under the PEST CONTROL PRODUCTS ACT to use a control product in a way that is inconsistent with the directions on the label.