

Evaluation Report for Category B, Subcategory 3.4 Application

Application Number: 2011-2974
Application: Changes to product label – application method
Product: BotaniGard 22WP
Registration Number: 29321
Active ingredients (a.i.): *Beauveria bassiana* strain GHA (BGH)
PMRA Document Number: 2214335

Background

Beauveria bassiana strain GHA is a microbial pest control agent used to suppress whitefly, aphids, and thrips on ornamental plants and vegetables in greenhouse horticulture. The associated end-use product BotaniGard 22WP is a commercial insecticide that contains the entomopathogenic fungus *B. bassiana* strain GHA at 4.4×10^{13} conidia/kg as the active ingredient and is currently registered for foliar application at a maximum rate of 2.34 kg of product per hectare.

Purpose of Application

The purpose of the application was to add to the label, a new method of application for BotaniGard 22WP. The new method of application involves the use of a dispenser-type product through which pollinators (bees) will pass through to deliver the microbial pest control agent diluted in corn starch, to ornamental plants and vegetables in greenhouses. The rate being proposed for vector application, results in a final concentration of 6.24×10^{10} conidia of *B. bassiana* strain GHA/g of inoculum, with approximately 240–320 mg of this inoculum per day per hectare, targeted to plants.

Chemistry Assessment

No new Product Characterization and Analysis information was submitted with this application. As the new method of application does not change the product itself in any way, no additional information was required to support the new method of application.

Health Assessments

No new toxicology information was required to support the new method of application for BotaniGard 22WP. The toxicology database for BotaniGard 22WP is complete.

Since April 26, 2007, registrants have been required by law to report incidents, including adverse effects to health and the environment, to the PMRA within a set time frame. Information on the reporting of incidents can be found on the Pesticides and Pest Management portion of Health Canada's website www.healthcanada.gc.ca/pesticideincident. As of October 27, 2011, there were no incidents related to health or the environment reported in the PMRA Incident reporting database or the California Department of Pesticide regulation (CalDPR) for products containing *B. bassiana* strain GHA for use as pesticides. Nor were there any incidents related to the environment in the US EPA's Ecological Incident Information System (EIS) for products containing *B. bassiana* strain for use as pesticides.

The new method of application using the vector technology is not expected to result in occupational/bystander exposures that are higher than the currently registered foliar application method.

A food exposure assessment was not required for this application.

Environmental Assessment

This novel method of application involving vectors to deliver a pesticide to a target site is not expected to result in increased environmental exposure. In fact, this delivery method uses far less pesticide than the conventional method of foliar sprays. As the use is targeted application in greenhouses, exposure to the environment is expected to be negligible. The possibility of bees carrying the MPCA outdoors does exist through escaped bees, however that would likely be infrequent and the amount each bee can carry would not result in an increase of this MPCA in outdoor environments. The proper disposal of unused inoculum in dispenser trays (as per the proposed label) would mitigate the risk from unnecessary environmental exposure.

Value Assessment

A comprehensive value summary and efficacy review and a number of published studies were submitted in support of the addition of a novel application technique of BotaniGard 22 WP to the label. This application method uses pollinators (bumble bees) to deliver the biological control agent in greenhouses. As bees exit hives through a biopesticide dispenser they accumulate the powdery product (BotaniGard 22 WP) on their body and it is subsequently vectored to the plant (flowers and leaves) during pollination.

The provided information supports the use of bumble bees to vector BotaniGard 22 WP to provide suppression of whiteflies, aphids, and thrips in pollinated greenhouse crops at a rate of 3 parts BotaniGard 22 WP to 7 parts corn starch, applied using a microbial product dispenser attached to 5 to 10 hives per hectare. This application method is compatible with the use of the biological control agents *Aphidius coleman*, *Amblyseius swirskii*, *Encarsia Formosa*, and *Eretmocerus eremicus*.

Conclusion

The Pest Management Regulatory Agency has completed an assessment of the information provided in support of the product, BotaniGard 22 WP, and has found the information sufficient to add a new application method to the product label.

References

- 2079498 2006b, Biological control of *Lygus lineolaris* (Hemiptera: Miridae) and *Frankliniella occidentalis* (Thysanoptera: Thripidae) by *Bombus impatiens* (Hymenoptera: Miridae) and *Frankliniella occidentalis* (Thysanoptera: Thripidae) by *Bombus impatiens*, DACO: M10.3, M10.3.2, M10.3.2.2
- 2079502 2011, Note explaining the discrepancies between the concentrations of *Beauveria bassiana*., DACO: M10.0,M10.1,M10.2,M2.9
- 2079503 1993, Pathogenicity of *Beauveria bassiana* (Balsamo) Vuillemin towards Lygus bug (Hemiptera: Miridae). DACO: M10.3, M10.3.2, M10.3.2.2
- 2079509 Data for URMULE of Bee Vector Technology, DACO: M10.1, M10.2
- 2079523 1994, Design and application of a hive-mounted device that uses honey bees (Hymenoptera: Apidae) to disseminate heliothis nuclera polyhedrosis virus. DACO: M10.1
- 2079524 1999, Honey Bees (Hymenoptera: Apidae) as Vectors of *Bacillus thuringiensis* for Control of Banded Sunflower Moth (Lepidoptera: Tortricidae), DACO: M10.1
- 2079525 2008a, Optimal concentration of *Beauveria bassiana* vectored by bumble bees in relation to pest and bee mortality in greenhouse tomato and sweet pepper, DACO: M10.1, M10.2, M10.2.1, M10.3, M10.3.1, M10.3.2, M10.3.2.2
- 2079526 2008, Co-vectoring of *Beauveria bassiana* and *Clonostachys rosea* by bumble bees (*Bombus impatiens*) for control of insect pests and suppression of grey mould in greenhouse tomato and sweet pepper, DACO: M10.2, M10.2.1, M10.3, M10.3.2, M10.3.2.2,
- 2079535 Using bumble bees to deliver a fungal control agent and a plant health inoculum to greenhouse vegetables for arthropod pest control and plant disease suppression, DACO: M10.3, M10.3.2.2
- 2079539 2001a, Bumble Bee (Hymenoptera: Apidae) Activity and Pollination Levels in Commercial Tomato Greenhouses, DACO: M10.3, M10.3.2, M10.3.2.2
- 2079544 1994, Effectiveness of the bumble bee, *Bombus impatiens* Cr. (Hymenoptera: Apidae), as a pollinator of greenhouse sweet pepper, DACO: M10.3, M10.3.2, M10.3.2.2
- 2095222 2007, Vectoring of fungal agents by bumble bees for pest control and disease suppression in greenhouse tomato and sweet pepper, DACO: M10.2, M10.3, M10.4
- 2164872 Data Summary (revised), DACO: M10.1, M10.2, M9.0, M9.1, M9.5
- 2164871 2012, BotaniGard 22WP - Regulatory information in support of a label amendment to include pollinator delivery as an application method (UPDATED), DACO: M1.2, M1.3, M10.0, M10.1, M10.2, 10.2.1, M10.2.2, M10.3, M10.3.1, M10.3.2, M10.3.2.1, M10.3.2.2, M10.4,M10.4.1,M10
- 2128727 2008a, Optimal concentration of *Beauveria bassiana* vectored by bumble bees in relation to pest and bee mortality in greenhouse tomato and sweet pepper, DACO: M10.1,M10.2, M10.2.1, M10.3, M10.3.1, M10.3.2, M10.3.2.2, M9.0, M9.5,M9.5.1
- 2128728 Data for URMULE of Bee Vector Technology, DACO: M10.1,M10.2,M9.0,M9.1,M9.5
- 2128731 2007, Vectoring of fungal agents by bumble bees for pest control and disease suppression in greenhouse tomato and sweet pepper, DACO: M10.2, M10.3, M10.4, M10.5, M9.0, M9.1, M9.5
- 2128732 2004, Non-target effects of insect pathogenic fungi, DACO: M10.3,M10.3.2,M10.3.2.2,M9.0,M9.5,M9.5.1
- 2128733 Using bumble bees to deliver a fungal control agent and a plant health inoculum to greenhouse vegetables for arthropod pest control and plant disease suppression, DACO: M10.3,M10.3.2.2,M9.0,M9.5,M9.5.1
- 2128735 2011, Submission number 2011-2974: Responses to Request for Clarification, DACO: M5.0,M9.0,M9.1,M9.5,M9.5.1
- 2164871 2012, BotaniGard 22WP - Regulatory information in support of a label amendment to

- include pollinator delivery as an application method (UPDATED), DACO:
M1.2,M1.3,M10.0,M10.1,M10.2,M10.2.1,M10.2.2,M10.3,M10.3.1,M10.3.2,M10.3.2.1,
M10.3.2.2,M10.4,M10.4.1,M10
- 2128730 2008b, Co-vectoring of *Beauveria bassiana* and *Clonostachys rosea* by bumble bees
(*Bombus impatiens*) for control of insect pests and suppression of grey mould in
greenhouse tomato and sweet pepper, DACO: M10.2, M10.2.1, M10.3, M10.3.2,
M10.3.2.2,
- 2164869 2012, Response to Deficiency Letter, DACO: 0.8
- 2079533 2004, Non-target effects of insect pathogenic fungi, DACO: M10.3,M10.3.2,M10.3.2.2

ISSN: 1911-8082

© Her Majesty the Queen in Right of Canada, represented by the Minister of Public Works and Government Services
Canada 2012

All rights reserved. No part of this information (publication or product) may be reproduced or transmitted in any form or by any
means, electronic, mechanical photocopying, recording or otherwise, or stored in a retrieval system, without prior written
permission of the Minister of Public Works and Government Services Canada, Ottawa, Ontario K1A 0S5.