

Metarhizium anisopliae strain F52 (029056)

Biopesticide Fact Sheet

Related Information

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OPP Chemical Code: 029056

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Summary

Metarhizium anisopliae strain F52 (referred to as Met F52) is a fungus that infects insects, primarily beetle larvae and ticks. It has been approved as a microbial pesticide active ingredient for non-food use in greenhouses and nurseries, and at limited outdoor sites not near bodies of water. Many strains of *Metarhizium anisopliae* have been isolated worldwide from insects, nematodes, soil, river sediments, and decomposing organic material. No harm is expected to humans or the environment when pesticide products containing *Metarhizium anisopliae* strain F52 are used according to label instructions.

I. Description of the Active Ingredient

The fungus *Metarhizium anisopliae* strain F52 infects insects that come in contact with it. Once the fungus spores attach to the outer surface of the insect, they germinate and begin to grow. After penetrating the outside skeleton of the insect, they grow rapidly inside the insect, causing the insect to die. Insects that come in contact with infected insects also become infected. *Metarhizium anisopliae* strain F52 can infect larvae and adults of many insects, but is labeled for use on mites, thrips, ticks, whiteflies, and weevils.

II. Use Sites, Target Pests, and Application Methods

- **Use Sites:** Terrestrial non-food sites, including ornamentals in greenhouses; nurseries, residential and institutional lawns; landscape perimeters. Not for use where water might become contaminated.
- **Target Pests:** mites, thrips, ticks, weevils and whiteflies.

- **Application Methods:** Spray; incorporate in growth media, soil incorporation.

III. Assessing Risks to Human Health

No harm is expected to humans from exposure to *Metarhizium anisopliae* strain F52 by ingesting, inhaling, or touching products containing this active ingredient. No toxicity or adverse effects were seen when the active ingredient was tested in laboratory animals.

IV. Assessing Risks to the Environment

The Agency has performed an environmental risk assessment and determined that the proposed uses of *Metarhizium anisopliae* strain F52 as an insecticide will have no adverse effects on birds, mammals, or terrestrial and aquatic plant species. In light of laboratory studies reporting toxicity and pathogenicity to immature aquatic vertebrate and invertebrate species, additional studies were not required because the pesticide is not to be applied to aquatic sites. No harm is expected to freshwater and estuarine/marine fish, invertebrates or aquatic insects from the small quantities of *Metarhizium anisopliae* Strain F52 that might enter the aquatic environment from incidental drift and runoff from approved terrestrial uses.

Submitted studies show that *Metarhizium anisopliae* strain F52 is not harmful to earthworms or to such beneficial insects as lady beetles, green lacewings, parasitic wasps, honey bee larvae, and honey bee adults. The potential exposure level as a function of the proposed application methods of the pesticide was assessed, and BPPD made “no effect” determinations for direct effects, indirect effects, and affects to habitat (including designated critical habitat) for listed species for certain methods of application as labeled. The Agency also considered the lower toxicity potential of Met F52 pesticides relative to the alternatives (carbamates and pyrethrins) for the proposed uses and the fact that following applications the fungus returns to levels that cannot be distinguished from the naturally occurring *M. anisopliae*. Further analyses are needed to characterize the effects that are likely to occur and the species that could potentially be affected. This assessment will be conducted during registration review for Met F52.

V. Regulatory Information

Earth BioSciences of New Haven, CT (formerly Taensa Company) submitted an application on May 28, 1999 for registration of a product containing *Metarhizium anisopliae* strain F52 as the active ingredient. The product was for non-food outdoor and greenhouse use. On June 14, 2002 the registrant

submitted an application for a second product for treating additional sites and pests.

On June 6, 2003, the following three end products were registered for a period of two years: Taenure Granular Bioinsecticide; Tick-EX G; Tick-EX EC. The registrant had one year from the registration date to satisfy certain conditions, including providing evidence that the products are effective against specific ticks. Ownership was finally transferred to Novozymes Biologicals, Inc., that provided data to satisfy the conditions of registration. After reviewing the required data, EPA decided to change the conditional registration to a full registration and to include food uses on the label in April 2011. An exemption from tolerance was established in 40 CFR 180.1303.

VI. Products Directed Against Public Health Pests

EPA has created a list of pests of significant public health importance.* The list consists of pest species that can cause or transmit human disease, or can cause human discomfort or injury. Cockroaches, rats, ticks, and various microbes are on the list. To help protect the public's health, EPA requires pesticide products directed against listed pests to meet specific standards for effectiveness as well as for safety. Products containing *Metarhizium anisopliae* strain F52 have demonstrated effectiveness against ticks as labeled.

[* Microbes in or on living humans or other living animals are specifically excluded from this EPA list. These excluded microbes are regulated by FDA and not by EPA.]

VII. Registrant Information

Novozymes Biologicals, Inc.
5400 Corporate Circle,
Salem, VA 24153.

VIII. Additional Contact Information

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