

# Met52® granular bioinsecticide

For Black Vine Weevil control in protected  
and outdoor soft fruit and ornamental  
plant production



Extended control of Black Vine  
Weevil (*Otiorynchus sulcatus*)

Bioinsecticide with no harvest  
interval or chemical residue

# Met52<sup>®</sup> granular bioinsecticide

**Met52 granular** is a microbial pest control product containing the entomopathogenic fungus *Metarhizium anisopliae* var. *anisopliae* strain F52, a naturally occurring insect parasitic fungus that is not genetically modified. **Met52 granular** controls Black Vine Weevil, *Otiorynchus sulcatus* (Coleoptera: Cuculionidae) a common and noxious polyphagous pest of soft fruit and ornamentals. **Met52 granular** contains 2% active substance, for incorporation into crop growing media and soil in protected and unprotected situations. **Met52 granular** can be used at all crop growth stages from propagation to final potting. When plants are potted into larger containers, the fresh growing media in which they are potted should also be treated with **Met52 granular** to maintain good control otherwise larvae within the original root-ball may not be controlled by application at re-potting.

Black Vine Weevil (BVW), *Otiorynchus sulcatus* (Coleoptera; Cuculionidae) are important and widespread pests of ornamental nursery stock and soft fruit. Adults damage the above ground parts of plants typically causing notching of leaves. Larvae feed on roots reducing the number and quality of roots which in turn reduces plant vigour and health and can cause plant death.

## Mode of Action

**Met52 granular** spores germinate and the fungal hyphae penetrate and grow within the insect. Death usually occurs within a few days and a new generation of spores are produced on hyphae emerging from the dead insect. In the absence of suitable insect hosts the spores can remain in the soil for years without germinating, providing longevity from a single treatment.

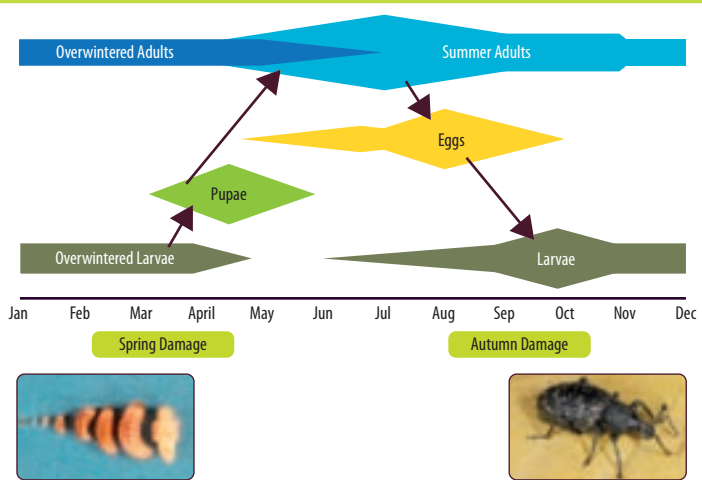


Met52 granular spores on rice

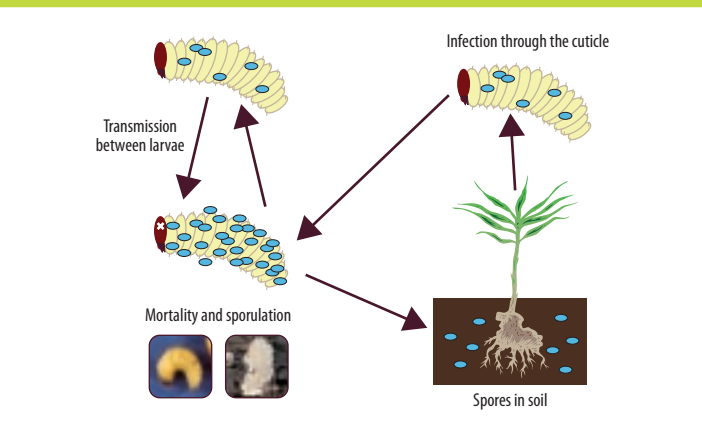
The larvae will come into contact with **Met52 granular** spores, which attach to its body after which the fungi will grow through into the body of the larvae. Once the penetration peg enters the hemolymph of the insect the insect dies. The process takes between 5-7 days. Hyphae may then emerge from the body of the larvae and give rise to new spores. Larvae which come

## Life Cycle of Black Vine Weevil

Moorhouse et al., 1992

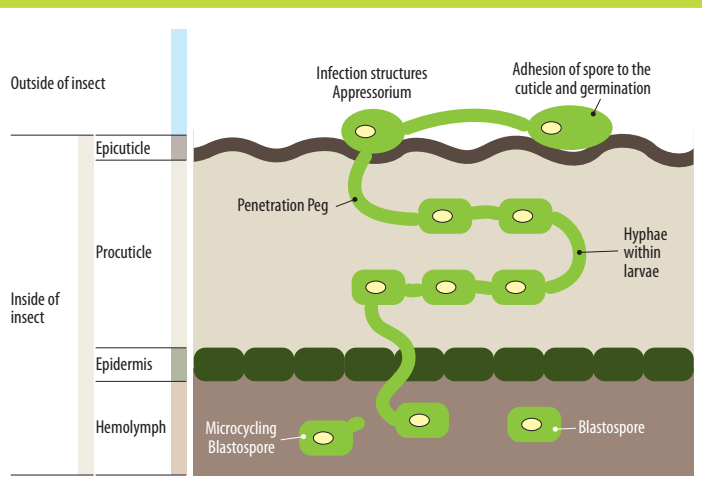


## Metarhizium anisopliae - Simplified life cycle



## Metarhizium anisopliae - The infection process

Adapted from Clarkson and Charnley, 1996



into contact with these spores will become infected and die. The optimum temperature range for activity is between 15 and 30°C. Outside this temperature range, activity may be reduced but spores remain viable. Spores are not killed by the cold, or a heavy frost. On the other hand, they will start to die at temperatures above 40°C.

## Crop Recommendations

**Met52 granular** is for use on soft fruit (blackberry, blackcurrant, blueberry, gooseberry, raspberry, redcurrant, strawberry, whitecurrant) and ornamental plants. **Met52 granular** is effective against all larval stages of Black Vine Weevil when applied shortly before egg-laying occurs.

## Application Rate & Frequency

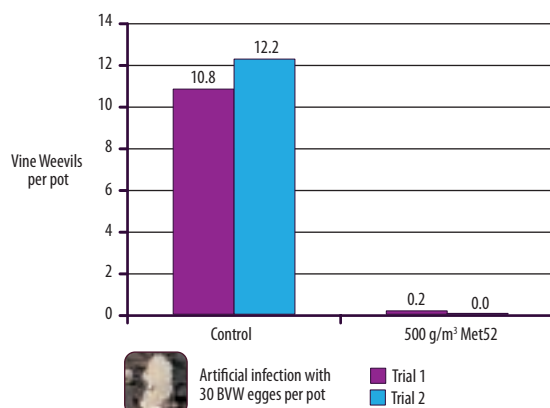
**Met52 granular** is incorporated into soil or growing media at a rate of 0.5 kg/m<sup>3</sup>. It is essential to incorporate thoroughly into the growing media and once incorporated, treated media should be used within 30 days. To obtain good control of Vine Weevil larvae in small containers it is particularly important to ensure even mixing of the correct dose into the substrate. When applying to field-grown crops, broadcast at a rate of 122 kg/ha immediately prior to planting and thoroughly incorporate into the top 5 cm of soil. Do not apply to established crops or before planting crops in autumn.

## Efficacy

Extensive trials over many years have demonstrated the high efficacy of **Met52 granular** against Vine Weevil.

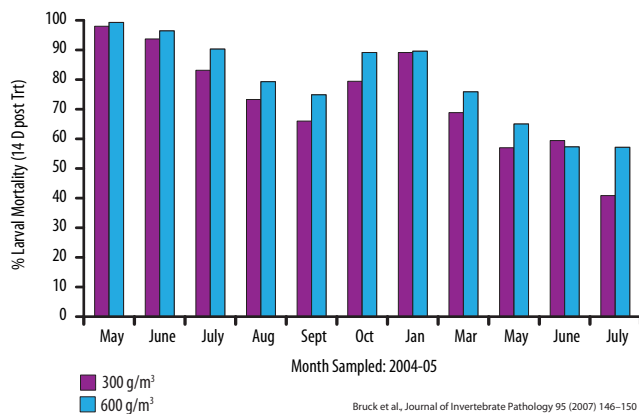


### Efficacy of Met52 granular against Vine Weevil larvae



### Persistence over two seasons

Average larval mortality from all locations



# Met52<sup>®</sup> granular bioinsecticide

## Root Association

*Metarhizium anisopliae* preferentially associates with the roots of plants providing a protective and persistent barrier. When transplanted the roots of the plant will retain this protective cover.

This root association originally discovered in cabbage demonstrated that rhizospheric soils are a potential reservoir for *M. anisopliae*. It is suggested that root exudates may be responsible for this rhizospheric effect.

## Soil Type

Control of larvae is likely to be greatest in peat-based growing media. Qualified Minor Use: limited data available to support effectiveness in soil and only reduction of larvae may be achieved, particularly in heavier soil types.

## Compatibility

**Met52 granular** should not be mixed with other pesticides. The effect of fungicides applied either before or after **Met52 granular** on the effectiveness of **Met52 granular** has not been established. The effect of **Met52 granular** on insects and mites used in biological control programmes has not been established and safety cannot be assumed. **Met52 granular** has been used on a wide range of crops under a range of conditions and no phytotoxicity has been observed. (see separate technical leaflets for a list of species).

## Resistance

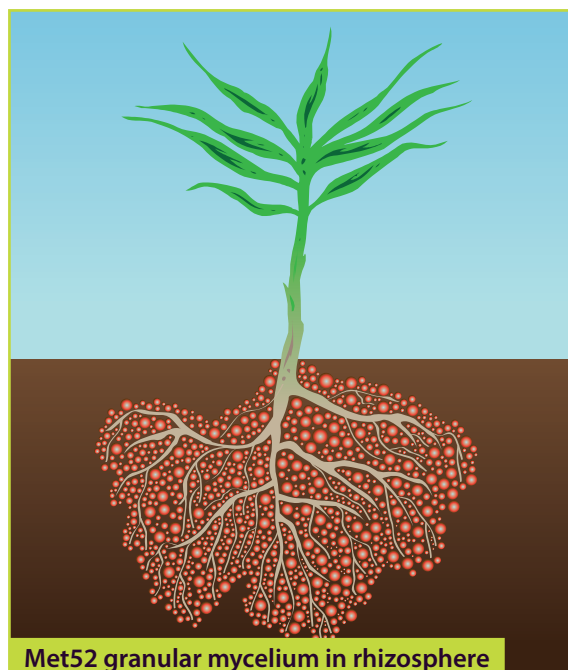
**Met52 granular** has not been reported to have any insect resistance however, it is good practice to use such products as components of Integrated Pest Management systems, alternating with other control measures.

## Shelf Life

Ideally store at 4–5°C, but **Met52 granular** has a shelf life of 1 year at 20°C.



Growth of Met52 granular mycelium



Met52 granular mycelium in rhizosphere



## Approval Holder

Novozymes Biologicals FR  
Parc Techno.des Grillons  
60, route de Sartrouville  
Batiment 6  
78230 LE PECQ  
France

Tel: +33 1 30 152840



## Marketing Company

Fargro Limited  
Toddington Lane  
Littlehampton  
West Sussex  
BN17 7PP

Tel: +44 01903 721591

Fax +44 01903 730737

Email: [promos@fargro.co.uk](mailto:promos@fargro.co.uk)

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Use pesticides safely.  
Always read the label.

MET52 granular contains 2% *metarhizium anisopliae* var. *anisopliae* strain F52 (a minimum of  $9 \times 10^{11}$  cfu/kg).

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