

***Metarhizium brunneum* / LALGUARD M52 (OD & GR) compatibility with fungicides, insecticides and beneficial insects**

LALGUARD M52 is an effective and versatile bioinsecticide for foliar and soil pest management. Composed of spores of the fungus *Metarhizium brunneum* strain F52 (formerly *Metarhizium anisopliae*), this bioinsecticide provides proven pest control efficacy with minimum impact to applicators, non-targets, and the surrounding environment. The OD (oil dispersion) bioinsecticide is used for both foliar and soil pest management whereas the GR (granular) is used for soil pest management. LALGUARD M52 offers growers proven efficacy against the most destructive pests infesting greenhouse and nursery crops, which include:

- Whiteflies
- Thrips
- Mites
- Aphids

LALGUARD M52^{OD}

- Black Vine Weevil
- Thrips pupae

LALGUARD M52^{GR}

LALGUARD M52^{OD}

Application guidance:

- Do not tank mix LALGUARD M52 OD with other insecticides or fungicides
- Consult compatibility tables for rotational/program compatibility information
- When compatibility information is not available, apply LALGUARD M52 OD at least 7 days after other product is applied

IPM with chemical and biological pesticides:

- Weekly applications or rotations with chemical and other biopesticides are highly encouraged to control new pest generations on new and old surfaces
- Chemical insecticides or horticultural oils can be used to knock down high pest populations before LALGUARD M52 OD sprays
- Azadirachtin products (where allowed) can be rotated with LALGUARD M52 OD in hot weather to slow pest life cycles enough for best efficacy

LALGUARD M52^{OD}

Compatibility with beneficial insects and mites:

- Several beneficial insects are compatible with LALGUARD M52 OD sprays, while some are not: consult our current tables for compatibility with beneficial insects
- Remember: effects on incompatible beneficials are only temporary (unlike many chemical insecticide treatments)

For incompatibility with beneficials:

- Apply LALGUARD M52 OD 1 or more days prior to releases
- Remove or cover banker plants during spraying
- Target LALGUARD M52 OD sprays at the canopy and not the ground or floor
- Do not apply LALGUARD M52 OD when pollinators and other beneficials are actively foraging
- Excellent uses of LALGUARD M52 OD are during cooler and hotter months when beneficials are less active

LALGUARD M52^{GR}

Application guidance

- Do not apply LALGUARD M52 GR mixed with fungicides
- Compatible fungicides: Can be applied after planting
- Non-compatible fungicides: Apply in a minimum of 7-day rotational program

| LALGUARD M52^{GR} LALGUARD M52^{OD} | |
|------------------------------------------------------------|----------------|
| Fungicides | |
| Active ingredient | Compatibility |
| Azoxystrobin | Compatible |
| Captan | Not compatible |
| Dimethomorph | Compatible |
| Etridiazole | Compatible |
| Fludioxinil + mefanox. | Compatible |
| Fludioxanil | Compatible |
| Fosetyl-Al | Compatible |
| Iprodione | Compatible |
| Mefanoxam | Compatible |
| Phosphorus acids / K-salts | Compatible |
| Propamocarb | Compatible |
| Pyraclostrobin | Compatible |
| Quintozene | Compatible |
| Thiophanate-methyl | Compatible |
| Tolclofos-methyl | Not compatible |
| Triflozystrobin | Compatible |
| Triflumizole | Not compatible |

| LALGUARD M52^{GR} LALGUARD M52^{OD} | |
|------------------------------------------------------------|----------------|
| Insecticides | |
| Active ingredient | Compatibility |
| Acetamiprid | Not compatible |
| Azadirachtin (Margosa extract)* | Compatible |
| Buprofezin | Compatible |
| Citrus extract | Compatible |

| LALGUARD M52 ^{GR} LALGUARD M52 ^{OD} | |
|-------------------------------------------------------|----------------|
| Insecticides | |
| Active ingredient | Compatibility |
| Diflubenzuron | Compatible |
| Fipronil | Not compatible |
| Garlic extract | Compatible |
| Idoxcarb | Not compatible |
| Imidacloprid | Not compatible |
| Neem extract | Compatible |
| Novaluron | Compatible |
| Pyriproxyfen | Compatible |
| Spinosad | Compatible |

*tested on LALGUARD M52 OD, research of other active ingredients are based on *Metarhizium brunneum*, but not specific to the strain F52

| LALGUARD M52 ^{OD} | | |
|----------------------------------------------------|---------------------------------------------------------|--------------------------|
| Beneficial insects (foliar) | | |
| Species | Exposure of <i>Metarhizium</i> | Mortality vs non treated |
| Ablyseilus mite (<i>Amblyseius swirskii</i>) | 7 days of exposure | 25 % |
| Aphidius wasp (<i>Aphidius rhopalosiphii</i>) | 48 hours of exposure | 55 % |
| Bumblebee (<i>Bombus terrestris</i>) | 28 days of exposure 4 consecutive applications | 0 % |
| Green lacewing (<i>Chrysoperla carnea</i>) | 12 days of exposure | 12 % |
| Honeybee adults (<i>Apis mellifera</i>) | 26 days of exposure | 0 % |
| Lady beetle (<i>Hippodamia convergens</i>) | 22 days of exposure | 10 % and 29 % |
| Mirid bug (<i>Macrolophus caliginosus</i>) | 10 days of exposure 2 consecutive appl, 5 days each. | 12 % |

| LALGUARD M52^{OD} | | |
|--------------------------------------------------|--------------------------------------------------------|--------------------------|
| Beneficial insects (foliar) | | |
| Species | Exposure of <i>Metarhizium</i> | Mortality vs non treated |
| Nasonia wasp (<i>Nasonia viripennis</i>) | 12 days of exposure | 20 % |
| Parasitic wasp (<i>Nasonia vitripennis</i>) | 26 days of exposure | 0 % |
| Pirate bug (<i>Orius majusculus</i>) | 7 days of exposure | 70 % |
| Predatory mite (<i>Typhlodromus pyri</i>) | 7 days of exposure | 75 % |
| Tomato bug (<i>Nesidiocoris tenuis</i>) | 10 days of exposure 2 consecutive appl, 5 days each | 3 % |

| LALGUARD M52^{OD} LALGUARD M52^{GR} | | |
|------------------------------------------------------------|--------------------------------|--------------------------|
| Beneficial insects (soil) | | |
| Species | Exposure of <i>Metarhizium</i> | Mortality vs non treated |
| Earthworm (<i>Lumbricus terrestris</i>) | 14 days of exposure | 0 % |
| Entonem nematode (<i>Steinernema feltiae</i>) | 14 days of exposure | 0 % |
| Gaeolaelaps Mite (<i>Gaeolaelaps aculeifer</i>) | 12 days exposure | <5 % and 0 % |
| Gaeolaelaps Mite (<i>Gaeolaelaps gillespie</i>) | 12 days of exposure | 28 % |
| Hypoaspis mites (<i>Stratiolaelaps scimitus</i>) | 12 days of exposure | 18 % |
| Rove beetle (<i>Dalotia coriaria</i>) | 12 days of exposure | 5 % |

Use plant protection products safely. Always read the label and product information before use.