

Some selected fungicides labeled for use on herb bedding plants

Fungicide	Use Site	Targeted Pest	Labeled Crops	Comments
<i>Bacillus subtilis</i> (Cease) 4 hr. REI Group NC Organic product	G	Suppression of <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> and <i>Phytophthora</i> Alternaria leaf blight, Anthracnose, and bacterial blight	Herbs and spices	Preventative broad spectrum biological fungicide. For maximum effectiveness, apply prior to or in the early stages of disease development. Applied as foliar spray or drench. Begin applications when environmental conditions are favorable for disease development.
<i>Bacillus subtilis</i> (Companion Liquid Biological Fungicide) 4 hr. REI Group NC Organic product	G, O	Crown Rot, Damping Off Fungus, Botrytis Blight, Root Rots (<i>Pythium</i>)	Herbs and spices	Preventive biological fungicide. Activates ISR (induced systemic resistance)
Copper sulfate pentahydrate (Phyton 35) 48 hr. REI Group M1	G, O	Chives: Bacterial soft rot, downy mildew, botrytis Coriander, mint and Rosemary: Botrytis and Powdery Mildew Dill: Leaf spots Parsley: Leaf scorch, leaf spots	Herbs such as chives, coriander, mint, rosemary and dill	Systemic bactericide and fungicide that provides systemic, preventive and curative activity
Cyazofamid (Ranman) 12 hr. REI Group 21	G, O	Downy mildew on basil	Basil	Locally systemic fungicide. Apply as a drench.
Fenhexamid (Decree 50 WDG)	G	Botrytis	Cilantro, chervil, parsley	Works by contact. Begin applications when conditions favor disease development. Follow

12 hr. REI Group 17				resistance management guidelines on label.
Horticultural Oil Paraffinic Oil (Ultra-Pure Oil) 4 hr. REI Group NC	G, O	Powdery mildew	Herbs and spices	Application should be made when the disease is first noticed. Acts by contact. Due to varietal differences, conduct a small-scale test spray first. Greenhouse applications should be at lower rates stated on the label.
Hydrogen dioxide & peroxyacetic acid (OxiDate 2.0) 0 hr. REI 1 hr. REI (spray) Group NC Organic product	G, O	Anthracnose, downy mildew, powdery mildew and Pythium root rot	Herbs and spices	Contact, oxidizing sanitizer. Strong oxidizing agent. Works by contact.
Mandipropamid (Micora) 4 hr. REI Group 40	G	Downy Mildew	Chervil, parsley	For use in enclosed greenhouses with permanent flooring for resale to consumers. Begin applications prior to disease development. See label for specific use instructions.
Phosphorous Acid (Fosphite) 4 hr. REI Group 33	G, O	<i>Phytophthora</i> , <i>Pythium</i> , <i>Fusarium</i> , <i>Rhizoctonia</i> Downy Mildew, Powdery Mildew	Herbs and spices	Make applications prior to disease development in conjunction with good cultural management practices. Do not apply to plants that are dormant or heat or moisture stressed.
Phosphorus Acid (Alude) 4 hr. REI Group 33	G, O	Downy Mildew	Parsley, chervil	Ensure spray coverage is adequate to wet the whole plant.
Phosphorous Acid and Hydrogen peroxide (OxiPhos)	G, O	Downy Mildew, Pythium Root Rot	Herbs and spices	See label for plant safety precautions.

4 hr. REI O hr. REI (soil drench) Group 33 and Group NC				
Potassium bicarbonate (Milstop) 1 hr. REI Group NC Organic product (Armicarb O) 4 hr. REI Organic product	G, O	Powdery mildew and others (see label)	Herbs (see labels for specific types)	Contact eradicant fungicide. Thorough coverage essential. Begin applications at first sign of disease and repeat as needed.
<i>Streptomyces griseoviridis</i> strain K61 (Mycostop) 4 hr. REI Organic product	G, O	<i>Fusarium</i> , <i>Alternaria</i> , <i>Phomopsis</i> , <i>Botrytis</i> , <i>Pythium</i> and <i>Phytophthora</i> that can cause seed, root and stem rot	Herbs	Preventative biological fungicide. Contains a beneficial bacterium. Repeat applications may be needed. Use as a soil spray or drench.
<i>Streptomyces lydicus</i> (Actinovate SP) 1 hr. REI Group NC Organic product	G	Suppression of soil borne fungi such as <i>Fusarium</i> , <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Phytophthora</i> Suppression of foliar diseases such as powdery mildew, <i>Botrytis</i> , <i>Alternaria</i> and others	All food crops	Preventive biological fungicide that contains a beneficial bacterium that can be applied as a drench or spray. It may also increase plant size, vigor and root mass. Note storage conditions needed and expiration date on the package.
<i>Streptomyces lydicus</i> (Actino-Iron) 4 hr. REI Organic product	G	Root rot and damping off fungi such as <i>Fusarium</i> , <i>Pythium</i> , <i>Rhizoctonia</i> ,	All food crops	Preventive biological fungicide that contains a beneficial bacterium with iron and humic acid.

		<i>Phytophthora,</i>		
<i>Trichoderma harzianum</i> (PlantShield HC) 0 hr. REI (soil application) Group NC Organic product (RootShield Granules) (RootShield WP) 0 hr. REI NC Organic product	G, O	<i>Pythium, Rhizoctonia Fusarium, Cylandrocladium, and Thielaviopsis</i>	Herbs, spices and mints – soil applications only	Preventative biological fungicide for use in soil applications. Contains a beneficial fungus. Acts as a preventative and will not cure diseased plants. Becomes active when soil temperatures are above 50 °F. Greenhouse foliar applications are for non-food crops only. Granules for use in greenhouse planting mix, WP as a soil drench
<i>Trichoderma harzianum</i> and <i>Trichoderma virens</i> (Root shield Plus+ Granules) No REI (RootShield Plus+ WP) 4 hr. REI Organic Product	G	<i>Pythium, Phytophthora, Rhizoctonia, Fusarium, Cylandrocladium, Thielaviopsis.</i>	Herbs and spices	Preventative biological fungicide. Becomes active when hold temperatures are above 50 F. WP: No overhead spray.

*G= Greenhouse, ** O= Outdoors, Group NC Not classified*

Fungicides are grouped by their mode of action (MoA) and each MoA group is assigned a Fungicide Resistance Action Committee (FRAC) code. Most systemic fungicides (that are absorbed into plant tissues) are specific in their mode of action. Protectant fungicides are less likely to develop resistance problems as they have multi-site modes of action (M). To prevent the development of resistance, alternative applications among difference FRAC codes and incorporation preventative biological fungicides and cultural controls into your management plan. See www.frac.info/frac/index.htm

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Growers should always read and follow label instructions. Always follow label instructions regarding registered uses and note cautions. To avoid any phytotoxicity problems, spot test first before widespread use.

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