

## Organic Controls for Insect Pests of Nursery Crops

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**Table 4.3 - Organic Controls for Predators and Pathogens**

Products	Insects Controlled	Remarks
Insecticidal soap	Works well on soft bodied insects in particular aphids, mites, lacebugs, mealybugs	This product is sold under many trade names and is a fatty acid soap.
Spinosad	Many insect pests, including thrips, lepidopterous larvae, and leaf beetles	Entrust is for organic production.
Rotenone	Many insect pests, including aphids, leafhoppers, weevils Japanese beetles, flea beetles	Usually sold as a dust, but some formulations can be mixed in water.
Pyrethrum	Broad spectrum, works on a wide variety of insects	Usually sold mixed with other botanical insecticides.
Predators	Insects Controlled	Remarks
Lady beetles	Feed on aphids and other soft bodied insects	Lady beetles may leave to find other prey. <i>Cryptolaemus</i> for mealybug, <i>Delphastus</i> for whitefly.
Lacewings	Aphids, scales, mealybugs, other soft bodied insects	Immature lacewings are called aphid lions.
Predatory mites	Mostly for control of spider mites	Release approximately 2/square foot. <i>Phytoseiulus persimilis</i> will work in some situations.
Parasitic wasps	Many insect pests on the foliage including caterpillars, whiteflies.	<i>Trichogramma</i> wasps work well on many Lepidoptera eggs; <i>Encarsia formosa</i> for whiteflies; <i>Diglyphus</i> for leaf miners; <i>Aphytis</i> for armored scale.
Pathogens	Insects Controlled	Remarks
<i>Bacillus thuringiensis</i>	Leaf-feeding caterpillars, elm and willow leaf beetle	Known as "Bt;" sold under many trade names. A strain of <i>Bt</i> sold as M-One.
<i>Beauveria bassiana</i>	Aphids, leafhoppers, thrips, mites, beetles, caterpillars	Trade names include Naturalis-O, Mycotrol, BotaniGard. Multiple applications may be needed.
Entomopathogenic nematodes	Root-feeders, borers	For grubs or weevil larvae, apply to ground at base of plants. Rates are on product label; soil temperature should exceed 60° F. Apply late in the day, irrigate immediately. For borers, inject directly into galleries using syringe or turkey baster. Aqueous sprays to trunk are effective. Rates are on label. Not effective against foliar feeding pests as desiccation and exposure to ultraviolet light on the leaf surface kills the nematodes within hours.

