



## Pesticide Compatibility with Biological Control: Updates 2006

Adapted from Sadof, C.S., and Raupp, M.J. 1999.

In (eds McCullough, D.G., S.A. Katovick., D.L. Mahr, D.D. Neumann, C.S. Sadof and M.J. Raupp) Biological control of Insect pests in forested ecosystems: A manual for foresters, Christmas tree growers, and landscapers. Michigan State Extension Bulletin E-2679, 122 pp.

Pesticide Common Name (Chemical Class)	Compatibility <sup>1</sup>	Comment
bifenazate (other)	HC	This miticide does not kill predatory mites or eriophyid mites.
carbaryl (carbamate)	NC	Repeated use may stimulate spider mite reproduction. Broad spectrum activity.
chlorpyrifos (organophosphate)	NC	The chemical standard for borer control. Long residual. Broad spectrum activity.
clofentazine (tetrazine)	HC	This miticide does not kill predatory mites or eriophyid mites.
cyfluthrin (pyrethroid)	NC	
dicofol (organochlorine)	NC	Very long residual miticide. Kills mite predators.
diflubenzuron (insect growth regulator)	SC	Moderate residual. Kills immature stages. Pupal stage parasitoids are not killed.
fenitrothion (organophosphate)	NC	Long residual. Broad spectrum activity.
fluvalinate (pyrethroid)	NC	Long residual. Broad spectrum activity.
<i>Heterorhabditis bacteriophora</i> (entomophagous nematode)	C	Very low toxicity to humans and non-targets. Wasp parasitoids with silken cocoons are not killed.
hexythiazox (thiazolidine)	HC	Kills only spider mite nymphs and eggs. Long residual. Does not kill predators.
horticultural oil	C	Inactive when dry. Kills soft-bodied insects. Pupal stage parasitoids not killed.
imidacloprid (chloronicotinyl)	NC	Ability to kill predaceous plant bugs can cause spider mite outbreaks. Long residual when systemically applied.
insecticidal soap	C	Inactive when dry. Kills soft-bodied insects. Pupal stage parasitoids not killed.

<sup>1</sup> HC = Highly compatible, C = Compatible, SC = Somewhat compatible, NC = Not compatible



### Pesticide Compatibility with Biological Control (continued)

Pesticide Common Name (Chemical Class)	Compatibility <sup>1</sup>	Comment
lambda-cyhalothrin (pyrethroid)	NC	Very long residual. Broad spectrum activity.
malathion (organophosphate)	NC	Moderate residual. Broad spectrum activity.
methoxychlor (organochlorine)	NC	Very long residual. Broad spectrum activity.
neem oil (botanical)	C	Insect growth regulator derived from seeds of neem tree. Kills immature stages. Pupal stage parasitoids not killed.
oil (see horticultural oil)		
oxythioquinox (dithiocarbonate)	NC	Long residual. Broad spectrum activity miticide.
oxydementon-methyl	NC	Long residual. Broad spectrum activity.
permethrin (pyrethroid)	NC	Moderate residual. Broad spectrum activity.
phosmet (organophosphate)	SC	Reportedly low impact on spider mite predators in orchards with long history of pesticide use. Effect on predators in landscape unknown.
pyradiben	NC	Lasting effects on whiteflies, mites and predatory mites.
pyriproxifen (insect growth regulator)	SC	Very effective on armored scales but also kills parasitized scales.
pyrethrins (botanical)	SC	Very short residual but broad spectrum activity. Prevents additional injury and sets the stage for future conservation and augmentation efforts.
spinosad (microbial)	C	Very short residual. Toxic to adult wasp parasitoids. Not toxic to some important predators.
<i>Steinernema carpocapsae</i> (entomophagous nematode)	HC	Very low toxicity to humans and non-targets. Wasp parasitoids with silken cocoons are not killed.
trichlorfon (organophosphate)	NC	Long residual. Broad spectrum activity.

<sup>1</sup> HC = Highly compatible, C = Compatible, SC = Somewhat compatible, NC = Not compatible