



Insecticides for Managing Box Tree Moth

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The box tree moth, *Cydalima perspectalis*, was detected in the US in 2021. Box tree moth is a serious pest of boxwood (*Buxus*), and has been reported on other hosts (*Euonymus*, *Ilex* and *Murraya*). State and federal regulators are currently conducting intensive trapping and regulatory activities to prevent the spread of box tree moth in the US. If you wish to assist with box tree moth trapping, or find or suspect box tree moth infestation, please contact your local Extension, state department of agriculture, or USDA APHIS offices. Refer to the Box Tree Moth EDDMapS website (<https://www.eddmaps.org/species/subject.cfm?sub=62133>) for resources to help you identify and manage the box tree moth.

The box tree moth is a new pest in the US. As a result, there is no information on the efficacy of insecticides against the box tree moth in the US. This list of insecticides focuses primarily on insecticides that are available to commercial operations (nurseries, greenhouses and landscapes), and is developed based on insecticides registered for management of caterpillars in general. Some of the active ingredients are also available for homeowner use, albeit under different product trade names.

Important notes:

1. No product is registered specifically for box tree moth management. This list includes active ingredients that are registered for various caterpillar species, and are recommended for general caterpillar management on ornamental plants.
2. Inclusion of any insecticide in this list does not imply effectiveness. Efficacy data against populations in the US are not available. Discuss product efficacy and management plan with your local Extension agent or state Extension specialist.
3. Trade names are included as examples, and do not represent endorsement by Clemson University or any organization that uses this list.
4. Check with your local Extension office to determine if an active ingredient is registered for use in your state or county, as well as other use restrictions.
5. Read product labels carefully to determine use site, restricted entry interval (REI), personal protection equipment (PPE), application rate, application method, other use restrictions, and other instructions.
6. Some products are harmful to beneficial insects and mites, such as pollinators, parasitic wasps, predators, etc. Read labels carefully and adhere to advisory statements on pollinator protection. Generally, broad-spectrum insecticides, such as carbamates, organophosphates, neonicotinoids, abamectin and spinosyns, can be detrimental to certain natural enemy species. Use only compatible insecticides if biological control is practiced.

Insecticides Registered for Caterpillar Management in the US

Use site: L = landscape, N = nursery, G = greenhouse.
REI = Restricted entry interval.

IRAC No.	Chemical class or subgroup	Active ingredient	Trade names (examples)	Use Site	REI	Pollinator Advisory
1A	Carbamates	carbaryl	Carbaryl, Sevin	L, N, G	12	No
1B	Organophosphates	acephate	Acephate, Lepitect, Orthene	L, N, G	24	No
		chlorpyrifos	Chlorpyrifos	L, N	24	No
			Dursban	N	24	No
			DuraGuard ME	N, G	24	No
		malathion	Malathion	L, N	12	No
trichlorfon	Dylox	L	N/A	No		
3A	Pyrethroids	bifenthrin	Bifen, Talstar, etc.	L, N, G	12	No
			OnyxPro	L, N	12	No
		cyfluthrin	Decathlon	L, N, G	12	No
		beta-cyfluthrin	Tempo	L	N/A	No
		lambda-cyhalothrin	Scimitar	L, N, G	24	No
		alpha-cypermethrin	Fendona	L	N/A	No
		beta-cypermethrin	Demon	L	N/A	No
		deltamethrin	DeltaGard, Suspend	L	N/A	No
		fenpropathrin	Tame	L, N, G	24	No
		tau-fluvalinate	Mavrik Aquaflo	L, N, G	12	No
			permethrin	Astro	L, G	12
			Perm-Up	N, G	12	No
		pyrethrins	Lynx, Pyganic, etc	N, G	12	No
3A + 4A	Pyrethroids + Neonicotinoids	bifenthrin + clothianidin	Aloft	L	N/A	Yes
		bifenthrin + imidacloprid	(Allectus)	L	N/A	Yes
		cyfluthrin + imidacloprid	Discus N/G	N, G	12	Yes
		λ-cyhalothrin + imidacloprid	Tandem	L	N/A	Yes
		bifenthrin + zeta-cypermethrin + imidacloprid	Triple Crown T&O	L	N/A	Yes
3A + UN	Pyrethroids + Azadirachtin	pyrethrins + azadirachtin	Azera Gardening	L, N, G	12	No
3A + UNF	Pyrethroids + Entomopathogenic fungi	pyrethrins + <i>B. bassiana</i>	Botanigard MAXX	L, N, G	12	No
4A	Neonicotinoids	acetamiprid	Tristar	L, N, G	12	No
		dinotefuran	Safari	L, N, G	12	Yes
		thiamethoxam	Meridian	L	12	Yes

IRAC No.	Chemical class or subgroup	Active ingredient	Trade names (examples)	Use Site	REI	Pollinator Advisory
4C + 5	Sulfoxamines + Spinosyns	sulfoxaflor + spinetoram	XXpire	N, G	12	No
5	Spinosyns	spinosad	Conserve, Entrust	L, N, G	4	No
6	Avermectins	abamectin	Avid, Lucid, Minx	L, N, G	12	No
			Aracinate	L	N/A	No
11	<i>Bacillus thuringiensis</i> (Bt) and insecticidal proteins	<i>Bt. subsp. aizawai</i>	Agree, Xentari	L, N, G	4	No
		<i>Bt. subsp. kurstaki</i>	Biopit, Bioprotec, Dipel, Thuricide	L, N, G	4	No
13	Chlorfenapyr	chlorfenapyr	Pylon	G	12	No
15	Benzoylureas	diflubenzuron	Dimilin	L	12	No
		novaluron	Pedestal	N, G	12	No
18	Diacyhydrazines	methoxyfenozide	Intrepid	L, N, G	4	No
21A	METI insecticides	tolfenpyrad	Hachi-Hachi	G	12	No
22A	Indoxacarb	indoxacarb	Provaunt	L	N/A	No
28	Diamides	chlorantraniliprole	Acelepryn	L, N, G	4	No
		cyantraniliprole	Mainspring	L, N, G	4	Yes
		cyclaniliprole	Sarisa	N, G	4	No
28 + 29	Diamides + Flonicamid	cyclaniliprole + flonicamid	Pradia	N, G	12	No
31	Nucleopolyhedroviruses	?	?	?	?	No
32	GS-omega/kappa HxTx-Hv1a peptide	GS-omega/kappa HxTx-Hv1a peptide	Spear	N, G	4	No
UN	Unknown mode of action (MOA)	azadirachtin	Azatin, AzaGuard, Ornazin, etc.	L, N, G	4	No
		pyridaryl	Overture	G	12	No
UNB	Unknown MOA - Bacterial agents	Heat-killed <i>Burkholderia</i> spp.	Venerate	L, N, G	4	No
		<i>Chromabacterium subtsugae</i>	Grandevo	L, N, G	4	No
UNE	Unknown MOA – Botanical extract	neem oil	Trilogy, Triact	L, N, G	4	No
UNF	Unknown MOA – Fungal agents	<i>Beauveria bassiana</i>	Botanigard, Mycotrol, BioCeres	L, N, G	4	No
		<i>Isaria fumosorosea</i>	Ancora	N, G	4	No
	Unclassified	<i>Heterorhabditis bacteriophora</i>	NemaShield	L, N, G	N/A	No
		<i>Steinernema carpocapsae</i>	Millenium, Capsanem	L, N, G	N/A	No
		potassium salts of fatty acid (insecticidal soap)	M-Pede, Kopa	L, N, G	12	No
		mineral, petroleum or paraffinic oil (horticultural or dormant oil)	SuffOil-X, Ultra-Pure, Sunspray	L, N, G	4	No

Insecticides Available in the US for Use against Box Tree Moth
(Modified from USDA APHIS 2021)

Source: USDA APHIS. 2021. Table 5-1 Insecticides available in the United States for use against box tree moth. In: New Pest Response Guidelines, *Cydalima perspectalis*, Box Tree Moth. Available: https://www.aphis.usda.gov/plant_health/plant_pest_info/box-tree-moth/box-tree-moth-nprg.pdf (Last Updated 15 July 2021.)

IRAC Number	Insecticide class or mode of action	Active ingredient
28	Diamides	Chlorantraniliprole
18	Ecdysone receptor antagonists	Methoxyfenozide
6	Glutamate gated chloride channel blocker	Abamectin
		Emamectin
4A	Neonicotinoids	Thiacloprid
1B	Organophosphate	Trichlorfon
		Dimethoate
		Chlorpyrifos
3A	Pyrethroids	Lambda-cyhalothrin
		Beta-cyfluthrin
		Cypermethrin
		Tau-fluvalinate
5	Spinosyns	Spinosad