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Insecticide Suggestions to Control Tree and Shrub Insects

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Discussion of application times and suggested dates are based on an average season. Adjust timing of treatments when an early or late season is encountered. Dates listed for spring apply to central Minnesota, including the Twin Cities. Treat approximately 7 days earlier for southern Minnesota and approximately 7-10 days later for northern Minnesota. It is up to the applicator to ensure the target pest is present before treating.

Follow all label directions carefully. Be sure the pesticide is labelled for the target plant that is intended to be treated. It is up to the applicator to ensure pesticides are used correctly.

Pest	Host(s)	Pesticide Choices	Timing/Remarks
Aphids (general)	virtually all trees and shrubs	acephate bifenthrin chlorypyrifos malathion diazinon insecticidal soap[1] pyrethrins[1] dimethoate	When aphids are numerous.
Leaf-folding aphids	viburnum and others	acephate dimethoate	Spray foliage when damage is first noticed.
		oxydementon-methyl	Inject into soil about third week of May.
Honeysuckle witches' broom aphids	Tartarian, Zabel and other susceptible varieties of honeysuckle	acephate dimethoate	Spray 3 times[2] to protect the plant's health or 5 times[3] to protect the plant's appearance.
		oxydementon-methyl	Inject into soil about third week of May.
Woolly aphids	ash, elm, silver maple, juneberry, alder	acephate dimethoate bifenthrin	Spray foliage when damage is first noticed.
Ash borer	ash	chlorpyrifos lindane	Apply during adult egg laying, mid-May to June. Base timing on pheromone trap catches (available commercially).

Pest	Host(s)	Pesticide Choices	Timing/Remarks
Ash plant bug	ash	acephate bifenthrin carbaryl malathion pyrethrins[1]	Damage is rarely extensive enough to warrant control. Spray when bugs first appear on leaves. Two generations occur annually.
Birch leafminer	birch	acephate dimethoate	Spray foliage thoroughly when mines first appear, about mid-May. A second generation occurs in early June.
		oxydementon-methyl	Inject into soil when mines first appear.
		dimethoate	Paint on trunk at bud break.
Bronze birch borer	birch	bendiocarb chlorpyrifos lindane	Improve health of birch, primarily through adequate watering. Spray bark of trunk and limbs 3rd week of May, 2nd week of June, and 1st week of July.
Caterpillars	virtually all trees and shrubs (see below)	*Bacillus thuringiensis* var. kurstaki[4] acephate bifenthrin carbaryl azadirachtin cyfluthrin diflubenzuron diazinon phosmet malathion pyrethrins[1]	Spray leaves when caterpillars are small and before leaf damage is extensive.
Cankerworms (spring and fall)	apple, ash, basswood, boxelder, cherry, elm, maple, and others	In addition to above: oxydementon-methyl	Late April to mid-May Inject into soil
Eastern Tent caterpillar	wild cherry, apple, crabapple, plum, pear, and others	(see caterpillars)	Spray foliage when tents first appear, early to mid-May.

Pest	Host(s)	Pesticide Choices	Timing/Remarks
Fall webworm	apple, birch, black walnut, boxelder, elm, oak, willow and many others	*(see caterpillars)*	July to early August
Forest tent caterpillar	aspen, birch, bass-, wood, oak, ash, maple, elm, and others	*(see caterpillars)*	Mid- to late May
Red-humped caterpillar	birch, dogwood, elm, apple, and many others	*(see caterpillars)*	August to September
Spiny elm caterpillar	elm, willow, and others	*(see caterpillars)*	Late May to early June
Spruce budworm	balsam fir, spruce	*(see caterpillars)*	Mid- to late May
Walnut caterpillar	butternut, hickory, walnut, and others	*(see caterpillars)*	July to September
Whitemarked tussock moth	apple, basswood, elm, poplar and others	*(see caterpillars)*	Mid- to late May, occasionally again in August
Yellow-necked caterpillar	crabapple, maple, oak, elm, and many others	*(see caterpillars)*	August to September
Elm bark beetle	elm	chlorpyrifos methoxychlor carbaryl	Control of feeding adults not recommended for control of Dutch elm disease. Control Native elm bark beetle at overwintering sites at the base of healthy elm trees in fall.
Elm leafminer	elm	dimethoate	Spray foliage thoroughly when mines first appear in early May. One generation occurs annually.
European pine shoot moth	pine	chlorpyrifos carbaryl diazinon	Spray ends of branches thoroughly in mid-April and/or late June, early July.

Pest	Host(s)	Pesticide Choices	Timing/Remarks
Flat-headed borer	maple, oak, apple, willow rose, cotoneaster and others	chlorpyrifos lindane	Keep trees in vigorous growing condition. Spray in late May and repeat twice at 3-week intervals.
Galls	most trees and shrubs; found on leaves, twigs, stems, flowers, buds, petioles; induced by cynipid wasps, eriophyid mites, psyllids, gall midges and adelgids	*(see below)*	Control rarely is necessary to protect tree health. Once galls are seen, control is not effective for the current year. Identify the insect or mite and use the suggestions below as a guide.
Mite galls	maple, elm and many others	carbaryl dicofol	Spray at bud break up to 1/4 leaf expansion.
Ash flower gall (eriophyid mites)	ash	carbaryl dicofol	Spray just prior to flower bud break in spring.
Cynipid wasp galls	oak	acephate	Spray from 1/2 to 3/4 leaf expansion.
Psyllid galls	hackberry	acephate	Spray from 1/2 to 3/4 leaf expansion.
Midge galls	many	malathion cyfluthrin	Spray from 1/2 to 3/4 leaf expansion.
Cooley spruce gall (adelgids)	Colorado blue and white spruce	carbaryl acephate chlorpyrifos diazinon	Spray spruce before galls begin to form in spring or as galls open in August.
Eastern spruce gall (adelgids)	Norway, white and other spruce	carbaryl acephate chlorpyrifos diazinon	Spray spruce as buds swell in early April or as galls open in late August or early September.

Pest	Host(s)	Pesticide Choices	Timing/Remarks
Honeylocust plant bugs	honeylocust	acephate bifenthrin carbaryl malathion diazinon pyrethrins[1]	Spray when leaves first expand.
Japanese beetles	many trees and shrubs	acephate cyfluthrin bifenthrin phosmet carbaryl chlorpyrifos	Spray when beetles first appear, in mid-July.
Lace bugs	white and bur oak, hackberry, basswood, chokecherry, juneberry, hawthorn and others	acephate carbaryl bifenthrin malathion cyfluthrin chlorpyrifos insecticidal soap[1] pyrethrins[1]	Spray when bugs are numerous, normally in July.
Leaf beetles (see below)		*Bacillus thuringiensis* var. San Diego[5] carbaryl bifenthrin acephate cyfluthrin phosmet chlorpyrifos malathion pyrethrins[1]	Monitor for adult beetles in May; spray when larvae first appear. Two generations occur annually.
Elm leaf beetle	elm, esp. Siberian and some hybrid elms	In addition to above oxydementon-methyl	Inject into soil about third week of May.
Imported willow leaf beetle	cottonwood, poplar, willow	*(see leaf beetles)*	*(see leaf beetles)*
Cottonwood leaf beetle	will, poplar	*(see leaf beetles)*	*(see leaf beetles)*

Pest	Host(s)	Pesticide Choices	Timing/Remarks
Maple petiole borer	maple, esp. sugar maple		Damage is rarely extensive enough to warrant control. No effective control available.
Sawflies	many trees and shrubs (see below)	acephate cyfluthrin carbaryl chlorpyrifos diazinon malathion	Spray foliage when larvae are small and before damage is extensive.
Dogwood sawfly	dogwood	*(see sawflies)*	June to July
Dusky birch sawfly	birch	*(see sawflies)*	May
European pine sawfly	mugo, scotch and other pine	*(see sawflies)*	early to late May
Introduced pine sawfly	white and other pine	*(see sawflies)*	June to July and August to early September
Larch sawfly	larch	*(see sawflies)*	Early June to early July
Mountain ash sawfly	mountain ash	*(see sawflies)*	June to early August and August to September
Redheaded pine sawfly	Jack, red and other pine	*(see sawflies)*	Late June to early July
Roseslug sawfly	rose	*(see sawflies)*	Mid-May to mid-June
Yellowheaded spruce sawfly	spruce	*(see sawflies)*	early to mid-June

Pest	Host(s)	Pesticide Choices	Timing/Remarks
Scale		paraffinic oil bifenthrin chlorpyrifos carbaryl cyfluthrin acephate malathion	Spray after crawlers have hatched. Sample to determine hatch time.[6]
Black pine-leaf scale	red, mugo, and jack pine and Douglas fir	*(see scale)*	Mid-June to mid-July
Cottony maple scale	maple, basswood, black locust, boxelder, elm, maple	*(see scale)*	Late June, July repeat 10 days later
European elm scale	elm	*(see scale)*	Late June to early July and again in early to mid-August
Lecanium scale	many trees and shrubs	*(see scale)*	June, early July
Oyster shell scale	apple, birch, coton-easter, elm, lilac, and others	*(see scale)*	Early June
Pine needle scale	pine, spruce	*(see scale)*	Late May, about the time lilacs are in bloom (one generation). Check again in July and August for crawlers (there may a closely related species with two generations). If using paraffinic oil, apply two weeks after egg hatch. Insecticidal soap is also effective.
Pine tortoise scale	Jack and Scotch pine	*(see scale)*	Late June to early July
Scurfy scale	elm, hackberry maple, willow	*(see scale)*	Late June to early July

Pest	Host(s)	Pesticide Choices	Timing/Remarks
Spruce bud scale	spruce	*(see scale)*	Mid-June to early July
Spider mites	evergreens, and some deciduous trees	avermectrin dicofol bifenthrin dimethoate insecticidal soap[1]	Spray increasing mite populations before they become numerous. Especially serious on juniper.
Twig pruner	oak, maple, linden flowering fruit trees, and others		Damage is rarely extensive enough to warrant control. No effective control available.
Twolined chestnut borer	oak, ironwood	bendiocarb lindane	Improve health of tree, primarily through watering. Spraying bark of trunk and limbs, as with bronze birch borer, 3rd week of May, 2nd week of June and 1st week of July may provide control.
White pine weevil	pine and spruce, especially white pine and Norway spruce	bendiocarb lindane	Spray mid- to late April. Spray only terminal portion of tree.
Zimmerman pine moth	pine, especially Scotch, white, and Austrian	chlorpyrifos endosulfan	Spray bark, especially areas with exuding pitch, once in mid-April. Prune and destroy infected limbs. Remove pitch masses by August. Can also spray in August, although spring application is most effective.

[1] This insecticide has no residual activity and repeat treatments may be necessary.
[2] Spray about the first week of June, the first week of July and first week of August.
[3] Spray about the third week of May, the second week of June, the first week of July, the fourth week of July, and the third week of August.
[4] *Bacillus thuringiensis* var. kurstaki is most effective when young caterpillars are treated. It is not effective against older caterpillars or adult moths or butterflies.
[5] *Bacillus thuringiensis* var. San Diego is most effective against young larvae and is not effective against older larvae or adult beetles.
[6] Adult scales are very difficult to control. Treatment is most effective during the crawler stage.

Index of Common Trade Names

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