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EC81-1502 Insect Control Recommendations for Ornamental Plants and Turf in Nebraska

Robert E. Roselle
University of Nebraska-Lincoln, rroselle1@unl.edu

David Keith

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INSECT CONTROL RECOMMENDATIONS FOR ORNAMENTAL PLANTS AND TURF

NEBRASKA

By Robert E. Roselle and David L. Keith
Extension Entomologists

LARRY THE LABEL SAYS:

. . Identify Your Problem

. . Select the Right Insecticide

. . Study the Label

. . Apply as Directed

. . Clean Up Afterwards

Insect control recommendations in this guide are based on research results of central states universities, U.S.D.A. recommendations, and label registrations. Weather, type and thoroughness of application, time of application, and other conditions will vary and may affect the degree of control. Suggestions contained herein are designed to benefit when control programs are needed. Recommendations are subject to withdrawal or change at any time.

In some instances trade names have been used to simplify recommendations. No endorsement is implied by the Nebraska Cooperative Agricultural Extension Service, and no discrimination is intended.

Extension work in "Agriculture, Home Economics and subjects relating thereto," The Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Cooperating with the Counties and the U.S. Department of Agriculture
Leo E. Lucas, Director

PRECAUTIONS: Insecticides are useful and effective when used properly to protect plants from destructive insects. All of them are poisonous to some degree and must be handled, used, and stored with care and proper safety precautions. Labels provide necessary information about safe use, storage, handling, and treatment of accidental poisoning. It is very important that labels be studied before using any pesticide. In case of accidental poisoning a physician should be contacted immediately, and the patient taken to the nearest hospital for treatment and observation. The Nebraska Master Poison Center is located at the Children's Memorial Hospital, Omaha, Nebraska. The telephone number is 553-5400, area code 402. Physicians can obtain latest treatment information from this center.

FORMULATIONS: Insecticides are available as solutions, wettable powders, emulsifiables, dusts, and granules.

Solutions are intended for household use and must never be applied to plants. Oil in the solution will damage or kill living plants.

Wettable powders are suspended in water before spraying. The wettable powders are safer on plants than emulsion concentrates as there is no oil. Wettable powders will leave a more visible deposit.

Emulsifiable concentrates are mixed with water before spraying. They are more resistant to washing off, and normally will provide residual deposits.

Dusts are not as effective as sprays for control of insects attacking ornamental plants. Dusts do not adhere to leaves and wash off readily. More frequent applications are usually required.

Spreader-stickers added to wettable powder sprays will help distribute the deposit of insecticide and cause it to adhere to the foliage longer. Several commercial spreader-stickers are available. Use them according to the directions on the container.

INSECTICIDES TOXIC TO PLANTS: Some insecticides may cause chemical injury to certain varieties of plants. Do not use the following insecticides on plants listed, as injury may result.

SEVIN: Boston ivy. May cause injury if applied when humidity is high.

DIAZINON: Ferns, hibiscus, gardenias, gladiolus, African violets, poinsettia, gardenia and pilea

DIMETHOATE: Honeylocust, elm, flowering almond, dahlias, plum, peach, cherry, chrysanthemums

ETHION: Yews and redbud

MALATHION: cannarti, Sargent's and Burk junipers, ferns, petunias, violets, hickory, viburnum, lantana and crassula

OILS: Walnut, mountain ash, maples, Russian olive, spruce, yews, hemlock, magnolias, redbud, euonymus, pines and junipers

ORTHENE: Elm, flowering crabapples, sugar maple and cottonwood

TEDION: Some varieties of roses

SYSTEMIC INSECTICIDES: Systemic insecticides are chemicals that are absorbed through the leaves or roots and translocated throughout the plants, making the entire plant poisonous to insects. They are used primarily for sucking insects such as aphids, leafhoppers, scales, and mites. The three available to the home gardener are Cygon (dimethoate), Meta-Systox-R (oxydemetonmethyl), and Di-Syston (disulfoton). Cygon and Meta-Systox-R are emulsifiable concentrates. When they are mixed with water and sprayed on foliage, the chemicals are absorbed through the leaves. Di-Syston, a granular material, is used in the soil and taken up through the roots. Di-Syston is highly toxic so must be used with caution. Systemic materials may have limitations as to varieties of plants they should be used on. The lists of plants not injured by these products are on the labels. Do not use them on other varieties.

EQUIPMENT: For spraying small trees and ornamentals, most of the commercially available compressed air sprayers are satisfactory. Attachments on the end of garden hoses can be used for application of emulsifiable concentrates, but are not generally satisfactory for wettable powders.

Large trees require mist blowers or hydraulic sprayers for efficient coverage. The amounts listed for 100 gallons of water in this guide are intended for hydraulic spraying. A five or six percent methoxychlor emulsion is suggested for mist blower to control leaf feeders such as cankerworms and leaf beetles. A spray containing 5% Sevin can also be used in mist blowers. For control of sucking insects such as aphids, scales, and leafhoppers with mist blowers, a lower concentration and a higher volume of application would be necessary.

MIXING INSECTICIDES: Insecticides should not be mixed unless you are certain the mixture is safe and serves a purpose. Some mixtures may result in a spray that is more toxic then either alone. For control of both sucking and chewing insects the following mixtures are suggested:

MATERIAL	AMOUNT TO 1 GALLON WATER
METHOXYCHLOR 50% WP	2 level tablespoons
or	
SEVIN 50% WP	2 level tablespoons
PLUS	
MALATHION 25% WP	2 level tablespoons
or	
DIAZINON 50% WP	1 level tablespoon

ABBREVIATIONS: Abbreviations used in this circular are:

WP. . . .wettable powder	kg. . . . .kilogram
EC. . . .emulsifiable concentrate	g . . . . .gram
qts . . .quarts	lbs . . . .pounds
pts . . .pints	Tbl . . . .tablespoon
l . . . .liter	tea . . . .teaspoon
ml. . . .milliliter	gal . . . .gallon

INSECTICIDES FOR CONTROL OF PESTS OF ORNAMENTAL PLANTS

Insecticide & Formulation	Amount to 100 gallons water	Amount to 1 gallon water
A. Lindane 20% EC*	2 pts. (0.9 l)	2 tea.
B. Sevin 50% WP (carbaryl)	2 lbs. (907 g)	2 Tbl.
C. Methoxychlor 50% WP	3 lbs. (1.4 kg)	3 Tbl.
D. Diazinon 25% EC	2 pts. (0.9 l)	2 tea.
E. Cygon 2E, Defend, (dimethoate)	3 pts. (1.4 l)	1 Tbl.
F. Malathion 25% WP	2 lbs. (907 g)	2 Tbl.
G. Malathion 50% EC	3 pts. (1.4 l)	2 tea.
H. Dipel, Thuricide, Biotrol (*Bacillus thuringiensis*)	Follow label directions	
I. Imidan 50% WP (phosmet)	1.5 lbs. (680 g)	1 Tbl.
J. Dursban 22.4% EC (chlorpyrifos)	1 pt. (.47 l)	1 tea.
K. Orthene 15% LC (acephate)	4 pts. (1.9 l)	4 tea.
L. Dylox 80% SP (trichlorfon)	1.25 lbs. (574 g)	1 Tbl.
M. MSR 25% EC (oxydemetonmethyl)	2 pts. (0.9 l)	2 tea.

CHEMICALS FOR CONTROL OF MITES ON ORNAMENTAL PLANTS

N. Kelthane 18% EC (dicofol)	2 pts. (0.9 l)	1 Tbl.
O. Tedion 25% WP (tetradifon)	2 lbs. (907 g)	1 Tbl.

Letters in the CONTROL column of this circular refer to the chemicals and dilutions listed above. Where more than one letter appears in a control column, there is a choice of products that may be used.

* Registrations under EPA review, may be suspended at any time.

HOST	INSECT	CONTROL	WHEN TO APPLY
ASH	Borers	A,D,E,J	Spray trunks and lower branches 3 times, beginning May 10 at 3-week intervals. Wrap trunks.
	Leaf feeders	B,C,J,K	
	Flower gall mite	J	When first blooms appear
BIRCH	Borers	A,E	Spray trunks and branches in mid-May, early June, and early July. Water trees frequently in summer.
	Scale	B,D,F	Apply at egg hatch, about June 1.
BOXELDER	Boxelder bugs	B,D	
CEDAR	Bagworms	D,E,H,J,K	Mid-June, after eggs hatch. Pick bags before June 1.
	Spider mites	D,E,K,L,M N,O	Apply thorough spray when spider mites are detected by tapping branches over white paper. Infestations may be present from May until October.
	Webworms	D,E,F	Use high pressure to penetrate webs.
CHERRY	Aphids	D,F,G	
	Scale	B,D,F	Apply when eggs hatch, about June 1.
	Peach tree borers	A,B,J	Apply to lower trunk and soil July 1, July 25 and August 15. Wrap trunks of small trees.
COTONEASTER	Webworms	D,L	When first webs occur.
ELM	European elm scale	B,D,K	Spray when eggs begin to hatch, usually early July. Repeat in 10 days.

HOST	INSECT	CONTROL	WHEN TO APPLY
	Cankerworm	B,H,I,K	In early spring when infestations are first observed or band trees in February.
	Tussock moth	B,G,K	
	Elm leaf beetle	B,C,	Spray mid-June and mid-July, and as larvae collect at base of trunk. *See below.
	Aphids	D,G	
	Bark beetles		Use methoxychlor 25%, 8 gallons to 100 gallons water in hydraulic sprayer before April 10.

*Furadan 10G is registered on Siberian elms for commercial applicators only. (Nebraska, Colorado, Kansas, Wyoming, Utah only) Apply in April. Dig one hole per inch of trunk circumference 6 inches deep, evenly spaced under drip line. Place 1/2 ounce of granules in hole, replace soil plug, and tamp down. Water often for about 2 weeks. Check label for additional details.

EUONYMUS	Scale	D,E,K	Apply in early May, June, July, and August.
HACKBERRY	Nipple gall	B,K	As leaf buds show green. Repeat in 10 days.
	Witches broom		Use 11 gallons liquid lime-sulfur in 100 gallons water as a thorough spray in spring before leaves appear.
LILAC	Borers	A	Spray canes in mid-May. Repeat every 3 weeks for 3 applications.
	Scale	B,D,E,F,K	At egg hatch, May 15-June 1.
LINDEN	Lace bugs	B,D,K	When leaves show injury.
	leafhoppers	B,D	When leaves show injury.
	Aphids	D,G	
HONEY LOCUST	Mimosa webworm	B,D,J,L,	When first webs appear, about July 1. Second brood about August 15.
	Borers	A	Spray trunks 3 times, beginning May 10 at 3-week intervals. Wrap trunks.
	Plant bugs and leafhoppers	B,F	When leaves show evidence of injury, usually mid-May.
	Pod gall midge	B	May

HOST	INSECT	CONTROL	WHEN TO APPLY
IVY	Leafhoppers	C,F,J,K,L	When leafhoppers first appear.
MAPLE	Bladder gall mites	D,E,J	As buds begin to swell in spring.
	Aphids	D,E,G,J,L	
	Cottony scale	B,D,E	In late June when eggs hatch, repeat in 10 days.
	Oystershell scale	B,G	May when eggs hatch, repeat in 10 days. Also in August when eggs hatch.
OAK	Borers	A	Spray trunks 3 times, beginning about May 10 at 3-week intervals. Wrap trunks of small trees.
	Bark aphids	D,E,G	
	Kermes scale	B,D,G	Summer oil spray in March or April. Spray in August for crawlers.
	Lecanium scale	B,D,G	At egg hatch in June. Repeat 1 time in 14 days.
PEACH & ALMOND	Peach tree borers	A,B,J	Apply to lower trunk and soil July 1, July 25 and August 15. Wrap trunks of small trees.
PINE	Tip moth	D,E,L	Apply to tips May 15, 30, and first week of July.
	Bagworms	D,E,H,J,K,L	After eggs hatch, about mid-June.
	Spider mites	D,E,M,N,O	Apply thorough spray when mites are detected by tapping branches over white paper.
	Needle scale	D,E,G	In May when eggs hatch. Repeat in 10 days.
	Zimmerman pine moth	A,E	Spray in mid-April and late August.
	Sawflies	D,G,K	When feeding is first observed.
POPLAR & COTTONWOOD	Poplar borers	A	In June, July and August.

HOST	INSECT	CONTROL	WHEN TO APPLY
	Leaf beetles	B	
	Scales	B,D,F	About May 15-June 1. Repeat in 10 days.
PRIVET	Borers	A	May 15, repeat every 3 weeks for 4 applications.
	Thrips	B,G,M,J	
REDBUD	Leafhoppers	B,C,J	When infestations cause bleached leaves.
	Lacebugs	B,C	When infestations cause bleached leaves.
	Leaf folder	B,C,F	
	Spittlebugs	B,C,J	When adults cause tips to wilt.
SPRUCE	Needle miner	D,E,K	When damage is first observed, usually in May and June.
	Spider mites	D,E,M,N,O	Apply when mites are detected by tapping branches over white paper.
	Bagworms	D,E,H,J,K	When eggs hatch, usually mid-June.
	Pine needle scale	D,E,F,M	When eggs hatch, usually late May or early June.
SYCAMORE	Lacebugs	B,D,K	When leaves show injury.
WALNUT	Caterpillars	B,F	In June when webs first appear.
WILLOW	Scale	B,D,F,K	When eggs hatch in late May and early June.
	Aphids	D,E,F,G,J,K	
	Leaf beetles	B,K	
	ANNUALS AND PERENNIALS		
	Aphids	D,F,G,K	
	Chewing insects	B,C,D,J,K	When leaf damage is observed.
	Cutworms	D,J	
	Leafhoppers	B,C,D,G	

ANNUALS AND PERENNIALS. . .continued

HOST	INSECT	CONTROL	WHEN TO APPLY
	Leaf rollers	B,C,D,G	
	Plant bugs	B,C,D,F	
	Spider mites	D,K,M,N,O	
	Thrips	B,C,D	
	Rose slugs	B,D,E	
	Slugs		Use metaldehyde or mesurol baits.
	Sowbugs and pillbugs		Sevin 5% bait.

TURFGRASS INSECTS

INSECT	MATERIAL	AMOUNT TO 1000 SQUARE FEET	APPLICATION
SOD WEBWORMS	Aspon 13% EC	10 oz. (295 ml)	Apply EC or WP formulations in 10 gallons water per 1,000 square feet. Apply granules with fertilizer spreader. Make applications when sod webworms are first detected by careful examination or flushing with pyrethrins, or when injury is first observed. Apply in evening and sprinkle granules or spray off grass blades. Keep children and pets off treated lawns until materials have been washed off blades and are thoroughly dry.
	Diazinon 25% EC	8 oz. (.24 l)	
	Diazinon 5% G	2 lbs. (907 g)	
	Dursban 0.5% G	5 lbs. (2 kg)	
	Dursban 5.3%	8 oz. (.24 l)	
	Dursban 22% EC	1½ oz. (42.5 ml)	
	Dylox 80% SP	3 oz. (85 g)	
	Sevin 5% G	5 lbs. (2 kg)	
	Sevin 50% WP	7 oz. (198 g)	
WHITE GRUBS	Diazinon 5% G	2.5 lbs. (1 kg)	Aerate before application and water into soil thoroughly.
ARMYWORMS, CUTWORMS & ANTS	Sevin 50% WP	6.4 oz. (181 g)	
	Diazinon 25% EC	8 oz. (.24 l)	
	Dursban 5.3% EC	8 oz. (.24 l)	
LEAFHOPPERS	Sevin 50% WP	3.2 oz. (90 g)	
	Diazinon 25% EC	8 oz. (.24 l)	
	Malathion 57%	1 oz. (29.5 ml)	

INSECT	MATERIAL	AMOUNT TO 1000 SQUARE FEET	APPLICATION
FLEAS & CHIGGERS	Sevin 50% WP	6.4 oz. (181 g)	
	Malathion 57%	5 oz. (140 g)	
	Diazinon 25%	8 oz. (255 g)	
MILLIPEDES	Malathion 4% D		
	Diazinon 5% G	2 lbs. (907 g)	
	Sevin 50% WP	8 oz. (255 g)	
WASPS	Malathion 4% D		Apply to nests after dark.
	Sevin 5% D		
	Pyrethrun aerosol		
TICKS	Sevin 50% WP	6.4 oz. (181 g)	Apply in 10-15 gallons water per 1000 square feet. Treat weedy areas and paths.
BLUEGRASS BILLBUGS	Diazinon 5% G	2½ lbs. (1 kg)	Apply in mid-to-late May to control adults if billbugs were a problem the previous year.
	Diazinon 25% EC	8 oz. (.24 l)	
	Sevin 50% WP	7 oz. (198 g)	
CLOVER MITES	Diazinon 25% EC	1 Tbl. per 1 gal. water	Spray side of building, around window and door frames, and 15 feet into lawn in early September.
	Kelthane 18% EC	2 Tbl. per 1 gal. water	
	Malathion 57% EC	1 Tbl. per 1 gal. water	

Time of control for major insect pests of woody ornamentals and turf. The months are approximate, cool weather may delay, and warm weather accelerate insect activity.

Before making decisions to use chemical controls, be certain of the insect identification, proper insecticide, and application procedures.

Preventative measures are required for borers, and more than one application is needed. Refer to the specific host and pest in previous pages for details.

APRIL

Ash flower gall
Eastern tent caterpillar
Locust pod-gall midge
Zimmerman pine moth
Elm bark beetle
Maple bladder gall mite

MAY

Oystershell scale
Hackberry nipple gall
Spruce needle miner
Pine tip moth
Pine sawfly
Pine needle scale
Cankerworm
Ash borers
Euonymus scale
Ticks
Oak Kermes scale
Tussock moth
Spider mites
Bluegrass billbug
Privet borer
Lilac borer
Aphids
Elm leaf beetle
Locust plant bug
Locust leafhopper
Cutworms
White grubs

SEPTEMBER

White grubs
Sod webworm
Clover mite

JUNE

Ash borers
Bronze birch borer
Bagworms
Euonymus scale
Spider mite
Lilac borer
Boxelder bug
Aphids
Elm leaf beetle
Oak lecanium scale
Poplar borer
Cutworms
Privet borers
Walnut caterpillar
Chigger

JULY

Bagworm
Mimosa webworm
Cottony maple scale
Euonymus scale
Spider mite
Peach tree borer
European elm scale
Poplar borer
Sod webworm
Privet borers

AUGUST

Mimosa webworm
Euonymus scale
Pine needle scale
Ash borer
Peach tree borer
Poplar borer
Spider mites
Sod webworm
Oystershell scale

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