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EC77-1502 Insect Control Recommendations for Ornamental Plants and Turf in Nebraska

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EC 77-1502

INSECT CONTROL RECOMMENDATIONS FOR ORNAMENTAL PLANTS AND TURF

NEBRASKA

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Agricultural 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, storing, 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 Childrens 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 longer 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. Too much may cause excessive run-off of the spray.

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

SEVIN: Boston ivy

DIAZINON: Ferns, hibiscus, gardenias, gladiolus, and African violet

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

ETHION: Yews and redbud

MALATHION: cannarti, Sargent's and Burk junipers, some fern petunias, and violets

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

LIME-SULFUR: Apricots

SULFUR: Viburnums and forsythia

TEDION: Some varieties of roses

THIODAN: Geraniums

TOXAPHENE: Linden, oak, redbud, sugar maple, plum, grape, peach and pears

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, 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 and Meta-Systox-R are highly toxic materials 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 prepared from "80 sprayable" 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 than either alone. For control of both sucking and chewing insects the following mixtures are suggested:

<u>MATERIAL</u>	<u>AMOUNT TO 1 GALLON WATER</u>
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	L.	liters
EC.	emulsifiable concentrate	ML.	milliliter
Qts	quarts	Kg.	kilograms
Pts	pints	g.	grams

ABBREVIATIONS: Continued...

Lbs pounds
 Tbl tablespoons
 Tea teaspoons
 Gal gallons

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. (0.9L)	2 Tea.
B. Sevin 50% WP (carbaryl)	2 Lbs. (907g)	2 Tbl.
C. Methoxychlor 50% WP	3 Lbs. (1.4Kg)	3 Tbl.
D. Diazinon 25% EC	2 Pts. (0.9L)	2 Tea.
E. Pyrethrum 1% EC	2 Pts. (0.9L)	2 Tea.
F. Cygon 267, Defend, Dimex (dimethoate)	3 Pts. (1.4L)	1 Tbl.
G. Malathion 25% WP	2 Lbs. (907g)	2 Tbl.
H. Malathion 50% EC	3 Pts. (1.4L)	2 Tea.
I. Dipel, Thuricide, Biotrol (<i>Bacillus thuringiensis</i>)	Follow label directions.	
J. Imidan 50% WP (phosmet)	1.5 Lbs. (680g)	1 Tbl.
K. Thiodan 50% WP (endosulfan)	2 Lbs. (907g)	2 Tbl.
L. Dursban 22.4% EC	1 Pt. (.47L)	1 Tea.
M. Toxaphene 60% EC	4 Pts. (1.9L)	4 Tea.

CHEMICALS FOR CONTROL OF MITES ON ORNAMENTAL PLANTS

N. Chlorobenzilate 25% EC	2 Pts. (0.9L)	1 Tbl.
O. Kelthane 18% EC	2 Pts. (0.9L)	2 Tea.

CHEMICALS FOR CONTROL OF MITES ON ORNAMENTAL PLANTS

Continued...

P. Tedion 25% WP	2 Lbs. (907g)	1 Tbl.
Q. Aramite 15% WP	2 Lbs.	1 Tbl.
R. Dimite 25% EC	2 Pts. (0.9L)	2 Tea.

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,F,K	Spray trunks and lower branches 3 times, beginning May 10 at 3-week intervals. Wrap trunks.
	Leaf feeders	B,C,M	
BIRCH	Borers	A,F,K	Spray trunks and branches in mid-May, early June, and early July. Water trees frequently in summer.
	Scale	B,D,G	Apply at egg hatch, about June 1.
BOXELDER	Boxelder bugs	B,D,M	
CEDAR	Bagworms	D,F,I,M, L	Mid-June, after eggs hatch. Pick bags before June 1.
	Spider mites	D,F,N,O P,R	Apply thorough spray when spider mites are detected by tapping branches over white paper. Infestations may be present from May until October.
	Webworms	D,F,G,M	Use high pressure to penetrate webs.
CHERRY	Aphids	D,G,H,E	
	Scale	B,D,G	Apply when eggs hatch, about June 1.
	Peach tree borers	A,B,K	Apply to lower trunk and soil July 1, July 25, and August 15. Wrap trunks of small trees.

HOST	INSECT	CONTROL	WHEN TO APPLY
ELM	European elm scale	B,D	Spray when eggs begin to hatch, usually early July. Repeat in 10 days.
	Cankerworm	B,I,J,M	In early spring when infestations are first observed or band trees in February.
	Tussock moth	H,M	
	Elm leaf beetle	B,M	Spray mid-June and mid-July, and as larvae collect at base of trunk. *See below.
	Aphids	D,H,E	
	Bark beetles		Use methoxychlor 25%, 8 gallons to 100 gallons water in hydraulic sprayers before April 10.
<p>* Furadan 10G is registered on Siberian elms for commercial applicators only. (Nebraska, Colorado, Kansas, Wyoming, Utah only). Apply in April. Use ½ ounce of 10G per inch of trunk circumference. Dig one hole per inch (circumference), each 6 inches deep, under drip line. Place granules in hole, replace soil plug and tamp down. Water often for about 2 weeks. Check label for additional details.</p>			
EUONYMUS	Scale	D,F	Apply in early May, June, July, and August.
HACKBERRY	Nipple gall	B	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,K	Spray canes in mid-May. Repeat every 3 weeks for 3 applications.
	Scale	B,D,F,G	At egg hatch, about June 1.
LINDEN	Lace bugs	B,D	When leaves show injury.
	Leafhoppers	B,D	When leaves show injury.
	Aphids	D,H,E	
HONEY LOCUST	Mimosa webworm	B,D	When first webs appear, about July 1. Second brood about August 15.

HOST	INSECT	CONTROL	WHEN TO APPLY
MAPLE	Borers	A,K	Spray trunks 3 times, beginning May 10 at 3-week intervals. Wrap trunks.
	Plant bugs	B,H	When leaves show evidence of injury; usually mid-May.
	Pod gall midge	B	May
	Bladder gall mites	D,F,O	As buds begin to swell in spring.
	Aphids	D,F,H	
	Cottony scale	B,D,F	In late June when eggs hatch, repeat in 10 days.
OAK	Borers	A,K	Spray trunks 3 times, beginning about May 10 at 3-week intervals. Wrap trunks of small trees.
	Bark aphids	D,F,H	
	Kermes Scale	B,D,H	Summer oil spray in March or April Spray in August for crawlers.
	Lecanium scale	B,D,H	At egg hatch in June. Repeat 1 time in 14 days.
PEACH & ALMOND	Peach tree borers	A,B,K	Apply to lower trunk and soil July 1, July 25, and August 15. Wrap trunks of small trees.
PINE	Tip moth	F,D	Apply to tips May 15, 30, and first week of July.
	Bagworms	D,F,I, M,L	After eggs hatch, about mid-June.
	Spider mites	F,K,N,O P,R	Apply thorough spray when mites are detected by tapping branches over white paper.
	Needle scale	D,F,H	In June when eggs hatch. Repeat 10 days.
POPLAR & COTTONWOOD	Poplar borers	A,K	In June, July and August.
	Leaf beetles	B	
	Scales	B,D,G	About June 1. Repeat in 10 days.

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

HOST	INSECT	CONTROL	WHEN TO APPLY
	Thrips	B,C,D	
	Rose slugs	B,D,F	
	Slugs		Use metaldehyde or mesurol baits.

TURFGRASS INSECTS

INSECT	MATERIAL	AMOUNT TO 1000 SQUARE FEET	APPLICATION
SOD WEBWORMS	Aspon 13% EC	10 Oz. (295 Ml)	
	Diazinon 25% EC	1 Cup (.24L)	
	Diazinon 5% G	2 Lbs. (907g)	
	Dursban 0.5% G	5 Lbs. (2 Kg)	
	Dursban 22% EC	1½ Oz. (42.5 Ml)	
	Dylox 80% SP	3 Oz. (85g)	
	Sevin 5% G	5 Lbs. (2 Kg)	
	Sevin 50% WP	7 Oz. (198g)	Apply EC or WP formulations in 10 gallons water per 1000 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 thoroughly dry.
WHITE GRUBS	Diazinon 5% G	2.5 Lbs. (1 Kg)	Water into soil thoroughly.
ARMYWORMS, CUTWORMS & ANTS	Sevin 50% WP	6.4 Oz. (181g)	
	Diazinon 25% EC	1 Cup (.24L)	
LEAFHOPPERS	Sevin 50% WP	3.2 Oz. (90g)	
	Diazinon 25% EC	1 Oz. (29.5 Ml)	
	Malathion 57%	1 Oz. (29.5 Ml)	

INSECT	MATERIAL	AMOUNT TO 1000 SQUARE FEET	APPLICATION
FLEAS & CHIGGERS	Sevin 50% WP	6.4 Oz. (181g)	
	Malathion 57%	5 Tbl.	
	Diazinon 25%	5 Tbl.	
MILLIPEDES	Malathion 4% D		
	Diazinon 5% G	2 Lbs. (907g)	
	Sevin 50% WP	8 Oz. (255g)	
WASPS	Malathion 4% D		
	Sevin 5% D		
	Pyrethrun aerosol		Apply to nests after dark.
TICKS	Sevin 50% WP	6.4 Oz. (181g)	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	1 Cup (.24L)	
	Sevin 50% WP	7 Oz. (198g)	
CLOVER MITES	Diazinon 25% EC	1 Tbl. per 1 gal. water	
	Kelthane 18% EC	2 Tbl. per 1 gal. water	Spray side of building, around window and door frames, and 15 geet into lawn in early September.
	Malathion 57% EC	1 Tbl. per 1 gal. water	
	Chlorobenzilate 25% EC	2 Tea. per 1 gal. water	