

INSECTS OF LAWN AND ORNAMENTALS AND THEIR CONTROL

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Everyone can be proud of his beautiful lawns, shrubs and trees. This beauty can be protected through proper insect control. The descriptions of the common pests which attack our lawns, shrubs and trees and their feeding injury are given in this leaflet.

Effective insect control is based on **proper application** of an appropriate chemical at the correct time. There is no one chemical that will adequately control all insects. The precise timing of insecticide treatments is given for a specific time during the season which will control a specific stage in the development of the insect. Improper application of these treatments will allow injury to occur. Proper pruning to remove diseased and dead wood will facilitate better insect control.

Insecticides can be purchased as wettable powder or as emulsifiable concentrate formulations. Both must be diluted in a given amount of water and applied as sprays. Sprays prepared with emulsifiable concentrations require less agitation but they may burn tender foliage especially when applied during the heat of the day. In addition to the chemicals listed, general purpose spray mixtures can be purchased.

Proper timing of spray applications and thorough coverage of leaves, stems, branches and trunk are as important as the chemicals used. Follow the insecticide container label directions closely when preparing and applying all sprays. Remember, the leaves have two sides. Be sure to wet both. Treat the foliage until the spray starts to drip from the leaves.

Equipment

There are many types and sizes of sprayers suitable for spraying lawn and ornamental plantings. Select the type of equipment that will meet all your spraying requirements.

Hose-on sprayer Simple to operate, these small sprayers are designed to be attached to a garden hose. They require no spray tank but operate by metering out a desired amount of chemical into a stream of water. Problems encountered with

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RATES OF APPLICATION

These chemicals and their rates of application are recommended in this guide. Be accurate in your dilution rates; too much chemical may cause plant injury; too little chemical will result in poor control.

CHEMICAL	AMOUNT OF INSECTICIDE PER GALLON OF WATER
Calcium polysulfide 29%	
dormant	1 cup
summer	4 tsp.
Chlordane	
45% EC	4 tsp.
40% WP	5 tbl.
DDT	
25% EC	3 tbl.
50% WP	4 tbl.
Diazinon	
48% EC	2 tsp.
Dicofol (Kelthane)	
18.5% EC	2 tsp.
18.5% WP	2 tbl.
Dieldrin	
18.7% EC	3 tsp.
50% WP	1 tsp.
Dimethoate (Cygon)	
23.4% EC	2 tsp.
Dormant Oil EC	
80% purified oil	2/3 cup 2/3 pt.*
Malathion	
57% EC	1 tsp.
25% WP	5 tbl.
Oxydemetonmethyl (Meta-Systox-R)	
25.4% EC	2 tsp.
Superior Oil EC 98%	
dormant	1/2 cup
summer	1/3 cup
Tetradifon (Tedion)	
10% EC	2 tsp.
25% WP	1 tbl.

EC: emulsifiable concentrate; WP: wettable powder; tsp.: teaspoon; tbl.: tablespoon; pt.: pint; lb.: pound; sq.: square; ft.: feet.

3 tsp.=1 tbl.; 16 tbl.=1 cup; 2 cup=1 pint;
800 tsp.=1 gal.

*This dosage designates an 8% solution used as a dormant spray for control of European elm scale.

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HOSTS AND COMMON PESTS

Many different insects attack our lawns, shrubs and trees. The following are the common pests. For assistance in the control of pests not listed, send the pest and damaged plant specimens to the Extension Entomologist, Department of Entomology, University of Idaho, Moscow 83843.

PESTS	INJURY AND PLANTS ATTACKED	WHEN TO TREAT	WHERE TO TREAT WHAT TO USE
Ants	Tiny to large, yellow to red to black and bicolored ants living in soil of garden and lawn. Those frequenting shrubs and trees are associated with aphid and scale infestations upon whose sweet secretions they feed. Under these conditions ants drive off or kill the natural enemies of these insects.	When encountered locate nests in soil.	Incorporate chlordane or dieldrin into soil or spray area of ant activity at weekly intervals until ants disappear.
Bluegrass billbug	Patches to large areas of lawn grass eaten off by 1/4 inch long dull black weevils and their footless, creamy-white, brown-headed grubs.	Remove dead grass with finetoothed rake.	Treat infested areas or entire lawn with chlordane or dieldrin as given for earthworms.
Earthworms	Several species, small to large size "nightcrawlers" produce objectionable earthen mounds in lawns making walking hazardous and mowing uneven. Found in moist soils high in organic matter.	Spring: When soil is saturated with water cut grass as short as possible and remove clippings. A power-driven "lawn-rake" is excellent for removing excess old grass.	Apply 1 lb. of actual chlordane or 1/2 lb. of dieldrin per 20 by 50 sq. ft. area and water thoroughly in to the soil.
European earwig	Dark reddish brown, 5/8 inch long insect with forcep-like appendages at rear end of body. Holes eaten from tender leaves and blossoms at night.	When encountered throughout the season.	Spray soil with chlordane, DDT or dieldrin about plants, shrubs and lawns. Foundation spraying of house in late summer will prevent household nuisance.
Gray garden slug	Slime trails on foliage found with holes eaten from tender leaves and blossoms at night. Humid conditions preferred. Slimy, shiny, dark green and gray creatures about 1 inch but up to 2 inches long. Continuous generations during growing season.	When encountered.	Place grain carrier poison slug bait on soil in area of slug damage. Cover bait with 4 to 8 inch shelters to extend bait effectiveness.
Lawn moths	Irregular brown "trails" or patches which may expand into large areas of destroyed grass. Silken tunnels and burrows in turf protect light brown webworms as they feed on grass blades at night. Activity begins early in spring. Whitish-gray or brown, 1 inch long, cigar-shaped moths are first seen about June 10. Population of dusk flying moths increases as season progresses.	Spring and summer: cut grass short as possible and remove clippings.	Treat infested areas as for earworms, or spray lawns as for earwig.
Aphids	Soft-bodied gray, green, red, or black insects about 1/8 inch long. Suck plant juices from leaves and new growth of many deciduous trees and shrubs as well as several conifers. Produce large amounts of sticky honeydew which may eventually turn black and which attracts ants.	Delayed-dormant: After buds swell but before the buds break open. Spring and summer as needed.	Dormant oil to twigs and branches or combination of superior oil and calcium polysulfide. Malathion, dimethoate, oxydemetonmethyl or diazinon. Pour 1 qt of dimethoate or oxydemetonmethyl spray into soil about

Elm leaf beetle	Yellow to orange, ¼ inch long beetle with 3 black lines on wing covers and with 2 black spots behind the head. They eat holes in leaves. Larvae up to ½ inch long, are dark colored with yellow markings and prominent body tubercles whose feeding destroys the lower surfaces of leaves. Elm trees are often completely defoliated by the attack from the summer generations of beetles.	When first larvae feeding occurs. Control of summer generations is generally necessary.	Diazinon or malathion plus DDT spray. Thoroughly cover lower leaf surfaces.
European elm scale	Reddish-brown, plump-bodied sucking insect fringed with white and covered with mealy secretion. Abundant on elm in crevices of bark and on the undersides of limbs. Can cause death of elms.	Dormant: Before buds swell in the spring to control over-wintering scales. Summer: To control young crawlers.	Dormant oil (8% spray concentration). Malathion or diazinon plus DDT.
Juniper scale	Grayish-white scales 1/20 inch in diameter with a yellow center, suck juices from the foliage and twigs of juniper. Plants turn yellow. Branches or entire tree may die.	Dormant: Before plant growth starts in spring. Summer: Mid-May. This spray should be repeated in 10 days if immature scales continue to emerge over an extended period of time.	Calcium polysulfide. Malathion or diazinon.
Maple bladder gall	Green, red, or black bladder-shaped galls on the upper leaf surface of silver, red and soft maples are caused by microscopic mites. Galls cause little injury to the tree.	Dormant: As buds swell in the spring or at leaf drop in the fall.	Calcium polysulfide.
Oyster shell scale	Gray-brown, oystershell-shaped scales about 1/8 inch long often completely encrusting branches and twigs of lilac, ash, willow, apple, viburnum and many other trees and shrubs. Trees are stunted, foliage is yellowed and branch or entire tree dies.	Dormant: Before growth starts in spring. Summer: Late May and repeat two weeks later.	Dormant oil. Malathion, DDT or diazinon.
Pear leaf blister mite	Microscopic, pink colored, 4 legged mites spend winter beneath bud scales of apple, mountain ash and pear. They migrate in spring to begin feeding inside the leaves before they are fully opened. Infested areas are first green blisters, then red and finally brown. Each season there are many generations within the leaf tissues.	Dormant: As buds begin to swell. Summer: As soon as first green blisters are seen.	Calcium polysulfide. Dimethoate or oxydemetonmethyl.
Pine needle scale	White, elongated scales about 1/8 inch long suck juices from needles of pines and spruces. Trees are stunted, needles turn yellow and drop prematurely. If uncontrolled, this insect may kill tree.	Dormant: Before growth starts in spring. Summer: Late May and late July. August and September.	Calcium polysulfide. Malathion, diazinon.
Poplar-and-willow borer	Irregular burrows beneath dead and dying areas of trunk and lower limb bark are packed with moist sawdust from feeding of yellowish, fleshy, footless, pale-brown headed grubs. Adult weevils about ½ inch long are a sooty-brown color with a large light pinkish-gray patch on rear end of wing covers. Alder, birch, poplar and willow over one year old are often girdled.	Dormant: Before growth starts in spring. Spring through fall: To control active mites.	Spray trunk and lower limbs with DDT or dieldrin at 14 day intervals. Prune and burn severely infested limbs and trees. (Dominant sucker stem will replace tree in a few years.)
Spider mites	Several different mites feed on the leaves of shrubs and trees, including conifers. They suck juices giving the leaves or needles a stippled or bronze appearance and cause them to drop prematurely. Mites can be detected by forcibly jarring a portion of the foliage over a white piece of paper; the mites will appear as tiny moving specks.	Dormant: As terminal shucks begin to swell. Apply a second spray 2 weeks later.	Superior oil, or combination of superior oil plus calcium polysulfide. (Oil sprays will remove the bloom from blue spruce.) Dicofol or tetradifon.
Spruce gall aphids	Abnormal green to brown swellings or pineapple-like galls which usually encompass new growth at the tips of Colorado blue, Engelmann, Sitka, Norway and red spruces are caused by the feeding of two different aphids. Galls disfigure trees but do not kill them. Also occur on Douglas-fir needles as small cottony white spot. Damage to Douglas-fir minor. Do not interplant Douglas-fir with spruce.		Malathion, diazinon or calcium polysulfide.

some types of these sprayers have been poor spray distribution, clogging of nozzles and non-mixing of the insecticide with the water.

Trombone sprayer Spray mixture can be prepared in any size container and applied by inserting the intake apparatus into the container and operating the sprayer with a trombone-like motion. A uniform concentration of the spray can be maintained since the insecticide is mixed with a known quantity of water. However, frequent agitation of the spray mixture is necessary when using a wettable powder formulation. This sprayer is the easiest to wash and keep clean.

Compressed air sprayer Compressed air sprayers with 1- to 5-gallon capacity have wide adaptability for spraying small plantings. Air is pumped into the tank and forces the spray out when the nozzle is opened. It is advisable when using wettable powder insecticides to shake the sprayer frequently to keep them in suspension.

Knapsack sprayer This sprayer is carried on the back. The hand operated piston pump supplies the pressure during application. The capacity of these sprayers is 3- to 5-gallons.

Small power sprayers There are many small motor driven sprayers mounted on wheels capable of adequately treating large trees. Some are self-propelled while others are not. The auxiliary attachments to "snow blowers", "garden tractors" and "riding mowers" can be quite effective when the limits of their capacities are not over-extended.

All sprayers should be thoroughly washed, dried, and the moving parts and the threads of nozzles oiled before storing. Proper maintenance immediately after using will lengthen the trouble-free life of the sprayer.

In the absence of adequate spray equipment the services of a reputable commercial operator should be secured.

PESTICIDE RESIDUES—These recommendations are based on the best information currently available for each chemical listed. If followed carefully, residues should not exceed the tolerance established for any particular chemical. To avoid excessive residues, follow recommendations carefully with respect to dosage levels, number of applications and minimum interval between application and harvest.

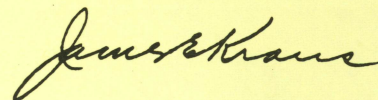
THE GROWER IS RESPONSIBLE FOR residues on his crops as well as for problems caused by drift from his property to other properties or crops.

General Warnings

All pesticides are poisonous to warm-blooded animals to some degree. They should be handled cautiously to prevent poisoning pets, livestock, wildlife, children or the user. When using any chemical, observe the following safe use procedures:

1. Always read the label before using any chemical, and carefully follow the directions given. Each time before opening the container note warnings and cautions.
2. Keep insecticides out of the reach of children, and pets. Pesticides should be kept in their original containers, outside the home, in a locked storage.
3. Do not spill concentrates or sprays on the skin or clothing. If they are spilled, remove the contaminated clothing immediately and wash body and clothes thoroughly.
4. Never smoke while spraying.
5. Avoid inhaling insecticide mists and vapors; and when directed on the label, wear protective clothing and a face mask. A handkerchief fitted to the face, coveralls and gloves will help prevent excessive inhalation and contact with the insecticide.
6. Wash hands and face and change to clean clothing immediately after spraying. Always wash clothing before re-use.
7. Cover food and water containers when treating around livestock or pet areas. Do not contaminate fish ponds.
8. Use separate equipment for applying hormone-type herbicides in order to avoid accidental injury to susceptible plants from contaminated spray equipment.
9. Always dispose of empty containers in trash or by burning or burying so that they pose no hazard to humans, animals or plants. When burning containers, avoid inhaling the smoke.
10. Observe label directions and cautions to keep undesirable residues off fruits and vegetables.

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