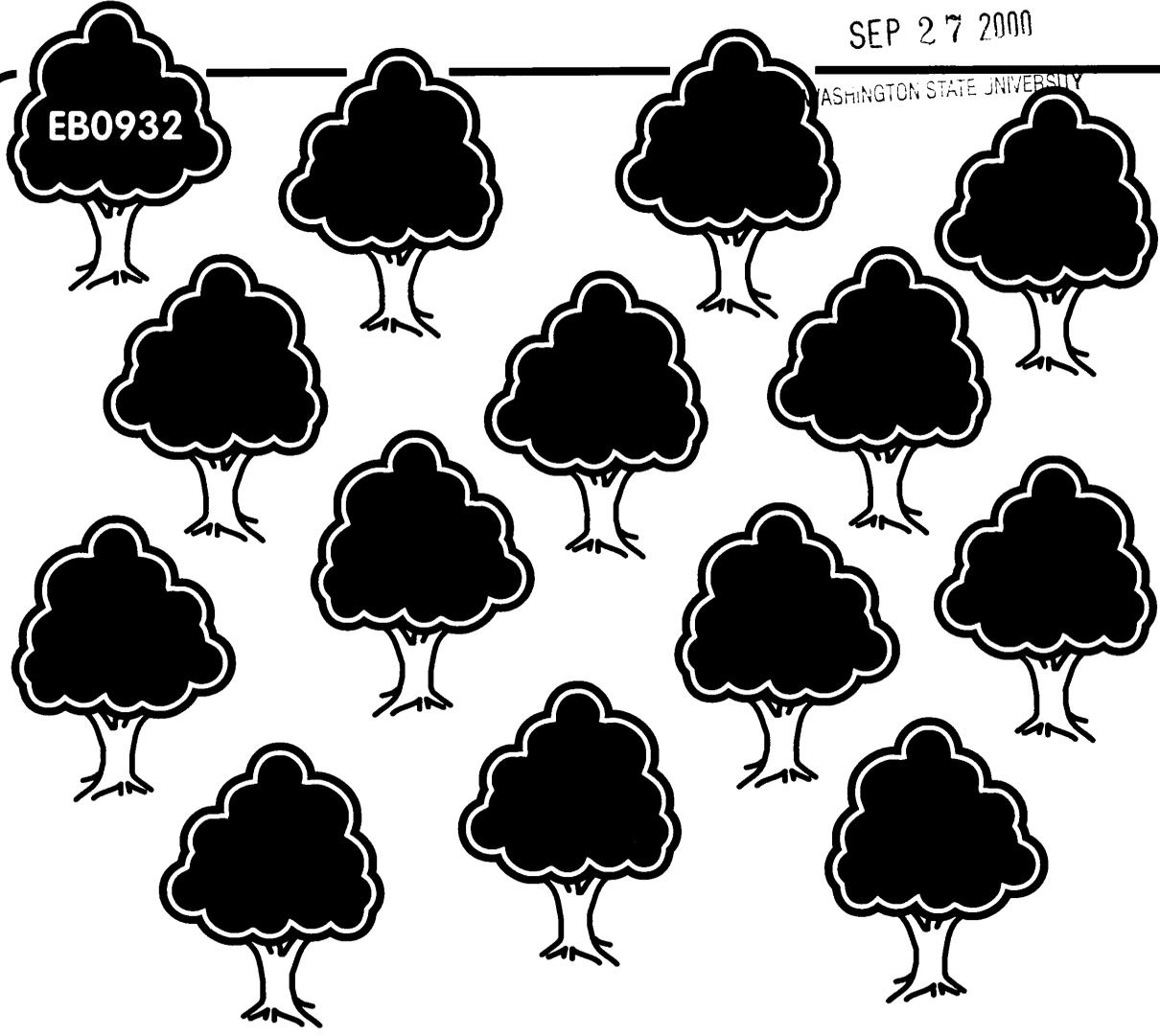


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WASHINGTON STATE UNIVERSITY



INSECT AND MITE MANAGEMENT IN HOME ORCHARD TREE FRUITS AND NUTS

COOPERATIVE EXTENSION
Washington State
University



**For your safety, and the safety
of the environment, please
follow label directions.**

SPRAYING YOUR BACKYARD ORCHARD

Choosing a Sprayer

Many types and sizes of hand sprayers are available to home orchardists. The most commonly used sprayers are the 2-5 gallon hand-held, pump-up sprayers (Fig. 1). This type of sprayer is very effective for spraying young trees 1-6 years old, and may be used on trees up to 8-10 years if you are willing to climb a ladder and make several ladder moves while spraying your trees.

A trombone sprayer shown in Fig. 2 is often used for small and mid-sized trees 1-12 years old. Old trees and large trees—apple, walnut, cherry, and pecan—often cannot be adequately sprayed using either the pump-up sprayer or the backpack equipment.

A third type of sprayer often seen in the backyard is the hose sprayer (Fig. 3). This sprayer attaches to the home garden hose. These sprayers consist of a bottle or jug which holds the pesticides and includes a nozzle metering device. The nozzle meters the water/pesticide mixture while the water pressure forces the mixture into the canopy of the tree. The hose sprayer, if properly adjusted, can give good spray coverage. However, misadjustment is common and often poor application and pest control failures are noted where this equipment is used.

A fourth type of sprayer is seen in large backyard plantings or small orchards. This is the small tank sprayer (Fig. 4). Usually these sprayers range in size from 10-100 gallon tanks, and are powered by small air cooled engines. Pump pressures of 100-400 pounds per square inch can be obtained with these sprayers. Size of tank pump, engine, and running gear varies considerably in these sprayers. For large trees or tree numbers running into several acres the power sprayers are the only proper type of equipment to use.

Precautions in Spraying

When using any sprayer be sure to keep the chemical and water mixture stirred up or agitated at all times! If the chemical settles in the tank or is not mixed properly two things may occur:

1. You will obtain no pest control.
2. You may burn or injure the tree or its foliage.

Wear the Proper Clothing

1. Keep your skin covered while spraying. Long-sleeved shirts or coveralls are best. Long pants

that cover your legs, and shoes and socks are all essential. Eye protection is also essential.

2. Wear unlined rubber gloves when spraying pesticides. If chemicals somehow get inside the gloves, discard them and buy new ones.
3. Wash your clothes carefully following each spray application. Keep pesticide contaminated clothing separate from family laundry.
4. Wash your face and hands after spraying and before using the toilet, smoking, eating, or drinking.
5. Bathe completely and immediately if you spill any chemical on your body during spraying.

Choosing a Pesticide

Pesticides come in many-sized bottles, cans, bags, and other containers. Many products are mixtures of two or more pesticides. Prices of the products vary with area where they are sold.

When you choose a pesticide be sure to do the following:

1. *Make sure the pesticide is needed.* This may sound silly, but many pesticides are applied for the wrong insect or for an insect that is not a pest. Often beneficial insects may be present and could be doing more good than you would with a pesticide. Take your problem to an agriculture authority before you spray. Your county Cooperative Extension office, Master Gardener booth, state horticultural office, or other agricultural person can usually help you decide on the need for chemical control.
2. Choose *the most effective material available* for control of the pest with the following considerations:
 - A. How will the material affect you and the environment, including beneficial animals such as bees, birds, and ladybugs?
 - B. Is the material more costly than equally effective and safe materials that are also available?
3. Choose *chemicals recommended for home or small acreage use only.* Many materials are available in large packages prepared for commercial grower use. Commercial pesticides are often too toxic for use around the home and yard.

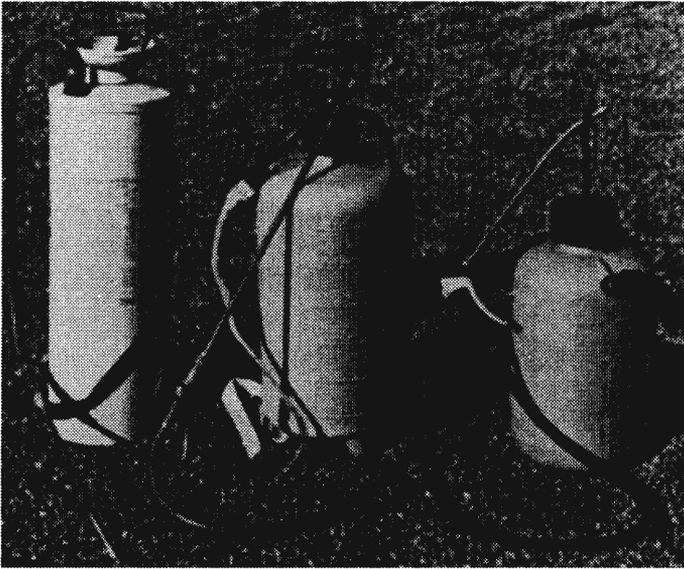


Fig. 1—Pump-up sprayers.

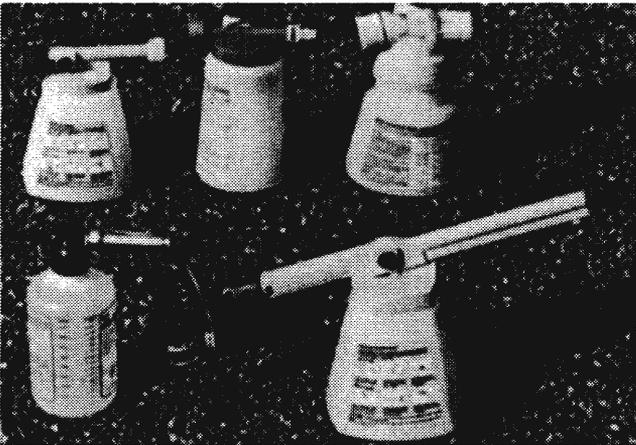


Fig. 3—Hose sprayers.



Fig. 2—Trombone sprayer. Wide end of hose is placed in a bucket with the spray mixture. Spraying is controlled by moving the handle in (left) and out (right).

Fig. 4—Small tank sprayer.



4. *Be sure that you can use the pesticide in the spraying equipment that you own.* Some chemical mixtures require special equipment.

Precautions in Using Pesticides

Backyard home and garden pesticides range from slightly to moderately toxic.

You can determine the relative hazard of a given pesticide product by looking for certain signal words which must appear on the label. These signal words are as follows:

1. The words **DANGER**, **POISON**, and a **skull and crossbones** symbol. These products are highly toxic and are not packages for home and garden use.
2. The word **WARNING** is on labels of products considered moderately toxic.
3. The word **CAUTION** is on labels of products considered slightly toxic.

Safety Precautions

1. Store pesticides where they will not contaminate food or feed, and where children and animals cannot reach them. Keep them in the original containers, tightly closed, and in a dry place.
2. Avoid contact with pesticides. If any is spilled on skin or clothing, wash thoroughly and change clothing **IMMEDIATELY**.
3. Avoid inhalation of dusts or mists.
4. Wash clothing before reuse.
5. Wash hands and face before eating or smoking and immediately after completing the pesticide

application. Do not eat, drink, or smoke while applying or mixing pesticides.

6. If illness occurs during or shortly after application, call a physician immediately. Be sure you can tell a doctor, nurse, or paramedic the name of the chemical you were applying.
7. Protect fish and wildlife. Do not apply pesticides in any manner that will contaminate lakes, streams, ponds, irrigation ditches, or canals. Do not clean spray equipment or dump excess material near such bodies of water or down storm drains.
8. Bees are extremely important in raising trees that bear fruit annually. Honey bees and other wild bees are responsible for carrying pollen from flower to flower in your trees. If this did not happen you would not be able to obtain adequate fruit set on your trees. Other beneficial insects such as ladybugs, syrphid or hover flies, lacewings, and many others help you daily in destroying pest insects. Protect these beneficial insects.
 - A. *Do not spray* when bees or beneficial insects are present in or on trees in noticeable numbers.
 - B. *Never spray* during the *blooming* period.
 - C. *If sprays* are necessary, apply them in late evening or very early morning.
 - D. *Choose a pesticide* that has a low toxicity to bees and beneficials.
9. Dispose of pesticide containers so they do not pose a threat to humans, pets, or the environment. Rinse empty containers at least three times and pour the rinse water into the spray tank. Take rinsed containers to a sanitary landfill, dump, or other site approved by the local health department or hold them for a hazardous waste disposal day. Small containers, such as those in the home and garden trade, can be handled by city trash disposal services. Wrap them in paper and dispose of them in a tied garbage bag or covered container.

NOTE: Under each heading a plant stage or weather period (e.g., dormant period) is given with reference to stages illustrated on the "Bud Development" page at the end of this publication. A "month" or "span of months" is often also given as a reference. The chronological period or month is given as a loose definition of the stage of development. The stage of development, however, may vary some during any one month from one area of Washington to another. Therefore, there should be a greater reliance on the stage entry as it relates to the bud development page than on a precise time of year.

APPLES

Pest	Pesticide	Remarks
DELAYED—DORMANT (STAGES 2–3*): MARCH TO APRIL		
SCALE INSECTS	(Use one)	Apply sprays during dormant or delayed-dormant period (do not use after pink color appears in buds). Use enough water to thoroughly cover all portions of the tree including small limbs and shoots. The oil plus Diazinon sprays should give better mite egg control than oil alone. Diazinon plus superior type oil used at the late delayed dormant period will help control leafrollers.
EUROPEAN RED MITE EGGS	Superior type oil	
BROWN MITE EGGS	Superior type oil	
LEAFROLLERS	PLUS one of the following:	
APHID EGGS	Δlime-sulfur	
LECANIUM SCALE	Δlime-sulfur materials such as Orthorix or Polysul Diazinon EC	
PREPINK (STAGES 4–5*): JUST BEFORE BLOSSOMS OPEN		
APPLE APHIDS	(Use one) Diazinon EC Thiodan EC Insecticidal Soap malathion EC	Do not apply after blossoms appear.
CLIMBING CUTWORMS	No effective chemical labeled for home use at this time. <i>Bacillus thuringiensis</i> may provide some relief providing enough is eaten to induce mortality.	
PETAL FALL—(AFTER ALL PETALS ARE OFF)		
CODLING MOTH	(Use one) Diazinon EC Methoxychlor-Malathion EC	Apply sprays about 10 days after full petal fall or 17-21 days after full bloom. A maximum of three applications of Diazinon may be made per season, a minimum of 14 days apart. A 14–21 day schedule should be maintained if the Methoxychlor-Malathion material is used. Diazinon has a minimum time till harvest of 21 days; Methoxychlor-Malathion has minimum time of 14 days till harvest. County agents maintain pheromone traps in the major and some minor apple growing areas. These traps are helpful in timing codling moth sprays. Check with your county agent on moth levels for your area.
LEAFHOPPER	Diazinon EC Thiodan EC	21 days, minimum time to harvest. 30 days, minimum time to harvest.
SPRING-SUMMER PERIOD		
APPLE APHIDS	See prepink	Do not apply in presence of blossoms.
MITES	insecticidal soap	
APPLE ERMINE MOTH	Δ <i>Bacillus thuringiensis</i> (Thuricide, etc.)	See label for additional information.
APPLE-AND-THORN SKELETONIZER	No chemicals are labeled for specific control of this pest on fruit trees. Diazinon sprays applied in late spring and early summer for control of aphids and other insect pests often reduce this insect as well. <i>Bacillus thuringiensis</i> should also provide control.	
LEAFROLLERS	Codling moth materials will control leafrollers. <i>Bacillus thuringiensis</i> will also control leafrollers.	
LECANIUM SCALE	Diazinon EC	21 days, minimum time to harvest.
APPLE MAGGOT	Diazinon EC malathion/methoxychlor EC	Apply first cover in early July. A maximum of three applications of Diazinon may be made per season, 14 days apart. Do not apply within 21 days of harvest. Malathion/methoxychlor EC repeat at 14-day intervals up to 14 days before harvest.

EC = Emulsifiable Concentrate

*See back page for illustration of these stages.

ΔSome or all pests not listed on label.

APRICOTS

Pest	Pesticide	Remarks
DELAYED—DORMANT (STAGES 2–3*): MARCH TO APRIL		
SCALE INSECTS MITE EGGS	(Use one) Superior type oil Superior type oil PLUS Diazinon EC	Use sufficient spray to thoroughly cover all portions of the tree including small limbs and shoots. apply only during dormant or delayed dormant period. May also reduce leafroller numbers.
PREPINK (STAGES 3-5*): JUST BEFORE BLOOM WHEN BUDS SHOW COLOR		
PEACH TWIG BORER FRUITTREE LEAFROLLER APHIDS THRIPS	Diazinon EC	21 days, minimum time from last application to harvest. (<i>Bacillus thuringiensis</i> can be used for leafroller control)
PEACH TWIG BORER APHIDS	Thiodan EC	30 days, minimum time to harvest. Do not apply more than twice per fruiting season.
PETAL FALL—WHEN ALL PETALS HAVE DROPPED		
PEACH TWIG BORER FRUITTREE LEAFROLLER APHIDS THRIPS	Diazinon EC Δinsecticidal soap	21 days, minimum time to harvest. (aphids only)
PEACH TWIG BORER APHIDS	Thiodan EC Δinsecticidal soap	For Thiodan EC, observe 30 days, minimum time from last application to harvest. Do not apply more than twice per fruiting season. Insecticidal soaps may be applied up to the day of harvest.
LATE SPRING-SUMMER PERIOD		
PEACHTREE BORER	Thiodan EC	Apply to tree trunks and crotches in early July and again in early August. 30 days, minimum time to harvest. Do not apply more than twice per fruiting season.
SPIDER MITES	insecticidal soap	See label.
EARWIGS	Sevin EC	Use as a spray around the trunk. 3 days, minimum time to harvest.
APHIDS PEACH TWIG BORER		(Same as Prepink Period/Petal-Fall Period above.) If twig borer sprays were not applied at petal fall, they must be applied in early June.
LECANIUM SCALE	Diazinon EC malathion EC	21 day minimum time to harvest. 14 day minimum time to harvest.

EC = Emulsifiable Concentrate

*See back page for illustration of these stages.

ΔSome or all pests not listed on label.

CHERRIES

Pest	Pesticide	Remarks
DELAYED—DORMANT (STAGE 1*): FEBRUARY TO MARCH		
SCALE INSECTS	(Use one)	Apply sprays using enough water to thoroughly cover all portions of the tree including small limbs and shoots. Apply only during dormant or delayed dormant period. The Diazinon and oil mixture will help control leafrollers.
BLACK CHERRY	Superior type oil	
APHID EGGS	Superior type oil	
LEAFROLLERS	PLUS	
LECANIUM SCALE	Diazinon EC	
CLIMBING CUTWORMS	Sevin EC	<i>Bacillus thuringiensis</i> may give some control providing they eat enough of it.
PREBLOOM-CLUSTER BUD (STAGES 4–5*): APRIL TO MAY		
LEAFROLLERS	Diazinon EC	21 days, minimum time to harvest.
SAN JOSE SCALE	<i>Bacillus thuringiensis</i>	
APHIDS	(leafrollers only)	
SPIDER MITES	insecticidal soaps	See label for rates.
PETAL-FALL—WHEN ALL PETALS HAVE DROPPED		
LEAFROLLERS	(Use one)	21 days, minimum time to harvest for Diazinon. 3 days, minimum time to harvest for Malathion.
APHIDS	<i>Bacillus thuringiensis</i> (leafrollers only)	
	Diazinon EC	14 days minimum time to harvest for Malathion-Methoxychlor EC.
	Malathion EC	
	Malathion-Methoxychlor EC	
SPIDER MITES	insecticidal soaps (mites and aphids)	See label for rates.
SUMMER SPRAYS: MAY TO JULY		
BLACK CHERRY APHID	Diazinon EC	21 days, minimum time last application to harvest. Cherry fruit fly— present mid-May to last of July. Begin spraying about May 20 to 25. Spray at 10-day intervals.
SCALE INSECTS		
CHERRY FRUIT FLY		
CHERRY FRUITWORM		
LEAFROLLERS	<i>Bacillus thuringiensis</i>	See label for use directions.
CHERRY FRUIT FLY (ONLY)	(Use one)	Cherry fruit fly—present from mid-May to last of July. Begin spraying at 10-day intervals.
	Malathion EC	
	Diazinon EC	Apply around bases of trees and on trunks as well as under vegetation and on trash. 1 day minimum time to harvest.
EARWIG	Sevin EC	
PEAR-CHERRY-SLUG	ΔDiazinon EC	Diazinon EC may be used for control of this pest on cherries and some ornamental trees. If Diazinon is used for control of other pests such as aphids during the spring and summer it should also reduce the numbers of pear-cherry-slug.

EC=Emulsifiable Concentrate

*See back page for illustration of these stages.

**Commercial product only. If necessary, acquire services of professional applicator.

ΔSome or all pests not listed on label.

CHERRIES (continued)

Pest	Pesticide	Remarks
SUMMER SPRAYS: MAY TO JULY (continued)		
SPIDER MITES	insecticidal soaps	See label for rates.
APPLE-AND-THORN SKELETONIZER	No chemicals are labeled for control of this pest on fruit trees. Diazinon sprays applied in late spring and early summer for control of aphids and other insect pests often reduce this insect as well. <i>Bacillus thuringiensis</i> should also provide control.	
POSTHARVEST		
SHOTHOLE BORER	No material labeled for this pest at this time. Remove and destroy infested firewood. Keep trees healthy and whitewash trunks of young trees to prevent sunburn and reduce potential hazard of attack by shothole borer and flathead borers.	

PEACHES

DORMANT PERIOD—FEBRUARY TO MARCH OR— DELAYED-DORMANT (STAGE 1*): MARCH TO APRIL

SCALE INSECTS	(Use one)	Apply sprays using enough water to thoroughly cover all portions of the tree including small limbs and shoots.
EUROPEAN RED MITE	Superior type oil	
EGGS	Superior type oil PLUS	
	Diazinon EC	

PREPINK (STAGES 3-5*): JUST BEFORE BLOOM WHEN BUDS SHOW COLOR

PEACH TWIG BORER	Diazinon EC	21 days, minimum time from last application to harvest.
FRUITTREE LEAFROLLER	<i>Bacillus thuringiensis</i>	
APHIDS	(leafrollers only)	
THRIPS		
PEACH TWIG BORER	Thiodan EC	30 days, minimum time from last application to harvest. Do not apply more than twice per fruiting season.
APHIDS		

SUMMER: MAY TO AUGUST

PEACH TWIG BORER	(Use one)	Apply sprays for twig borer in early June. Apply sprays for mites as needed. 21 days, minimum time from last application to harvest for Diazinon. 30 days, for Thiodan. Do not apply Thiodan more than twice per fruiting season.
APHIDS	Diazinon EC	
	Thiodan EC	
LEAFROLLERS	<i>Bacillus thuringiensis</i> (caterpillars only)	See label for use directions.
	Diazinon EC	
EARWIGS	Sevin EC	Apply as a spray around the trunk. 1 day, minimum time to harvest.
MITES (ONLY)	insecticidal soap	See label.

EC=Emulsifiable Concentrate

*See back page for illustration of these stages.

**Commercial product only. If necessary, acquire services of professional applicator.

ΔSome or all pests not listed on label.

PEACHES (continued)

Pest	Pesticide	Remarks
SUMMER: MAY TO AUGUST (continued)		
SHOTHOLE BORER OTHER BORERS		No material labeled for this pest at this time. Remove and destroy infested firewood. Keep trees healthy and whitewash trunks of young trees to prevent sunburn and reduce potential hazard of attack by shothole borer and flathead borers.
PEACHTREE BORER		See Thiodan instructions under Apricot. This insect can be controlled by worming. In home orchards where only one or a few peach trees are involved, it is quicker and cheaper to use the worming method. This is merely the use of a pocket knife or some pointed instrument in which one removes the dirt around the tree and digs the larvae out. This method is time-consuming if a large orchard is involved, and if carelessly done will cause injury to the tree.

PEARS

DORMANT PERIOD (STAGE 1-2*): FEBRUARY TO MARCH

SCALE INSECTS	(Use one)	Use enough water to thoroughly cover all portions of the tree including small limbs and shoots. Sprays in central Washington usually applied in first part of March. Eastern Washington sprays applied mid-to late March. Timing sprays during this period could vary greatly in western Washington. In general, it would be mid-late February. Apply only during dormant or delayed-dormant period. The oil plus Diazinon mixtures should give better control of mite eggs and psylla than oil alone.
EUROPEAN RED	Superior type oil	
MITE EGGS	Superior type oil	
PEAR PSYLLA	PLUS	
BROWN MITE EGGS	ΔDiazinon EC	
APHID EGGS		
LEAFROLLERS BLISTER MITES		

DELAYED-DORMANT(STAGES 2-3*): MARCH

MITE EGGS	(Use one)	Apply only during dormant or delayed-dormant period. Apply sprays at both delayed and full dormant periods for control of pear psylla as this will give much better control than a single spray.
APHID EGGS	Superior type oil	
SCALE INSECTS	PLUS	
PEAR PSYLLA	One of the following:	
LEAFROLLERS	Δlime-sulfur	
BLISTER MITES	lime-sulfur type materials ΔDiazinon EC	
PEAR PSYLLA (ONLY)	(Use one) Thiodan EC	Apply sprays, using enough water to thoroughly cover all portions of the tree including small limbs and shoots. Apply only during dormant or delayed dormant periods. The addition of superior type oil to the Thiodan material would greatly improve psylla control. Do not use Thiodan more than twice per fruiting season.

CLUSTER BUD (STAGES 4-5*)

CUTWORMS	No effective garden store insecticides available. <i>Bacillus thuringiensis</i> may provide some relief providing they eat enough of it.
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EC=Emulsifiable Concentrate

*See back page for illustration of these stages.

ΔSome or all pests not listed on label.

PEARS (continued)

Pest	Pesticide	Remarks
CLUSTER BUD (STAGES 4-5*) (continued)		
THRIPS	(Use one)	If pear psylla control is not satisfactory with the materials shown, the addition of superior oil should be used. 21 days, minimum time from last application to harvest for Diazinon. 21 days, minimum time from last application to harvest for Thiodan. Do not use Thiodan more than twice per fruiting season.
PEAR PSYLLA	Diazinon EC	
	Thiodan EC	

PETAL-FALL—WHEN ALL PETALS HAVE DROPPED

CODLING MOTH	(Use one) Diazinon EC Methoxychlor-Malathion EC	Apply treatment starting about 10 days after complete petal-fall. Repeat sprays 10 to 14 days. 21 days, minimum time to harvest for Diazinon. Apply Methoxychlor-Malathion mixture (7 days, minimum time to harvest) as per manufacturer's label. See codling moth control for apples.
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SUMMER PERIOD—MAY TO AUGUST

APHIDS	Use one)	If pear psylla control is not satisfactory with the materials shown, add minimal rates of superior oil. Do not add oil to Thiodan. 21 days, minimum time from last application to harvest for Diazinon. 21 days for Thiodan. Do not use Thiodan more than twice per fruiting season.
PEAR PSYLLA	Diazinon EC	
	Thiodan EC	
CODLING MOTH		See petal-fall period.
APPLE-AND-THORN SKELETONIZER	No chemicals are labeled for control of this pest on fruit trees. Diazinon sprays applied in late spring and early summer for control of aphids and other insect pests often reduce this insect as well. <i>Bacillus thuringiensis</i> should also provide control.	
PEAR-CHERRYSLUG	ΔDiazinon EC	If Diazinon is used for control of other pests such as aphids during the spring and summer.
BLISTER MITES	Thiodan EC	Postharvest application only.

PLUMS-PRUNES

DORMANT PERIOD—FEBRUARY OR—DELAYED-DORMANT (STAGE 1*): MARCH

SCALE INSECTS	(Use one) Superior type oil	Use enough water to thoroughly cover all portions of the tree including small limbs and shoots. Apply only during dormant or delayed-dormant period. The materials are not labeled for control of aphid eggs or mite eggs, but they often reduce the numbers of these pests. Apply only during dormant or delayed-dormant period. The oil plus Diazinon mixture should give better control of several overwintering pests than the oil alone.
APHID EGGS	Superior type oil	
	PLUS Diazinon EC	

EC=Emulsifiable Concentrate

*See back page for illustration of these stages.

ΔSome or all pests not listed on label.

PLUMS-PRUNES (continued)

Pest	Pesticide	Remarks
PREBLOOM-CLUSTER BUD (STAGE 4*): APRIL TO MAY		
PEACH TWIG BORER APHIDS FRUITTREE LEAFROLLER THRIPS	(Use one) Diazinon EC (Δpeach twig borer) <i>Bacillus thuringiensis</i> (caterpillars only) ΔThiodan EC	Apply twig borer sprays when pheromone traps show rapid moth buildup or when damage to buds is first noticed. See label for use directions on <i>Bacillus thuringiensis</i> .
SPIDER MITES	insecticidal soap	See label.
SUMMER PERIOD—JUNE TO SEPTEMBER		
APHIDS TWIG BORER LEAFHOPPERS	(Use one) Diazinon EC Thiodan EC	Apply twig borer sprays in early June if early bloom sprays were not applied. 21 days, minimum time from last application to harvest for Diazinon. 7 days, minimum time from last application to harvest for Thiodan.
APPLE-AND-THORN SKELETONIZER	No chemicals are labeled for control of this pest on fruit trees. Diazinon sprays applied in late spring and early summer for control of aphids and other insect pests often reduce this insect as well. <i>Bacillus thuringiensis</i> should also provide control.	
EARWIGS	Sevin EC	Apply around trunk at ground level only. 1 day, minimum time to harvest.
PEAR-CHERRYSLUG	ΔDiazinon EC	If Diazinon is used for control of other pests such as aphids during the spring and summer it should also reduce the numbers of pear-cherryslug.
SHOTHOLE BORER FLATHEAD BORER	No material labeled for this use at the present time. Remove infested limbs and firewood containing borers. Whitewash young trees for prevention of sunburn and borer damage. Maintain good tree vigor to reduce borer attack.	
SPIDER MITES	insecticidal soap	See label.

EC = Emulsifiable Concentrate WP = Wettable Powder

*See back page for illustration of these stages.

**Commercial product only. If necessary, acquire services of professional applicator.

ΔSome or all pests not listed on label.

FILBERTS

Pest	Pesticide	Remarks
DELAYED—DORMANT		
SCALE INSECTS FILBERT APHID	No home chemicals are labeled for control of these pests.	Severe infestations may cause dieback of small shoots and branches.
EARLY SPRING		
APPLE MEALYBUG EYESPOTTED BUD MOTH	No materials listed for these pests specifically.	
FILBERT LEAFROLLER TENT CATERPILLARS	Sevin EC	Apply spray in spring after over-wintering eggs hatch at about time leaves are 3/4 to 1 inch in size. Control much more effective if sprays applied when larvae are small. 0 days, minimum time from last application to harvest.
LATE SPRING-SUMMER		
FILBERT APHID FILBERTWORM	insecticidal soaps Sevin EC	Small greenish aphids cause honeydew from heavy leaf feeding. Heavy infestations reduce size and fill of nuts. Apply sprays when found and causing damage. 0 days minimum time from last application to harvest for insecticidal soaps. For Filbertworm control apply sprays in early July and again three weeks later. 0 days, minimum time to harvest.
OMNIVOROUS LEAFTIER	No material labeled for this pest specifically.	
SPIDER MITES	insecticidal soaps	See label for rates.

EC=Emulsifiable Concentrate

WALNUTS

Pest	Pesticide	Remarks
SPRING AND SUMMER		
WALNUT APHIDS	(Use one) Malathion EC Thiodan EC insecticidal soap	Do not apply Thiodan after husks open. Most common aphids are controlled by predator insects. Apply sprays only if aphids in large numbers and causing damage. 0 day, minimum time from last application to harvest for Malathion.
LECANIUM SCALE	No chemicals specifically labeled for this pest at the present time; however, if eggs have hatched, Malathion applied for aphid control should adequately control it.	
SCALE INSECTS	superior oil	Apply oils during delayed-dormant period.
WALNUT HUSK FLY	Malathion EC	Do not apply after husks split. Do not apply more than twice during growing season. Timely application of sprays is important. Control is directed against adults to prevent egg laying. Use fly traps. Apply first treatment within 10 days after catches in fly traps show a sharp or steady increase over a three day period, probably early or mid-August. A second application may be necessary three or four weeks later.
WALNUT CATERPILLARS	No chemicals specifically labeled for this pest.	Larvae pale yellow to brown; found on leaves.

EC = Emulsifiable Concentrate

BUD DEVELOPMENT CHART

STAGE

APPLE

PEAR

PEACH/COT

CHERRY/PLUM

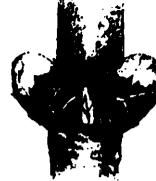
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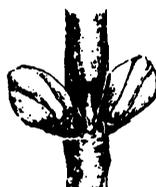
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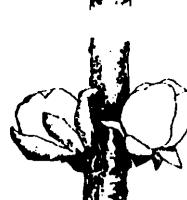
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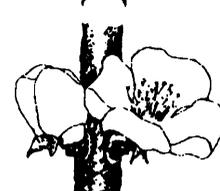
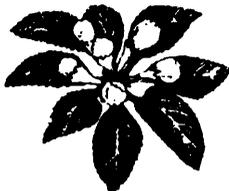
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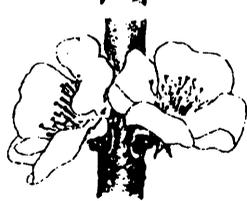
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College of Agriculture and Home Economics

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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