

AGRICULTURAL EXPERIMENT STATION
Oregon State College
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CONTROL OF INSECT PESTS AND DISEASES OF PRUNES IN WESTERN OREGON

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Prunes have been grown extensively in Oregon for many years. The control of certain insect pests and brown rot are essential for best yields, particularly in western Oregon.

Pear or prune thrips and brown rot are discussed in particular in this circular, which also includes a spray schedule for all the important insects and diseases affecting prunes in Oregon.

CONTROL OF THRIPS

Pear or prune thrips, a serious pest of prunes in Oregon for over twenty-four years, can be controlled by spraying at the correct time and with the proper materials. This conclusion is based on results obtained from eighteen years of experimental spraying.

Materials recommended:

The materials given below are those found to be most effective in the control of pear thrips on prunes:

1. Oil emulsion, having the following specifications:
Viscosity 70-75 seconds Saybolt; unsulphonated residue test of 90%, diluted to give 2% actual oil; and nicotine sulfate 40% 1 pint; water to make 100 gallons.
2. Lime sulfur 3 gallons, nicotine sulfate 40% 1 pint, water to make 100 gallons.

When to Apply Spray:

The sprays may be timed according to the bud development as follows:

1. Delayed-dormant spray, or when 30% to 40% of the blossom buds show green at the tips.
2. Green-tip spray, or when all of the blossom buds show green at the tips.
3. Preblossom spray, or when the stems lengthen and the blossom buds show white at the tips.

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Number of Applications:

In cases of severe infestation, at least two spray applications are necessary for effective thrips control. To determine whether two or more sprays are to be applied, an examination of the buds for the thrips is necessary. At the time the second application is to be made, the orchardist should pick at least three hundred buds at random from several trees, putting them in a test tube or enclosed jar. The buds are then examined for thrips by picking them to pieces with needles, and the thrips counted. If there are 90 or more thrips per 100 buds, a second spray application is necessary. The same procedure is followed in determining whether a third application is necessary.

The schedule given above cannot always be followed precisely due to rains, winds or other conditions which occur at the time outlined. It may be necessary, therefore, to spray slightly before or after the time given in the schedule to take advantage of more favorable spraying conditions. The proposed schedule must be followed as closely as possible, however, in order to obtain satisfactory control.

Thorough Spraying Necessary:

Thrips are likely to be anywhere on the trees. Therefore, the spray should reach every part of the tree. The spray materials are contact sprays and must wet the insects to kill them. The spray equipment should be capable of maintaining from 300 to 350 pounds pressure during the spraying operations. A coarse driving spray will force the spray into the buds better than a fine spray and is recommended.

Preparedness Essential:

Spray materials should be on hand before the buds begin swelling in the spring. Sprayers should be overhauled and put in good condition several weeks before the spray season begins. Success in thrips control may depend on a very few days when spraying is possible. A delay for any reason may mean failure to control this pest.

Caution:

If oil is used in the first spray, it should also be used in the later sprays. The same rule applies in the use of lime sulfur. Lime sulfur followed by oil or oil followed by lime sulfur may result in serious injury.

CONTROL OF BROWN ROT

The severity of brown rot, a common disease of prunes, varies from year to year depending upon climatic factors. During green fruit stages no significant amount of brown rot is apt to appear unless there is considerable wet weather. As the fruit approaches the ripening period the danger from brown rot becomes greater, especially if there is much wet weather or very high humidity.

Whether prunes are to be dried, canned or shipped fresh, brown rot must be held in check as the fruit approaches maturity. Brown rot originates in the orchard but may spread disastrously in lugs or packs after harvest if the fruit is held long in storage or in transit. This is especially true in case of prunes shipped fresh to eastern markets.

In a year favorable to brown rot development it may not be possible to avoid all rot by preventive measures but the following program is suggested to reduce losses to a minimum.

I. Spray or Dust Program for Brown Rot Control: The best known materials for the control of brown rot on prunes are sulfur spray or sulfur dusts. These are about equally effective and the grower may use whichever he prefers or is equipped to use. If dust is preferred use 325-mesh sulfur or finer. Dusting has several advantages over spraying, such as ease and economy of application, and less objectionable appearance of residue on the fruit.

As a spray for prunes ordinary sulfur with a commercial wetting agent is most practical. Such commercial wetting agents as Vatsol, Nacconal NR, and others available through dealers,* are superior to the casein-type spreaders because of the waxiness of the prune fruit, and the fact that these do not leave as conspicuous residues as the casein spreaders. Use 1/4 lb. of the wetting agent to 100 gallons of spray.

To prepare the spray, add the wetting agent to about 2 gallons of water; stir while sifting in the sulfur. When thoroughly mixed pour into spray tank and fill to capacity.

If the orchardist has wettable sulfur already on hand it may be used instead of the ordinary sulfur with a wetting agent as described above. The latter, however, is cheaper. Even some wettable sulfurs may need an extra wetting agent, unless the directions given by the manufacturer indicate that they have enough of a suitable wetting agent present. A trial on some prunes will indicate whether the spray wets sufficiently well.

A. Time and Number of Applications will vary with weather conditions but the following recommendations will fit the average year.

1. First Application: About five weeks before harvest. Six pounds sulfur plus 1/4 pound wetting agent to 100 gallons; or dusting sulfur.
2. Later Applications: Repeat once a week, using same materials as No. 1, giving last application a few days before harvest.

II. Other Precautions Recommended: In addition to a well-planned and executed spray program there are certain other practices which should help materially in reducing the amount of brown rot in shipments of fresh prunes.

1. Exercise the greatest care in picking and handling to avoid stem punctures and any other fresh abrasions. Any break in the skin of the fruit enables brown rot to gain a foothold more easily.

* Miller Products Co., 1932 S.W. Water Avenue, Portland, Oregon.
 California Spray Chemical Co., 2127 N. Albina St., Portland, Oregon.
 Van Waters & Rogers, Portland, Oregon.
 National Analine and Chemical Co., 730 W. Burnside St., Portland, Oregon.
 Stauffer Chemical Co., North Portland, Oregon.

2. Avoid placing fruit with any brown-rot spots in the lugs when picking.
3. Dust thoroughly both the lugs and the packing boxes inside and outside with dusting sulfur before using. The lugs should be dusted each time they are used. This precaution is most important.

SPRAY PROGRAM FOR PRUNES

Time of application	Insect or disease	Spray material and strength
1. <u>Dormant spray.</u> As winter buds are ready to open.	San Jose scale, twig miner	Lime sulfur 12 to 100. If scale is absent dilute 10 to 100.
	Lecanium scales and mite eggs.	An oil emulsion to give 4 percent actual oil.
2. <u>Delayed-dormant spray.</u> When 30 to 40% of buds show green tips.	Thrips. If no thrips are present delay spray to green tip and pre-blossom applications.	Lime sulfur 3 gallons to 100 and nicotine sulfate 1 pint to 100 gallons of water, or 2% oil emulsion nicotine sulfate 40% 1 pint, as described on p. 2.
3. <u>Green-tip spray.</u> Most of buds green at tip.	Thrips.	Same as 2.
4. <u>Preblossom spray.</u> Buds white just before opening.	Brown rot.	Cultivate to destroy brown rot on ground.
	Bud moth	Lead arsenate 4 pounds plus
	Syneta beetle	hydrated lime 4 pounds to 100
	Twig miner	gallons.
	Aphids and	Nicotine sulfate, 1 pint to
	Thrips	100 gallons, plus spreader; or same as 2
5. <u>First fruit spray or dust.</u> About 5 weeks before harvest.	Leaf spot and brown rot.	Use wettable-sulfur spray, 6 pounds to 100 gallons, or sulfur dust.
6. <u>Later sprays or dusts.</u> Repeat weekly up to a few days before harvest.	Leaf spot and brown rot.	Use dust or spray as in 5.