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# SPRAY PROGRAM FOR THE CONTROL OF DISEASES AND INSECT PESTS OF SWEET CHERRIES IN WESTERN OREGON

By
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## BROWN ROT

Sprays or dusts for the control of brown rot are applied at two separate periods in order to prevent (1) blossom infection and (2) fruit infection.

### Control of Brown-rot Blossom-blight

Experience has shown that brown-rot blossom blight can be controlled best by spraying when the blossoms are wide open. Since the blossoms usually open slowly and irregularly rather than all at once, it is better to give two applications during the blossoming period, as follows:

(1) When about 1/4 blossoms are open. Use fermate 1½ lbs. plus 1½ lbs. hydrated lime plus 1/3 lb. casein spreader to 100 gallons or Kolodust, which is a bentonite-fused sulfur dust.

(2) When in full-bloom stage. Use same materials as (1).

### Control of Fruit Rot

The best known materials for the control of brown rot of sweet cherry fruit are sulfur dusts or sprays. These are about equally effective and the grower may use whichever he prefers or is equipped to use.

Bentonite-fused-sulfur dust has given good results for some growers who have used it consistently.

Lime-sulfur (2 gallons to 100 gallons of water or 1 gallon + 3 lbs. of wettable sulfur to 100 gallons of water) has given satisfactory results for some growers. Lime-sulfur, however, may cause some leaf burn in warm weather. For this reason the use of wettable sulfur spray is recommended (6 lbs. to 100 gallons) or sulfur dust in warm weather.*

Usually the brown-rot fungus attacks the fruit after ripening begins. The spray or dust should be on the fruit during all stages of ripening.

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* Caution.—Growers who may adhere to the old recommendation of bordeaux mixture in the blossom stages should not use lime-sulfur directly following the bordeaux. Such a combination of bordeaux mixture and lime-sulfur is liable to be extremely injurious.

## LEAF SPOT

The stages of tree development for best control of leaf spot are (1) petal fall, (2) shuck fall, and (3) two weeks later. Sprays or dusts should be applied at these stages. Fermate or lime-sulfur* will give control equally well, although the latter may result in some leaf burn if used in warm weather. (Strengths and combinations of application were given above under "brown rot.") Thorough coverage of all leaves is necessary for leaf-spot control.

## CHERRY FRUIT FLY

As a result of five years of experimental tests, the following spray and dust combinations were found effective against the cherry fruit fly:

1. Acid lead arsenate 2½ pounds, in water to make 100 gallons of spray. To this material, add a commercial spreader or a homemade spreader which is made as follows: skimmed milk 2 quarts, hydrated lime 4 ounces.

2. A bentonite-fused-sulfur dust is mixed with 10% of acid lead arsenate.

3. A dust containing 10 parts of acid lead arsenate and 90 parts of finely divided sulfur (325 mesh or finer).

4. Rotenone, containing 4% of rotenone extract, 3 pounds, molasses 2½ gallons in water to make 100 gallons of spray.

5. The poisoned bait spray consisting of acid lead arsenate 5 pounds, molasses 5 gallons in water to make 100 gallons of spray.

Fungicides recommended by the plant pathology department for brown-rot or leaf-spot control may be added to formula No. 1. If a fungicide is used the spreaders recommended for insecticides may be omitted.

One properly-timed cover spray or dust will control the cherry fruit fly on Royal Ann cherries. Two sprays will be necessary on late-ripening sorts such as Bings or Lamberts. If Royal Ann cherries are mixed with Bings and Lamberts they should receive a second application immediately after harvest. If formula No. 1, 2, or 3 is used the spray should be complete cover sprays and all parts of the tree should be thoroughly sprayed or dusted. Approximately 45 pounds per acre of dust should be used on average-sized sweet cherry trees.

If rotenone is used (formula No. 4) the spray should also be a complete cover spray and should be repeated at weekly intervals until the cherries are harvested. Rotenone is recommended only in cases where cherries will not be washed before consumption or where they are to be sold to the fresh fruit market or brined for the maraschino trade.

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The poisoned-bait spray (formula No. 5) is recommended for the small cherry grower who may not have the equipment required to apply a complete cover spray. This spray is applied as a bait and in no way should be interpreted as a cover spray. The upper surfaces of the foliage on all parts of the tree, however, should be reached by the bait. This spray should be repeated at weekly intervals and should be repeated after rains since it is easily washed from the foliage. Avoid spraying the cherries if possible to prevent excess residue.

Regardless of the spray used the first spray should be applied when the first flies begin emerging. The date of beginning emergence will be announced by the Entomology Department, Oregon Experiment Station. The second spray is timed by the peak of fly emergence which usually occurs about two weeks after the first spray.

## SYNETA LEAF BEETLE

This insect occurs in April and May on foliage, fruit clusters, and in open blossoms as a creamy-white beetle about $\frac{1}{4}$-inch long. It eats holes in the leaves and blossom petals and gnaws out small cavities in fruit and fruit stems. The syneta beetle is especially injurious to cherry. A satisfactory spray on cherries has not yet been developed, but in tests conducted by the Oregon Agricultural Experiment Station, 4 pounds of lead arsenate plus 4 pounds of lime to 100 gallons of water, applied both as a pre-blossom spray and also when most of the blossoms have fallen, has given a fair degree of control. Applications of lead arsenate-lime dust (30-70) or lead arsenate sulfur dust (30-70) instead of the spray applications have given control on cherries in the Marion-Polk area.

## BUD MOTH

This is a chocolate-brown worm 1/3-inch long found inside a mass of webbed leaves at the tip of the twig. Cherries are often seriously attacked by this pest. Lead arsenate in the pre-blossom spray will control.

## APHIS OR PLANT LICE

The black cherry aphis frequently causes severe injury to sweet cherries. They have piercing mouth parts and suck the juices from the leaves, causing them to curl badly. A spray of nicotine sulfate 1 pint to 100 gallons of water should be applied when the blossom buds are showing white just before opening. The aphis is very difficult to control after it has curled the leaves, which protect aphids from the spray.

## LECANIUM, OR SOFT-BODIED SCALE

These scale insects are rather larger, dark-brown, strongly humped scales. They may be found on the limbs and twigs of cherries. The standard method of control is to apply an oil-emulsion spray (4 percent actual oil) in the early spring as the winter buds are beginning to swell. Injury may occur if oil sprays are used after buds start to open. (See Oregon Station Circular of Information No. 294)

## SAN JOSE SCALE

The San Jose scale manifests itself as small, ash-gray or blackish pimple-like scales clustered on the bark. The bark usually shows a purple stain for a short distance around each scale, especially on young trees and new growth. The trees become bark-bound and devitalized. Infested fruit shows bright red spots. The pest seldom becomes serious in well-sprayed commercial orchards. Where present, the dormant spray of lime sulfur or oil is recommended.

## CHERRY SLUG

This pest occurs as a greenish-brown, slimy, sluglike larva, which skeletonizes the foliage of cherry. When the insect appears dust with a lead-arsenate-lime dust (20 pounds lead arsenate, 80 pounds hydrated lime), or spray with 1 pint of 40 percent nicotine sulfate to 100 gallons of spray.

Complete recommendations for sprays and dusts on sweet cherries are included in the following schedule:

### SPRAY PROGRAM FOR SWEET CHERRIES

| Time of application | Insect or disease | Spray material and strength |
|---|---|---|
| 1. Dormant spray. As winter buds are about to open. | San Jose and Lecanium scale.<br>European red mite and brown mite (but not common spider-mite) | Lime sulfur 12 to 100. Oil emulsion diluted to give 4 percent actual oil. |
| | Leaf spot | Plow under old leaves before bloom starts. |
| 2. Preblossom spray. Blossom buds white just before opening. | Syneta beetle.<br>Bud moth. | Lead arsenate 4 pounds plus hydrated lime 4 pounds to 100 gallons of water, or lead arsenate-hydrated lime dust (30-70). |
| | Aphis | Add nicotine sulfate 1 pint and spreader to 100 gallons of spray. |
| 3. Early open blossom stage (when about $\frac{1}{4}$ of the blossoms are open) | Brown-rot blossom blight. | Fermate spray ($1\frac{1}{2}$ lbs. fermate + $1\frac{1}{2}$ lbs. hydrated lime + 1/3 lb. casein spreader in 100 gallons) or Kolodust. |

| Time of application | Insect or disease | Spray material and strength |
|---|---|---|
| 4. Full blossom. (When all the blossoms are wide open). | Brown-rot blossom blight. | Same as in No. 3. |
| 5. Petal-fall spray. (When most of the petals have fallen.) | Leaf spot | Same as in No. 3. |
| | Syneta beetle | Same as in No. 2, or add 4 lbs. lead arsenate to fermate spray (No. 3). |
| 6. Shuck-fall spray. (As soon as shucks fall from fruit.) | Leaf spot | Same as in No. 3. |
| 7. Two-weeks-later spray. (Two weeks after shuck-fall.) | Leaf spot | Same as in No. 3. |
| 8. Later sprays. (For fruit rot, fruit fly, and cherry slug.) | Brown-rot on fruit, and leaf spot. | Same as No. 3. (See suggestions concerning use of lime-sulfur or sulfur dusts on page 1.) First fruit application as fruit begins to color and repeat at weekly intervals until harvest. |
| | Cherry fruit fly | See suggestions for dusts and sprays on page 2. |
| | Cherry slugs | Apply dust or spray when slugs appear (see page 4). |