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# *Spray Schedule*

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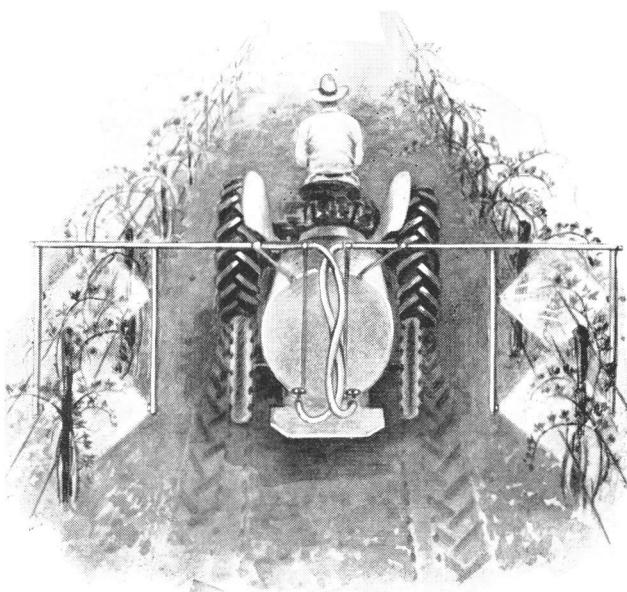
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## **Diseases and Insects of Cane Fruits**



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Cooperative Extension Service  
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**D**ISEASE AND INSECT CONTROL increases yield and improves quality of cane fruits. Oregon cane fruits are subject to insect and disease damage, most of which can be controlled with a good spray program.

A dormant spray of lime sulfur, preferably in February or early in March, is the first step in a spray program for all cane fruits. All dead or diseased canes should be removed and destroyed.

## INSECTS

### Oblique-banded Leafroller

Active, green larvae with black heads. Larvae web and feed on foliage and ripening fruit. Raspberry is the most susceptible to damage. Control with DDT in early May. Do not apply DDT after fruit forms.

### Orange Tortrix

Active, yellow-green larvae with brown heads. Larvae web and feed on foliage and ripening fruit of all cane fruits. Control with TDE (DDD) in early May when first boysenberry leaves are fully open. Do not apply TDE within 14 days of harvest. DDT is not effective.

### Strawberry Root Weevils

All cane fruits are susceptible to injury, but red raspberries are most seriously damaged. The white, legless larvae with tan heads feed on small roots and later on the cambium of large roots and crowns.

**Larval control**—New plantings can be protected for several years by a pre-planting soil treatment using 5 pounds actual aldrin or dieldrin, or 4 pounds actual heptachlor, or 10 pounds actual chlordane per acre. Work into upper 6 inches of soil before planting.

**Adult control**—To control adult weevils use 2 pounds chlordane, or 1.75 pounds malathion per acre as a dust or spray. Use chlordane before bloom or after harvest to avoid residue on fruit. After bloom use malathion, but not within one day of harvest. Apply insecticide to soil surface around base of plants. Adult weevils begin to appear in May and continue through July. Weevil bait may be used if preferred.

### Raspberry Cane Maggot

An occasional pest of red and black raspberries. Presence of insect indicated by canes which wilt and droop in "limberneck" fashion. Cut off wilted canes close to ground and burn.

## Spray and Dust Program for Cane Fruits

| Time of application          | Insect or disease  | Material and strength*   |
|------------------------------|--|--|
| Spring .....                 | Anthracnose  | New canes 10" to 12" high: Lime sulfur 2½ gallons.   |
|                              | Blackberry rust  | Green tip stage—spray with a fixed copper at the rate of 6 pounds per 100 gallons of water.  |
|                              | Leaf and cane spot<br>Redberry mite  | March 10 to 15: Lime sulfur 10 gallons or a fixed copper 6 pounds. Two weeks later: Fixed copper 6 pounds or Captan 1½ pounds. Add 2 ounces spreader sticker to all sprays. Residues: Captan—no limitations. To control redberry mite on blackberry apply lime sulfur when new shoots are 2 to 6 inches long, but reduce dosage to 8 gallons per 100 gallons of water.   |
|                              | Yellow rust  | Green tip stage: Lime sulfur 4 gallons. Two weeks later: Lime sulfur 2½ gallons or ferbam 1½ pounds. If weather continues humid, 1½ pounds ferbam just before blossoming. Do not apply ferbam within 40 days of harvest.   |
| Late spring and summer ..... | Blackberry rust  | Just before blossoming—spray with a fixed copper at the rate of 6 pounds per 100 gallons of water.   |
|                              | Oblique-banded leafroller  | 5% DDT dust, 40 pounds per acre; or 2 pounds actual DDT per acre as a spray. Apply in early May just before boysenberries blossom. When spray used, direct it to underside of leaves. Remove old canes between November and March to destroy overwintering larvae. Do not apply DDT after fruit forms.   |
|                              | Orange tortrix   | 5% TDE dust, 40 pounds per acre; or 2 pounds actual TDE per acre as a spray. Apply in May when first boysenberry leaves are fully open. Do not apply TDE within 14 days of harvest.  |
|                              | Powdery mildew   | Karathane (25% W.P.) ¾ pounds. Apply at rate of 1½ pounds per acre in 200 gallons of water. Apply when first flowers open and thereafter at 7 day intervals until petal fall. Thoroughness of application very important. Do not apply within 7 days of harvest.   |
|                              | Strawberry root weevils  | Use pre-planting soil treatment to control larvae. Use chlordane or malathion dusts or sprays, or weevil bait to control adults.   |
|                              | Spider mites   | Treat soon after harvest if mites are present on 10% or more of the old leaves. Treat in early August if 20% or more of the old leaves are infested. Use 1.2 pounds actual Kelthane, or 1.75 pounds actual malathion, or 6 ounces actual parathion, or ½ to 1 pound actual Trithion per acre. Do not use Kelthane within 2 days of harvest, malathion within 1 day of harvest, parathion within 15 days of harvest. Use Trithion only as a post-harvest treatment. |
| Fall .....                   | Redberry mite  | Summer oil emulsion 3 gallons. Apply after old canes removed. Needed only in case of severe "redberry" condition. Can be added to Bordeaux spray.  |
|                              | Leaf and cane spot   | Remove and burn affected canes after harvest. Bordeaux 8-8-100 about September 15.   |
| Winter (dormant) ....        | Rust, scale, anthracnose, powdery mildew, cane blights, leaf and cane spot | Lime sulfur 10 gallons.  |

\* Amounts of spray chemicals recommended are to be mixed with sufficient water to make up 100 gallons of spray. Example: The 3 gallons of summer oil emulsion for redberry mite control in the fall should be mixed with 97 gallons of water.

### **Spider Mites**

Small 8-legged mites about 1/50 inch long. Their feeding reduces plant vigor and causes leaves to turn yellow and drop prematurely. Found on foliage of all cane fruits but do most damage to red raspberries. To control use materials recommended in spray schedule.

### **Strawberry Crown Moth**

Black raspberries are most susceptible. Whitish larvae tunnel in crown and larger roots. No control recommended at present.

### **Raspberry Root Borer**

White larvae with brown heads about one inch long tunnel into crown and base of canes. Cut off damaged and wilted canes close to crown.

### **Redberry Mite**

Attacks Himalaya and Evergreen blackberries. Presence of this pest indicated by berries which do not ripen normally and remain red and hard after harvest. Use fall or spring sprays as suggested in the spray schedule. If infestation is severe, spray in fall and spring.

### **Scale**

Rose scale most common. Appears as small white scaly spots on canes. Usually held in check by lime sulfur spray in the winter or spring.

## **DISEASES**

### **Anthracnose** (black and red raspberry)

On canes, small, 1/8-inch or more, purplish sunken spots, later turn gray. Older spots are deeper with raised purplish margins.

### **Blackberry Rust**

Small yellow powdery spots on undersides of leaves. Yellow pustules 1/8 to 3/8 inch long on the canes. Chehalem and Evergreen blackberries susceptible.

### **Cane Gall**

Small, rough ridges of warty growth on fruiting canes. Affects the red, black, and purple raspberry, Himalaya, boysenberry, loganberry, and youngberry. Best control is by setting out disease-free plants from healthy plantings, in soil free from the causal bacterium. Remove and burn severely diseased plants. Remove the contaminated soil about these plants and replace with clean soil. When the disease is not severe, cut out the affected canes and burn. Avoid injury to the plants. The causal bacterium will persist in soil for 5 or 6 years after the susceptible plants are removed.

### **Crown Gall**

Irregular, warty galls on the base of canes or on the roots. Affects all cane fruits as well as many woody shrubs and fruit trees. Control: same as cane gall.

### **Leaf and Cane Spot** (trailing berries)

Small, light to dark brown spots on both leaves and canes. Later, spots have whitish center, brownish border. Severe on loganberry, boysenberry, youngberry, Santiam, Chehalem, and the common wild trailing blackberry. Where the disease is particularly severe, the fall spray of Bordeaux should be applied in addition to the dormant and spring sprays.

### **Mushroom Root Rot** (all cane berries)

Decline and dieback of the plant—eventual killing. Autumn: honey colored mushrooms in crown of plants. White, felt-like masses of fungus between the bark and wood in crown of plant. Dark brown or black thread-like strands are often found on plants at ground level or just below. Remove and destroy plants (small roots as well). Do not replant in affected spots. The fungus can live in the soil for many years.

### **Powdery Mildew** (raspberries and some blackberries)

The Puyallup red raspberry is very susceptible. Canby, Washington, and Willamette are much less susceptible.

Whitish-gray powdery mass on leaves, fruit, young canes, fruit spurs, and buds. Spray with Karathane during blossom period—see spray program.

### **Verticillium Wilt** (most cane berries)

Yellowing and wilting of foliage. Bluish strips of infected tissue usually extend up the canes from ground level. Himalaya, Evergreen, and wild trailing blackberries seem to be highly resistant.

Plant healthy stock from disease-free plantings. Roguing, and rotations of nonsusceptible grasses and cereals help. Avoid planting where susceptible crops—potatoes, tomatoes, eggplants, peppers, strawberries, and peaches—have been grown previously.

### **Virus Diseases**

To control virus diseases use disease-free planting stock; rogue out and destroy suspicious or diseased plants. When more than 5 percent of the plants in the field are diseased, the value of roguing is doubtful.

### **Yellow Rust** (red raspberry—some varieties)

Yellow pustules on both surfaces of leaves in spring and summer. Also on canes. Black pustules on underside of leaves in autumn. Two spring sprays of lime sulfur or ferbam usually control—see spray program.