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Coryneum Blight

of

Stone Fruit Trees

A. W. Helton

H. S. Fenwick

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Timing Of Sprays

DORMANT SPRAY	Sprays recommended for use in the dormant period are toxic when used on actively growing tissues. They may be applied from the time leaves are about to drop in the fall until buds begin to swell in the spring.
DELAYED-DORMANT	Apply when the bud tips are beginning to expand.
PRE-PINK	Apply when leaves are unfolding and flower buds first show occasional pink at their tips.
"POP-CORN"	Apply when flowers are unfolding so that they resemble "popped" popcorn.
FULL-BLOOM	Apply when flowers have unfolded their petals.
CALYX (PETAL FALL)	Apply when flower petals have fallen and left only the green calyx "petals".
SHUCK FALL	Apply when calyx parts have dried up.
FIRST-COVER	Apply 2 to 3 weeks after petal-fall. This is the calyx stage.
OTHER COVERS	Apply at 2 to 3 week intervals after first cover.
PRE-HARVEST	Sprays applied any time from 3 weeks before harvest up to the day before picking begins. (Materials must be chosen carefully because of residue problems.)
POST-HARVEST	Sprays applied after the fruits have been picked but before fall rains.

CONVERSION TABLE

1 fluid ounce = 2 tablespoons
8 fluid ounces = 1 cup = 16 level tablespoons
2 cups = 16 ounces = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon
1000 milliliters (ml.) = 1 liter
1 liter = 0.95 quarts
1 ppm. = 1 part per million
1 acre = 43,560 square feet

CORYNEUM BLIGHT OF STONE FRUIT TREES

A. W. Helton[1] and H. S. Fenwick[2]

Coryneum blight, caused by the fungus *Coryneum beijerinckii*, is one of the most serious problems in Idaho stone fruit trees. The disease is difficult to control and causes serious damage annually though losses vary from year to year.

When conditions are favorable for the fungus, it is capable of causing heavy fruit loss within a short period. Trees may be killed if attacked when young, and older trees can be forced into a lingering decline. Although the fungus can infect many stone-fruit species, peaches and apricots are most seriously affected. Occasionally cherries and prunes are seriously damaged.

Spores of the fungus germinate in cool, wet weather and infect almost any part of the plant. The fungus survives year to year in stem cankers and bud scales, however, and is potentially dangerous even after long periods of drought.

The disease causes crop loss in severe cases but may do little more than mar fruit surface in mild cases.

SYMPTOMS

Coryneum beijerinckii is capable of causing a variety of symptoms, depending on the tree variety and the part affected as well as on environmental conditions.

PEACH –

Most of the trouble in infested peach orchards is traceable to stem lesions (cankers) of one kind or other.

Bud sites seem to be favorite starting points for the fungus although it is capable of attacking the stems at other points. Infected buds may die at any time. Remains of the dead buds are often noticeable in the central portions of stem lesions (Figure 1).

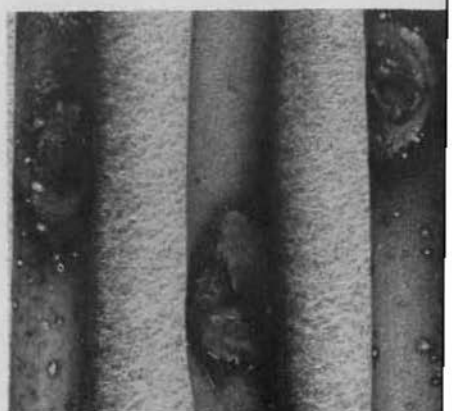

Figure 1. First year Coryneum blight lesions at bud sites on peach twigs.

[1] Associate Plant Pathologist, Idaho Agricultural Experiment Station.

[2] Extension Plant Pathologist, Idaho Agricultural Extension Service.

Figure 2. Old Coryneum gall-cankers at bud sites on peach twigs.

Bud infections first become noticeable as small brownish spots that spread out from the buds within the first growing season. If such spots are numerous along the twigs between the buds, the twigs die early in the season (Figure 4). Sometimes cankers that start with bud infections may not cause stem death but may continue to enlarge on living branches. This results in ragged, gall-like growths (Figure 2). Exudation of gum often follows (Figure 5) and may continue for several seasons (Figure 2).

Coryneum spores are showered outward and downward from stem cankers so that the fruits and sometimes the leaves below them become severely spotted.

Leaf symptoms are not common on peaches in Idaho, but occasionally they develop in disturbing proportions. The leaf symptoms usually begin as a small, light colored spot (Figure 3, upper) which later darkens and drops out of the leaf.

The "shot-holes" that result often have brownish-purple borders (Figure 3, lower).

Leaves damaged by Coryneum blight generally do not drop, and the effect seems largely to be one of reduced photosynthetic (food-making) area.

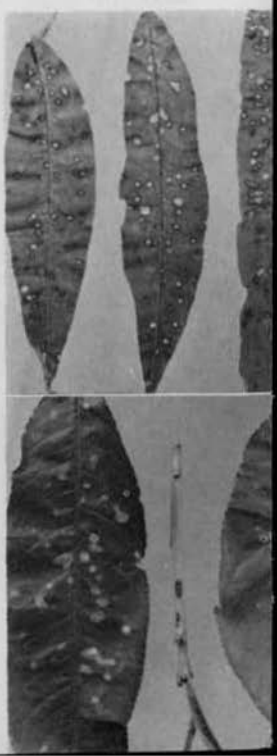

Figure 3. Coryneum lesions on leaves of peach (upper) and the more advanced shot-hole stage (lower) in which the centers of the spots have dropped out.

Figure 4. Peach terminals showing the effects of Coryneum blight infection during the bloom stage. The two twigs on the left are essentially normal, while the three to the right are variously cankered and gumming. (Note that on the three infected twigs there is little growth and practically no flowering.)

There are two kinds of direct fruit effects—blossom loss and damage to the fruits themselves. Trees severely affected by Coryneum blight have a correspondingly reduced crop of flowers (Figure 4). The flower that does not form or does not survive obviously will not produce a fruit. Damage to the maturing fruits can be so slight that the effect is mostly on the surface (front cover) or it can be so severe that market value is lost (Figure 5, right) and the fruit ruined for any useful purpose (Figure 5, left).

Ordinarily the fruit spots develop whitish centers shortly after they form. Sometimes, however, the white centers are slow in

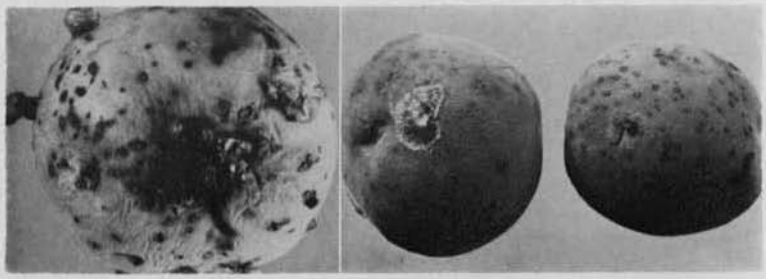

Figure 5. A moderately severe case of Coryneum infection of peach fruits (right) and an extremely severe case (left). (Gumming of the fruits is common in advanced stages of infection.)

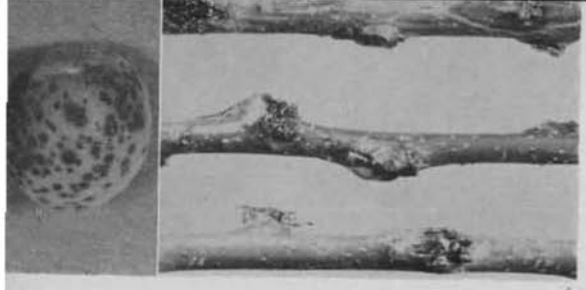

Figure 6. Coryneum blight infection of apricot. (Fruit spots do not develop the whitish centers as readily as do those on peach fruits, but stem lesions are very similar.)

developing. Exudation of gum follows development of the light-centered spots, particularly where the fruit is thickly covered with the lesions.

APRICOT –

With one exception the symptoms of Coryneum blight on apricots are similar to those on peaches. The exception is that the fruit spots do not develop the whitish centers as prominently as do those on peach fruits. On apricots they tend to be a more uniform reddish-brown color and more thickly scattered over the fruit surface (Figure 6).

In Idaho the fruit symptom is more common on apricots than on peaches.

Leaf symptoms are almost as unusual on apricots as they are on peach trees, and their development pattern is roughly the same. If the fruits are heavily infected, there are usually some shot-holes in the leaves.

Figure 7. A mature cherry fruit infected with Coryneum blight (lower) and immature fruits and leaves showing the symptoms (upper).

CHERRY –

When conditions are right, cherries are damaged extensively by Coryneum blight. This generally happens during prolonged cool springs and/or damp seasons. Under such conditions the fungus causes small brown spots to develop on the leaves and immature fruits (Figure 7, upper). The leaf spots tend to run together along the veins. This can be very damaging not only to the current crop but to the general vigor of the tree.

As cherry fruits mature, the spots enlarge correspondingly (Figure 7, lower). When they are numerous, the result resembles the bumpy, uneven fruit surface sometimes caused by the powdery mildew fungus.

Twig or stem symptoms are much less severe or common on cherries than on peach and apricot trees.

PRUNE –

Many different leaf-spotting symptoms appear in Idaho prune orchards. Causes of most have not been identified. Some are genetic in nature. By this we mean that they spread through the

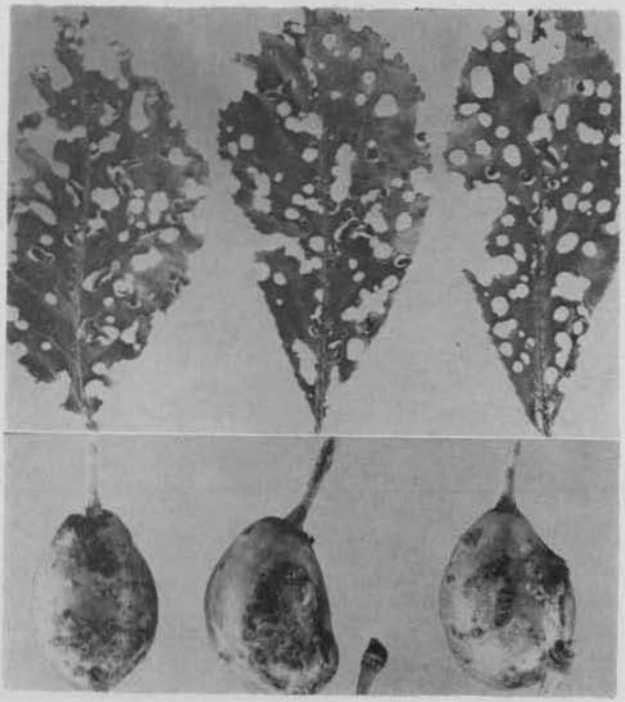

Figure 8. Prune leaves and fruits affected by Coryneum blight.

buds and are not transmitted to other trees. Some are due to systemic arsenic injury. Others are spray injury. Most of them are characteristic enough to be recognized, but sometimes leaf-tattering caused by one of these is confused with the shot-hole symptom of Coryneum blight (Figure 8, upper).

Coryneum symptoms on prune fruits begin much as do those on peach, apricot, and cherry fruits. However, prune fruits often develop roughened surfaces as the spots enlarge. Such symptoms remind the observer of branch-rub or similar rubbing injuries. Gumming occurs (Figure 8) much as it does on infected peach fruits.

CONTROL

Where Coryneum blight is a problem, sprays must be applied annually if the disease is to be kept in check. Active cankers cannot be neutralized in less than three consecutive years of spraying. Longer periods often are required.

Pruning out and destroying cankered stems is helpful in Coryneum blight control. This stimulates new growth. If the infected material is removed from the orchard, the quantity of disease-causing inoculum will be reduced.

Coryneum blight can be controlled by applying various spray materials during the dormant period in the fall and again while still dormant in the spring if the infestation is severe. Application of sprays during the bloom period is not necessary if dormant treatments are applied as recommended and cankers are removed during pruning operations.

Dormant season sprays applied in the fall and spring for Coryneum blight control will also control the peach leaf curl disease.

Sulfur sprays should not be applied to apricots because of the danger of injury.

FALL (Dormant period) —

Bordeaux mixture and Phygon-XL have given the most consistent control. Applications should be made before fall rains start and after most of the leaves have fallen.

1. *Bordeaux mixture,* at 12-12-100 (12 lb. copper sulfate and 12 lb. lime in 100 gal. water).
2. *Phygon-XL,* at 1 lb. per 100 gal. water plus 4 oz. sticker.
3. *Basic copper sulfate,* 53%, at 5 lb. per gal. water plus 4 oz. of sticker.
4. *Captan,* 50% wettable powder, at 2 lb. per 100 gal. plus sticker.

SPRING (Dormant period) –

1. *Lime-Sulfur*, at 1 lb. liquid per 8 gal. water or 4 lb. dry per 8 gal.
2. *Polysulfide compound*, at 10 gal. per 100 gal. water.
3. *Wettable sulfur*, at 5 lb. per 100 gal.
4. *Phygon-XL*, at 1 lb. per 100 gal. plus 4 oz. sticker.
5. *Basic copper sulfate*, 53% at 5 lb. per 100 gal. plus 4 oz. sticker.
6. *Captan*, 50% wettable powder, at 2 lb. per 100 gal. plus 4 oz. sticker.

PRE-BLOOM AND BLOOM PERIOD –

1. *Phygon-XL*, at ½ lb. per 100 gal. water plus 4 oz. sticker.
2. *Captan*, 50% wettable powder at 2 lb. per 100 gal. plus 4 oz. sticker at the pink and shuck-fall stages.

REMINDERS –

Remember that the Coryneum blight fungus is often well established in an orchard before the grower discovers it. When the fungus is already deep within the tissues of the tree, killing it with surface sprays is difficult. That is why annual control measures are necessary to keep the orchard free of serious infestation. If the fungus has become established, three to several years of diligent work are necessary to bring it under control.

Much can be gained by judicious pruning along with timely spray applications. When a grower has not had good results with sprays, we often find that he has not applied them annually or has not pruned out diseased wood. Cut the cankered stems out and destroy them. Leaving the infected cuttings on the orchard floor accomplishes little disease control.

At best, Coryneum blight is difficult to control. Peach and apricot growers must be especially careful, and growers of other stone fruits must at least be on guard. Be especially vigilant when the spring season is cool, wet, and prolonged.

Dilution Rates for Preparing Small Quantities of the Fungicidal Materials Listed in this Bulletin

Quantities of material for indicated quantities of water			
100 gal.	**5 gal.**	**3 gal.**	**1 gal.**
	Wettable powders		
5 pounds	15 Tablespoons	10 Tablespoons	3 Tablespoons
4 pounds	13 Tablespoons	8 Tablespoons	8 teaspoons
3 pounds	10 Tablespoons	6 Tablespoons	2 Tablespoons
2 pounds	8 Tablespoons	4 Tablespoons	4 teaspoons
1 pound	3 Tablespoons	6 teaspoons	2 teaspoons
½ pound	5 teaspoons	1 Tablespoon	1 teaspoon

THINGS TO REMEMBER

KEEP EQUIPMENT CLEAN –

Do not allow spray materials to stand in tanks or pipes. Many are corrosive. Many settle out on standing. This results in plugging screens and nozzles with the residue. Some lose their effectiveness within a short period when mixed with other chemicals. Use the spray when it is prepared and keep the agitator running until the tank is drained and flushed out.

Do not use the same equipment for disease or insect control sprays that you use for application of weed killers. If it is necessary to do so, wash out the equipment with extreme thoroughness. Even then, there may be damage to fruit trees.

MIXING THE SPRAY MATERIALS –

Do not mix pesticidal materials unless they are compatible. If full information is not on the package, ask your county extension agent about it.

RESIDUE TOLERANCES –

Before using a new material, be certain that it will not leave a residue exceeding the acceptable tolerance level. You are responsible for this precaution.

SPRAYING PRACTICES –

Apply sprays with discretion. Use of narrow nozzle streams at excessive pressures and short distances can damage foliage. Fine mists applied from distances of 4 feet or more will be safe enough.

SPRAY METHOD VS. QUANTITY –

Whether it is concentrate, semi-concentrate, or dilute applied, the method of application has little bearing on the needed quantity of the effective part of the product. Use your sprays as directed on the container's label.

DUSTS VS. SPRAYS –

Dusts must be applied thoroughly and at the proper time. They should contain at least equal quantities of active ingredients as sprays for the same purpose. For example, if a product containing 5 percent copper is being applied as a spray at a certain poundage per acre and the operator wishes to switch to a dust, he should choose a product and per acre rate that will deliver the same copper poundage per acre as the spray.

More frequent applications of dusts may be necessary because they do not adhere and retain their effectiveness as long as sprays.

LIQUID VS. DRY LIME SULFUR –

In general, liquid lime-sulfur is preferred because of mixing ease, but it is more difficult to get. Where it is not available, dry lime-sulfur may be substituted at the rate of 4 pounds of the dry for each recommended gallon of the liquid or according to directions on the package.

Injury is likely if oil is applied within 30 days after lime-sulfur applications.

PRUNING AND SPACING –

Pest control programs are more effective in orchards where the trees are properly spaced and pruned. Proper spacing and proper pruning of trees aid circulation which reduces disease damage.

SPRAY CONCENTRATION NUMBERS –

The first figure means pounds or gallons of the pesticide. The last means gallons of water. For example, 1½-100 Captan means 1½ pounds of Captan in 100 gallons of water.

Where there is a middle number, it refers to a second ingredient. For example, 3-4-100 Bordeaux mixture indicates that the mixture is a home-made preparation containing 3 pounds of copper sulfate and 4 pounds of freshly slaked lime (never use air-slaked lime) in 100 gallons of water. (Hydrated lime may be substituted and the slaking operation eliminated.)

PESTICIDE RESIDUES—These recommendations for use 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.

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