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Shot hole of stone fruit

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SHOT hole of stone fruit is a serious fungal disease which occurs in orchards throughout the fruit growing areas of the State. Successful control is based on routine applications of Bordeaux mixture at leaf fall and bud burst.

The common shot hole disease is caused by the fungus *Clasterosporium carpophilum* (Syn. *Coryneum beijerinckii*) which has been recorded on almond, apricot, cherry, nectarine, peach and plum in this State. It is most damaging on almonds and early varieties of peach and apricot which come into growth in late winter or early spring.

The emerging buds of almonds and early peaches (such as Charles Watt), may be so severely blighted that the lower parts of trees are denuded of fruiting wood.

Almonds which show pronounced gumming as a result of infection by the shot hole fungus may fail to develop normal kernels.

Certain varieties of apricot, particularly Newcastle Early, are very subject to disease attack. In the absence of control measures growers may suffer severe economic losses as a result of unsightly scabbing of the fruit.

**SYMPTOMS**

Affected leaves of all the stone fruit hosts show small purplish-brown markings which later enlarge into brown spots with darker margins. The invaded areas in the leaves usually become separated from healthy surrounding tissue and fall away to give the characteristic "shot hole" effect (Figs. 1 and 2).

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Fig. 1.—Peach leaves and shoot affected by shot hole. Cankers have developed on the shoot during the growing season.
Cankers are commonly formed on shoots of peaches and are obvious as oval sunken areas with dark brown margins (Fig. 1.)

The dormant buds of apricots are severely attacked by the fungus and present a black, shiny appearance due to gum formation. In addition the fruits are often infected and develop small purplish spots similar to those found on the leaves. Subsequently these spots enlarge and finally become raised brown areas of dry and scabby tissue (Fig. 2.)

Infected almond fruits develop scabs on the husk and exude copious amounts of gum from these areas.

**DISEASE CARRYOVER AND DEVELOPMENT**

The shot hole fungus survives over the summer in infected dormant buds and in twig cankers. With the advent of autumn rains renewed fungal activity occurs on the trees. Numerous fungal seeds or spores (known as conidia) are produced and these serve to infect other twigs and dormant buds during the winter. In the spring the new growth is attacked and the typical symptoms of the disease are produced.

**CONTROL MEASURES**

Once established in the orchard, the shot hole disease can prove very difficult to combat, and losses can be avoided only by the adoption of systematic control measures.

The following spray schedule is recommended for routine application each year:

- **At Leaf Fall in the Autumn.**—Bordeaux mixture 6 : 4 : 50. This spray will also control leaf curl.
- **At Bud Swell in Late Winter or Early Spring.**—Bordeaux mixture 6 : 4 : 50.
- **At Petal Fall.**—Thiram at 1½ lb. per 100 gallons.

The following points should also be noted:

1. A suitable spreader such as calcium caseinate should be added to the Bordeaux mixture after preparing the spray.
2. No further applications of Bordeaux mixture should be given after bud swell owing to the risk of subsequent damage to foliage and fruit.
3. In seasons where showery weather favours continued disease development one or two additional sprays of Thiram at fortnightly intervals after petal fall may give improved control.

**Alternative Autumn Spray:**

Phenyl mercury chloride at 0.1 per cent. concentration has shown considerable
promise as a leaf fall spray for shot hole control in recent trials in the Eastern States, and also under local conditions. Growers should note, however, that this treatment is more expensive than Bordeaux mixture.

BLACK SPOT OF PEAS
By the Plant Pathology Branch

ASCCHYTA BLIGHT of peas (more commonly known as black spot or stem rot) is well known to anybody who has tried to grow peas in the winter. In the wettest months it often makes it difficult to produce a good crop of garden peas, but in summer it is unimportant.

The disease appears to be caused by a complex of three parasitic fungi—Ascochyta pisi, A. pinodella and Mycosphaerella pinodes—and although they produce slightly different symptoms their life histories are so similar that they can be considered the cause of a common disease.

Symptoms:
Are conspicuous black or purplish streaking of the lower stem and very obvious spotting of the leaves and pods. In severe cases the base of the stem may rot completely, causing the top of the plant to die. A typically diseased plant is shown in the picture.

Spread:
Ascochyta blight is seed borne, and is usually first introduced through infected seed. Most commercial samples contain some infected seeds, which are usually shrivelled and discoloured with dark blotches. Not all show symptoms, and it is hard to entirely eliminate them by culling. Sowing infected seed gives rise to diseased plants, and the disease then spreads rapidly through the crop. Ascochyta blight may also spread through diseased crop residues in the soil, or wind-blown spores from adjacent crops.

Control:
• Sow disease-free seed from a summer crop, or carefully cull all shrivelled, discoloured or damaged seeds.
• Dust before planting with a suitable seed dressing (such as Tetroc).
• Plant on land which has not grown peas for two or three years, selecting a sunny, well drained site for winter crops.
• Support the plants well off the ground, so they will dry off quickly after rain.

As soon as the disease is noticed spray with a Thiram-containing fungicide at 1½ lb. per 100 gals. (1 oz. per 4 gals.), taking care to thoroughly cover stem bases as well as leaves. In very damp weather, spraying at approximately weekly intervals may become necessary.
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