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BLACK SPOT OF TOMATOES

BLACK SPOT DISEASE IS THE MOST SERIOUS FOLIAGE BLIGHT OF TOMATOES IN THIS STATE. IN SEASONS FAVOURABLE TO ITS DEVELOPMENT SEVERE DEFOLIATION AND FRUIT ROTTING ARE EXPERIENCED.

By R. P. DOEPEL, B.Sc. (Agric.), Plant Pathologist

IN Western Australia, black spot, which is also known as early blight and target spot, is a troublesome disease of long standing. It is caused by the fungus Alternaria solani which also attacks potatoes.

On tomatoes the disease has proved a limiting factor in the Geraldton district where early, main and late winter crops are grown. Not only is the yield and quality of the crop affected but serious wastage occurs in fruit transported overland to Melbourne markets. Late autumn crops at Balcatta, Osborne Park and Spearwood are also subject to black spot attack.

SYMPTOMS

Young plants attacked in the seedbed develop a collar rot of the stems at ground level (Fig. 1), a condition commonly referred to by growers as "black leg." If such plants escape notice and are transplanted into the field they become unthrifty and are often broken over by wind. If the soil is hilled up around the stems to induce adventitious rooting they may survive, but seldom develop into first-class plants.

On the foliage the disease appears first on the lower leaves shortly after the plants are set out in the field. It becomes obvious as irregular, dark brown spots often surrounded by a yellowish margin (Fig. 2). The spots may enlarge up to half an inch in diameter and, if numerous, cause affected leaves to die and hang downward against the stem.

The fungus also attacks the stems and laterals and produces dark brown oval cankers.

Fruits are infected at all stages of development and subsequently a typical black rot is produced (Fig. 3). The decay is most commonly observed on the stem end of the fruit adjacent to the stalk scar.

SURVIVAL AND SPREAD

The black spot fungus can survive from one season to the next in infected crop residues in the soil. Minute spores produced by the fungus are spread by wind and soon establish the disease in new plantings.

If seed is extracted from infected fruits, contamination with spores may occur dur-
ing the process and this also assists in disease carry-over.

Wet weather conditions and moderate temperatures favour rapid build-up of the disease in field crops. These conditions frequently prevail at Geraldton during the winter months and are responsible for serious outbreaks of black spot in the main plantings. Subsequent killing of the foliage before the end of the season reduces both yield and quality of the fruit.

**CONTROL MEASURES**

The following measures are recommended for reducing losses due to the black spot disease.

1. Seed should be immersed in hot water at 126° F. with 0.25 per cent. commercial formalin added (1 fluid ounce or 2 tablespoonsful in 2½ gallons water) for 25

**Fig. 1.**—Seedling affected with collar rot

**Fig. 2.**—Leaf showing spots typical of the disease

**Fig. 3.**—Tomato fruits affected with black spot

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minutes. It should then be removed and spread out thinly to dry in the shade. The hot water seed treatment is also of value in controlling the bacterial canker disease.

2. Prior to planting, the seed should be dusted with an organic mercury dust (⅛ to ⅛ level teaspoonful per lb.) to guard against attack by soil-borne fungi.

3. As a supplement to the above measures new or sterilised soil should be used for the seedbed each year.

4. Because the fungus lives over in plant refuse in the soil all crop remains should be burnt at the end of the season and the land rested from tomatoes for at least three years.

5. Plants should be sprayed with a zineb-type fungicide at regular ten-day intervals during the susceptible period. However this interval may need to be reduced to five days when weather conditions become very favourable for disease development. The recommended spray strength is 2 lb. of fungicide in 100 gallons of water. Zineb fungicides are available under such trade names as “Dithane -Z78,” “Zebtox,” “Zineb,” etc.

**ROOT-BOUND SHRUBS**

The illustrated garden shrub (Cotoneaster) strangled itself with its own roots. When purchased several years earlier it had been in the pot too long and the young roots, not being able to grow straight down had spiralled round and round in the pot. It grew well after transplanting in the garden but as the trunk and roots thickened with age, the constriction became worse till the sap flow eventually stopped. Death of the shrub was preceded by a gradual dieback of branches.

To avoid disappointment, home gardeners should never purchase large plants in small pots because numerous other shrubs, including Victorian ti-tree are subject to this condition. Shrubs raised for sale should be transferred from time to time into large containers to prevent them from becoming root bound.
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