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R F. Doepel

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DOWNY MILDEW OF ONIONS

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

DOWNY mildew of onions, caused by the fungus *Peronospora destructor*, is widespread in Western Australia. In market gardens adjacent to Perth where the majority of onions are grown the disease occurs each year in spring and early summer crops and often attains epidemic proportions.

Leaves affected with mildew turn yellowish green and wither back from the tips (Fig. 1). The disease is most noticeable on the older leaves but the younger leaves are also attacked as they develop. The fungus can often be seen as a grey-violet downy covering on the leaves in the early morning after rain or dew. If leaf damage is severe, bulb development is retarded and yields are lowered.

Seedstalks are also attacked by mildew (Fig. 2) and commonly bend over or break at the site of infection (Fig. 3). As a result seed quality and yields are greatly reduced.

**DISEASE DEVELOPMENT**

The fungus grows in the leaf tissues and produces minute spores or fungal seeds which are blown about by wind or splashed by water. These spores give rise to new leaf infections and so spread the disease rapidly through the crop and to neighbouring crops.

The fungus may progress inside the leaves down into the bulb; such bulbs if retained for seed purposes can carry the disease.

Resting spores, known as oospores, are also produced in the leaf tissues and can survive in diseased leaves in the soil to infect healthy plants the following season.
Mildew development is favoured by cool moist weather conditions; frequent dews encouraging prolific spore production by the fungus.

Fig. 2—Onion seedstalk affected with mildew—early stage. The portion of the stalk showing white has been girdled by the fungus

**HOST RANGE**

In this State, downy mildew has only been recorded on onions and shallots although elsewhere it has been found also on leek and garlic.

**CONTROL MEASURES**

The following measures are recommended for adoption by growers:

1. **Spraying.**

Both field and seed crops should be sprayed during the susceptible period with Zineb fungicide at a strength of 1½ lb. in 100 gallons of water. To obtain good coverage and disease control it is essential that an efficient wetting and spreading agent, such as Triton B 1956 or Agral LN, should be added to the spray at the rate of 4 to 6 fluid ounces in 100 gallons spray.

The first sprays should be applied before mildew develops and then at 10 to 14 day intervals during the season.

Zineb is marketed under such trade names as Dithane Z-78, Zebtox, Zineb 65, etc., and can be obtained from seedsmen and stock firms.

2. **Sanitation.**

As crop remains may serve to carry over the mildew fungus from season to season, all dead leaves and discarded bulbs should be burnt after harvesting has been completed.

3. **Rotation.**

Onions should not be grown more frequently than once every three years on the same land. This will help prevent infection of seedlings, field and seed crops from diseased refuse in the soil.

Fig. 3—Onion seedstalk affected with mildew—late stage. The stalk has withered and bent at the site of attack

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