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Downy mildew of lettuce

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

Downy mildew of lettuce is a fungal disease common in market gardens during autumn, winter and spring. Severe outbreaks of the disease can be kept in check by timely applications of fungicidal sprays.

Downy mildew of lettuce is caused by the fungus *Bremia lactucae* and was first recorded at Spearwood in 1934. Outbreaks have since been noted in commercial plantings throughout the State.

In some seasons the disease may reach epidemic proportions and result in greatly reduced yields of marketable heads. Seedlings are very susceptible to attack and often show severe leaf damage.

**SYMPTOMS**

The disease becomes obvious as yellow patches on the upper surface of older leaves. Under favourable conditions these infected areas increase in size, turn brown...
and wither (Fig. 1). The white downy growth of the fungus can usually be seen on the underside of such patches (Fig. 2).

Secondary soft rot may develop in the tissues and result in total collapse of affected leaves.

**DISEASE DEVELOPMENT AND CARRYOVER**

Although the fungus first becomes established on the older leaves infection may also occur in the younger, more exposed leaves. The disease is spread by means of minute fungal seeds (spores) which are borne in enormous numbers on the under surface of infected leaf patches. These spores are readily blown by wind or splashed by water from plant to plant and are also blown to neighbouring crops.

Germination of spores and subsequent infection of the host plant is favoured by cool and wet conditions. The occurrence of heavy dews, high humidity and dull, overcast weather are particularly conducive to mildew development.

Under local conditions of continuous crop production the fungus can spread from planting to planting in a district and so survive throughout the year. Although downy mildew may only be present in trace amounts in some mature plantings sufficient spores would be produced to infect other lettuce crops at an earlier stage of development.

The fungus can also survive from season to season in the soil by means of resting spores (oospores) which are formed in diseased lettuce refuse. Subsequently these oospores infect seedlings and older transplants located on contaminated ground.

**CONTROL**

The following measures are recommended for adoption by growers:

1. **Sanitation**

   As the downy mildew fungus may carry over from season to season in diseased refuse all crop remains should be destroyed after harvesting has been completed.

2. **Rotation**

   Lettuce should be grown as infrequently as possible on the same land. This will help prevent infection of seedlings and transplants by the soil-borne oospores.
3. Spraying

In seasons which are very favourable to downy mildew development, heavy losses can be avoided by regular spraying with a suitable fungicide. Zineb, at a strength of 2 lb. in 100 gallons of water, should be applied at seven to 10 day intervals during susceptible periods.

Recently a newer organic fungicide, called maneb, has become available in this State. Maneb is similar in action to zineb and is considered worthy of trial for the control of downy mildew disease. It should be used at the same rate as zineb.

These sprays will protect healthy plants from attack but will not eradicate patches of infection established on the leaves. Special attention should be given to young seedlings which are very susceptible to downy mildew.

Zineb is available under such Trade names as “Dithane-Z 78”, “Zebtox”, “Zineb 65” etc., and maneb as “Dithane-M22”, “Mantox”, etc.

TRAVELLING AWARDS FOR AUSTRALIAN FARMERS

The Nuffield Foundation is continuing this year its practice of offering two travelling scholarships to enable progressive Australian farmers to spend a period of not less than six months gaining experience in the United Kingdom.

The Foundation will pay the scholar’s return travelling expenses, at tourist rates, (by air if really necessary) and will provide a living allowance. The Foundation will assist the scholar to plan his itinerary in the United Kingdom to ensure that he gains the maximum benefit from his stay. Candidates, who may be male or female, should be over 25 but not much more than 35 years of age.

The applicant’s capacity to communicate his experience to other farmers on his return to Australia will be taken into account in making the awards.

This year’s scholarships, to be taken up early in 1963, are being offered to farmers in South Australia, Western Australia and the Northern Territory.

Full particulars of the scheme and application forms may be obtained from the Secretary of the Nuffield Foundation Australian Advisory Committee, C/- University of Melbourne, Parkville, N.2., Victoria. Applications for the present awards will close on Thursday, 31st May, 1962.

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