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Powdery mildew of cucurbits

R.F. Doepel
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POWDERY MILDEW OF CUCURBITS

Powdery Mildew is one of the most damaging fungal diseases of cucurbits in Western Australia. Disease development reaches epidemic proportions in most years and results in reduction in yield and quality of crops. Regular applications of fungicides give economic control on susceptible varieties.

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

Powdery Mildew is caused by the fungus Erysiphe cichoracearum, which can attack a wide range of crops of the cucumber family (cucurbits). In Western Australia the disease has been recorded on cucumber, marrow, pumpkin, and rock melon (cantaloup) and is established in all parts of the State where these crops are grown.

SYMPTOMS AND EFFECTS.
The disease becomes obvious as a greyish-white powdery covering on the stems or runners, leaf stalks and leaves of affected plants. The fungus usually spreads over both lower and upper leaf surfaces to form a complete covering of fungal threads or hyphae (Fig. 1). The older leaves nearest to the crown are the first to be affected and the disease then extends outwards along the runners.

If a severe outbreak occurs the leaves wither and the plants are soon defoliated (Fig. 2).

As a consequence of defoliation both fruit yield and quality are reduced, for although the fruit is not attacked directly, it often fails to reach marketable size and is affected by sunburning.

DISEASE DEVELOPMENT.
Weather conditions suitable for the development of powdery mildew occur in
Fig. 2. — Above — Rockmelon plants defoliated by powdery mildew. Leaves and runners have withered and fruit is exposed to sunburning.

Below. — Healthy rockmelon plants (same age as above) showing luxuriant growth as a result of protection by fungicidal sprays.

most seasons. Although infection is favoured by warm to hot, humid conditions it can also occur during relatively dry weather. Following infection, minute fungal seeds (spores) are produced in enormous numbers on the diseased leaves. These spores are dispersed by wind and cause new infections in susceptible crops. During the growing season, therefore, the disease tends to increase progressively unless control measures are practised.

CONTROL MEASURES.
1. Fungicides
   Powdery mildew becomes very difficult to combat when once established in the crop, and prevention rather than cure should be the aim. This can only be achieved by regular applications of fungicides. The schedule outlined below is recommended for routine adoption by growers.
   (a) At the first sign of mildew spray the plant thoroughly with either of the following fungicides:
   Karathane—at 8 oz. in 100 gallons water
   OR
   Wettable sulphur—at 3-5 lb. in 100 gallons.
   Dusting sulphur may be applied as an alternative to the spray if desired.
(Do not use sulphur on rock melons and cucumbers—see note below).
(b) Repeat the applications of Karathane or sulphur at seven to 10 day intervals for as long as the crop requires protection.

Such protection may be necessary up to the end of harvesting or until unfavourable weather conditions check further development of the disease.

Note: (i) Most plants of the cucurbit family are sulphur tolerant. Notable exceptions are rock melon and cucumber, which are severely scorched by this fungicide. Karathane and the copper-containing fungicides do not produce these adverse effects and therefore can be used with safety on these crops.
(ii) The fungicides used for powdery mildew control should not be applied on hot days, when shade temperatures exceed 90° F. This precaution should be observed to prevent scorching of the foliage.

2. Resistant Varieties

The growing of cucurbit varieties resistant to powdery mildew should be considered in districts where the disease proves a serious obstacle to crop production.

The following varieties of cucumber and rock melon have shown considerable resistance under local conditions:

Cucumber—
Supermarket and Palmetto.

Rock Melon—
Gold Coast and Hales Best.
Mildew Resistant 45.