DEPARTMENTAL NOTES

CITRUS MILDEW

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POWDERY mildew is very common on orange leaves in the wetter areas of Ceylon and in India and Java. It has recently been introduced into California but has not yet been recorded from other citrus growing countries.

In Ceylon, it is most common on orange types, i.e., the sweet orange, the Ceylon sour orange and the mandarin orange. It also attacks grape fruit, pummelo, lemon and *Kalamondin* but it has not been found to attack limes.

SYMPTOMS OF THE DISEASE

Powdery mildew is readily noticeable and easily identified. Young, actively growing leaves and succulent shoots are most commonly affected, and usually the young shoots near the centre of the tree show the disease. Suckers which are allowed to run from the base up into the centre of the trees are very often attacked.

The first appearance of the disease on the young leaves generally occurs on the edges, as small isolated spots, when the fungus can be distinguished as fine radiating lines. Given suitable conditions, such as moist damp weather, the fungus growth increases rapidly until parts, and sometimes all, of the succulent young shoots become covered with the white, powdery or felted mildew. It is when the fungus is in this condition that the disease is most commonly noticed and most growers of orange trees are doubtless familiar with shoots of the type illustrated. There is a darkening and usually a definite depression of the diseased leaf surface, often followed in severe attack by a general buckling of the whole leaf. In the older stages some of the green colouring matter may disappear from the leaf and the affected leaves are consequently often decidedly yellowish in colour.

The youngest leaves become shrivelled when they are attacked and often fall off, leaving the bare green twig. The twig dies back and the young growth of orange trees is sometimes completely destroyed in this way. More commonly, however, some of the larger leaves remain on the shoot but their irregularly buckled and distorted appearance, which persists when they grow older, serves to show that they were attacked when young, even though the fungus can no longer be easily distinguished.

Leaves which survive the attack may have parts of their surface killed and these dead areas provide a means of entrance of fungi causing further diseases which may prove to be detrimental to the health of the tree.

THE CAUSE OF THE DISEASE

The disease is caused by the fungus *Oidium tingitatinum* which can be seen with the naked eye as the white powdery layer of mildew on the surface of newly attacked leaves. The fungus is almost entirely superficial and feeds on the plants by means of minute suckers or haustoria which penetrate into and kill the cells of the tissue on which the fungus is growing. The powdery appearance of the mildew is due to the presence of innumerable minute seeds or spores of the fungus. These may be carried by the wind or rain-splashes to the healthy leaves where they may grow to start fresh centres of infection.

The fungus is most active in warm, damp weather; such weather usually occurs at the times when the trees put out their new shoots.

CONTROL OF THE DISEASE

The fungus, as stated above, lives almost entirely on the surface of the shoots and for that reason is more amenable to direct control measures than most other fungi causing diseases. It has been shown that the disease can easily be checked and the fungus killed by spraying or dusting with a fungicide, especially with a fungicide containing sulphur. Not only can the disease be checked in this way but healthy young leaves can be protected from the disease by spraying.

In most districts in Ceylon, there are regular periods in which citrus trees put out new shoots; such periods vary in different districts. If the trees are watched and two or three sprayings with a fungicide containing sulphur are applied during growing periods complete control of the disease can be assured. Details of the preparation and method of application of a cheap and efficient fungicide can be obtained from any Agricultural Instructor or from the writer.

Trees on which the disease have been destructive in the past should be cleaned up by pruning out dead and dying shoots and branches. As a general rule, young suckers should not be allowed to grow up from the bottom of the tree and should be pruned out. Severely affected shoots may be removed and burned since they will not develop normally.