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PLANT DISEASES

APPLE MOSAIC A Virus Disease

By H. L. HARVEY, Senior Plant Pathologist

LAST season apple growers were very conscious of a disease in their trees which was more conspicuous than usual. In fact, some orchardists say they became aware of it for the first time last season. The disease in question is apple mosaic, caused by a virus. It is sometimes known as infectious chlorosis or variegation.

The symptoms of mosaic consist of cream to white irregular markings on the leaves. They may vary from a single small spot to an almost complete whitening of the leaf. The veins of the leaves may also turn white to a greater or lesser extent. In addition, leaf scorching is often associated with the disease.

In some cases, nearly all the leaves on a mosaic-infected tree may be affected, while in others, as few as one or two leaves only betray the presence of the disease in the tree. When only one or two leaves are affected, the orchardist may not notice them and he passes the tree concerned, as healthy. It is nevertheless, diseased and in the following season may show conspicuous mosaic symptoms leaving the impression that it has only just become infected.

EFFECTS OF MOSAIC

What are the economic effects of mosaic in apple trees? The disease has been present in Western Australia for many

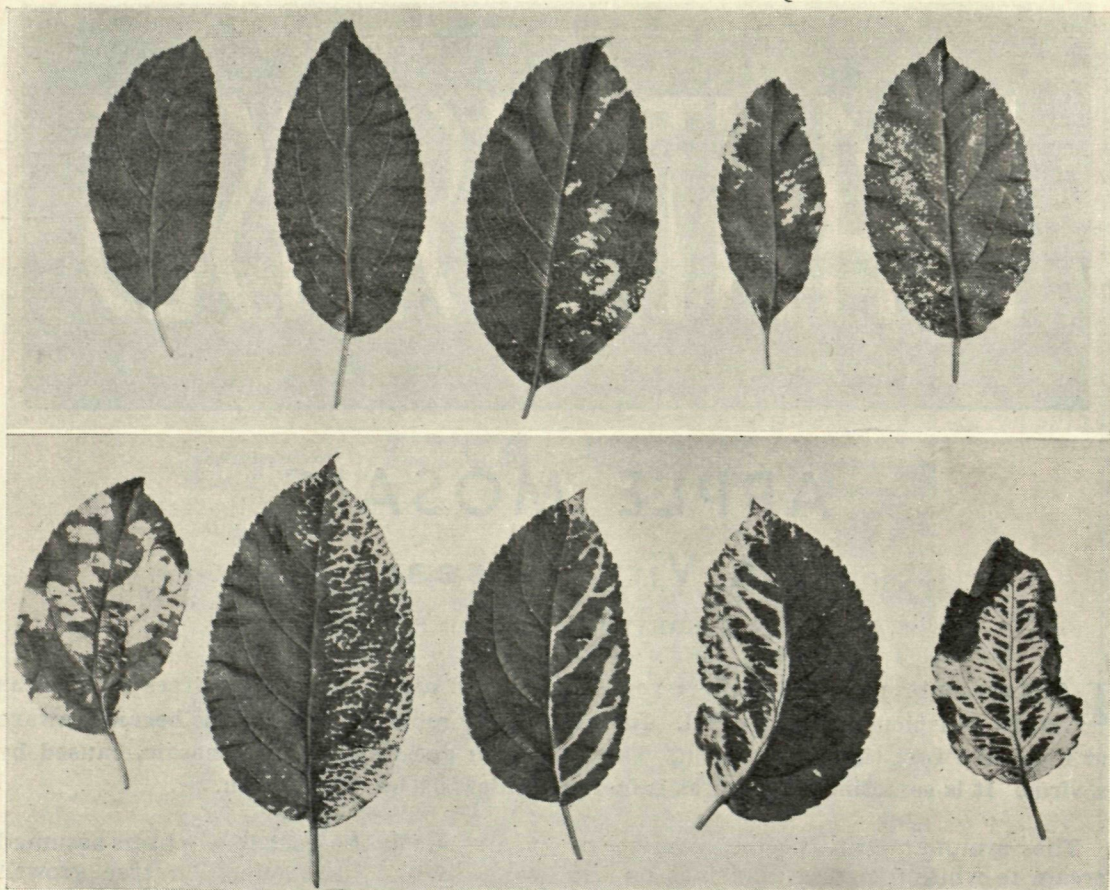
years, but in the past it has been assumed to have had little effect on tree growth and fruit yields.

It has been noticed for some time, however, that the mosaic-affected leaves have a tendency to scorch and drop prematurely and last season this resulted in a high percentage of sunburnt fruit due to inadequate foliage protection in the heat of summer. So that even if **total** yields are not significantly reduced by mosaic the amount of sunburnt fruit that must be culled at harvest, may represent a considerable loss to orchardists.

Further information about this disease is now being sought in experiments to study tree growth, fruit yields, fruit quality and seasonal fluctuations of symptoms.

CONTROL

How can the disease be controlled? To answer this, we must first know how it is spread. Being a disease which infects the



Cream-coloured spots, blotches and veins on leaves from a single Granny Smith apple tree infected with the apple mosaic virus. The pinhead-sized spots on the first two leaves (top left) are barely discernible. The last leaf (lower right) shows severe symptoms, including necrosis or scorch. Such leaves may be partly destroyed or may drop prematurely and expose fruit to sunburning.

sap of the tree, it would be expected that it could be transmitted from tree to tree by one or more of the sap-sucking insects, or by pruning tools. This has never been proved to be the case, so that control measures directed at these possibilities cannot be guaranteed to give results.

Furthermore, there is no evidence from experimental work conducted overseas, that apple mosaic can be transmitted through the seed. The use of seedling rootstocks should therefore involve no risk of spread of the disease.

The main method, if not the only method, by which mosaic is spread, is by the use of either infected stocks or scions

for vegetative propagation by budding or grafting.

It is important to note that once a tree becomes infected, there is no spray or similar treatment that will eliminate the disease.

In practice therefore, the problem of mosaic control must be attacked chiefly in the nursery. In propagation work, scion material must be taken from mosaic-free parent varieties, from trees which, over a number of years, have shown not even a trace of mosaic on *any* of their leaves.

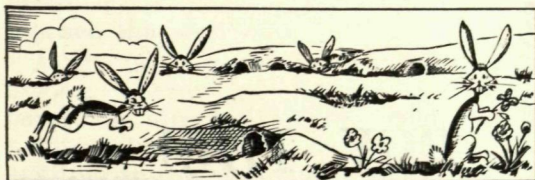
Selected healthy parent trees should be plainly marked after inspections of the orchard during November and December.

Later in the summer, affected leaves may wither and symptoms may be more difficult to find.

And what of the rootstocks? With the exception of seedling rootstocks, these also must be taken from mosaic-free parents, otherwise the virus may pass up through the graft union into the scion.

These are simple precautions to take during propagation, and any departure from these simple rules, leaves the way open to the propagation of mosaic-infected apple trees.

(From a Country Hour broadcast. Reprinted by courtesy of the Australian Broadcasting Commission.)



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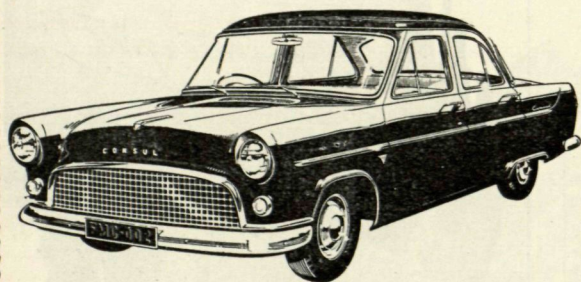
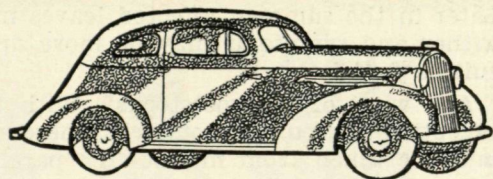
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