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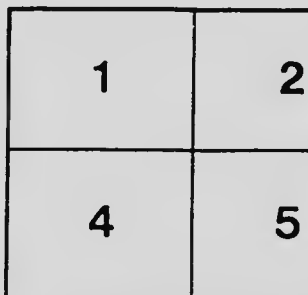
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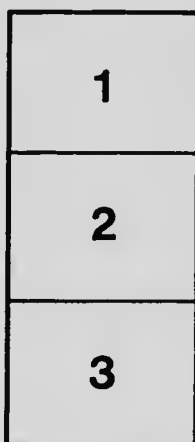
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PROVINCE OF BRITISH COLUMBIA.

DEPARTMENT OF AGRICULTURE
(HORTICULTURAL BRANCH).

The Woolly Aphid of the Apple

(*Erisoma lanigerum*).

THE woolly aphid of the apple, or, as it is more commonly called, the "woolly aphid," may be recognized during the summer months by its conspicuous, cottony-white masses which may be found in old pruning-scars, on succulent water-sprouts, often in axils of leaves, or in crevices of the trunks and main branches of apple-trees.



The woolly aphid. Winged and wingless forms. (After Mariatt.)

If an examination is made of these characteristic white flocculent masses, a number of purplish-brown wingless insects will be found clustering together.

The life-history is complex, inasmuch as it belongs to a class of insects having two host-plants. True males and females are developed in the autumn on the elm, where elms occur and sexual eggs are laid, which eggs carry the insect over winter. Where elms are not found,



The familiar white cottony clusters of woolly aphides on fruit-spur. Photo taken in September. (Author's illustration.)

the aphid maintains itself throughout the year on the apple, either by remaining localized on one tree or by migration from one apple-tree to another. Migration of these winged forms takes place twice in the year—in the spring at the end of May and during June, and in the autumn in September and part of October.

The woolly aphid of the apple may be found, also, on hawthorn, crab-apple, or mountain-ash. The woolly aphid, which occurs on such trees as the alder, copper beech, etc., is not the same species and cannot live on the apple. The roots of apple-trees may also be found to harbour the woolly aphid. Abnormal and peculiar swellings are produced which check the growth of the tree. The root form is very much more serious to nursery plantations than to the more mature trees in an orchard.

All of the aphides found, whether on the roots, stem, leaf, or branch, are actively engaged in sucking the juices of the plant by means of minute mouth-parts inserted beneath the epidermis. The injury they cause, therefore, results in a malnutrition of the parts affected. Their presence on the fruit itself, also, in late summer lessens the market value of the apple.

Remedial Measures

It is not advisable to plant elm-trees near nurseries or orchard land. The absence of elm-trees will not, however, prevent the reproduction of the aphid. Their absence only tends to reduce the numbers and possibly checks the development of the species.

The propagation of apple-trees upon resistant root stock should be fostered.

On small trees or on a few large trees the colonies of woolly aphides should be treated by hand. This can be done with an



Result of an attack by woolly aphid on apple-stem. (Author's illustration.)

ordinary whitewash-brush or small pump, using a solution of whale-oil soap or neutral laundry-soap at the rate of 1 lb. to 5 gallons of water. Kerosene emulsion or even paint may be used in the same way. If the washes are applied warm, better results attend the penetration of the waxy covering of the aphides.

On large trees in a commercial orchard satisfactory remedial measures require a great deal of care and perseverance. In cases of severe infestation where the aphid has obtained a substantial foothold, it is well to devote two or three sprayings, exclusive of the ordinary orchard sprayings, directly to the woolly aphid alone. These sprays should be applied about June or at the period when the aphides commence to appear in numbers on the trees. The number of sprayings given at this time of year depends on the degree of infestation and the efficiency of each application. The sprays recommended are as follows:—

(1.) Nicotine sulphate, 40 per cent., $1\frac{1}{2}$ pints; whale-oil soap, 10 to 12 lb.; water, 200 U.S. gallons.

(2.) Nicotine sulphate, 40 per cent., 1 pint; lime (fresh slaked), 6 to 8 lb.; water, 200 U.S. gallons.

Kerosene emulsion (15 per cent. or 1-10), though expensive, is more effective as a control spray than nicotine and soap.

In the autumn, after the crop is picked, apply refuse tobacco stems and leaves to the trunk just above where the roots join the trunk. A 20-lb. sack should be sufficient for ten trees, and the tobacco waste, thus placed, should be left until spring, thereby allowing the nicotine extract to seep down into the soil and reach the aphides harbouring in the crevices of the main roots.

In cases of light infestation the ordinary lime-sulphur sprays with the addition of 40 per cent. nicotine-sulphate solution applied under high pressure, at the time recommended above, will be sufficient to moderate the effects of the aphid.

Victoria, B.C., issued March, 1918.

This circular has been prepared by R. C. Treherne, Field Officer for British Columbia, Entomological Branch, Dominion Department of Agriculture, at the request of the Horticultural Branch.

Copies of this circular may be obtained free of charge on application to the Horticultural Branch, Department of Agriculture, Victoria, B.C., or from local branch offices of the Department.

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