

## GRAPE ROOT-WORM

(*Fidia viticida*)

By R. H. PETTIT

The adult form of the grape root-worm is a small, reddish-brown beetle about a quarter of an inch long and clothed with a covering of short grey hairs. It has been known in the Mississippi Valley for quite a long period and appeared in the states adjoining Michigan's southern border about the beginning of the present century. Michigan has thus far escaped serious losses from this pest, but during the past summer it appeared in Berrien county in greater numbers than ever before, and undoubtedly from now on



Fig. 1. Adult beetle of Grape Root-worm, enlarged about three times.

this beetle will have to be considered in making plans and schedules for the protection of grapes.

The beetle eats narrow, chain-like holes on the upper surfaces of the leaves during late June and July, when plentiful nearly destroying the entire leaf. After this feeding period, the beetles lay their yellowish eggs beneath the loose bark on the plant, often placing 20 or 30 eggs in a cluster. From the eggs come tiny larvae which finally grow to a size somewhat larger

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than the adult beetles. These larvae resemble, except in size, the common white grubs that one finds under sod. They tunnel down to the roots, where they feed on the rootlets and often gnaw the bark from the larger roots, thus doing very serious injury to the vine as a whole. As a matter of fact, the larvae do very much more damage than the beetles themselves, but, being underground, their work is obscure and often passes unnoticed except for the failing vigor of the vine. When cold weather approaches, they burrow down more deeply and pass the winter underground, some of them almost of full size while others are only partially grown. During the following spring, they go back to the roots and continue to feed until full grown, making little cells in the soil and changing to the pupal condition in late May and early June. This pupal stage lasts about two weeks, after which the beetles emerge and start feeding on the leaves.

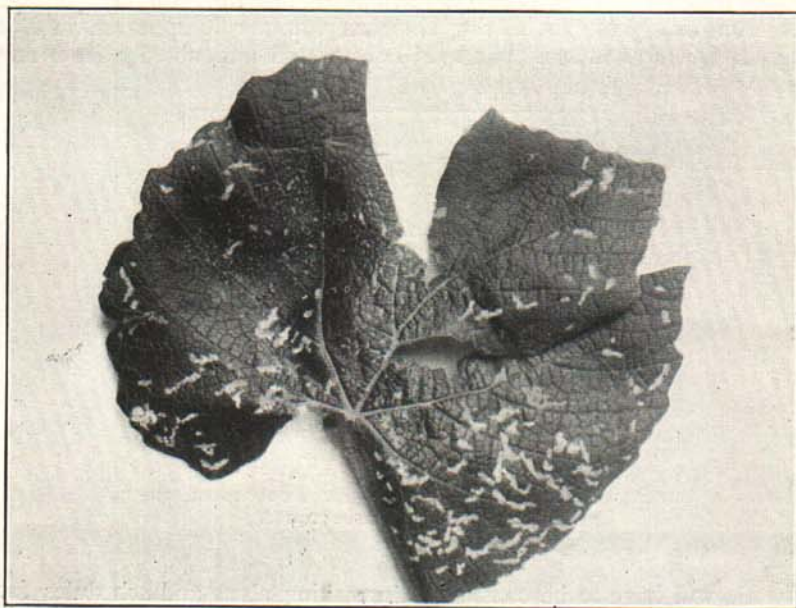


Fig. 2. Chain-like holes eaten in grape leaves by adult beetles.

**Control:** During early June and indeed up to the time when the beetles emerge, the pupae lie within two or three inches of the surface of the soil, and a vigorous shallow cultivation at that period, will break up many of the cells in which the pupae are resting. Cultivation alone does not accomplish control, but spraying with arsenate lead, in addition to early cultivation, using from three to five pounds to 100 gallons of water or bordeaux mixture, satisfactorily controls this insect. The application should, of course, be made when the beetles first appear; and, unless the grower is watching very closely for the beetles, that will be when the first characteristic rows of chain-like holes are eaten in the leaves, usually about two weeks after blooming time. The spray, to be most effective, should be directed downward from above so that the entire upper surface of each leaf is coated.

It is imperative that the application of the spray be made immediately after the first appearance of the beetles, or as soon as the chain-like holes begin to appear in the leaves. It should be borne in mind that the most favorable time to control the grape root-worm is during the feeding period of the adult beetles, which lasts only about six weeks. The spray should therefore be applied on the first appearance of the beetles, and, if the infestation is very heavy, it should be repeated at the end of about two weeks.

It has been noted in the Lake Erie grape district that, in vineyards where a vigorous campaign has been waged against the grape berry moth, there is usually not so much to fear from the grape root-worm. Or perhaps one might say that the sprays directed toward the control of the grape berry moth come near enough the right time to kill many of the grape root-worms. This is true, however, only in districts where a very vigorous campaign has been carried on against the grape berry moth, and usually where a number of sprays have been applied. In districts where the grape berry moth is not an important factor, and where no spraying with arsenicals is done, the injury from the grape root-worm has often been very severe, many vines having been killed outright.

