

The flies have extensible mouth-parts with rasp-like force, by means of which they feed on liquid or solid materials present on the leaves and fruit. This habit of feeding affords us a very satisfactory method of control by making it possible to poison the flies before they lay their eggs.

Control. Experiments conducted in Ontario during the past six years have definitely proved that the Apple Maggot may be controlled by spraying, at least twice, with arsenate of lead—2½ lbs. of paste to 40 gallons of water.

The first application should be made as soon as the flies begin to emerge, that is, *about June 25th* in the warmer portions of the province, such as the Niagara-Burlington districts and the counties bordering Lakes Erie and St. Clair and the Detroit River; *about July 1st* in moderately warm sections, such as most of the remaining counties west of Toronto and those along Lake Ontario as far east as Lennox and Addington; *about July 7th* in the counties farther north and east. In a cold, backward season this application should be put on one week later than the dates specified.

The second application should be given as soon as the first shows signs of disappearing, usually this will be about three weeks later. It must be borne in mind that the flies continue to emerge for about seven weeks, and that it is therefore essential to have poison on the trees for that length of time. In wet weather this may mean one or more extra applications.

Every application should be fairly heavy, and all trees in and around the orchard, except those with fruit nearly ripe, should be sprayed.

All useless seedling apple trees and Hawthorns should be cut down.

THE APPLE MAGGOT.

(*Rhagoletis pomonella* Walsh.)

From time to time the Apple Maggot or, as many fruit-growers call it, the Railroad Worm, has appeared in large numbers in various parts of Ontario. In some orchards it has destroyed the entire crop and in others a large percentage of it. Such attacks have caused great anxiety not only to those whose orchards were infested, but also to all the fruit-growers who heard of the damage the insect had done, and who feared that it might spread to their orchards. Their fears were increased by learning that there was no known practicable remedy for the insect in large commercial orchards, the old remedy of gathering and destroying the fruit being considered impracticable except in small orchards.

In 1909 and 1910 the Apple Maggot was abundant in a number of localities east of Toronto. In the latter year the senior author visited these localities, saw the extent of the injury, learned of the fears of the fruit-growers, not only in the immediate vicinity but also many miles away, and then brought the matter to the attention of the Provincial Fruit Branch in Toronto. The result was that he was authorized to begin a study of the insect with the object of finding, if possible, a satisfactory method of control.

The first year of the investigation the junior author acted as an assistant, but after that year became a full partner in the investigation, in which henceforth he represented the Dominion Entomological Branch, to which he had been appointed at the end of the first year's work. Hence since 1911 the study of the insect and its control has been carried on as a joint enterprise of the Dominion and Provincial Departments of Agriculture.