

POPULAR EDITION.

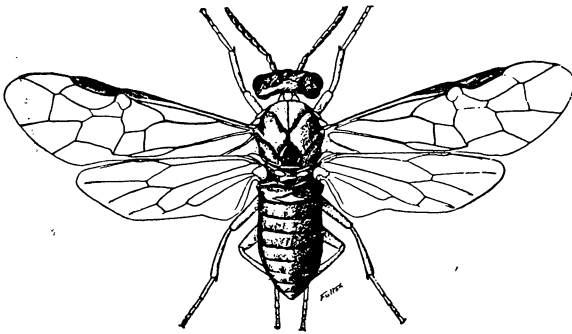
BULLETIN No. 411.

DECEMBER, 1915.

---

New York Agricultural Experiment Station.

GENEVA, N. Y.



A NEW CHERRY AND HAWTHORN PEST.

---

SUMMARIZED BY

F. H. HALL

FROM BULLETIN BY

P. J. PARROTT AND B. B. FULTON.

PUBLISHED BY THE DEPARTMENT OF AGRICULTURE.

POPULAR EDITION\*  
OF  
BULLETIN No. 411.  
A NEW CHERRY AND HAWTHORN PEST.

F. H. HALL.

**Peculiar  
choice of  
host plants.**

The sour cherry is less subject than most cultivated plants to injury by insects or disease — one of the factors that have made this fruit so popular with growers in recent years. Plum curculio, plant lice, and San Jose scale, all very destructive on other fruit trees, even on the sweet cherry, rarely injure the sour cherry.

Within a few years, however, a new pest has become known, fortunately, only in a few restricted areas as yet, that selects the sour cherry in preference to the sweet cherry; and, peculiarly enough, it appears to confine its work principally to one variety of the sour cherry, the English Morello. Still more strangely, the same insect attacks the leaves of shrubs and trees of an entirely different species and genus, the hawthorn; and here, also, it does not work indiscriminately, but affects certain species or groups of species severely and allows others very nearly related to remain practically untouched. No satisfactory explanation has been found for this restricted, and yet widely divergent, choice of host plants by this new pest, the cherry and hawthorn sawfly leaf-miner, *Profenusa collaris*.

**The insect  
and its  
changes.**

The adult insects are small, fly-like creatures that appear only for a brief time in late spring and eat little or nothing. Though similar to small flies in general appearance, they are four-winged and have other characters that ally them with bees and wasps, the Hymenoptera. They belong to a group of about 2000 species, the Tenthredinoidea, of which about 700 species are American. These include possibly a dozen injurious forms of which the pear slug, the rose sawfly and the currant worm are probably best known. The name "sawfly" applied to many members of this great group, comes from the fact that the females are provided with toothed ovipositors, of which one part slides upon another with a saw-like

\* This is a brief review of Bulletin No. 411 of this Station, on The Cherry and Hawthorn Sawfly Leaf-Miner, by P. J. Parrott and B. B. Fulton. Those interested in the detailed account of the investigation will be furnished, on application, with copies of the complete bulletin, so long as these are available.

Names of those who so desire will be placed on the Station mailing list to receive future bulletins, popular or complete, as issued.



PLATE I.—CHERRY LEAVES INJURED BY SAWFLY LEAF-MINER.



PLATE II.—HAWTHORN LEAVES INJURED BY SAWFLY LEAF-MINER.

motion, thus cutting or sawing the plant tissues so that the eggs may be deposited beneath the surface.

The "flies" of the cherry and hawthorn leaf-miner are about 3-16 of an inch long, mainly black in color, but with some portions of the body tinged reddish and the appendages whitish.

These flies emerge from pupal cells in the ground in early or mid-May when the cherry leaf-buds are opening. They mate at once (or the females, without mating, may lay eggs which produce living larvæ), and place their eggs through the upper surface and close to the lower surface of a cherry or hawthorn leaf. These eggs hatch within a week into tiny, maggot-like larvæ which spend the five stages of their larval life inside the leaf, each stage being ended by a molt. The development of the larva requires about a month, after which it cuts its way to the surface of the leaf, drops to the ground and forms a hard pupa-case of earth in which to spend the summer, winter and early spring and to change to the adult sawfly.

The larvæ eat the leaf tissue between the two surfaces, forming narrow twisting tunnels, at first near the margin of the leaf, but later, as the tunnels enlarge, working toward the center of the leaf or crossing it at the tip and working down the opposite side. The destruction of the pulpy tissues leaves the upper cuticle or thin membrane covering the leaf, making a wide line, a blister or a patch of grayish brown, dead tissue on the leaf. Sometimes a half dozen miners may work in a single leaf so that a great part of the tissue is destroyed and the blister-like patches become so large that the foliage appears as though struck with a blight. With the cultivated hawthorns, which are used as ornamentals, this disfiguration is sometimes quite serious.

With both cherry and hawthorn, however, the leaves affected are only those that have appeared before the middle of May, since egg-laying by the sawfly ceases about this time, and there is no second brood. The larva remains in the same leaf, so the foliage that unfolds later escapes injury. In ordinary seasons of good leaf-growth, the actual damage to the trees is probably slight, since new leaves soon appear to replace those mutilated. If the conditions should happen to be very unfavorable for foliage production the trees might suffer noticeably from an especially numerous brood of the "miners," and the setting fruit be checked in development. It is very difficult to estimate the damage from such partial defoliation, though, unless it be continued over a considerable period of years.

The work of the insect was first brought to the attention of the Station Entomologist in 1910, through infested leaves sent by a cherry grower near Geneva. The larvæ from infested leaves came to maturity in 1910 and as they were of an unknown species speci-

#### **History and distribution.**

mens were sent for identification to an authority in the group to which the insects belong. He found it to be a new species and also placed it in a new genus, but reported that similar specimens, in too poor condition for description, had been found in hawthorn leaves sent from the vicinity of Boston.

Subsequent investigations and search have found the insect at work in several cherry orchards near Geneva, and in others in the Hudson Valley, while it has been discovered in hawthorns about Geneva, Rochester, Ithaca, Skaneateles and New York City. Careful watch has been kept for it in cherry orchards in other parts of the State, but if present elsewhere than about Geneva and Germantown it is probably in very restricted numbers.

Control methods have been quite thoroughly tested for three years in an orchard near Geneva, but without discovering any certain preventive treatment. The most practicable appears to be the removal and burning of infested leaves in late May or early June, with destruction of wild hawthorns near the cherry orchard and with late summer and early spring plowing and working of the ground to expose the pupa cases to the weather and to birds.

Fumigation with hydrocyanic-acid gas is a sure method of destroying the larvæ in the leaves, but is hardly to be recommended because of the necessity of special equipment, with consequent expense, and the inconvenience.

Spraying with practically all forms of contact insecticides proved ineffective against the larvæ on cherry, hidden as they are inside the leaves; but on hawthorn a strong soap solution, with nicotine, sprayed on the leaves, seemed to penetrate the tunnels and destroy the miners. It was found impossible to poison the adults, even by using a sweetened arsenate spray; and very few of them were killed by attempts to reach them with contact insecticides.

Fortunately, at least two natural enemies have been found, one of them a new species, which parasitize the eggs or the larvæ and so destroy them. It is quite probable that these and other enemies, with the ordinary destruction by severe weather, will hold the pest in check except for rare outbreaks.