A LITTLE-KNOWN ASPARAGUS PEST.

F. A. SIRRINE.

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A LITTLE-KNOWN ASPARAGUS PEST.

Agromyza simplex Loew.

F. A. SIRRINE.

SUMMARY.

The asparagus miner is not generally known as an injurious pest to asparagus, its work being first observed in the fall of 1896.

There are two distinct broods of the miner on Long Island.

At present the only known means of controlling the increase of this pest is pulling the old stalks after they have been killed by frost and burning them.

INTRODUCTION.

During the fall of 1896 the author accompanied the Station Botanist on a tour of inspection of the asparagus fields for asparagus rust. While in the fields some plants were pulled to ascertain if the rust occurred on the portion of the stalk below the surface of the ground. Many stalks were found to have the puparia of some fly buried beneath the epidermis especially in the portion of the stalk which was below the surface of the ground. Some of the material was preserved for breeding, but the lack of a suitable place, at that time, for keeping such material so that it would not get too dry, resulted in our failing to breed the adults. During the past year the adult fly was reared from some of the old, infested stalks collected early in May. This pest has no common name. Possibly “asparagus miner’’ would be appropriate.

1 Kindly verified for the author by Mr. D. W. Coquillet, Washington, D. C.
THE ASPARAGUS MINER.

HISTORY.

This fly has been known to collectors for a number of years, but as far as can be learned, what it feeds upon has not, hitherto, been ascertained; or its life history worked out. In 1897 Mr. Chittenden of the Division of Entomology, Washington, D. C., reported collecting it on asparagus and suggested that it might feed upon that plant. The only species of fly reported in European literature as infesting the asparagus plant is a species of Ortalis known as the "asparagus-fly," the maggots of which burrow into the stalk of the asparagus and work downward to the root.

DESCRIPTION.

As the adult fly has already been described in works on diptera only a general description is given here.

Adult.—The adult is a small, metallic-black fly, 3 to 4 mm. long (about one-sixth inch) and rather broad as compared with its length; it is usually found resting upon flowers and branchlets of asparagus and especially on plants that have been gnawed or eaten by the asparagus beetle. A modified camera lucida drawing of this fly is shown on Plate I, Fig. 1.

Egg.—The eggs have not been found.

Larva.—The larvae or maggots are about 5 mm. long, somewhat flattened and of a white or transparent-white color. It is found only beneath the epidermis near base of asparagus plants. Fig. 2, Plate I is a greatly enlarged drawing of the larva, giving a side view. The black rasp-like jaw or proboscis is shown at r, the cephalic and caudal spiracles are shown at s, s.

Puparium.—The puparium, or resting stage, of this miner resembles the "flax-seed" stage of the "Hessian fly." The

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PLATE I.

Fig. 1.—Side view of adult fly of asparagus miner, Agromyza simplex. Magnified 15 diameters.

Fig. 2.—Larva or maggot of the above fly showing cephalic and caudal spiracles at s, s, and rasping organ or jaw at r. Magnified 15 diameters.

Fig. 3. Enlarged view of head of maggot. Lettering same as in Fig. 2. Muscular attachment of "rasp" at m. Magnified 60 diameters.

Fig. 4.—Puparium, or "flax seed" stage, of the maggot of the asparagus miner. Magnified 15 diameters.

Fig. 1-4 inclusive, camera lucida drawings modified.

Fig. 5.—Section of asparagus stem showing mines made by maggots of asparagus miner with one of the puparia in the mine. Natural size.
puparia show as small, oblong, dark-brown, raised spots beneath the epidermis near the base of the asparagus stalk and are often mistaken for the rust pustules. If taken from beneath the epidermis during the fall they are generally amber-brown in color and oblong in shape, with two minute horns or projections at each end. After remaining in the stem all winter they are generally very dark brown in color. See Figs. 4 and 5, Plate I.

**LIFE-HISTORY.**

The adult flies issued in confinement May 30. They were taken in the field on asparagus June 8. On June 19, puparia and maggots were found beneath the epidermis of this season's growth. No adult flies were to be found. None of the adult flies were taken again until August 2. After this date occasional specimens of adult flies and of maggots were noticed until the asparagus was killed by frost. During all the fall the puparia were plentiful and apparently many of the maggots which changed into puparia the latter part of August remained in this condition over winter.

**HABITS AND METHOD OF WORK.**

The adult flies can be found around the flowers but they were generally found congregated around wounds made by the asparagus beetle, apparently feeding upon the juices exuding from these wounds. The place and method of depositing the eggs were not determined, but frequently the mine made by a maggot started beneath a leaf scale and generally near the surface of the ground, thus indicating that the eggs are sometimes deposited under or near the leaf scales. In some instances mines were found which started nearly a foot above the ground but generally the majority started at or near the surface of the ground and extended downward below the surface of the ground for distances varying from 3 to 4 inches.

The work of this pest should not be confused with the injury of the European asparagus fly, which mines into the stalk; while the above species simply works beneath the outer bark or epidermis and devours all the green portion of the plant between the epidermis and the bast, or wood, fiber. Five or six of the
maggots will usually completely girdle a stalk. Their method of mining, with a "flax-seed" or puparium in the mine, is illustrated in Fig. 5, Plate I.

The puparia are always formed within the mines and generally below or near the surface of the ground where the old, dead stalks remain moist.

AMOUNT OF INJURY.

This pest has been watched during the past four years, and no noticeable injury from its work has ever been detected on cutting beds. During 1900 they were apparently more numerous than common and considerable injury from their work was observed on seedling and newly set beds. The injury showed itself by the plants first turning yellow and finally dying much earlier than they naturally should do. Possibly the fact that the structure of the asparagus plant is such that it can withstand girdling much better than more woody plants accounts for the injury not being noticed. Furthermore, the life history of the pest is such that the first brood cannot get much of a foothold on cutting beds, especially where ridging is practiced. Although the injury to cutting beds is not noticed, there is no doubt that the plants are materially weakened, later, by the attacks of this pest.

NATURAL ENEMIES.

At present it is not known what natural enemies this pest has. As yet no parasites have been bred from the puparia. The only enemy noted in the field was another small fly, which was not identified, feeding upon the fly of the asparagus miner.

REMEDIES.

The habits of this asparagus pest are such that there is little chance of applying insecticides and none have been tested. Cultural and preventive measures can be and should be applied. As the eggs for the first brood are deposited early in June undoubtedly much could be done toward keeping this pest under control by not allowing any small shoots to grow on cutting beds during the cutting season. Where new beds are being put out yearly, pulling and allowing the old stalks to dry and burning them will aid in keeping the pest under control. The stalks can be pulled and
burned any time after they are dead, but, when possible, it should be done late in the fall. Where left until spring the stalks rot to such an extent that the bark slips off, in pulling, and the puparia are left in the ground.

CONCLUSIONS.

Growers of asparagus are not generally aware of the work and injury of this pest, as it usually works in the asparagus stem below the surface of the ground.

Its work was first noticed on asparagus in the fall of 1896.

It is not known where or how the eggs are deposited.

The injury, such as it is, is done by the maggot.

There are at least two distinct broods of this pest on Long Island.

It is suggested that this pest be called "asparagus miner."

It is still a question whether this pest does enough injury to cutting beds to warrant growers going to any extra expense to get rid of it, but, this does not necessarily prove that it may not become a troublesome pest, as it is already known to injure seedling beds.

At present the only means that can be given to control it is pulling of the old asparagus stalks as soon as they are killed by frost, and burning them.