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ONION CUTWORMS; THEIR RAVAGES AND TREATMENT.

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*Connected with Second Judicial Department Branch Station.
†Connected with Fertilizer Control.
Popular Edition*

of

Bulletin No. 120.

Onion Cutworms; Their Ravages and Treatment.

F. H. Hall.

Carneades messoria is the scientific but probably unfamiliar name of an enemy too well known by the onion growers of southeastern New York. This enemy is the Dark Sided Cutworm, or, as it is known in various parts of the country, the Onion Cutworm, the Climbing Rustic, or the Reaping Rustic.

Name.

Though usually present in greater or less numbers throughout the entire northern half of the United States, wherever succulent crops are grown, it is only at intervals that its ravages become so great as to excite attention and dread among those upon whose crops it preys. It wrought severe damage in 1867, when it nearly ruined the peach crop of Illinois, Michigan and Indiana by climbing the trees and feeding upon the flower buds.

In 1885 and 1886 the worms appeared in hordes in Orange County, N. Y., and destroyed about one-half of the onion

*This is a brief review of Bulletin No. 120 of this Station, on A Practical Method of Fighting Cutworms in Onion Fields, by F. A. Sirrine. Any one specially interested in the detailed investigations will be furnished, on application, with a copy of the complete Bulletin.
crop of that county, and in this same territory the pest has again developed alarmingly. It did much damage here in 1895, and in 1896 destroyed about 46 per cent of the onions and injured severely many other garden and market vegetables. Such wholesale destruction is a very serious matter where, as is often the case in the Second Judicial Department, the onion crop is the only one bringing in a money return.

*Constant damage.*

These occasional startling outbreaks, however, do not measure the damage done by these cutworms, for year after year they destroy a considerable proportion of the young plants raised on the farm or in the garden, and undoubtedly consume many flower buds upon trees and shrubs. Growers have become accustomed to this annual loss—look upon it as a matter of course—and do not take any decided measures to check it as long as the crop returns a profit; but when nearly half of the yield is lost means of relief are sought.

*History of investigation.*

The attention of the Station was called to the ravaged onion fields of Orange County in 1895, but the season was too far advanced for effective work to be done. In 1896, however, careful and early attention was given to the worms, their habits and their treatment.

*Habits.*

As indicated by one of its names, Climbing Rustic, the insect belongs to the class of "Climbing Cutworms." This habit of ascending the stems the worms have probably acquired in searching for the tender part of the plants upon which they prey—the fruit and leaf buds of trees, the hearts of the forming cabbages, the blades of grass or the tips of the young onions. When older the worms become too clumsy to climb and content themselves with eating off the plants at the surface of the ground. They usually feed at night, but may, when food is scarce, march from plant to plant by day, as does the army worm, traveling slowly and leaving behind them only the stubble and the roots.
PLATE I.—Cutworm larvae (twice natural size) and moths.
Just how and where and when each stage of the insect's career is passed is not fully established. It is probable that, on the onion fields at least, the eggs are mostly laid in the late fall upon the weeds and other debris remaining upon uncultivated spots in the fields, along ditch borders and fences, or on adjoining highlands. From these highlands the weeds and eggs are borne upon the fields by the high waters of early spring and furnish starting points for the spread of the young worms. These also advance from the borders of the field and from the ditch banks. Some of the eggs may hatch in the fall; and the young worms feed for a time before going into winter quarters in the ground, and some of the moths probably remain alive though dormant during the winter and resume egg laying in the spring. The small size of the worms, however, when they are first seen feeding in the spring, and their occurrence in such numbers on the gray soils which receive so much of the wash of the uplands and in scattered spots in the fields where the water-borne debris is found, would seem to indicate that they reach these places in the egg form upon the weeds; hatch early in the spring; and spread soon to the onions. They begin to feed early in May, and when first noticed (May 12) they were from one-tenth to one-half grown, and were from one-eighth to one-fourth of an inch in length. They eat ravenously and continue to grow until they finish feeding, sometime before the middle of June. They are then about an inch and a quarter in length, and are marked upon the sides by a decided dark band or stripe. They now burrow into the ground a short distance and form small cavities in which they change, first to dark-brown chrysalids, and then into moths. The moths may emerge at any time between the last of July and October, and soon begin to lay their eggs.

Several lines of treatment were tested by the Station, but the dry poisoned bait proved most satisfactory. A resin-lime mixture, to which Paris green was added, was sprayed upon
the young plants and destroyed some of the worms, but not enough of them to make the treatment advisable.

Kerosene emulsion sprayed upon the young plants at night when the worms were most active seemed to produce an immediate effect, as the worms dropped to the ground when touched by the spray, and appeared fatally injured by the kerosene; but by morning captured specimens had regained their full vigor, and careful investigation of the ground about the plants failed to reveal any dead worms.

Bunches of freshly cut grass were dipped into water to which Paris green had been added, and were placed upon the margins of a field where most of the onions had been destroyed; but for some reason the bait was not touched.

A poisoned bran mixture was prepared by adding about one pound of Paris green to fifty pounds of moistened bran and mixing thoroughly. Small piles of this mixture, a spoonful to a handful in a place, were scattered in spots frequented by the worms, and on the following morning dead cutworms were found in abundance upon and under the surface of the soil about the piles. After the first day the bait became moldy at the bottom and caked so hard at the top that the worms could not eat it well.

Thirty pounds of dry bran and middlings in equal parts mixed with one pound of Paris green proved equally acceptable to the worms, equally deadly in effect, and much easier to apply. This mixture can be distributed by means of an onion seed drill, and thus deposited evenly and continuously about the margins of the fields before the advancing destroyers it forms a line of defence across which the worms will seldom pass without feasting to their death. If the worms become scattered over the fields the dry bait can be applied quickly and uniformly along side the rows by use of the drill.

This treatment is fully as efficient as hand picking, is less expensive, and is, for onions, at least, a very satisfactory defence against the cutworms. It can also be used successfully and with ease to protect cabbages, tomatoes, egg plants, sweet potatoes, strawberries and similar garden plants, by
surrounding each, at time of transplanting, with a little of the poisoned mixture.

If the onion grower will have ready for the cutworms when they first appear upon the grass about his fields a meal of the tempting but deadly, poisoned dry bait, and will offer this food to them whenever and wherever they appear among the onions, his loss from their ravages will be but small.