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THE 1921 OUTBREAK OF THE CLOVER-LEAF WEEVIL IN IOWA

H. E. JAQUES

Early in the spring of 1921 it became apparent that many clover meadows were suffering severely from some trouble. The entire stand was killed in an occasional field while in others patches throughout the fields were killed or the plants were very much stunted. At first it was thought by many to be winter-killing but it was soon found to be insect injury due to the work of the Clover-leaf Weevil, *Hypera punctata* Fab., and one or more species of cut worms. It was thought in some quarters that the matter was further complicated by the presence of a fungus disease of the roots. As far as the writer observed this root injury seems to have been an infection naturally following the insect damage.

The clover-leaf weevil, which originally came from Europe, has been known in this country for a half century or longer. It can be found almost any season in almost any clover field but has never before been known to do such general and widespread damage within the state of Iowa as during the spring of 1921.

The clover-leaf weevil has but one brood per year. The eggs are laid on various parts of the clover or alfalfa plant. A good percentage of the eggs hatch and reach the first, second or third instar as larvæ before hibernating. The later eggs do not hatch until spring. The larvæ are yellowish green or bluish green (a small percentage pinkish) with a white dorsal stripe and when fully grown measure from $\frac{1}{3}$ inch to a little more than $\frac{1}{2}$ inch in length. Cocoons with a unique golden brown silky network covering are formed on or immediately under the ground, pupation occurring in May or June. The adult, a brown snout beetle, begins to emerge in June and many continue to live until winter sets in or later.

They were found feeding on the common red clover and on alfalfa although the injury to the clover was much the worse. The leaf blades and petioles and the more tender stems of the plants were eaten. In many cases the crowns of the plants were literally filled with the larvæ.

Counts of weevils were frequently made. It was not uncom-



Fig. 26a. Worms on a denuded spot in a meadow.

mon to find thirty or more larvæ feeding on one clover plant. Mr. A. E. Albert living north of Eldon had 65 acres of clover which was almost wholly killed. A part of this meadow was already plowed when we visited it. Many weevil larvæ could be seen in the furrows. A count of the larvæ was made for five feet of furrow which averaged 108 worms to the foot in length of furrow.

The cutworms (species undetermined) seemed to do even worse damage to the clover than the weevils though the two pests worked together for the most part. The cut worms ate deeper into the plant crown. County agents and farmers in the infested areas were about evenly divided in their opinion as to which of the two insects was the more destructive. The map shows the counties of the state in which damage was known to occur.

The extent of damage was highly variable in the different regions. In some areas the damage was light and of only a temporary nature. It was seen as summer came on that many fields made a much better recovery than had been thought possible. Some counties suffered heavily, the stand being so completely killed that many meadows were broken up. Since this came in a year with an already too large acreage of corn the loss was even greater than would seem at first.

