Growing Good Potatoes in the Pacific Northwest

Some Ideas on the Homely "Spud" by Men Who Know Whereof They Write.

In this, the fifth of a series of articles on potato growing, diseases affecting potatoes in the Northwest are discussed in interesting style.

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THE SPECIES of flea-beetle most abundant in this state, and in the whole Northwest, in fact, is a different species from those commonly found in the middle and eastern states. Its habits and the nature of the damage it does are much the same as those of the eastern species. Our species is known as "The Western Potato Flea Beetle." The larva, pupa and adult are shown in (Fig. 1).

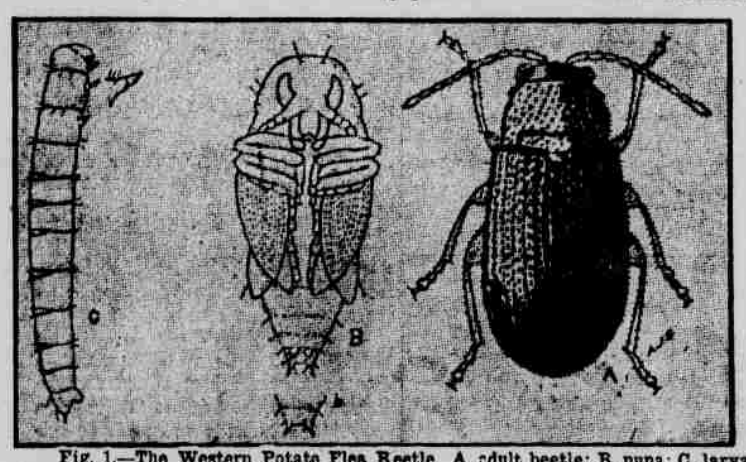

Fig. 1.—The Western Potato Flea Beetle. A, adult beetle; B, pupa C, larva. Enlarged. (After Ore. Ag. Exp. Sta.)

During the season of 1913 this was one of the most serious potato pests we had. It was especially abundant in Eastern Washington, where in many places it so hindered the growth of the potato vines that the potato crop was materially lessened. During the month of August it was no uncommon thing to see the potato leaves almost completely covered on the under side with these small brown beetles. The adult beetles are very small, about the size of the head of a pin only more elongated, and are of a brownish black color. They get their name "Flea Beetles" from their ability to jump very quicklky when disturbed. The character of their work is shown in (Fig. 2). They eat almost always if not entirely from the under side of the leaves and do not feed clear through, but leave a thin, transparent membrane on the upper surface in many cases. The leaves, after being fed upon, have the appearance of having been shot full of fine holes.

Fig. 2.—Potato leaf showing characteristic flea beetle injury. (After Johannsen, Maine Exp. Sta.)

Pest Is Serious.

The seriousness of this pest is increased by the fact that in many parts of the country it (as well as the eastern species) is known to assist unintentionally in the distribution of the fungous disease of the potato known as early blight. The fungous enters the tissues of the leaf through the exposed eaten edges of the feeding punctures and spreads from them throughout the leaf.

The eggs of the western species are unknown, and those of the eastern species have been found only a few times. They are laid singly in the ground in the latter part of June and the first part of July. The larvae, small, white and thread-like, are found in the ground feeding on the potato stems and tubers. Where at all abundant these larvae give the potatoes a pimply appearance, which may seriously affect their sale as choice potatoes. The larvae grow to their full size, pupate in the soil and then transform to adult beetles. There are two generations during the season. The past summer they were most abundant during August. The adult beetles of the fall generation pass the winter as adults, and attack the potatoes in the spring.

Treatment Is Advised.

The most effective treatment for this pest is to spray the plants with Bordeaux, at intervals of about two weeks, as long as the beetles are precent. The Bordeaux serves merely as a repellant. Although the beetles work on the under surface of the leaves only, it is possible to poison them with an arsenical, such as arsenate of lead, applied to the under surface of the leaves. Bordeaux applied to the under surface of the leaves as well as to the upper surface is more effective then when applied from above only. Spraying machines are to be had that are adapted for this kind of spraying, but with a little ingenuity any sprayer can be so adjusted that it will spray both the under and upper surfaces of the leaves at the same time. Such a machine not only places the poison in the only place in which it can be effective, but also increases the efficiency of the Bordeaux repellant by placing it on both surfaces of the leaves at once.

Wire Worms.

Wire worms are primarily known as grass infesting insects and do their greatest damage to the grains and grasses, including corn, but they are not averse to feeding upon the potato tubers when they happen upon them in the ground, and often do considerable damage by boring holes through them. They are usually found in low grass land or land one or two years removed from the sod, but are often found in land more or less cultivated.

The wire worms are slender, white or yellowish grubs (Fig. 3) from one-half to one and one-half inches long and about one-eighth of an inch across. Some specimens are much smaller, however, and some larger. They are somewhat flat and have smooth polished skins more or less like shells. They have six short legs just back of the head and a sucker-like foot on the last segment or joint of the body. Some kinds develop into pupae in the fall and reach maturity the next summer; others require two or three years to complete their transformation. The adult of the wire worm is the common "click" or snapping beetle, as shown in (Fig. 3). There are many kinds, varying from one-fourth to one inch in length.

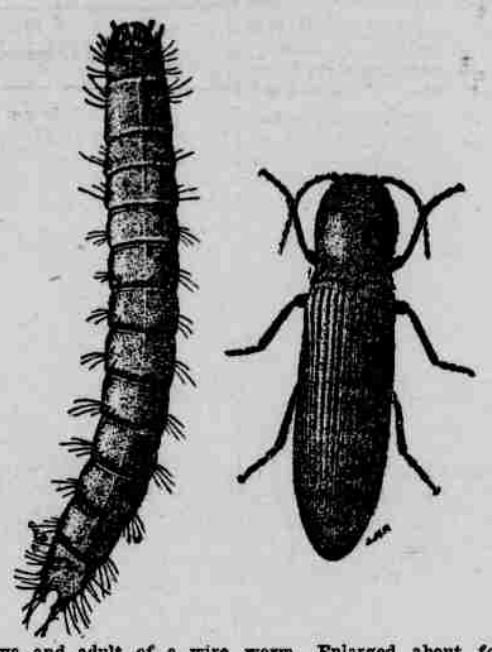

Fig. 3.—Larva and adult of a wire worm. Enlarged about four times. (After Forbes, Illinois.)

Methods of Control.

Wire worms are among the most difficult insects to control. The best remedy so far devised is fall plowing to destroy the over wintering pupae in their cells in the ground. Repeated each fall for two or three years, this procedure will work out most if not all of the wire worms from the soil. Owing to the fact that all of the larvae do not develop to maturity in the same season, this prolonged treatment is necessary in order to remove those pupae requiring two or three years to develop.

Salty fertilizers, such as Kainit or nitrate of soda have been used with good results. These salts act as repellants.

Poison bait, such as green alfalfa poisoned with strychnine, placed under stones and boards in the gardens have killed many of them. Poisoned slices of potato or carrots are also good baits.

Crop rotation is valuable in working the larvae out of the land. Clover should follow the grass, corn or some other cultivated crop follow the clover and then potatoes. Or potatoes may follow two years of clover or alfalfa.

DEACONS NOT "DRY" ON EASTERN SHORE

BALTIMORE, Md., May 23.—During a hearing before the public service commission, it developed that, unless he be a druggist, the only way a resident of the "dry" Eastern shore can obtain liquor is to become a church officer.

The hearing was held on the protest against the increased rate on liquor put into effect by the Tolchester Steamboat Company. Capt. Eliason, president of the company, admitted that he was doing everything he could to discourage the shipment of liquor by his line.

Under the new law, liquor can be shipped only to druggists, for medicinal purposes, and to churches, for sacramental purposes.

In his argument Attorney Chapman for the Tolchester Company said:

"If a gallon of liquor or six dozen bottles of beer were shipped to a church and a man called for it and said he was deacon of the church, how was the agent at the wharf to know whether the caller was telling the truth?"

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