Growing Good Potatoes in the Pacific Northwest

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

This is the fifth of a series of articles discussing potato growing.

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MUCH damage is done annually by cut worms to potato vines in many parts of the state. Although they, like the grasshoppers and wire worms, are not especially fond of potatoes, yet they are very general feeders and often do considerable damage. They work at night and hide in the soil in the day time a few inches beneath the surface, where it is often difficult to find them, owing to their close resemblance to the soil. There are many different kinds of cut worms, but their work is much the same and to the untrained eye they look much alike. Fig. 1 gives an idea as to their general appearance. When full grown the larvae average about an inch to an inch and a half in length and about one-fourth of an inch across. The adults of the cut worms are the ordinary grayish mottled winged moths so commonly seen in all parts of the country flying about lights at night in summer. The eggs are laid in the spring by the adult female moth. They are deposited on a great variety of plants, depending much upon the species of moth. The eggs hatch out into tiny cut worms which grow to maturity, feeding the while on most kinds of garden crops, field crops and many kinds of weeds. They pass the pupal stage under ground, the dark brown chysilids being enclosed in earthen cells. There are several broods during the year, depending upon the climate and more or less upon the local weather conditions. The winter is passed usually in the pupal stage under ground, but some of the adult moths are often seen in winter, especially in our houses. Sometimes the winter is passed in the partly grown larval stage and when spring comes they are ready to feed upon the first green vegetation that appears.

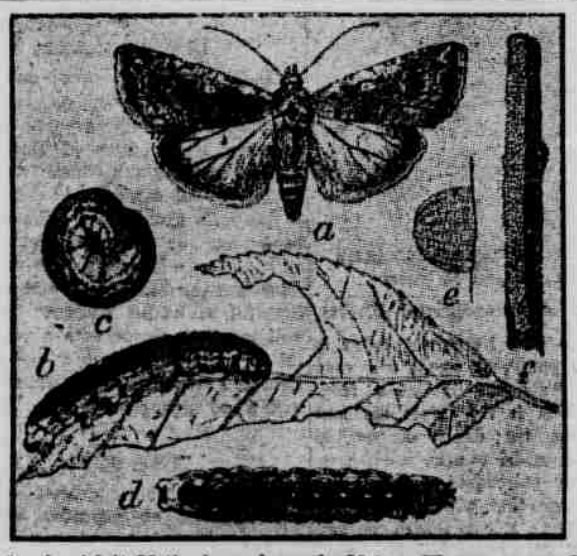

Fig. 1.—An Adult Moth; b, c, d, nearly Mature Worms; e, egg Greatly Enlarged; f, Eggs. All Natural Size Except e.

Control Measures.

Although many control measures have been devised for this pest from time to time there seems to be none that give perfect results.

Clean culture is one of the most effective remedies, however, and if consistently followed will give a good measure of success. Plow infested land in the fall to break up the pupal cells or bury and destroy the over wintering caterpillars.

The arsenical sprays, applied to the vines as directed for the potato beetles, will aid in protecting them from being eaten.

One of the commonest treatments, however, and a very effective one, is to poison the worms with the poison bran mash as recommended for the grasshoppers. The poison mash should be scattered along the rows and not around the field, for the worms are in the soil in the field.

Grasshoppers.

Several species of grasshoppers are well known as pests destructive to all kinds of crops. Their injury to the potato consists in the destruction of the leaves and stems. During the season of 1913 there was the most serious outbreak of grasshoppers, in certain districts along the Columbia and Snake rivers within the memory of the earliest inhabitants. Fortunately, in most districts where the outbreak was very bad the season is quite early and the early potato crop was well along or nearly grown by the time the insects swarmed into the fields and gardens. For this reason little damage was done to early potatoes, but in many cases the late potatoes suffered severely, especially where the grasshoppers were very abundant, in which case they even destroyed the vines down to the surface of the ground. In many parts of the state grasshoppers are more or less abundant every year, but they are not numerous enough to be very destructive to a crop as thrifty as potatoes.

All of our especially destructive grasshoppers spend the winter in the egg stage in the ground. The eggs are from one-eighth to one-fourth of an inch in length, cylinderical, yellowish, and are deposited in compact masses of from fifteen to seventy in small pouches in the ground. These tiny packets are made by the females with the tip of their abdomen and the eggs laid in them in a very exact position, the whole being sealed up with a frothy mass which hardens somewhat and protects the eggs from injury. The eggs are, as a rule, about one-half to one inch under ground.

The female grasshopper deposits her eggs in the fall, beginning about the first of August and continuing until the cold weather kills her. A single female lays about two packets of eggs. Most eggs are laid in vacant or little used pasture lands, scab land on the bluffs and hillsides, and in lanes and along the roadsides. The eggs begin to hatch in the spring as soon the vegetation starts well and the weather begins to get warm, and continue a couple of months, according to the species, but all of the eggs in a single pod hatch together. The young hoppers feed upon any kind of plant nearest to them. They are not very conspicuous during the early part of their lives, and do not attract much attention until they get their wings about the first of July and migrate into the fields, orchards and gardens. There is but a single brood or generation in a year. The young hoppers hatch out in the spring and when full grown have wings. They continue to feed and destroy the crops until late summer and early fall, when they cease to feed very extensively. After mating, the female lays her eggs and both male and female die with the approach of cold weather.

Methods of Control.

The most effective methods of control of grasshoppers on potatoes are the same as are employed for their control in general. First, find the breeding ground in the scab land or pasture in the fall and either plow up or burn over to destroy the eggs in the ground. Burning is more practicable for the bluffs and hillsides than plowing. It is unnecessary to try to burn over steep rocky hillsides devoid of vegetation inasmuch as the grasshoppers do not lay their eggs where there is nothing for the young to feed upon. In case the land can not be burned over or plowed in the fall it should be burned over in the spring just as soon as the grass gets dry enough for fire to travel in it, but before the young grasshoppers get their wings the last of June or the first of July. This treatment will destroy practically all of the young hoppers before they are able to do any damage to the crops and before they can fly away from the fire. Of course this treatment destroys the pasturage for the rest of the summer, but where it is a matter of saving a very valuable crop it is no doubt preferable to lose the pasturage than the crop. If the burning is done in the fall the pasturage is not injured for the next season.

A machine has been devised called a "hopper-dozer" into which the young grasshoppers can be gathered and killed by contract with kerosene. This machine has become an important factor in the control of grasshoppers in many parts of the country. The "hopper-dozer" is constructed as shown in (Fig. 2). The sides and back can be made of sheet iron or oil cloth. The pan at the bottom to hold the kerosene should be made of tin or galvanized iron and about three inches deep. This machine is simply drawn across the fields and the young hoppers, in trying to escape, jump into it and get wet with the kerosene and are killed. Many of the hoppers will jump out, but once they are wet with the oil they are sure to die. This machine can only be used on comparatively level land and for this reason it is not as useful in this country as in Kansas and some of the other states where it has served so well.

Where the grasshoppers are already in the fields, orchards and gardens the best treatment is to poison them with a poison bran mash, the formula for which is as follows:

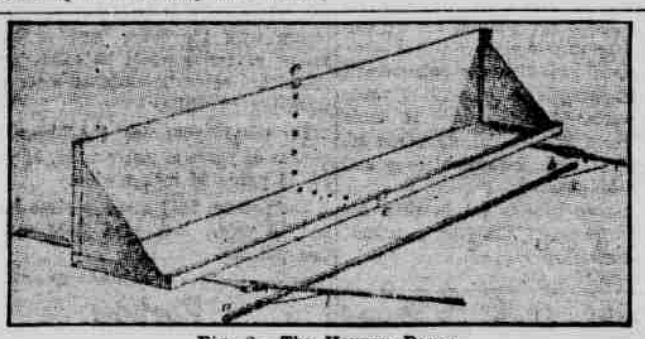

Fig. 2.—The Hopper Dozer.

Bran—25 pounds.
Syrup—1 gallon.
Paris green—2 pounds.

Mix the Paris green dry with the bran, then add the syrup dissolved in enough water to make a stiff mash when added to the bran. About three gallons of water will be sufficient. This bait should be scattered in and around the field and between the rows of potatoes.

Another formula, which has been used in California with very satisfactory results, is as follows:

Bran—40 pounds.
Syrup—2 gallons.
Arsenic—5 pounds.

The bran should be wet so that water can be squeezed out if held in the hand. After this stir in the syrup and then the arsenic. Stir thoroughly and then let stand over night, stirring again before applying on the field the next day.

Potato plants may be protected to a considerable extent by the application of the Bordeaux mixture. This serves as a repellant and tends to keep the hoppers off the plants.