

been removed. These animals are very fond of white grubs, and will root them out and devour them."

The method of controlling cutworms given in Leaflet No. 3, of the Entomological Branch, is to the effect that clean cultivation will go a long way in preventing these worms from multiplying. The eggs of most of the cutworm moths are deposited soon after the adult insect appears in early or late summer, and are laid on weeds or nearby succulent vegetation. Consequently, it is advisable to plow deeply in the early fall all fields where cutworms have been troublesome. Wrapping a piece of paper or a band of tin around such garden plants as cabbage, cauliflower, tomatoes, etc., is advocated as protection against the cutworms' attack. To protect fruit and other trees from the climbing cutworm, a band of cotton batting fastened tightly around the tree, near the bottom, will prove effective.

Remedial measures advocated in the Leaflet are as follows:

The poisoned-bran remedy is the one which is now used most extensively for the destruction of cutworms generally. This is made as follows: Bran, 20 pounds; molasses, 1 quart; Paris green, or white arsenic, $\frac{1}{2}$ pound; water, 2 or 2 $\frac{1}{2}$ gallons.

Mix the bran and Paris green (or white arsenic) thoroughly in a wash tub, while dry. Dissolve the molasses in the water and wet the bran and poison with the same, stirring well so as to dampen the bran thoroughly. Shorts or middlings in place of bran are also useful for cutworm control.

A simple formula for small gardens is one quart of bran, one teaspoonful of Paris green, and one tablespoonful of molasses, with sufficient water to moisten the bran.

The mixture should be applied thinly as soon as cutworm injury is noticed. It is important, too, that the mixture be scattered after sundown, so that it will be in the very best condition when the cutworms come out to feed at night. This material is very attractive to them, and when they crawl about in search of food they will eat it in preference to the growing vegetation. If the mixture is put out during a warm day, it soon becomes dry, and is not, of course, as attractive to the cutworms. In treating fields of hoed crops, such as beets, turnips, etc., a simple method is to have a sack filled with the bran hung around the neck, and by walking between two rows, and using both hands, the mixture may be scattered along the row on either side. When cutworms are so numerous as to assume the walking habit, the poisoned bran may be spread just ahead of their line of march. In gardens, where vegetables or flowering plants are to be protected, a small quantity of the material may be put around, but not touching, each plant. Fruit trees may be protected from climbing cutworms in the same way, but the mixture should, of course, not be thrown in quantity against the base of the tree, otherwise injury may result from the possible burning effect of the Paris green.

Under field conditions, 20 pounds of poisoned bran is sufficient to treat about 3 acres. Scattering the mixture thinly places it where it will reach the greatest number of cutworms, and when thus spread there is no danger of birds, poultry or live stock being poisoned.

Observations have shown that the cutworm moths very often lay their eggs on weeds, etc., on the higher elevations in fields, and that the young cutworms migrate therefrom to other parts. If such places are watched from time to time in spring, it may frequently be possible to control the outbreak by scattering the poisoned bait chiefly within such areas.

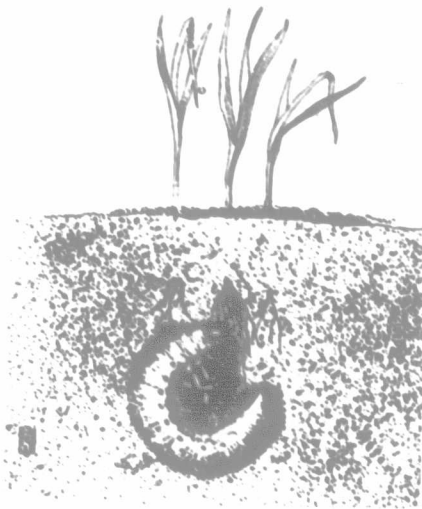
Fresh bundles of any succulent weed, grass, clover, or other tender vegetation, which have been dipped into a strong solution of Paris green (one ounce of Paris green to a pail of water), may be placed at short distances apart in an infested field, or between rows of vegetables, or roots, and will attract many cutworms and protect the crops from further injury. In Alberta the common weed known as Stinkweed has been successfully used. The bundles, also, should be put out after sundown, so that the plants will not be too withered before the cutworms find them. As in the case of the poisoned bran, they should be applied just as soon as the presence of cutworms is detected.

The above poisoned baits have given excellent results for surface-feeding cutworms, such as the Red-backed cutworm, the Striped cutworm, etc. For those kinds, however, as the Glassy cutworm, which feed almost entirely underground, these baits are, of course, of little value. For such cutworms it is important to keep the land to be used for grain crops the following year as free as possible from long grass and weeds. If this is done, there will be no tall vegetation to attract the female moths for the purpose of egg-laying.

As a rule, when cutworms assume the marching habit, they are nearly full-grown and, of course, are very ravenous. In such instances, applications of poisoned bran have been extremely useful in stopping the attack. Severe outbreaks may also be largely controlled by ploughing deep furrows in advance of the line of march of the cutworms. The progress of the caterpillars is thus stopped, and when a furrow is entered by them, a log drawn by a horse may be dragged

through it and the cutworms in this way will be crushed and killed. If a series of post holes about a foot deep and about 15 feet apart are dug in the furrow, hundreds of the cutworms will fall into them, and they can then be easily killed by crushing them with the blunt end of a post, or a piece of fence rail.

In small gardens, as soon as injury is noticed, the cutworms can, as a rule, be easily located in the soil, about an inch or so beneath the surface, and within a radius of a few inches of the plant, and destroyed by hand.

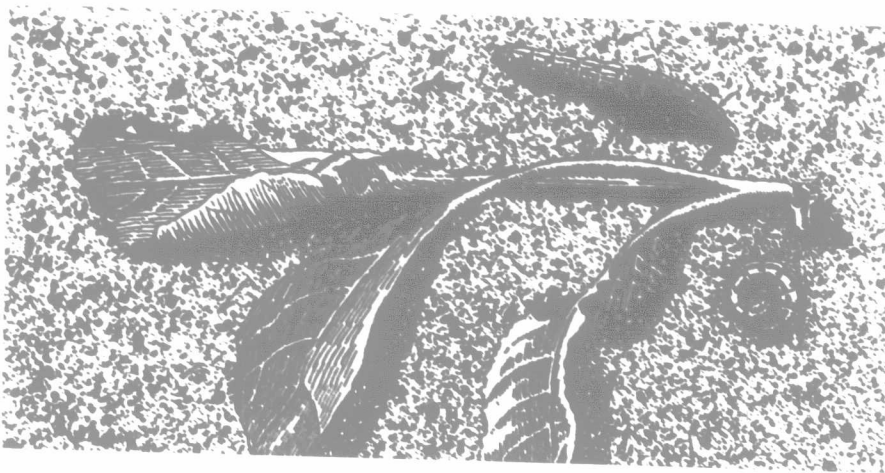


White Grub Feeding on Roots of Grasses.

FARM BULLETIN.

Anxiety in the Country.

During the last few weeks there has been anxiety, uncertainty, and a large amount of indignation evident throughout the rural districts of Eastern Canada, and as we go to press a large concourse of delegates are on their way to Ottawa to interview the Government concerning matters which affect production. Election pledges, that farmers coming under the Military Service Act would be exempted, and the continued appeal for greater and still greater production, have prompted renewed efforts and enlarged plans which render necessary all the skilled farm labor it is possible to obtain. The early and favorable spring brought about an increased acreage which will require more hands for harvest than were available last year. When exemptions were cancelled farmers became alarmed, and were seeding was not completed there was a sudden slackening of operations pending some advice as to how the crops would be cared for and harvested. Numerous meetings were called and largely attended. The sentiment expressed at these gatherings was that the Government had broken faith with farmers, and their endeavors to increase production must be more or less abortive if a greater draft was made on the man-power of the farm. Statements made by the British Ministry of Food, our own Food Control Board, and the Premier himself, were advanced as evidence that the importance of food production could not be overestimated. Since Canada



Young Plant Showing Characteristic Cutting Habit of Cut Worms.

has risen to third place as a wheat-producing nation, and as we lead the world in production per capita, it was considered inconsistent to further impair our effective machinery for feeding the Allies, who must naturally look to Canada for sustenance. All these matters have been agitating the minds of agriculturists, particularly when four-horse teams were turned to pasture in order that the farmers might report, when thousands in the towns and cities of the same draft had not yet been called up. The promise was made that farmers of the non-exempt class would be left with the seeding till those engaged in less essential industries had come forward, but it was not fulfilled, it was claimed.

After a long and sustained campaign for greater production, farmers cannot understand why the promise of an increase is to be blighted by the action taken and they are, at time of writing, en route to Ottawa to interview the Government and place their views before them. If conditions are such that food is now a secondary consideration and men for the army are of paramount

importance, then rural Canada will continue, as in the past, to rise to the occasion. No vague statements or "pleasing generalities" will satisfy this, one of the strongest delegations that any Canadian Government has ever been called upon to face.

Good Roads Conference.

At the Good Roads Conference, held in Hamilton the latter part of last week, the fact was emphasized that roads in the future must be built to stand the traffic conditions imposed by heavy and numerous trucks. When our roads were first constructed it was not expected that three and four-ton trucks would be passing over them at a rapid rate. Consequently, we find that many of the roads which were well constructed to stand ordinary traffic with horse-drawn vehicles, are breaking down under the pressure of the heavy loads and the suction of the rapidly-moving vehicles. As time goes on transportation by auto truck will undoubtedly become more popular. In the building of roads to-day mistakes of the past should be avoided. The main arteries of traffic should be built for the requirements of the next fifty or sixty years, was the advice given by Mr. Howland. This speaker outlined certain legislation which should be enforced for the governing of traffic on the road. Some of the points mentioned were, that all vehicles should carry lights; pedestrians should be required to carry a lamp; thirty miles an hour should be the maximum speed of any vehicle over an ordinary road, and that speed should be reduced according to the tonnage of the wheel base and ratio to the width of the tire. A number of delegates were present from the United States and they outlined methods of construction which were being employed in their country, and forcibly impressed upon the meeting the importance of considering the traffic of the future when building roads to-day. An address delivered by J. H. McDonald, on "Road Drainage", was listened to with a good deal of interest. H. Bertram, Vinemount, gave a paper entitled, "Who Should Pay for the Roads?" in which a number of methods of taxation for road building and road maintenance were outlined.

The Construction and Care of Outlets.

EDITOR "THE FARMER'S ADVOCATE":

The efficiency of the drainage systems in our province will depend more upon the condition of the outlets perhaps than upon any other single factor. The best outlet I have seen in operation was a corrugated metal one. Instead of bringing the tile to the end of the drain, a galvanized metal pipe, six or eight feet long of the same size as the tile, is inserted at the outlet. Across the mouth of this metal outlet, $\frac{1}{4}$ -inch bars of iron were fastened in order to prevent animals, such as muskrats and rabbits, from entering and clogging the drain. This type of outlet is absolutely frost proof, non-corrosive and, under ordinary conditions, indestructible. More than that, on account of its length and the firmness with which it can be laid, it is not likely to get out of place.

The first requisite of a good tile drainage system is a first-class outlet. Its construction and care are of first importance as no part of the system, after installation, is likely to give more trouble. Evidences of neglect in giving the outlets proper care are everywhere seen and more attention to this point will increase the efficiency of our drainage systems to a surprising extent.

An excellent outlet may also be made by using a cement tile or vitrified sewer crock at the end in preference to the clay. Due to their porosity and hence their high content of water, clay tile when frozen will flake and crumble and soon allow the earth to fall in and obstruct the drain.

Where neither a corrugated metal pipe nor sewer tile can be procured a wooden box at the outlet is to be preferred to exposing the tile at this, the most vulnerable point in the system. Cedar is preferable to use and the box should be made from six to eight feet long and large enough in cross section to admit the tile at the upper end. Care should be taken to place it firmly and permanently in position. This latter type of outlet is very efficient for a few years, but requires to be renewed as soon as the bottom board decays.

The condition of the ditch or channel into which the tile empties is also of fundamental importance and demands our careful attention. The two essential points in connection with this channel are first, that it should be of sufficient size that it will not run full for more than one day and, secondly, that the general plane of the tile drains emptying into it should be above its average surface line. Submergence of the outlet is to be avoided wherever possible as great danger of filling with silt or sand is incurred when this takes place. This condition also prevents the drainage of the lower lands. Where the tile empty at or near the bottom of a ditch and the water often rises over the top of them the outlet should be constantly watched and frequently cleaned out.

An excellent method to follow in maintaining the outlets is to examine them twice a year and repair any faulty condition found in them. The tile drainage system will be called upon to do the greatest amount of work during the spring season and if the outlets are cleared before the snow goes off their efficiency will be correspondingly enhanced. If the outlet is of a durable nature and has a good clearance it will not require any attention during the summer. They should be visited, however, late in the fall and any accumulation of dead leaves or other foreign matter removed before the snow covers it up. It will be a simple matter then to open them in the spring in preparation for the freshest season.

Thunder Bay, Ont.

"SURVEYOR".

Cattle received week were the totalling over Among the d killers. Price satisfactory to made at value prevailing at and almost \$3 the ruling pr was little cha to day, cattle market of the prevailing on day, four th for sale, and head were w of the market during the v cattle brought idea of the p the live stock can be obtaine loads of heavy the top price load was \$15.5 averaging four at \$16.25 per h hundred pound good sales fr hundred. Of hundred to tw load of twent eleven hundred per hundred, ty figure, eighteen eighty pounds hundred head the week from and heifers wei to ten hundred eight head of selling at \$14.3 twenty-eight a \$14.35, twenty numerous sales to \$14.25. Cow in keeping wi other grades of of fourteen hu \$14.00 per hund pounds at \$12.5 realized \$12.00; \$10.00 to \$11. from \$8 to \$9.50 \$12.50 in a fe a number of sale \$12; cows of goo \$10.75, common \$9 to \$9.75, and per hundred. market was abo prices of the p moved to the c numbers; choice per hundred, an \$11.75. With tw on sale, prices we choice veal calv per hundred, goo \$15.00, and comm

Lambs and she and sold at uncha About nine thou On Monday the while several deek sales were made but on Wednes marked up to \$21