The Webworm

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THE WEBWORM
(Talis pedionoma Mayr.)?


The popular name webworm has been applied to a small caterpillar whose depredations in ploughed-in wheat crops have concerned farmers in this State for many years. The first record of the insect as a pest was made by Newman (1927) under the scientific name of Sclerobia tritialis Wlk. and it has been referred to as such in all subsequent Departmental publications. Recent investigations, however, suggest that either more than one species of insect is covered by the term webworm or that the true webworm is a Crambid moth known as Talis pedionoma Mayr.

The matter can be finally settled by breeding adult moths from webworm caterpillars collected in the field but so far attempts to do this have proved unsuccessful. Autumn collections of small moths inhabiting typical "webworm country" have shown a high population of Talis pedionoma but other closely allied moths, particularly T. panteucha, may also be abundant. The exact identity of the moth may seem to the farmer to be of academic interest only but in actual practice a correct determination will greatly aid in elucidating life history studies of the pest and consequently the development of control measures.

DESCRIPTION

The various species of moths which may be implicated are small greyish insects with dark stripes and markings. The wings are closely folded around the body when at rest so that the moths harmonise closely with the background of dry grass or stubble.

The fully fed caterpillar measures approximately 3/8 in. in length and is dark greenish-black in colour. Caterpillars may be found on the surface of the ground at night but spend the day hidden in vertical silk-lined tunnels in the soil. It is the silken webbing in these tunnels which has been responsible for the popular name of the insect.
LIFE HISTORY

Many life history details still require investigation, but the adult moths fly in the early autumn and show a preference for old grass paddocks as egg-laying sites. Barley grass flats are particularly favoured. Caterpillars feed during the winter and apparently restrict their diet to grasses and cereals as opposed to broad-leafed weeds and clover.

When fully fed and with the arrival of warm dry conditions in the spring the caterpillars deepen their burrows and enter a quiescent stage. The exact period at which pupation occurs is not yet known, but this may be shortly before moth emergence in the autumn.

ECONOMIC IMPORTANCE

The importance of the webworm as a pest has increased in recent years owing to the reduction in fallow cropping in many areas. Clean fallow paddocks are not attractive to egg-laying moths and so crops planted on good fallow are never injured. However, where grass paddocks are turned-in and planted to wheat shortly afterwards serious losses may occur.

Webworm damage in wheat crops first manifests itself by the appearance of thin patches in the young crop. These patches may later become completely bare and extend in size to join up with adjacent patches. A superficial inspection of the area may fail to reveal the presence of caterpillars, as these will be hidden in the daytime in their subterranean tunnels. A search amongst the clods around the edges of a bare patch, however, will usually disclose some caterpillars. The small entrance holes to the tunnels, sometimes with a half-eaten blade of wheat protruding, are also characteristic signs to the more experienced observer.

In addition to the damage caused to cereal crops, less conspicuous but very serious losses may also occur in feed paddocks where the caterpillars destroy or adversely affect the growth of various grasses. The full extent of the damage may be masked by clover, capeweed or other plants but the depletion of true grasses in the pasture may be quite serious. Some idea of what injury could be caused will be gained from the fact that population samples have revealed approximately half a million caterpillars to the acre in some grass paddocks.

SUSCEPTIBLE PLANTS

Amongst the commonly grown cereal crops wheat, barley and rye are liable to webworm attack. Oats, on the other
hand, appear to be quite immune as numerous observations have been made where wheat has been totally destroyed by webworm and oats in the next drill row have been untouched. In mixed grass and clover pastures clover appears to be entirely ignored but detailed information is not available as to just which type of grasses are preferred, with the exception of barley grass (*Hordeum murinum*) which seems to be first favourite.

**CONTROL MEASURES**

**Cultural Operations**

Various investigations have been carried out by officers of the Entomological Branch in co-operation with members of the Wheat Branch and individual farmers in order to test out the effect of cultural operations on the incidence of webworm. These investigations have not been concluded but a brief summary will be given of the progress made to date.

The results achieved by various cultural methods may, of course, be expected to vary with seasonal conditions and perhaps from district to district. The practicability of certain recommendations will also vary considerably in accordance with local differences in rainfall and soil type.

**Fallow**

The surest known method of preventing webworm losses on susceptible cereal crops is to plant on clean fallow. For reasons of soil conservation and the greater use of land for stock grazing, there has been a considerable reduction in fallowing operations in recent years and a consequent increase in conditions favourable to webworm activity.
So Do Seasons

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Time of Planting

In order to test the effect of time of planting upon webworm activity a series of trials were planted using wheat as the susceptible crop and oat buffers to prevent migration from one treatment to the other. Without giving details of trials, their results indicate that early sown crops are less liable to webworm injury than late ploughed-in crops and that where sowing can be delayed a fortnight or three weeks after ploughing the likelihood of webworm loss will also be reduced.

Rolling, Harrowing and Replanting

Webworm outbreaks are often so patchy and the rate of spread so uncertain that although further extension may cease following harrowing or cultivating, the restricted activity is often associated with the natural habits of the creature rather than any direct effect of the implements used.

Observations on webworm infested areas which were rolled, harrowed or cultivated did not indicate that any appreciable control can be obtained by such methods. Replanting with wheat in most cases proved successful, although a few farmers have reported adversely on this practice.

Chemical Control

The control of pasture and cereal pests with chemicals is often an uneconomic proposition, not only because of the price of chemicals but because of the large areas involved and the difficulties and cost of application.

Because of its outstanding effectiveness against many other caterpillar pests however, it was decided to try D.D.T. on a field scale against the webworm. Preliminary tests were made in 1949 and the first field treatments were applied on wheat crops at York and Goomalling in July, 1950. The rate of application was 28 lb. of 2 per cent. D.D.T. dust per acre and this produced a heavy caterpillar mortality.

During the 1951 season D.D.T. from 4 ounces to 2 lb. per acre was tried on natural grass pasture. The insecticide...
was applied as a spray through a low volume spray boom at the rate of 10 gallons per acre.

Sampling prior to treatment revealed a caterpillar population of approximately half a million to the acre, and all treatments almost entirely eliminated the caterpillars from the sprayed areas.

NEED FOR FURTHER INVESTIGATIONS

A detailed knowledge of the insect's life history is essential so that more accurate recommendations based upon ploughing and sowing dates may be deduced. D.D.T. and superphosphate mixtures applied as a topdressing require careful study and the possible use of several new insecticides are worthy of trial.

Further experimental work is necessary to determine the practicability of using D.D.T. for webworm control on both pastures and crops. One of the chief difficulties is the scattered nature of the infestations and the varying intensity from year to year. Once bare patches have appeared in a crop then spray or dust treatments may be too late to repair the damage.

The best time to apply control measures should be immediately any thinning from webworm attack is noticed. In the case of mild infestations, however, the final losses may be unimportant even when no treatments are applied and local experience will probably guide the farmer as to whether action is worthwhile or not.

The experimental programme for the coming season has been planned with the above requirements in view, but it may be several years before some of the problems have been satisfactorily solved.

SUMMARY

(1) The exact identity of the webworm is doubtful but the insect is probably a Crambid moth (Talis pedionoma Mayr.)

(2) The caterpillars may cause serious damage to "ploughed-in" wheat, barley and rye crops. Oats are not subject to attack.

(3) Old barley grass paddocks appear to be most attractive to egg-laying moths.
(4) Crops planted on fallow are not subject to attack.

(5) When planting can be delayed a fortnight or more after ploughing there is evidence to show that the liability to webworm injury is reduced.

(6) D.D.T. has been shown to be very toxic to the caterpillars of the webworm moth.

(7) There is no evidence to show that rolling, and harrowing are effective controls against the pest.

(8) There is a need for more detailed information on the life history of the insect, and further insecticide trials should be made.

ACKNOWLEDGMENTS

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LITERATURE


“Thanks,” said Mr. Bristow, “for selling me such a splendid machine. It is the one thing that put me on my feet during the tough times. In fact, I can safely attribute my success on this farm to the Bulldog Tractor. I estimate that a kerosene tractor would have cost me ten times as much in upkeep alone and three times as much in fuel costs.”

It was 1924 when Mr. E. W. Bristow took over his property at BELKA, W.A., in the Eastern Wheatbelt. To-day he has a total of 4,200 acres, 1,000 crop, 850 fallow and runs 1,500 sheep.

Here is what he had to say about the performance of Lanz Bulldog Tractors: “If I had my way I’d have a Lanz engine in every vehicle and mechanical unit on the place. They are the only type of engine any good in my opinion. So much so that I bought another Bulldog in 1949.” Mr. Bristow added: “I was farming with the horses until I swapped over to the Lanz, and I have found Bulldogs are far more economical than horses. I am convinced also that a Bulldog will save at least £280 per year on the operating costs of kerosene tractors.

“My first Bulldog, bought twelve years ago, has been overhauled only once at a cost of £30, about £4 for parts and the balance for labour. Apart from that, the only other replacements I have made have been fan belts and one hot bowl. Over the whole period that Bulldog has cost me only £3/10/, approximately, per year for upkeep. On a kerosene tractor £100 would go nowhere for upkeep.”

Mr. Bristow has farmed at least 60,000 acres with his Bulldogs. They both pull a 14-disc plough, 20-run combine, and 18-tyne scarifier easily at 4½ m.p.h. in heavy country. Mr. Bristow concluded his remarks by saying: “I have stuck to Bulldogs because they’re the only machines that give me complete satisfaction!”

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