Insect pest and their control - The climbing cutworm

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The name, "climbing cutworm," is applied to several different species of caterpillars which cause serious economic damage in different parts of the world. The best-known form has such popular names as the "cotton boll worm," the "corn ear worm," and the "tobacco bud-worm," and is known to science as Heliothis armigera. Previous references in local literature have referred to this species, but more exact studies of the insects concerned have revealed that our local pest should be known as H. punctigera (Common, 1953). A change of name is of little interest to the farmer, but an exact knowledge of the different members of the climbing cutworm group, their distribution and food preferences may well lead to discoveries of practical importance. The name "climbing cutworm" is applied locally to distinguish the species from the common cutworm, which seldom feeds up in the foliage, but gnaws plants off at ground level and hides under soil and clods during the daytime.

The parent of the climbing cutworm is a light-coloured moth measuring about 1\(\frac{1}{2}\) inches across the outspread wings. The forewings are buff-coloured with darker bands running parallel to the outer margins, and with some scattered dark spots. The hind wings are light with broad dark bands on the outer margins.

**LIFE HISTORY**

The tiny white eggs are laid singly on the foliage of the host plants and hatch in from three to six days, according to conditions. A single female may lay as many as a thousand eggs, but as egg laying is done mainly at night this activity of the moth is rarely seen.

The young caterpillars are dark in colour, but as they feed and shed their skins the various stages show different body markings. The full-grown caterpillars measure about 1\(\frac{1}{2}\) inches in length and display great colour variation, but usually they are greenish with irregular dark stripes on the back and a light band along each side of the body. The period required for the caterpillar to become fully grown varies greatly according to the type of food available and the weather conditions, but under favourable circumstances the time involved is about 20 days.

When fully mature, the caterpillar descends from the food plant, burrows into the soil, and pupates within a silk-lined earthen cell. The length of the pupal period may only be a couple of weeks, but if weather and temperature conditions are unfavourable this stage may be lengthened very considerably.
HABITS

As already mentioned, the climbing cutworm moth is nocturnal in habits, but it may often be disturbed from weeds in the daytime, when it will make a low rapid flight and quickly disappear again. It is readily attracted to lights, and along with other types of cutworm moths, is a common visitor to lighted rooms on spring and summer evenings.

The caterpillars, although feeding readily on various types of foliage, show a marked preference for fruits and maturing flower heads. In consequence, ripening maize, tomatoes, cotton, linseed, and flax bolls, peas and bean pods, are favourite items of food. Immature almonds, plums, apples, pears and other fruits may also be attacked by the spring brood. A single caterpillar may, of course, go from one fruit or pod to another during feeding, and in the course of its development do a considerable amount of damage.

Under local conditions several generations of the climbing cutworm may develop annually. In the drier parts of the State development is retarded in the summer due to lack of moisture, and in these districts the pupae remain dormant in the dry soil until the autumn rains make it possible for the moth to emerge. In flower and vegetable gardens, where constant watering is being carried on, or in the moist southern portion of the State, it may be possible for the insect to develop throughout the year. The generation which is of greatest economic importance is the spring issue, for it is then that such crops as peas, flax, linseed, beans, tomatoes, etc., are commencing to fruit, and when conditions are most favourable for the development of the caterpillars.

The time at which this spring plague appears varies according to the locality. In northern districts such as Geraldton, caterpillars are active about mid-August or early September. In more southern districts, such as Northam and York, October is the critical month, and farther south heavy losses may be experienced in November.

HOST PLANTS

An extensive list of cultivated plants commonly attacked by the climbing cutworm has already been mentioned. In addition to these a large number of weeds and certain garden flowers may support the caterpillars. Rose buds, carnation heads and calendula flowers, to mention a few examples, are often ruined by this pest. Even late patches of wheat may be attacked by the "grub," and the still soft grains may be entirely hollowed out.

The neat manner in which the cutworm eats out the interior of fruits and seeds attacked is quite characteristic, and is well demonstrated in the illustration.

CONTROL

Cultural Methods.

The planting of crops on clean fallow is not as effective against the climbing cutworm as it is against the webworm and the armyworm. The life history details show that moths may fly extensively over fallow-sown crops and lay eggs on the growing plants. The time of planting and the date of maturing of certain crops may...
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Fig. 2—CLIMBING CUTWORM INJURY TO PLANTS. (1) Tip of tobacco plant injured by climbing cutworm. (2) Climbing cutworm injury to green tomatoes. (3) Climbing cutworm caterpillar boring into green peach. (4) Okra pod attacked by caterpillar. (5) Caterpillar boring into cowpea pod. (In this illustration (1) is reduced one half, (2), (3) and (4) natural size and (5) is two-thirds natural size.)

(After Quaintance and Brues)
Fig. 3.—PUPATION OF THE CLIMBING CUTWORM. (1) Full grown larva entering soil for pupation. (2) Three larvae showing shrunken appearance just before pupation. (3) Larva in cocoon as made in sandy soil. (4) Two climbing cutworm pupae. (In this illustration (3) is about natural size, (1) and (2) are enlarged one-half and (4) enlarged three times.)

(After Quaintance and Brues)
however, have an important bearing on the degree of caterpillar damage. Early-maturing varieties of field peas such as White Brunswick, for instance, sometimes show appreciably less caterpillar injury than the later-maturing Blue Dunn grown under similar conditions. This also applies to different varieties of flax.

**Chemical Treatments.**

**DDT**

Dusts and sprays containing DDT are generally used for climbing cutworm control and give superior results to those obtained with arsenate of lead. For market garden and home grown crops, 2 per cent. DDT dust is one of the most convenient forms of control. For orchard use, 0.1 per cent. DDT spray is recommended, but on field crops, low-volume applications of higher concentration should be used. As a general guide, for the treatment of such crops as lupins, linseed, flax and field peas, the DDT should be applied at the rate of not less than ½ lb. of pure DDT per acre. This means that a quart of 20 per cent. DDT concentrate will treat one acre. The actual rate of dilution will depend upon the output rate of the spray unit. Low-volume spray booms have been used with ground equipment at the rate of 5-10 gallons of liquid to the acre, and aircraft applications are usually as low as 2 gallons per acre. Providing a good cover is obtained, the important thing is the amount of insecticide which is applied to a given area, not the amount of liquid.

Chemical treatments for climbing cutworms should be applied immediately there is any sign of caterpillar activity. The young caterpillars succumb readily to the poison and the residual action of DDT will kill later arrivals. Where large caterpillars are already present, it may be necessary to increase the dosage rate from ½ lb. of DDT to 1 lb. of DDT per acre.

**Arsenate of Lead.**

If, for any reason, arsenate of lead is preferred to DDT, the following mixtures are suggested:

1. Arsenate of lead powder 1 part; slaked lime, talc or kaolin 1 part.
2. Arsenate of lead powder ½ oz. or arsenate of lead paste 1 oz., water 1 gallon.

The spray mixture should be kept well agitated when in use to prevent the powder settling to the bottom.

**LITERATURE**
