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Lepidopterous Larvae Injurious to Sorghum Earheads

by

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Introduction: *Sorghum vulgare* is one of the major millet crops of the Madras State grown for grain and for fodder. In Coimbatore where irrigation facilities are available it is grown as a summer crop under irrigation and as a rainfed crop in the N. E. monsoon season. The summer crop is subject to the attack of the earhead bug *Calocoris angustatus* D. which sucks up the sap from the newly formed grain and makes it chaffy. It has now become a regular practice to apply B. H. C. 10% dust once a week at the time the earheads are exerted so as to control the bugs. However, other insects which had so far been occupying a subsidiary status, are becoming important now. Many species of Lepidopterous larvae have been found in the internal portions of the compact earheads feeding on the grains in the security of the spikelets which surround them. Attention has been drawn to some of these insects by former workers (Fletcher, 1921 & Ramakrishna Ayyar, 1940) but the exact nature of attack has not been clearly indicated. An account of the insects noted and their characteristic features are given here.

Previous Records: Fletcher (1921) listed seven caterpillar pests which attacked cholam earheads. These were *Stenachroia elongella* Hmpsn. (Pyralidae) in Coimbatore and Pusa; *Eublemma silicula* Swinh. in Coimbatore and Nagpur; *Porthesia xanthorrhoea* Koll. (Lymantriidae) in Pusa; *Dichocrocis punctiferalis* Guen. in Nagpur and Pusa; *Anatrachyntis simplex* Wlsm. in Pusa, Hagari and Coimbatore (Fletcher, 1920); *Stathmopoda theoris* Meyr. (Heliodinidae) in Coimbatore and *Sitotroga cerealella* Oliv. also. Ramakrishna Ayyar (1940) observed the first two and *Celama internella* Wlk. (Arctiidae) as the common ones in Coimbatore. In Mysore, the occurrence of *D. punctiferalis* Guen. in the earheads of cholam stored after harvest (Puttarudraiah & Channabasavanna, 1951) and *S. cerealella* Oliv. feeding on the ripening grains of cholam in the field (Puttarudriah & Raju, 1953) were reported. Thirumal Rao (1956) reported for the first time outbreaks of *Heliothis armigera* Hb. causing severe damage to cholam earheads in 1952 in Coimbatore District and in 1953 in Guntur District. Again a serious incidence of the insect on cholam earheads in Madras State was reported (Nagaraja Rao & Abraham, 1956). A fairly large scale incidence of *S. cerealella* in the earheads of a standing cholam crop was reported in Coimbatore recently (Subramaniam *et al.*, 1959).

The Earhead Caterpillars and the nature of Injury Caused:

The study of the caterpillar pests of cholam earheads was made in the fields of the Agricultural College & Research Institute, Coimbatore. The following were the insects noted during the study.

1. *Cryptoblabes* sp. (Pyraustinae): A narrow light brown caterpillar with a dark head and dark lateral lines on the body occur commonly in the cholam earheads in any season. It attains a length of about 1½ cm and has very short hairs sparsely distributed on the sides. The caterpillar is usually found near the rachis, webbing together adjacent grains in a thin silken web and feeding from inside on the grains. The debris and faecal matter get attached to the webs. The caterpillar wriggles in short jerks when disturbed and falls to the ground. It pupates in light cocoons attached to the rachis or other branches in the earhead. The moth is about 1·5 cm. across the wings and has brown forewings and light brown hind wings.

This insect is being noted here for the first time on cholam.

It occurs during summer and October to December and is seen in the earheads all through the earhead stage of the cholam crop.

2. *Eublemma silicula* Swinh. (Noctuidae): This is a pale yellowish caterpillar noted webbing the grains in the branches of the earheads. The caterpillar is cylindrical, measures about 1½ cm. when full grown and has a dark V shaped marking on either side of the median line on the prothoracic shield. The apex of the marking points away from the head and the inner line is thicker than the outer. Small black spots are present on the sides of all the thoracic segments. Wavy greenish brown lines are seen on the body and thin long hairs in four rows. The thoracic legs are black and the prolegs in the fifth, sixth and anal segments are yellowish. There is a median dark marking on the dorsum near the anal end.

The caterpillar lives in light silk webs constructed on the grains or by combining a few grains together. It pupates in the silken tunnels itself in a brown pupa. The adult moth has a wing expanse of about 1·9 cm. and has reddish buff coloured wings with wavy lines. The wings are spread out flat while resting.

This insect has been noted by former workers but not much importance has been attached to it. It is seen in the summer and monsoon seasons and is capable of destroying a good number of grains.

3. *Heliothis armigera* Hb. (Noctuidae): The gram caterpillar has been noted as a polyphagous insect on a number of plants in India. It is met with invariably with the other two. It remains concealed in the earhead in the inner branches and feeds on the grains. The affected earheads could be easily made out in the fields by the chalky appearance of the earheads due to the presence of partially eaten grains. It has, however, to leave the earhead for pupation in the soil. This insect also occurs all through the year in cholam earheads.

4. *Anatrachyntis simplex* Wlsm. (Cosmopterygidae): This is a small red caterpillar with a yellowish brown head and prothorax measuring about 7 cm. in length. It binds grains in a thin silken web and feeds on the inner portions of the grains. It pupates in the web and emerges as a small brown moth of about 1·1 cm. in width with fringed hind wings.

This insect is found in fairly large numbers all through the year along with the other insects mentioned above. Fletcher (1920) concluded that it should feed on debris of the grains and may not injure whole grains. Wilcocks (Fletcher, 1920) had also noted the insect feeding only on injured cotton seeds or on the fibre in the cotton bolls. However in the present instance when fresh spikelets were given as feed the caterpillars were found to bore through the grains and feed on the contents. This insect can cause appreciable damage since its small size is made up by its numbers.

5. *Dichocrocis punctiferalis* Guen. (Pyralidae): The castor capsule borer has been known to attack several plants like turmeric, ginger, cardamom and guava commonly in the field. Except for its record on cholam earheads in Nagpur, Pusa and Mysore *(loc. cit.)* there is no further record of the insect as occuring on cholam. The insect collections of the Institute includes specimens taken on cholam earheads (Coll: Y. R. Rao, July, 1916). In the present instance it has been noted to occur on cholam from April to June in small numbers along with the other earhead caterpillars. This insect is common in Coimbatore and has therefore to be regarded as a regular pest of the crop in summer.

6. *Plodia interpunctella* Hubn. (Pyralidae): The meal moth is a pest of stored grains attacking mainly wheat (Pruthi & Mohansingh, 1950) in India. It does not occur to any large extent in South India. However, the caterpillars were found to feed on cholam grains in a standing crop during June. This appears to be the first record of the insect attacking cholam earheads in the field. Although it may be a small infestation, it can also contribute to reducing the yield of grain from the crop.

7. *Sitotroga cerealella* Oliv. (Gelechiidae): The grain moth is also a pest of stored grains attacking commonly unhusked paddy. But it has been reported as attacking cholam earheads *(loc. cit.)* and occasionally becoming severe. In the present case a few caterpillars were found attacking cholam earheads along with the others reviewed above. This also has to be considered as a pest of cholam earheads of the summer crop.

Other Insects: Though *Stenachroia elongella* Hmpsm., *Porthesia xanthorrhoea* Koll. and *Celama internella* Wlk. have also been reported as infesting cholam earheads, these were not obtained during the present study. Evidently these occur on the plant sporadically.

Comparative Populations of the Insects : With a view to arrive at the severity of injury caused by the several insects noted above, counts of the caterpillars in each species per earhead were made. The following range of infestation was noted in the summer crop of cholam.

Insect.	Number of caterpillars per earhead.	Occurrence.
1. *Anatrachyntis simplex* Wlsm. ...	5-37	common
2. *Eublemma silicula* Swinh. ...	2-6	,,
3. *Cryptoblabes* sp. ...	2-4	,,
4. *Heliothis armigera* Hb. ...	1-2	,,
5. *Dichocrocis punctiferalis* Guen. ...	1-2	occasional.
6. *Sitotroga cerealella* Oliv. ...	2	,,
7. *Plodia interpunctella* Hubn. ...	2	,,

The first four insects mentioned above occur in almost all earheads and hence have to be regarded as severe pests. The others occur only occasionally in small numbers but can cause appreciable damage.

Summary : Lepidopterous insects affecting cholam earheads and the nature of damage caused by them are given in this paper. Out of the seven insects noted, three are recorded here for the first time in this State. The range of infestation noted in the summer crop of cholam is also indicated.

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