

BIOLOGY OF *MYLLOCERUS CURVICORNIS* (F), A PEST OF COCONUT*

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Myllocerus curvicornis (F) is a pest on the foliage of coconut (Kurian *et al.*, 1978). It feeds from the margin in circular pattern preferring the tip portion of the leaflets of the middle and inner whorls. The results of the study on the biology of the pest are presented.

Materials and Methods

Field collected adults of *M. curvicornis* were used for the biological studies. Two pairs of the weevils were caged with coconut leaf bits in petridishes (10 cm dia) provided with sterile moist soil for egg laying. After hatching, the first instar grubs were transferred to specimen tubes (7.5 cm x 2.5 cm) in which cotton seedlings were raised in stem sterilized sandy loam soil. As soon as the seedlings were killed by feeding, the larvae were transferred to another tube containing a fresh seedling. The early instar grubs were separated from soil by washing the soil which makes the grubs float on the surface. The soil was examined every day to ascertain the time and number of moulting. After the pupation the mouth of the tube was covered with cotton plug until adult emergence. On emergence the adults were transferred to petridishes with coconut leaflets for further studies. The trial was carried out in the laboratory under a temperature range of 28°C to 30°C and RH range of 75 to 79%.

Results and Discussion

Adult

Adults (Fig 1) are grey or ash coloured immediately after emergence. Later the ash coloured scales are rubbed off exposing the dull brown body and so the adults, a few days after emergence, become sombre coloured. Male and female measures 6.4 mm and 7 mm long respectively. Head is mostly rugosely sculptured with scant short silvery white pubescence except for some setae at the base of the mandibles. Face is with a median longitudinal broad fovea. Eyes are black and surrounded by golden yellow encrustation. Rostrum is very short. Mandibles are black sickle shaped and unidentate. Antennae are inserted in fovea in front of eyes.

Prothorax is prominent, nearly as long as head and rugously sculptured. Meso and metathorax are smooth and shiny and are fused together. Elytra completely cover the abdomen to the very tip, mostly covered by yellowish white scales,

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with an olive tinge in certain angles, large brown patches dorsally and white pubescence laterally and apically, the whole colouration giving the weevil a camouflaged appearance which protects the weevil from its natural enemies. The hindwings are of the cantharid type. Foreleg is black and nearly the same as the middle and hind-legs in size and appearance. Mid legs are nearly same as the forelegs in colour, in size and structure except for shorter tibia and absence of prominent stiff spines arranged in the inner aspect of distal half of tibia which is clearly seen in foreleg. Hind leg is slightly bigger than fore and midleg. All the three pairs of legs carry bifid unidentate claws.

Abdomen is somewhat boat shaped and dorsoventrally flattened with two longitudinal foveae laterally disposed. The tergites are light brown with a yellowish tinge except for the last which is dark brown. The apical segment is finely sculptured with a metallic hue in certain angles. The genitalia are withdrawn into the abdomen and concealed while at rest.

During the period under observation, the following plants were recorded as alternate hosts which were not reported earlier. These are *Glyricidia indica*, *Moringa pterigosperma*, *Stylosanthes gracilis*, *Mangifera indica*, *Cajanus cajan*, Hybrid Napier, Pusa giant grasses, *Pueraria javanica*, *Canavata ensiformis*, *Ixora singaporensis*, *Chrysalidocarpus lutescens*, *Flacourista enermis*, *Hibiscus rosasinensis* (single), *Hibiscus rosasinensis* (double), *Saccharum officinarum*, *Cassia tora*, *Pavata indica*, *Mussaenda* sp., *Ochrasquamosa*, *Acalypha lanceolata* and *Arachis hypogea*. The larvae feed on the roots of grasses and small plants. The weevils prefer the inner and middle whorls of the leaves of coconut palms. In cases of severe attack, the leaflets finally bend and dry up. In diseased palms, they feed even on the spindle and innermost leaves.

The weevils are both polyandrous and polygamous. In few cases, as soon as the female is courted, mating occurs the female being in the receptive stage. Weaker males fail to mate with any of the females because the females could push them out very quickly.

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The weevils lay eggs in instalments both singly and in clusters below the soil surface usually at night. About 175 eggs are laid in three to four clutches. Incubation period varied from five to six days. Fresh eggs are pearly white with a faint brownish tinge at certain angles. Fully developed eggs are much darker, somewhat elongate, oval in shape and measure 0.6 mm long and 0.4 mm wide

Larva (Fig 2).

First instar: Apodous eucephalous larva is 1 to 1.2 mm long, 0.3 to 0.5 mm wide, creamy white, darker in the middle and covered over by fine setae. Head is light

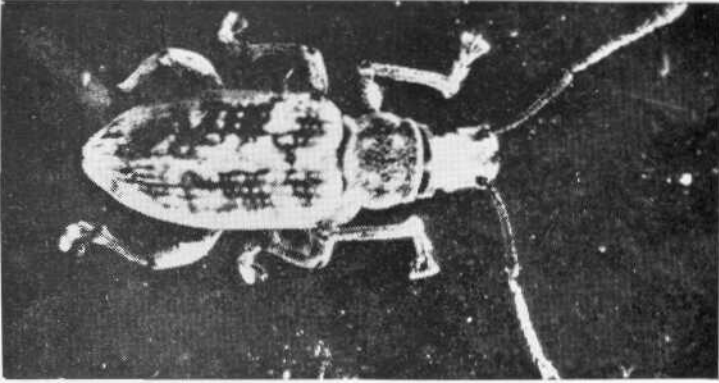


Fig. 1 The adult of *Millocerus curvicornis* (x9)

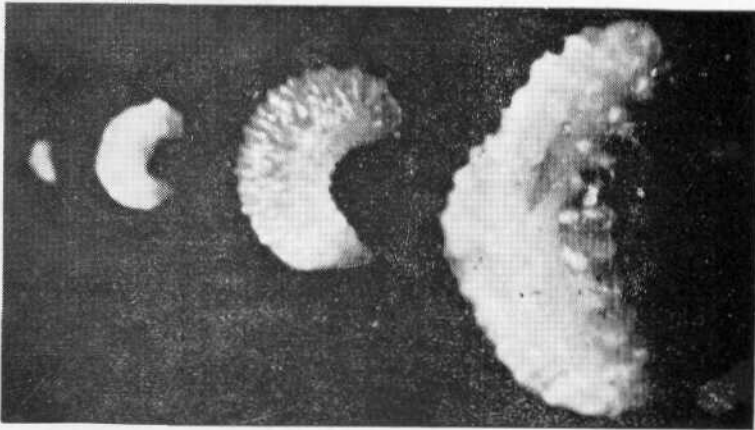


Fig. 2 The larval instars (x 9)

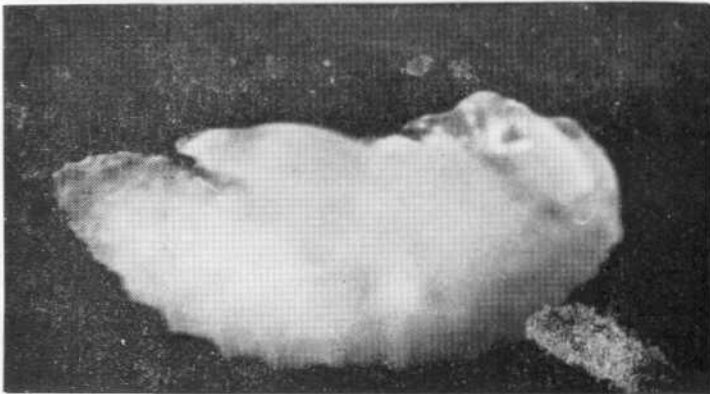


Fig. 3 The pupa (x9)



Fig. 4

The attack of *Millocerus curvicornis* on coconut palms

reddish brown with strong bi-dentate mandibles. Thorax is longer than head and abdomen. Segments are distinct. Nine abdominal segments are visible and tapers to the apex.

Second instar: Larva measures 2.5 mm long and 0.75 mm wide. Body is pale yellowish white with a creamy hue in the middle and is sparsely covered over by fine silvery white setae. Head is small with brownish tinge. Segmentation of the body is clearly visible. Caudal end is used as a pivot for body propulsion.

Third instar: Larva measures 4-5 mm long and 1.5 mm wide. Body is creamywhite and head is brownish yellow, smooth and shiny. Thorax is covered with bristles. Nine abdominal segments are clearly visible. Apex of the abdomen is papilliform and the posterior end is beset with a cluster of short brownish setae.

Fourth instar: Larva measures 5-6 mm long and 2 mm wide. Body is creamywhite and head is yellowish brown. Other details are as in third instar.

The prepupa after moulting slowly transforms into the pupa. Larva pupates in soil. At first, the middle portion becomes contracted demarcating the thorax and abdomen. At this stage the head is not very well defined but outline of compound eyes are somewhat traceable.

Pupa (Fig 3).

Pupa is exarate, measures 5 mm long and 2.3 mm wide. Head, thorax and abdomen are orange white with an yellowish white hue in certain angles. But viewed from ventral sides the eye region and appendages on head and the thorax are pearly white with a silvery white texture. Pupa is dorsally arched. Three segments of thorax and anterior abdominal segments are clearly visible. The eye marks also slowly become visible. Brown pigmentation develops first in the anterior part of eye and gradually spreads to the entire eye. As development proceeds eyes become deep black and are clearly seen through the pupal skin. Darkening of colour in the region of the mouth takes place. A light ash grey (slate) colour develops in the region of the wings and the anterior part of the head above the mouth upto the level of eyes become brownish.

Life cycle

The larval period is, on an average, 30 days, during which period the larva moults four times and the fourth moult is for pupation. The pupal period lasts for an average of nine days. The total life cycle is completed within an average period of 45 days. The maximum longevity observed for laboratory-emerged males and females was 14 and 28 days respectively.

Summary

Myllocerus curvicornis (F.) is a pest on the foliage of coconut palm. The life history is completed within a period of 45 days. It has four larval instars and one pupal instar. The description of various stages, life history and habits are presented in this paper.

സംഗ്രഹം

തെങ്ങിനെ ആക്രമിക്കുന്ന മിലോസിറസ് കർവിക്കോർണിസ് എന്ന കീടത്തിന്റെ ജീവചക്രത്തെക്കുറിച്ച് പഠിച്ചതിൽ, നാൽപ്പത്തിയഞ്ച് ദിവസംകൊണ്ട് മൂട്ട മുതൽ പൂർണ്ണ വളർച്ചയായ ജീവിവരെയുള്ള ഘട്ടങ്ങൾ പൂർത്തിയാക്കുന്നതായി കാണുന്നു.

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