



DEVELOPMENT OF RICE MOTH *CORCYRA CEPHALONICA* ON SORGHUM BASED GROWTH MEDIA

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ABSTRACT

Laboratory experiment was conducted to evaluate the life cycle of rice moth *Corcyra cephalonica*(Stainton) on sorghum grains based growth media. Life parameters viz., larval, pupal and total developmental period, adult emergence and female sex ratio were evaluated. The larval period was the shortest in first and third instars and longest in sixth instar. The adult emergence observed was 56.66% with 49.99% female moths.

Keywords: *Corcyra cephalonica*, sorghum, development, biology, instars, period, pupa, adult.

Corcyra cephalonica(Stainton) is an economically important stored grain pest of Asia, Africa, North America and Europe (Atwal and Dhaliwal, 2008). It is a major pest of rice, wheat, maize, sorghum, groundnut, cotton seeds, coffee, spices, cocoa beans, and millet (Allotey, 1991; Kumar and Kumar, 2001). It is extensively used in biological control being a host for 75 natural enemies of which 60 are parasitoids and 15 are predators. Mass rearing of insect is prerequisite for commercial production of several biological control agents (Omkar, 2017). So, mass breeding of *C. cephalonica* is done in the laboratory for its use against natural enemies, which are dependent on either egg or larval stages because it is easier and cheaper to produce natural enemies on different stages than on their original hosts (Kumar and Murthy, 2000). Hence, generating information on development and lifecycle of *C. cephalonica* is necessary and hence the present study was conducted.

MATERIALS AND METHODS

The eggs of *C. cephalonica* were procured from Punjab Agricultural University, Ludhiana and the experiment was conducted in the laboratory of Department of Zoology, Hans Raj Mahila Maha Vidyalaya, Jalandhar. To study the development, the rearing medium of sorghum was used. The grains of sorghum were coarsely crushed and beakers of 250 ml were 3/4th filled with grains and larvae were released. The newly hatched larvae were transferred to experimental beakers. There were six replicates with five larvae in each. The life cycle parameters were studied, for which the first instar larvae that hatched from eggs of rice moth were shifted to beakers of

250 ml. Beakers were covered with muslin cloths to prevent escape of moth. Observations were taken on instars, pupal period, adult emergence and sex ratio of the adults.

RESULTS AND DISCUSSION

The *C. cephalonica* larvae that were fed on sorghum diet were further observed for larval period at its different instars. There were six larval instars. The larval period for first and third larval instars were shortest ($F = 20.08$, $p \geq 0.0001$). However sixth larval instar with 9.70 days of larval period was amongst the instar with longest duration (Table 1). Growth, development, and reproduction of insects are strongly dependent on the quality and quantity of food ingested (Scriber and Slansky 1981). The present results are in close agreement with Ayyar (1934) who documented larval period of 57 days on sorghum. The larvae were further observed for pupal period. The pupal period was 11.12 days on sorghum diet. Ashwini Kumar et al. (2002) recorded pupal period of 7.78 days on sorghum. The results showed that the total developmental period is 52.69 days. Ashwini Kumar et al. (2002) reported total developmental period of 45.82 days on sorghum.

The pupae that were formed were further observed for adult emergence. 56.66% of the adults emerged from larvae fed on sorghum diet. Nathan et al. (2006) documented adult emergence of 68% on sorghum. Kumar and Kumar (2002) reported 37.04% moth emergence from sorghum (2 kg) with 4000 *C. cephalonica* eggs. The adult emergence was observed for sex ratio and it was found to be 49.99 percent in female moths (Table 1). The female moths are distinguished

Table 1. Lifecycle parameters of *C. cephalonica* fed on sorghum diet.

Larval instar	Larval period (Mean \pm S.E.)	Pupal period (Mean \pm S.E.)	Total developmental period (Mean \pm S.E.)	Adult emergence (Mean \pm S.E.)	Female sex ratio (Mean \pm S.E.)
First	5.83 \pm 0.23 ^c	11.12 \pm 0.52	52.69 \pm 0.41	56.66 \pm 3.33 %	49.99 \pm 16.66 %
Second	6.30 \pm 0.33 ^{bc}				
Third	5.43 \pm 0.24 ^c				
Fourth	6.56 \pm 0.48 ^{bc}				
Fifth	7.73 \pm 0.36 ^b				
Sixth	9.70 \pm 0.36 ^a				
F value	20.0802				
P value	0.0001				

Mean \pm SE. Means followed by different letters within a column significantly different

externally with their larger size as compared to male moths. *C. cephalonica* has been extensively used for laboratory purpose as its wide acceptability of easy rearing, cheap production with minimum laboratory facilities, thus it has turned out to be a boon for mass production of biocontrol agents.

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