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Bionomics and biometrics of Greater wax moth *Galleria mellonella* Linnaeus

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Investigations on the biology of *Galleria mellonella* revealed that the incubation period was 8.6 ± 0.48 days. The seven successive larval instars occupied 4.40 ± 0.48, 5.20 ± 0.4, 6.5 ±0.67, 7.3 ±0.45, 8.30 ±0.45, 8.40 ±0.66 and 9.20 ±0.4 days, the total larval period was observed to be 49.3 ±1.62. The duration of prepupa and pupa were 2.1 ± 0.53 and 8.6 ±0.73 days respectively. The adult males lived for 16.4 ±2.69 days, while female lived shorter only 6.9 ±0.7 days. The pre oviposition, oviposition and post oviposition periods were 1.1 ± 0.3, 4.6 ± 0.66 and 1.2 ± 0.4 days, respectively. Females laid 750.90 ± 169.78 egg/female with 159.70 ±46.87 eggs/day.

Key words : Biology, Greater wax moth

INTRODUCTION

Honey bees are affected by several natural enemies. The greater wax moth *Galleria mellonella* is considered as a notorious pest of honey bee colonies which is well distributed throughout the world. The larvae of wax moth cause no direct damage to bees at any living stage, but are very destructive to the combs. They eat the wax of the comb and other associated materials *viz.*, pollen, propolis dead bees and pupal cases of bees. The larvae of waxmoth bore in to the combs and make tunnels in the middle of the comb. Later black excreta can also be noticed in the web. As a result of serious infestation, weak bee colonies abscond, while in strong colonies bee population quickly reduced and complete destruction of colonies have also been recorded (Hanumantha Swamy,2000). It caused considerable damage to honey bee colonies which resulted in heavy economic losses to bee keepers (Kapil and Sihag,1983).

MATERIALS AND METHODS

Initial culture of greater wax moth was collected in *Apis cerana* colonies from apiary and developed in the laboratory. The eggs from the laboratory culture were kept in separate containers and were observed at 24 hr interval and the incubation period was recorded. Length and breadth of eggs were also measured by using a stereo binocular microscope with ocular micrometer fixed at one eye piece. After hatching, the observations were made daily for moulting, the number of moults and instars passed during the larval development. Larval, Prepupal, pupal durations, length and breadth were also measured. After adult emergence a pair of male and female moths were released separately in to wide mouthed plastic containers for egg laying. The paper strips were removed once in 24 hours and number of eggs, if any, were counted under stereobinocular microscope and later paper strips were kept in plastic vials for incubation. Pre oviposition, oviposition and post oviposition periods were recorded, simultaneously. Fecundity and eggs per day were calculated for female.

RESULTS AND DISCUSSION

Egg :

Eggs are small, elliptical and pearly white in colour when laid but turns cream colour on exposure to air. The shell has a number of wavy lines running across it diagonally. Eggs were laid in mass, glued to the inner side of the paper strips provided for egg laying under laboratory conditions, but the moths laid eggs in cracks and crevices of hives under nest conditions. Few eggs were also noticed on the combs of weaker colonies. Oviposition occurred during night between 19.00 to 03.00hr. During the development of the larva inside the egg, the prominent black head of the pre-emerged larva was observed inside the egg shell shortly before hatching. Hatching was observed mainly during morning hours between 8-11 AM. The per cent hatching was almost 100 during summer months. Eggs measured 0.44 ± 0.02 mm long , 0.29 ±0.02 mm broad and the duration was 8.6 ±0.48 days (Table 1).