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Natural incidence of pink bollworm, *Pectinophora gossypiella* (Saunders) (Lepidoptera: Gelechiidae) on okra (*Abelmoschus esculentus* (L.) Moench)

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ABSTRACT: Natural incidence of pink bollworm, *Pectinophora gossypiella* on okra, its nature and extent of damage is reported. Adult external morphology and characters of male and female genitalia are described with photographs. © 2018 Association for Advancement of Entomology

KEY WORDS: Pink bollworm, *Pectinophora gossypiella,* okra, in natural infestation

The cotton pink bollworm, *Pectinophora gossypiella* (Saunders) was described by W.W. Saunders in 1843 as *Depressaria gossypiella,* based on specimens found damaging cotton in India. Later, Common (1958) placed the species *gossypiella* in the genus *Pectinophora* in his revision of pink bollworms of cotton and related genera in Australia. It was reported as a serious pest of cotton in German East Africa during 1904 (Vosseler, 1904). Since then, it has become one of the globally distributed noxious pests of cotton. The pest is also reported to cause damage or survive on a broad range of host plants representing seven families, 24 genera and 70 species mostly belonging to the family Malvaceae (Busck, 1917). However, the natural incidence of this pest on okra has not been documented so far from India. Earlier, Butani and Verma (1976) recorded 20 species of insects on okra except *P. gossypiella*. Similarly, Pal *et al.* (2013) studied the incidence of insect pests on okra in West Bengal, and recorded eleven species, excluding *P. gossypiella*. Sharma *et al.* (2008) studied the biodiversity of lepidopteran insects associated with vegetables in India, and recorded 152 species including *P. gossypiella.* Further, Sharma (2011) studied the lepidopteran insects associated with vegetables in Aravali Range of Rajasthan, and recorded 38 species together with *P. gossypiella.* Chakraborty *et al.* (2014) also studied the biodiversity of insect fauna on okra and recorded 112 pest species including *P. gossypiella*. However, none of the above studies confirm feeding or breeding of *P. gossypiella* on okra in India as these reports are based on collection of adults manually, at light or using aspirator or sweep nets. Information on the male and female genital characters of *P. gossypiella* from India is also lacking. However, Busck (1917) described these characters only through line diagrams for the specimens collected on cotton from USA. Here we report the natural incidence of *P. gossypiella* on okra in India, its nature and extent of damage

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Plate 1: Natural incidence of *pectinophora gossypiella* (Saunders) on okra
a) Early instar larva inside the furit, b) Grown-up larvae feeding on seeds, c. Pupa in the damaged fruit

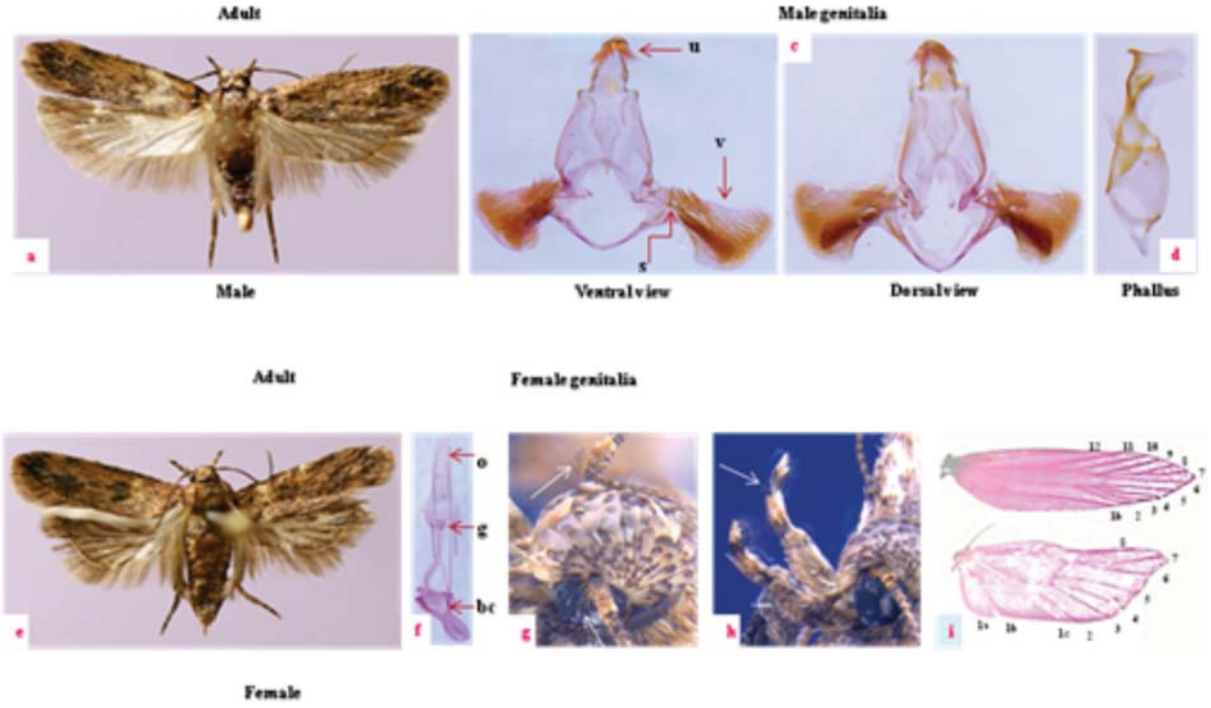

Plate 2: Genital and morphological characters of adult *Pectinophora gossypilla* (saounders)
a) male; male genetalia, b) ventral view, c) dorsal view, d) phallus, e) female, f) female genitalia, g) basal segment of antennae with stiff, long, hair-like scales; h) labial palpi are long and curved upwards, i) wing venation

for the first time. Adult external morphology and characters of male and female genitalia are described and photographs are provided for easy identification of the pest.

Incidence of *P. gossypiella* on okra was observed during 2016 - 17 in the experimental block of Agriculture College, Bheemarayanagudi (411m, 16°71'N 76°75'E), Karnataka (India). Sampling was done to quantify the extent of damage on okra. Three hundred and eleven fruits were collected randomly from the field, of which seven were infested with *P. gossypiella* (2.25 % damage) (Plate 1, a - c). The neonate larva was pale creamy white initially, later turned to pink as it grew. It was noticed feeding on seeds inside the fruit (Plate 1, a - c).

To study the adult morphological and genital characters, larvae collected from the infested fruits during field survey were reared on the same host to adult stage in the laboratory. The emerged adults were killed, pinned, stretched, labelled, dried properly and preserved in the Department of Entomology, College of Agriculture, Bheemarayanagudi, University of Agricultural Sciences, Raichur 584 104, Karnataka, India. The morphological as well as genital characters of the adults of *P. gossypiella* were studied following Hampson (1896), Clark (1941) and Robinson (1976) with the necessary modifications. Before dissection of genitalia, adult specimens were photographed. Adult structures such as fore and hind wings, palpi and genitalia were photographed using Trinocular microscope with auto-montage (Leica M205C). The identity of the species was confirmed based on Busck (1917).

Description: Adult (Plate 2 a, e, g & h) is a small, dark-brown moth measuring 12-20 mm across the wings. Head red brown with pale, iridescent scales. Antennae brown, basal antennomere with a pecten of five or six long, stiff, hair-like scales. Labial palpi are long, curved upward. Forewings elongated, oval, pointed at tips, bearing a wide fringe of hairs. Hind wings broader than fore wings, trapezoidal, silvery grey with darker, iridescent hind margin. The wing fringe ochreous.

Wing venation: Forewing with 12 veins. Veins 7, 8 stalked. Veins 4, 5 well separated at origin. Vein 3 before angle of cell. 1b furcate at base. Hind wings with 8 veins. Costa deflected from middle, apex pointed. Vein 8 connected with cell by oblique bar. Veins 6, 7 closely approximated at base. Veins 3, 4 connate. Vein 5 parallel with 4 (Plate 2, i).

Male genitalia: Valvae (v) narrow at base, broadening towards tip; tip strongly haired with a cluster of long, heavy, straight spines from its inner side. Sacculus (s) armed on its edge with a row of stout spines. Uncus (u) moderately long, broad at base, tapering towards tip and heavily hairy. Phallus is short, stout with a terminal hook (Plate 2, b-d).

Female genitalia: Ovipositor (o) is weakly chitinized, covered with stiff hairs. Genital plate (g) heart shaped. Bursa copulatrix (bc) with two opposite, strongly chitinized, horn like serrated invaginations (Plate 2, f).

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