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Pheromone trap collection of pink bollworm adults From a non-cropped area

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Abstract
In the present study, pheromone traps of six different agricultural pests were installed in a non-cropped area i.e. the Agri-Biodiversity Park (ABP) of Professor Jayashankar Telangana State Agricultural University, Rajendranagar, Hyderabad. Trap counts were taken at weekly intervals from November 2019 to February 2020. Out of the six different traps, only Pink Bollworm Pheromone trap recorded a considerable trap count with about 1500 adults of pink bollworm per trap per week from third week of December to second week of February 2020. Pink bollworm is a serious pest of cotton crop worldwide. However, the present findings from a no cropped area indicate that this pest can complete its life cycle in an alternate host i.e. *Abutilon indicum*, which is a malvaceous weed present in the study area.

Keywords: Pheromone trap, pink bollworm, *Abutilon indicum*, agri-biodiversity park

1. Introduction
The pink bollworm, *Pectinophora gossypiella* (Saunders) (Gelechiidae: Lepidoptera) is a destructive pest of cotton worldwide and can cause locule damage to an extent of 55 per cent and reduction in seed cotton yield in the range of 35 to 90 per cent (Narayanan, 1962) [3]. Among the different control measures used for this pest, pheromone trapping is an effective method for both monitoring and mass trapping the adult males and can reduce the population by 60-80% (Gao *et al.*, 1992) [1]. The pink bollworm larva is oligophagous and feeds on other malvaceous hosts (*Abelmoschus esculentus*, *Hibiscus cannabinus*, *H. sabdariffa*, *Abutilon indicum*, *Thespesia populnea*, etc.) besides cotton (Sarwar, 2017) [4].

2. Material and Methods
The present investigation was conducted at Agri-Biodiversity Park (ABP) of Professor Jayashankar Telangana State Agricultural University (PJTSAU), Rajendranagar, Hyderabad which is located at 17°18'33.19'' N latitude, 78°24'57.74'' E longitude and at an altitude of 559 meters from mean sea level (Plate 1). The area is spread over 60 hectares with jungle scrub, hillocks, boulders, undulated rocky terrain with sloppy lands covered with diverse vegetation, such as herbs, shrubs, creepers, trees and grass species. Besides this, there is also a natural pond which covers about 50 per cent of the total area.
Pheromone traps (Plate 2) of six agriculturally important lepidopteran pests (*Scirpophaga incertulas* (Walker), *Helicoverpa armigera* Hubner, *Spodoptera litura* (Fabricius), *Pectinophora gossypiella* (Saunders), *Leucinodes orbonalis* Guenee and *Aproerema modicella* (Deventer)) were installed to study the status of these pests in the study area. Two traps for each species were installed and trap counts were taken at weekly intervals (number of individuals trapped throughout the week) from November 2019 to February 2020. The lure of each trap was replaced at 45 days interval.

Plate 1: Map of Agri-Biodiversity Park of PJTSAU, Hyderabad

Plate 2: Pheromone trap of Pink Bollworm

3. Results & Discussion

Five out of six lepidopteran species *viz.*, *Scirpophaga incertulas*, *Helicoverpa armigera*, *Spodoptera litura*, *Leucinodes orbonalis* and *Aproerema modicella*, showed no considerable trap count (less than 15 adults per trap per week for each species) in respective pheromone trap throughout the study period. However, only the pink bollworm pheromone trap recorded a noticeable trap count. A peak number of pink bollworm adults was noticed from the third week of December and it continued with an average catch of about 1500 adults of pink bollworm per trap per week till the second week of February 2020. In the last two weeks of February a decline in pink bollworm catch was observed (Fig 1).

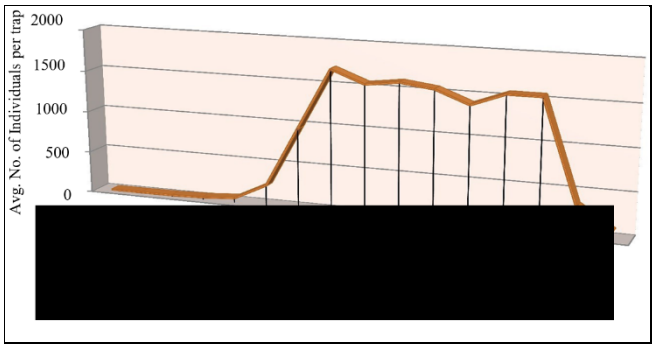

Fig 1: Average Number of Pink Bollworm Adults Caught per Pheromone Trap per Week

According to the studies conducted by Karuppuchamy and Balasubramanian (1990) [2] in Tamil Nadu, the peak male activity of pink bollworm in cotton crop was found between 120 days old (December) to 180 days old (February-March). In the present study the adult activity was also found at the same period of the year (December to February) but as the nearest cotton field from the study area is about 3 km away, it is less likely to attract pink bollworm adults from the cotton crop itself. So, the reason for a considerable population of pink bollworm in the study area could be due to the presence of a malvaceous weed, *Abutilon indicum*, which is also an alternate host for pink bollworm larvae. A decrease in pink bollworm population was noticed after the second week of February which was synchronized with the drying period of *Abutilon* fruits. This result also aided to the consideration of *Abutilon* plants to be the hosts for pink bollworm larvae in the study area. The current findings also indicate that, the pink bollworm adults can migrate from cotton to *Abutilon indicum* from December onwards (as it is the recommended harvesting time for cotton) and can complete one generation on it. A very less number of the remaining five pests in pheromone trap is possibly due to the absence of alternate host plants for at the ABP.

4. Acknowledgments

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