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RESEARCH NOTE

First documentation of *Helicoverpa armigera* (Hubner) infestation on vegetative tissues of dragon fruit in Telangana, India

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ABSTRACT: This study presents the first documented case of *Helicoverpa armigera* (Hubner) infestation on the vegetative tissues of dragon fruit (*Selenicereus costaricensis*) in Telangana India. Field surveys conducted across major dragon fruit-growing districts identified larvae feeding on tender stems, leading to visible damage including perforations, wilting, chlorosis, and tissue necrosis. The shift in feeding behavior from reproductive to vegetative tissues highlights the pest's expanding host range and adaptability. These findings have important implications for crop productivity, underscoring the need for the development and implementation of integrated pest management (IPM) strategies to mitigate potential economic losses caused by *H. armigera* and ensure the sustainability of dragon fruit cultivation. Ongoing monitoring and research into pest behavior, as well as the optimization of control measures, are critical to manage this emerging threat.

Keywords: *Helicoverpa armigera*, dragon fruit, *Selenicereus costaricensis*, pest infestation, vegetative tissue damage.

Dragon fruit (*Selenicereus costaricensis* weber; family Cactaceae), also called as Rica night blooming cactus or pitaya or strawberry pear or Kamalam is a fast-growing, climbing cactus species native to Central and South America. Known for its striking appearance, nutritional richness, and commercial potential, it has been recently introduced and commercialized in India. Telangana is one of the key regions for dragon fruit production, with over 250 hectares under cultivation, especially in districts like Sangareddy, Nalgonda, and Rangareddy. The crop's suitability for arid and semi-arid environments, combined with low input requirements and high economic returns, has contributed to its rapid adoption among progressive farmers. Beyond its horticultural promise, dragon fruit is valued for its nutritional benefits, including high levels of antioxidants, vitamin C, dietary fiber, and essential minerals (Anamika *et al.,* 2023). It is used in fresh consumption, beverages, jams, as well as in the nutraceutical and cosmetic industries. Prevalence of pests like ants, nematodes, scale insects, mealy bugs are common in dragon fruit in India. The ants cause major damage to the flowers and fruits. Different fungal (*Gloeosporium agaves, Macssonina agaves, Dothiorella* sp. and *Botryo sphaeriadothidea*), viral (Cactusvirus X), and bacterial (*Xanthomonas* sp. and *Erwinia* sp.) diseases are also reported (Guyen, 1996). This paper reports the occurrence of *Helicoverpa armigera* (Hübner) (Lepidoptera: Noctuidae), a polyphagous pest on vegetative parts of dragon fruit. While traditionally associated with damage to reproductive plant structures, recent reports indicate its emerging role as a pest in fruit crops, including dragon fruit (Sarate *et al.,* 2012; Vinutha *et al.,* 2013; Murua *et al.,* 2014; Safuraie-Parizi *et al.,* 2014; Saraf *et al.,* 2015). However, feeding on vegetative tissues of dragon fruit has not been previously documented, making this the first report from Telangana.

Surveys were conducted from June to September 2023 across dragon fruit plantations located in the districts of Adilabad, Sangareddy, Nalgonda, and Rangareddy in Telangana. A total of 20 fields were randomly surveyed, and symptomatic plants were collected and documented.

Fig. 1. Larva and adult of H. armigera reared from dragon fruit

The collected larvae were reared under controlled laboratory conditions until adult emergence. The emerged moths were identified based on adult morphological characters using standard taxonomic keys (e.g., Matthews, 1999; CABI, 2022), confirming the species as *Helicoverpa armigera* (Hubner). Diagnostic characters such as the forewing pattern, hind wing markings, and overall morphology were consistent with published descriptions. The larvae exhibited cylindrical body, either greenish or brownish in colour, with characteristic longitudinal stripes and black spots, consistent with descriptions by Ali *et al.,* (2009); Queiroz-Santos *et al.,* (2018) and Herald and Tayde (2018). Representative larval and adult specimens were preserved and deposited in the Regional Agricultural Research Station, Adilabad, Telangana.

Feeding symptoms were recorded and photographed. Observations included feeding holes, chlorosis, stem necrosis, wilting, and apical tip collapse. Infestation severity was quantified by assessing the proportion of infested plants and mean larval density per plant across surveyed fields. *H. armigera* larvae were found boring into the tender ridges of dragon fruit stems, producing circular feeding holes 2-5 mm in diameter (Fig.2 and 3). Internal tissue damage resulted in localized chlorosis, wilting, and the collapse of growing tips. In advanced infestations, sap exudation and necrosis of stems were also observed. These symptoms significantly impaired vegetative growth and could potentially reduce overall plant vigor and productivity.

Fig. 2and 3. *Helicoverpa armigera* larval instar scraping the dragon fruit vegetative tissues

The present study reports the first documented occurrence of *H. armigera* (Hubner) infestation on the vegetative parts of dragon fruit in Telangana, India. Field surveys were conducted during the 2024 cropping season across eight major dragon fruit-growing locations, covering 950 plants across Ranga Reddy, Sangareddy, Adilabad, and Nalgonda districts. Infestation was recorded on the stems and young shoots, causing visible boring damage and plant wilting. The extent of infestation varied across locations, ranging from 7.7% to 21.8%, with the highest damage observed in Adilabad, Patancheru (Sangareddy) and Narayankhed. Infestation was observed in 65% of the surveyed fields (n = 20),

Table 1. Extent of damage by H. armigera on dragon fruit in different locations of Telangana

Location (District)	No. of plants observed	No. of infested plants	Damage (%)
Shankarpally (Ranga Reddy)	120	14	11.7
Chevella (Ranga Reddy)	100	18	18.0
Patancheru (Sangareddy)	110	24	8.0
Moinabad (Ranga Reddy)	150	12	8.2
Zaheerabad (Sanga reddy)	130	10	7.7
Adilabad	100	20	20.0
Narayankhed	115	17	14.8
Nalogonda	125	16	12.8

with a mean larval density of 4.2 ± 0.6 larvae per plant (Table 1). The pest was identified through rearing of larvae to the adult stage under laboratory conditions, and confirmed morphologically using standard taxonomic keys. Voucher specimens for both larval and adult stages have been deposited at the Regional Agricultural Research Station, Adilabad. This novel host-pest association highlights the need for continuous pest monitoring and appropriate integrated pest management (IPM) strategies in dragon fruit cultivation.

This report confirms the expanding host range of *H. armigera*, marking the first record of its infestation on vegetative tissues of dragon fruit in Telangana and India. Traditionally recognized for its damage to reproductive parts of crops, the pest's stem-boring behavior in this study highlights a significant shift in feeding ecology. Such infestation not only disrupts vascular tissue but also predisposes plants to secondary infections through larval entry points, as similarly reported in cotton and tomato (Geeta Devi *et al.,* 2024). The multivoltine nature of *H. armigera*, combined with Telangana's favourable climatic conditions, could contribute to year-round pest pressure on dragon fruit. Rising temperatures and changing weather patterns could increase the pest's activity and spread. To address this, immediate surveys and monitoring are essential to assess the full extent of the *H. armigera* infestation. Early detection and timely action will be crucial in preventing further damage from now on. Implementing integrated pest management strategies and ongoing surveillance will help protect dragon fruit production from this growing threat.

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