

Seasonal incidence of *Haritalodes derogata* (Fabricius) (Lepidoptera, Crambidae) on *Urena lobata* in Saharanpur, Uttar Pradesh, India

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ABSTRACT: A field study was conducted to determine the seasonal incidence of *Haritalodes derogata* on *Urena lobata* weed in Saharanpur, Uttar Pradesh, during the year 2023-2024. The study revealed that *H. derogata* is a serious pest of *U. lobata* and its activity began in the first week of June and continued until December of 2023 and 2024. The larval population was minimum in June, with the lowest leaf damage. In contrast, the maximum population was observed in September and October, with the highest damage per leaf and per plant during the year 2023 and 2024. The pest remained active from June to December during both years. © 2026 Association for Advancement of Entomology

KEY WORDS: Leaf roller, Caesar weed, population, first report

The leaf roller, *Haritalodes derogata* (Fabricius) (Lepidoptera, Crambidae) is a polyphagous pest which feeds on Okra, cotton, cashew, jujube, ujubecrops and others herbaceous plants and trees in ornamental plantings in many countries around the world (Dhindsa *et al.*, 1980; Anioke, 1989; Byun *et al.*, 2008; Yamanaka, 2008; Mariselvi and Manimegalai, 2016; Roychoudhury *et al.*, 2017; Karpun *et al.*, 2022; CAB International, 2022). Its young larvae roll growing leaves into funnel shapes and feed on the leaf margins from within, causing defoliation (Kandaswamy, 2025). In the present investigation, *H. derogata* feeding on *Urena lobata* is reported from Saharanpur, Uttar Pradesh. The pest is available in this region from June to October and leads to considerable damage to the *U. lobata* plants during the peak time of infestation. *Urena lobata*, often known as Caesar weed or

Congo jute, is a flowering plant from the family Malvaceae. It is endemic to tropical and subtropical locations across the world, including Asia, Africa, South and Central America, and the Pacific Islands. In many places, it is considered a weed, yet it is also important in many traditional medicinal systems (Babu *et al.*, 2016). In Saharanpur, *U. lobata* is widely distributed and occurs in a variety of habitats, including disturbed forests, pastures, waste areas, swamps, roadsides, riverbanks, and agricultural lands. This study aims to describe the seasonal occurrence of *H. derogata* in *U. lobata* plants.

A field survey was conducted in Saharanpur (29.97° N; 77.55° E), Uttar Pradesh, India, from June to December in 2023 and 2024 on agricultural farms, roadside areas, and abandoned lands where *U. lobata*, was abundant. During the field survey,

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the plants were observed to be infested with larvae of *H. derogata*. Ten plants from the *U. lobata* plantation were randomly selected and permanently marked to monitor larval infestation on a weekly basis. The infestation was assessed by examining the presence of rolled leaves and calculating the percentage of damage for each leaf and each plant. The number of larvae and the extent of damage on each plant were evaluated weekly by inspecting the rolled and damaged leaves. The meteorological data, such as temperature, humidity, and rainfall, were taken from the Horticulture Research Institute, Saharanpur, Uttar Pradesh to record the influence of these abiotic factors on population dynamics of *H. derogata*.

The results showed that the larval population of *H. derogata* first appeared in the first week of June and remained active until December in the years 2023 and 2024. In the month of June, the larval population was recorded at 14.31 ± 1.45 larvae/plant, 14.3 ± 1.45 rolled leaves/plant, and 20.3 ± 1.54 per cent leaf damage/plant during the year 2023 and 10.2 ± 1.19 larvae/plant, 10.0 ± 1.39 rolled leaves/plant, and 16.4 ± 1.45 per cent leaf damage/plant in 2024. The larval population increased in July (recording 21.21 ± 1.51 larvae/plant, 25.6 ± 1.65 rolled leaves/plant, and $40.5 \pm 1.56\%$ leaf damage/plant during the year 2023, whereas in 2024 July, it was 17.38 ± 1.29 larvae/plant, 19.92 ± 1.29 rolled leaves per plant and $38.69 \pm 1.35\%$ leaf damage per plant were recorded). The population increased significantly in the month of August (45.82 ± 1.67 larvae/plant with 75.3 ± 1.56 rolled leaves/plant and $60.2 \pm 1.72\%$ leaf damage/plant in 2023 and 40.65 ± 1.75 larvae/plant, 61.51 ± 1.48 rolled leaves/plant, and $54.96 \pm 1.29\%$ leaf damage/plant in 2024). The larval population, number of rolled leaves, and percentage of leaf damage were observed to gradually increase in both years with rising temperature, rainfall, and humidity, indicating a positive effect on the population growth of *H. derogata*. The larval population increased drastically in the month of September (105.59 ± 1.39 larvae/plant, 120.2 ± 1.67 rolled leaves/plant, and $90.3 \pm 1.13\%$ leaf damage/plant in 2023 and 90.54 ± 1.54 larvae/plant, 112.21 ± 1.35 rolled leaves/plant, and $86.22 \pm 1.35\%$ leaf damage/plant during

the year 2024). The highest population of *H. derogata* was observed in October, with a peak during the first week (165.52 ± 1.56 larvae/plant, 225.4 ± 1.54 rolled leaves/plant, and $95.3 \pm 1.48\%$ leaf damage/plant during the year 2023 and 160.72 ± 1.32 larvae/plant, 217.57 ± 1.43 rolled leaves/plant, and $95.43 \pm 1.43\%$ leaf damage per plant in 2024). The population of *H. derogata* declined gradually in the month of November (110.32 ± 1.61 larvae/plant, 110.3 ± 1.65 rolled leaves/plant, and $65.4 \pm 1.51\%$ leaf damage/plant in 2023 and 102.78 ± 1.31 larvae/plant, 103.39 ± 1.54 rolled leaves/plant, and $60.92 \pm 1.56\%$ leaf damage/plant in 2024) and drastically in the month of December (20.5 ± 1.63 larvae/plant, 29.9 ± 1.67 rolled leaves/plant, and $25.3 \pm 1.38\%$ leaf damage/plant during the year 2023 and 16.71 ± 1.35 larvae/plant, 24.55 ± 1.19 rolled leaves/plant, and $19.5 \pm 1.25\%$ leaf damage/plant during the year 2024). The variations in population fluctuation, infestation levels, and damage to the host plant *U. lobata* during the years 2023 and 2024 could be attributed to differences in weather parameters (Table 1).

So far, various researchers have conducted the study on the seasonal occurrence of *S. derogata* on various host plants, but no one has described it in *U. lobata*. In the study, the maximum activity of the pest was observed from September to October, while Bhatnagar *et al.* (1993) reported peak activity from the last week of August to the last week of September in cotton. Ghosh *et al.* (1999) recorded the higher population of *H. derogata* from July to August in okra. Hiramatsu *et al.* (2001), observed *H. derogata* activity from the last week of June to the first week of November, with peak incidence during August, September and October, continuing up to November. According to Naresh *et al.* (2003), the peak incidence of *H. derogata* was observed in the second week of August, whereas Roychoudhury *et al.* (2009) and Badiyala (2011), reported from July to September and the first and third weeks of August in Palampur. Behera (2018) recorded the infestation in the fourth week of August and peak population in the second week of November in non-*Bt* cotton. Karpun *et al.* (2022), reported the presence of *H. derogata* from late July to early August, resulting in significant damage

Table 1. Seasonal incidence of *Haritalodes derogata* in *Urena lobata*

Year/Month	Larvae/ plant	Rolled leaf/ plant	Leaf damage/ plant (%)	Mean temp. (°C)	Rainfall (in mm)	R.H. (%)
June 2023	14.31±1.45	14.3±1.45	20.3±1.54	34.21	94.70	31.23
July	21.21±1.51	25.6±1.65	40.5±1.56	30.15	415.45	55.56
August	45.82±1.67	75.3±1.56	60.2±1.72	29.41	354.25	76.90
September	105.59±1.39	120.2±1.67	90.3±1.13	28.50	208.39	63.25
October	165.52±1.56	225.4±1.54	95.3±1.48	26.49	20.51	61.81
November	110.32±1.61	110.3±1.65	65.4±1.51	22.96	4.25	47.84
December	20.50±1.63	29.9±1.67	25.3±1.38	15.70	25.58	40.51
June 2024	10.20±1.19	10.0±1.39	16.4±1.45	36.71	90.10	10.21
July	17.38±1.29	19.92±1.29	38.69±1.35	30.29	305.62	58.32
August	40.65±1.75	61.51±1.48	54.96±1.29	28.32	310.25	74.32
September	90.54±1.54	112.21±1.35	86.22±1.35	29.41	208.39	72.28
October	160.72±1.32	217.57±1.43	95.43±1.43	27.67	16.49	60.83
November	102.78±1.31	103.39±1.54	60.92±1.56	23.98	14.56	51.61
December	16.71±1.35	24.55±1.19	19.5±1.25	15.32	12.45	30.15

to Hibiscus species. Dalsaniya *et al.* (2024), observed the peak incidence in October. In the present study, the activity of *H. derogata* was higher in September, reached a peak in October, and started to decline in November. The lowest larval population was observed in the month of December.

Symptoms of infestation and damage: The presence of rolled leaf on *U. lobata* is a key indicator of *H. derogata* larval infestation that can be easily identified. The larvae roll the leaf into a conical trumpet and tie it with silk thread before feeding on the leaf portion inside. Early instar larvae are gregarious and feed inside a leaf trumpet, but later instar larvae disperse to other leaves and each larva builds its own leaf trumpet for feeding.

The study finds that *H. derogata* is a regular pest of *U. lobata* being reported for the first time in Saharanpur. The population trends of *H. derogata* in *U. lobata* are almost parallel to those observed in crops like okra and *Hibiscus*. Peak infestation in late monsoon months aligns with optimal temperature and humidity for larval development.

Understanding the pest's ecological role in wild hosts like *U. lobata* can also provide insights into off-season survival and population build-up, which may affect nearby cultivated crops like okra and cotton.

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