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Survey of Banana Skipper, *Erionota torus* (Evans.) in Sindhudurg District of Maharashtra

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ABSTRACT: The present investigation on survey of banana skipper, *Erionota torus* (Evans.) was carried out in different banana growing talukas of Sindhudurg district in southern Maharashtra, India during the July to November 2021. Survey is important tool in ecology which determines the status of any pest. Banana skipper is newly introduced in Maharashtra hence study on present spread and intensity will be milestone for further management strategies. Fixed plot survey was carried out to know the incidence and intensity of *E. torus* infestation on banana plantation at an interval of one month from Kudal, Vengurla, Sawantwadi, Malvan and Dodamarg talukas of Sindhudurg district. The incidence of pest started during July and reached peak during August- September. Pest intensity was observed at the peak in the August-September months. Ten orchards were selected from each taluka for recording observations. The results revealed that the average per cent pest incidence and pest intensity in Sindhudurg district were 6.20 and 2.55 per cent, respectively.

Keywords: Banana, banana skipper, *Erionota torus*, pest incidence, pest intensity and survey.

INTRODUCTION

Banana (*Musa* sp.) belongs to family Musaceae and which is one of the most important fruit crop in India, commonly known as “Kalpataru” as well as “Tree of Paradise”. Banana is most popular and cheapest among all other fruits which is preferred by both rich and poor people so considered as “Poor man’s apple”. It is a native of tropical region of South-East Asian and Western Pacific Regions (Robinson and Sauce 2010). Total world production of banana is around 2,62,17,000 MT in which India shares 37 per cent (Asha and Pandian, 2020). Maharashtra ranks first in productivity and second in area among all states of India. In Maharashtra, cultivated area of banana is 82,000 ha with annual production of 4,303 thousand MT and having productivity of 52.5 MT /ha (Nanaware, 2017).

Like other crops, banana is also attacked by many insect pests. Out of 470 species of insects and mites damaging the banana plant, only 250 species feeds on foliage (Ostmark, 1974). The banana skipper, *Erionota torus* (Evans.) (Lepidoptera: Hesperiidae) commonly called as Sikkim palm dart or Sikkim palm red eye or rounded palm redeye or giant banana skipper (Jayanthi *et al*., 2015) was delineated from Sikkim and historically recognized from the Himalayan East and Southeast (Raju *et al*., 2015). Since 2015, this pest has been recorded in various parts of Maharashtra extending towards Northen areas of Western Ghats and West Coastal Konkan region of Maharashtra. Incidence of banana skipper was first observed in Amboli, Sindhudurg district (Sarang *et al*., 2020). The banana skipper often known as a banana leaf roller which is significant defoliator of banana. After hatching of eggs, the young larvae move towards the outer margin of leaf where they cut theleaves and construct leaf rolls before changing into pupa and then emerge as a moth (Guru *et al*., 2018). Severe infestation of this pest can damage the entire banana foliage, leaving only the midrib intact. The feeding and rolling devastate the banana leaves and can causes remarkable reduction in photosynthetic efficiency of plants which ultimately leads to decrease in bunch size, weight of fruit and cause considerable impact on fruit production (Irulandi *et al*., 2018). Studies on survey of pest incidence are aimed at

acquiring information regarding its distribution and peak period of occurrence of pest. The work on banana especially in Konkan region is scanty. In view of the above, the present investigation was carried out.

MATERIAL AND METHODS

A fixed plot survey was carried out to know the infestation and intensity of *Erionota torus* (Evans.) on banana plantation at an interval of one month from different talukas (*viz.,* Kudal, Vengurla, Sawantwadi, Malvan and Dodamarg) of Sindhudurg district during the July to November, 2021. Survey work was helpful to know the exact pest status among the pest infested areas of south Konkan.

A. Method of recording observations

Pest Incidence. To know the per cent pest incidence of *E. torus*, ten orchards were selected from each taluka. In each orchard, number of plants damaged by *E. torus* were recorded from total plants. Observations were recorded by observing 50 plants individually from different spots in the orchard. Banana plants with minimum one leaf roll per leaf was considered to be damaged and expressed in per cent pest incidence.

$$\text{Pest incidence (\%)} = \frac{\text{Total number of plants damaged}}{\text{Total number of plants observed}}$$

Pest Intensity. To know the per cent pest intensity of *E. torus*, ten orchards were selected from each taluka. In each orchard, number of leaves damaged by *E. torus* were recorded from total number of leaves, which was present on ten randomly selected plants (Plate 1). From each plant, ten leaves were observed and damaged leaves were counted. According to Pratiwi *et al.* (2020), the intensity of the pest attack was determined by using the leaf damage scoring method which was categorized into: 0 = no damage, 1 = 1-20 % leaf damage, 2 = 21-40 % leaf damage, 3 = 41-60 % leaf damage, 4 = 61-80 % leaf damage, 5 = 81-100 % leaf damage.

$$\text{Pest intensity (\%)} = \frac{\text{Total number of leaves damaged}}{\text{Total number of leaves observed}}$$

RESULTS AND DISCUSSION

The data recorded on the incidence and intensity of banana skipper during the year 2021 in Sindhudurg district of Maharashtra are presented in Table 1 and 2 and graphically depicted in Fig. 1 and 2.

A. Pest incidence

Highest pest incidence *i.e.* 8.60 per cent was recorded in the month of September in Kudal taluka, while the lowest 4.60 per cent was recorded in the month of July. In Vengurla location, highest pest incidence was recorded in the month of August (8.40 %), while the lowest was recorded in the month of July (4.40 %). At Sawantwadi location, maximum 7.20 per cent pest incidence was recorded in August month, while the minimum 4.40 per cent was recorded in the month of July. In Malvan, highest pest incidence was recorded in the month of August (7.00 %), while the lowest was recorded in July month(4.20 %). At Dodamarg location, 6.60 per cent pest incidence was observed in the month of September, while 4.00per cent in the month of July (Table 1).

Overall trend of surveyed data showed that, maximum average pest incidence was recorded in Kudal taluka (6.84 %) and average minimum pest incidence was recorded in Dodamarg taluka (5.56 %). The average pest incidence in Sindhudurg district was 6.20 per cent. The pest incidence was at the peak during the months of August and September and it declined from October onwards.

The above-mentioned results were partially supported by Sharanabasappa *et al*. (2016), who revealed that banana skipper population was at the peak, from the month of August onwards. The work carried out by Jayashankar *et al*. (2018) also are in conformity with the present findings. They observed the peak incidence of banana skipper during August to September 2017. A report from AICRP on Fruits (2019), showed that Vengurla, Sawantwadi and Dodamarg taluka of Sindhudurg district recorded maximum pest incidence during August and September with incidence of less than 2.0 per cent. The recent AICRP on Fruits report (2022) conducted through roving survey revealed that the incidence of banana skipper was observed throughout Sindhudurg district during July to September.

B. Pest intensity

In Kudal taluka, maximum pest intensity was recorded in the month of September (3.20 %), while the minimum was recorded in the month of July i.e. 2.10%followed by 2.50 per cent in the month of November. In Vengurla taluka, maximum pest intensity was recorded in the month of August (3.40%) and minimum was recorded in the month of July (1.70%). At Sawantwadi location, August month recorded more *i.e.,* 3.10 per cent pest intensity followed by 2.80 per cent in the month of September, whereas July month showed less *i.e.* 1.60 per cent pest intensity. In Malvan taluka, maximum 3.10 per cent pest intensity was recorded in the month of August, whereas minimum pest intensity was recorded as 1.60 per cent in the month of July. In Dodamarg taluka, 3.20 per cent pest intensity was recorded in the month of September followed by 2.70 per cent in the month of August, whereas minimum pest intensity was 1.50 per cent in the month of July (Table 2).

Table 1: Per cent incidence of *Erionota torus* (Evans.) in Sindhudurg District (2021).

Sr. No.	Taluka	Per cent incidence of *Erionota torus* (Evans.)					Average incidence (%)
		July	August	September	October	November	
1.	Kudal	4.60	8.40	8.60	6.80	5.80	6.84
2.	Vengurla	4.40	8.40	8.20	6.40	5.60	6.60
3.	Sawantwadi	4.40	7.20	7.00	6.20	5.56	6.07
4.	Malvan	4.20	7.00	6.80	6.00	5.54	5.91
5.	Dodamarg	4.00	6.20	6.60	5.80	5.20	5.56
Average		4.32	7.44	7.44	6.24	5.54	6.20

Table 2: Per cent intensity of *Erionota torus* (Evans.) in Sindhudurg District (2021).

Sr. No.	Taluka	Per cent intensity of *Erionota torus* (Evans.)					Average intensity (%)	Intensity score (%)
		July	August	September	October	November		
1.	Kudal	2.10	3.10	3.20	2.80	2.50	2.74	1
2.	Vengurla	1.70	3.40	3.10	2.60	2.30	2.62	1
3.	Sawantwadi	1.60	3.10	2.80	2.70	2.20	2.48	1
4.	Malvan	1.60	3.10	2.80	2.40	2.30	2.44	1
5.	Dodamarg	1.50	2.70	3.20	2.60	2.40	2.48	1
Average		1.70	3.08	3.02	2.62	2.34	2.55	1

Overall average data showed that, maximum pest intensity was recorded in Kudal taluka (2.74 %) and minimum pest intensity was recorded in Dodamarg taluka (2.48 %). The average per cent pest intensity observed was 2.55 per cent in Sindhudurg district. Intensity score was scaled as 1 for all the talukas in which survey was conducted.

The present observations are in conformity with findings of the AICRP on Fruits report (2022) which revealed that the intensity of banana skipper was recorded as 0.0 to 5.0 per cent leaf infestation throughout Sindhudurg district.

The deviation in the recorded observations from the previous findings may be due to favourable climatic conditions, absence of natural enemies, topography and plant cultivars.

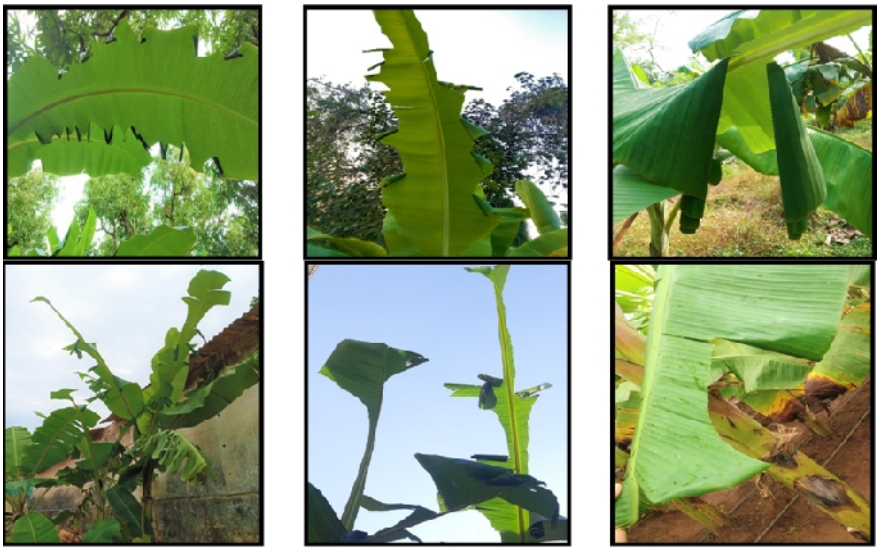

Plate 1. Damage caused by *Erionota torus* (Evans.).

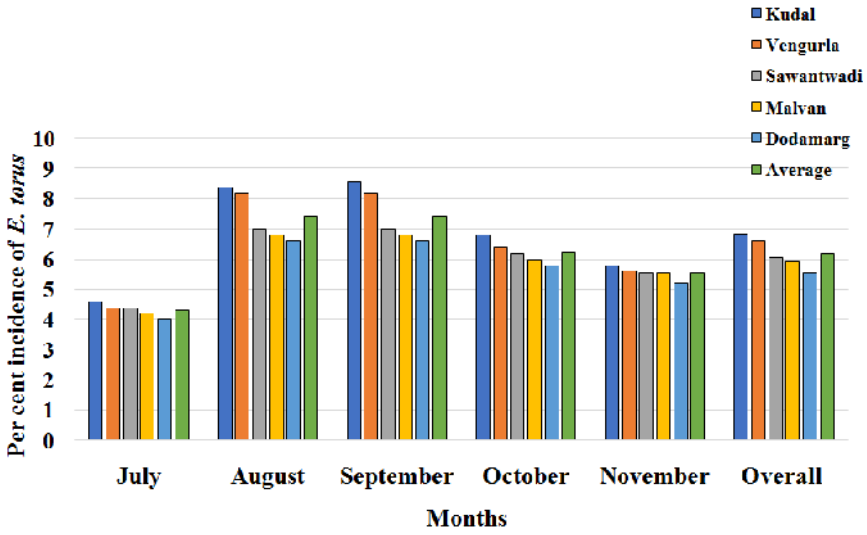

Fig. 1. Per cent incidence of *Erionota torus* (Evans.) in Sindhudurg district (2021).

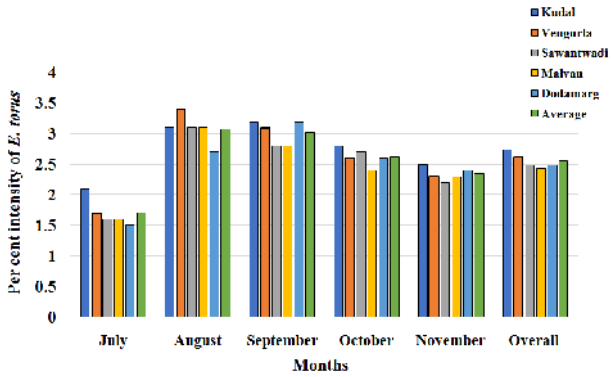

Fig. 2. Per cent intensity of *Erionota torus* (Evans.) in Sindhudurg district (2021).

CONCLUSIONS

The present investigations are based on data obtained from one season. Therefore, in order to arrive at a sound conclusion, it is necessary to continue the studies with long duration trials to monitor the pest infestation at early stage and thus to get higher returns from banana. The outcomes of the current study exhibited that banana leaf roller, *Erionota torus* (Evans.) is a new pest on banana observed in all banana growing talukas of Sindhudurg districtof Maharashtra. Highest average incidence and intensity were recorded at Kudal taluka in the month of September. This surveyed data would be more helpful to know the exact status and distribution of the pest, *Erionota torus* (Evans.) in Sindhudurg district.

FUTURE SCOPE

1. Survey of the pest will give a database for its status in the south Maharashtra which can be used for Area-wide Integrated Pest Management.
2. More studies should be conducted at different regions to find out the pest status in Maharashtra. By obtaining a clear vision on intensity and incidence level of pest, further more studies on all aspects will be made feasible.

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Conflict of interest: None.

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