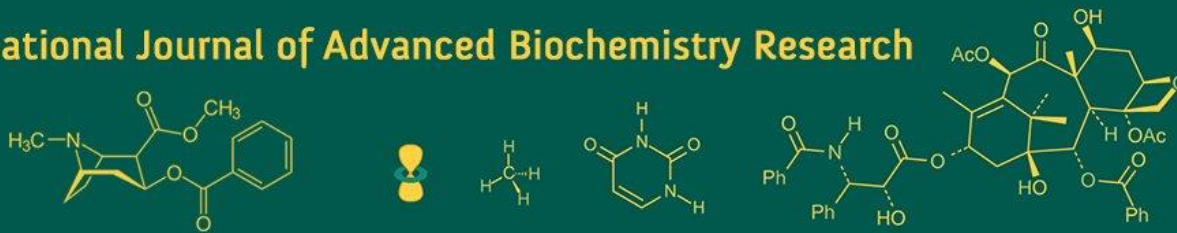


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## Studies on population dynamics of fruit and shoot damage in brinjal

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### Abstract

The investigations were carried out during *kharif* 2022, on the farm of college of agriculture, Badnapur, tal- Badnapur, dist-Jalna, department of Agricultural Entomology, College of Agriculture, Badnapur, Vasantnao Naik Marathwada Krishi Vidyapeeth, Parbhani with the objectives of study the population dynamics of fruit and shoot damage in brinjal, The experiment was laid out in non-replicated. The percent shoot damage and fruit damage was observed from 32<sup>th</sup> SMW. The percent shoot damage and percent fruit damage varied from (9.34 to 28.13%) and (11.6 to 36.35%), respectively. The percent shoot damage and percent fruit damage reached at its peak in 38<sup>th</sup> SMW (28.13%) and 39<sup>th</sup> SMW (36.35%) respectively. Dynamics of percent shoot and fruit damage and their correlation with weather parameters revealed that percent shoot damage had positive significant correlation with relative humidity at morning.

**Keywords:** Population dynamics, percent fruit and shoot damage, brinjal

### Introduction

The brinjal which is widely produced in India, Bangladesh, Pakistan, China, and the Philippines is very important in the warm regions of the far east. It is also well-liked in the USA, France, Italy, and Egypt. It is a flexible crop used in a variety of agroclimatic zones and can be farmed all year round. 100 grams of edible brinjal parts have the capacity to provide 4.0 g. vitamins A, B, and C, 1.4 g of protein and carbs. Moreover, Brinjal is well-known for its ability to treat diabetes, toothaches, and liver problems. Brinjal is grown over 760 thousand acres of land in India and it produces an annual 12.61 million tonnes of output in 2021–22. The entire area covered by brinjal in Maharashtra covers 26,000 acres yielding 578 million tonnes having a fruit production rate of 22.23 MT per hectare yearly. West Bengal is a notable state in area (161.50 thousand acres) and brinjal production (2,965 thousand tonnes). In India, States that produce the most brinjal include Orissa, Bihar, Karnataka, West Bengal, Andhra Pradesh, Karnataka and Utter Pradesh.

### Materials and Methods

The field experiment was conducted to study the population dynamics of major insect pests of brinjal during *kharif* season 2022. The locally available variety of brinjal i.e. Panchganga was sown in non-replicated 100 m sq. area adopting spacing of 60 X 45 cm to conduct a field trail on population dynamics. The plot was kept untreated till harvest to assess the highest potential of multiplication of major prevailing pests in brinjal under natural condition. The surveillance of major prevailing pests in brinjal under natural condition. The surveillance of brinjal crop for the population dynamics of major insect pests was done through out the growing season of crop and continued till the final harvest of crop. Observations on the incidence of brinjal fruit and shoot borer was recorded in terms of percentage of infested plants, number of larvae per ten plants (by splitting the damaged fruits) and percentage of damaged fruits (number and weight basis) in terms of percentage of damaged fruits on number and weight was recorded by counting and weighing healthy and damaged fruits at each picking. The meteorological data was recorded simultaneously along with pests. The data statistically analyzed by standard analysis of variance method suggested by Panse and Sukhatme (1967) [4].

**Table 1:** Seasonal incidence of insect pests and natural enemies in brinjal in relation to weather parameter.

SMW	Crop pests		Weather Parameter				
	% shoot damage by BSFB	% fruit damage by BSFB	Temperature (°C)		Rainfall (mm)	R.H. (%)	
			Max.	Min.		Mor.	Even.
32	9.34	11.6	27	22.5	18.5	89	90
33	13.43	14.13	24.3	22.5	9.0	88	82.2
34	14.47	16.18	27.5	22	00	91	83
35	19.13	23.25	31	23.5	68.0	87	84
36	24.34	25.15	28	23	120.5	92	92
37	26.34	24.15	27	23.5	72.0	94	92
38	28.13	30.11	28.5	23.5	12.0	95	91
39	25.43	36.35	29	22.5	6.5	91	92
40	26.15	34.13	25	23	18.0	92	80
41	24.17	35.13	26	22	30.0	97	71
42	23.15	24.24	25	22	80.5	98	71
43	25.26	26.17	25	21	00	96	71

## Results and Discussion

The study of population dynamics of insect pest in brinjal was carried out during *kharif* 2022 on research farm of college of agriculture Badnapur. The crop was grown on 100 m<sup>2</sup> area and kept untreated till harvest to record the activities of major insect pest as well as their natural enemies. The data incorporated in Table 1 revealed that inception of shoot damage was observed from 32<sup>nd</sup> SMW (9.34%). The shoot damage was recorded in range of the 9.34 to 28.13%. Gradual increase was noticed from 32<sup>nd</sup> SMW to 38<sup>th</sup> SMW. Kantipudi *et al.*, (2017) [2] who found that the second week of September was when shoot infestation was at its peak. The data included in the table 2 revealed that the shoot damage was correlated with the weather parameters. Temperature maximum ( $r=0.051$ ), temperature minimum ( $r=0.166$ ) and rainfall ( $r=0.224$ ) had positive and non-significant correlation whereas the relative humidity at morning ( $r=0.636$ ) was significant. Relative

humidity at evening ( $r= -0.061$ ) was non-significantly. Chandrakumar *et al.*, (2008) [1] found a non-significant positive link with relative humidity and significant and positive correlation with maximum temperature.

Initiation of fruit damage was observed from 32<sup>nd</sup> SMW (11.6%) to 39<sup>th</sup> SMW (36.35%). It was reached its peak at 39<sup>th</sup> SMW with findings of Nandi *et al.*, (2017) [3] who noted a peak incidence of fruit borer in October. The data given in the table 2 indicated that correlation coefficient at temperature maximum ( $r=0.108$ ), temperature minimum ( $r=0.074$ ), rainfall ( $r=0.004$ ) and relative humidity (morning) ( $r=0.486$ ) were positively correlated with the activities of fruit borer but it was non-significantly correlated. Relative humidity at evening ( $r= -0.137$ ) had negative impact but it was significantly correlated. Thus, the present findings are more or less corroborate to earlier workers Singh *et al.*, (2000) [5] stated that there was a positive role of temperature.

**Table 2:** Studies on correlation coefficient between major insect pests of Brinjal in relation to weather parameter

Name of pest	Correlation coefficient (r)				
	Temperature (°C)		Relative humidity		Rainfall
	Maximum	Minimum	Morning	Evening	
Percent shoot damage	0.051 NS	0.166 NS	0.636*	-0.061 NS	0.224 NS
Percent fruit damage	0.108 NS	0.074 NS	0.486 NS	-0.137 NS	0.004 NS

\*significant at 1%

## Conclusion

Studies on population dynamics of insect pests of brinjal was revealed that insect pests i.e. shoot and fruit borer prevailed in entire cropping season, of *kharif* 2022. Population dynamics of percent shoot damage and percent fruit damage and their correlation with weather parameters from 32<sup>th</sup> to 43<sup>th</sup> SMW, revealed that percent shoot damage, lady bird beetle had positive significant correlation with relative humidity at morning.

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