

Original Research Article

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Incidence of Insect Pest in Brinjal under Agro-Climatic Condition of Rewa District, Madhya Pradesh, India

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ABSTRACT

Keywords

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The study, done on the incidence of insect pest, revealed the presence of seven species of insect pests and three species of predator during the period of study from 16 September 2016 to 15 April 2017 at various stages of the brinjal crop after transplanting in district Rewa, Madhya Pradesh. The presence of whitefly, aphid, jassid and hadda beetle were recorded from the vegetative to maturity stage of the crop, while brinjal shoot and fruit borer as the most dominating species of the pest at vegetative as well as flowering and fruiting stage of the crop. The infestation of mealy bug and lace bug were recorded in the late season of the crop i.e. January to April 2017.

Introduction

The vegetables are an important dietary component, because of this reason its extensively cultivated in the world, including India. Amongst the various vegetables, Brinjal (*Solanum melongena* L; family- Solanaceae), commonly known as eggplant, is cultivated throughout the year in the country (Shukla and Khatri, 2010). Brinjal cultivation in the nation is done in about 680 thousand hectare area with an annual production of 12,706 thousand tonnes and productivity of 18.7 tonnes per hectare. In Madhya Pradesh, it is cultivated in 46.12 thousand hectare area with a productivity of 25.02 tonnes per hectare (Anonymous, 2015). Among the brinjal

cultivating state in India; Orissa, Bihar, Karnataka, West Bengal, Andhra Pradesh, Maharashtra and Uttar Pradesh are the major brinjal growing states. West Bengal is the leading states contributing about 23% of the national production while Madhya Pradesh is contributing about only 8% (NHB, 2014).

Although, productivity of the brinjal in the state is higher than national productivity but quality production of the crop is a matter of concern as it is severely affected by various insect pest and diseases throughout the year. Among the insect pest jassid (*Amrasca biguttula biguttula* (Ishida)), aphid (*Aphis gossypii* (Glover)), whitefly (*Bemisia tabaci* (Gennadius)), hadda beetle (*Epilachna vigintioctopunctata*), mealybug

(*Coccidohystrix insolita* (Green), lace bug (*Urentius sentis* Distant) and shoot and fruit borer (*Leucinodes orbonalis* (Guenée) have been reported to cause considerable yield loss to the crop (Deole, 2015).

Materials and Methods

A field experiment was carried out at Entomology Instructional Farm, JNKVV, College of Agriculture Rewa (M.P.), during *Kharif & Rabi* 2016-17. Popular Pusa Kranti, was sown in 128 sq. meter area following the standard package and practices of the crop. Observations on the incidence of different insect pests and natural enemies were recorded on 5 randomly selected plants from three locations of the experimental area. The observations were recorded on randomly selected plants of untreated plots once in a standard week. It is started after transplanting and continued up to the maturity of the crop. The crop was kept free from insecticide treatment.

Results and Discussion

The study pertaining to incidence of insect pest, indicated the presence of seven species of insect pests and three species of predators during the period of study from 16th September 2016 to 15th April 2017 at various stages of the brinjal crop after transplanting in district Rewa, Madhya Pradesh.

The insect pests recorded on the crop were whitefly, aphid, jassid and hadda beetle from vegetative growth stage to maturity of the crop, while brinjal shoot and fruit borer was noted, as the most dominating species of the pest, at vegetative as well as flowering and fruiting stage of the crop. The infestation of mealybug and lace bug were recorded in the late season of the crop i.e. from January to April 2017 (Plate 1–3).

Incidence of whitefly

Whitefly was recorded on the crop, 16 days after transplanting and

It remained active thereon upto second fortnight of March 2017.

Incidence of jassid

Jassid was observed on the crop when it was 27 days old after transplanting and remained thereon upto 30th March 2017.

Incidence of aphid

Aphid was recorded on the crop from 35 DAT (21st October) in high density and found active upto 175 DAT (i.e. 10th March 2017).

Incidence of hadda beetle

Hadda beetle was recorded on the crop from 50 DAT (5th November) and found active upto 121st DAT (i.e. 15th January 2017).

Mealybug

Mealybug was recorded on the crop with its first incidence on 125th DAT (19th January) and thereafter remained active upto 3rd week of March.

Lace bug

Lace bug was observed on the crop at 183rd days old transplanted plants remained active throughout the experimental period i.e. 14th April 2017.

Shoot and fruit borer

Incidence of shoot and fruit borer was noted on the crop when it was 76 days old after transplanting i.e. vegetative stage of the crop and remained active upto 20th March 2017.

Plate.1 Incidence of insect pests in brinjal crop in Rewa district during *Kharif & Rabi* 2016-2017



(a) Whitefly on brinjal leaves



(b) Aphid on brinjal leaves



(c) Jassid on brinjal leaves



(d) Hadda beetle on brinjal leaves



(e) Mealybug on brinjal leaves



(f) Lace bug on brinjal leaves

Plate.2 Incidence natural enemies in brinjal crop in Rewa district during *Kharif & Rabi* 2016-2017



(a) BSFB larvae



(b) BSFB adult



(c) Lady bird beetle



(d) Dragonfly



(e) Bark sac spider



(f) White banded crab spider

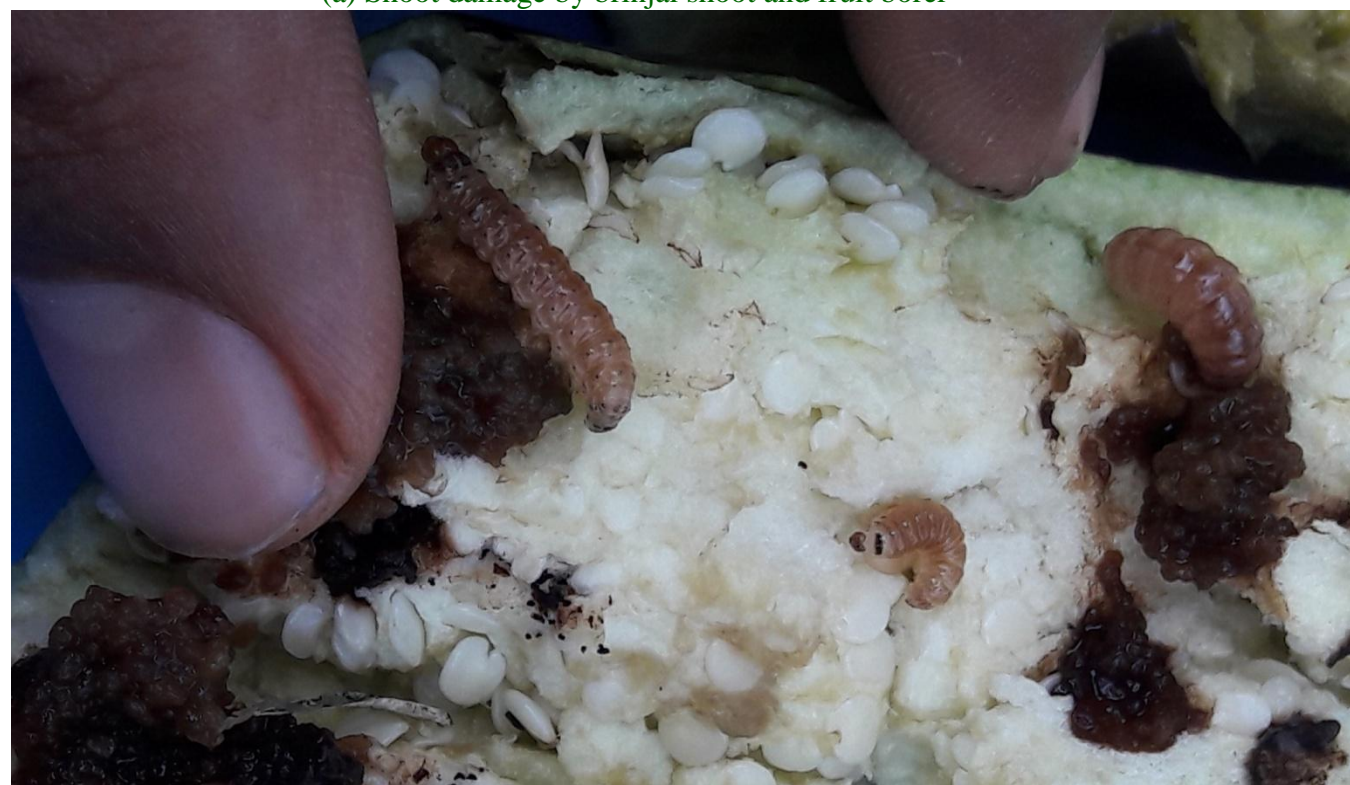


(g) Striped lynx spider

Plate.3 Incidence of insect pests in brinjal crop in Rewa district during *Kharif & Rabi* 2016-2017



(a) Shoot damage by brinjal shoot and fruit borer



(b) Fruit damage by brinjal shoot and fruit borer

Fig.4 Incidence of insect pests and natural enemies in brinjal crop in Rewa district during *Kharif & Rabi* 2016-2017

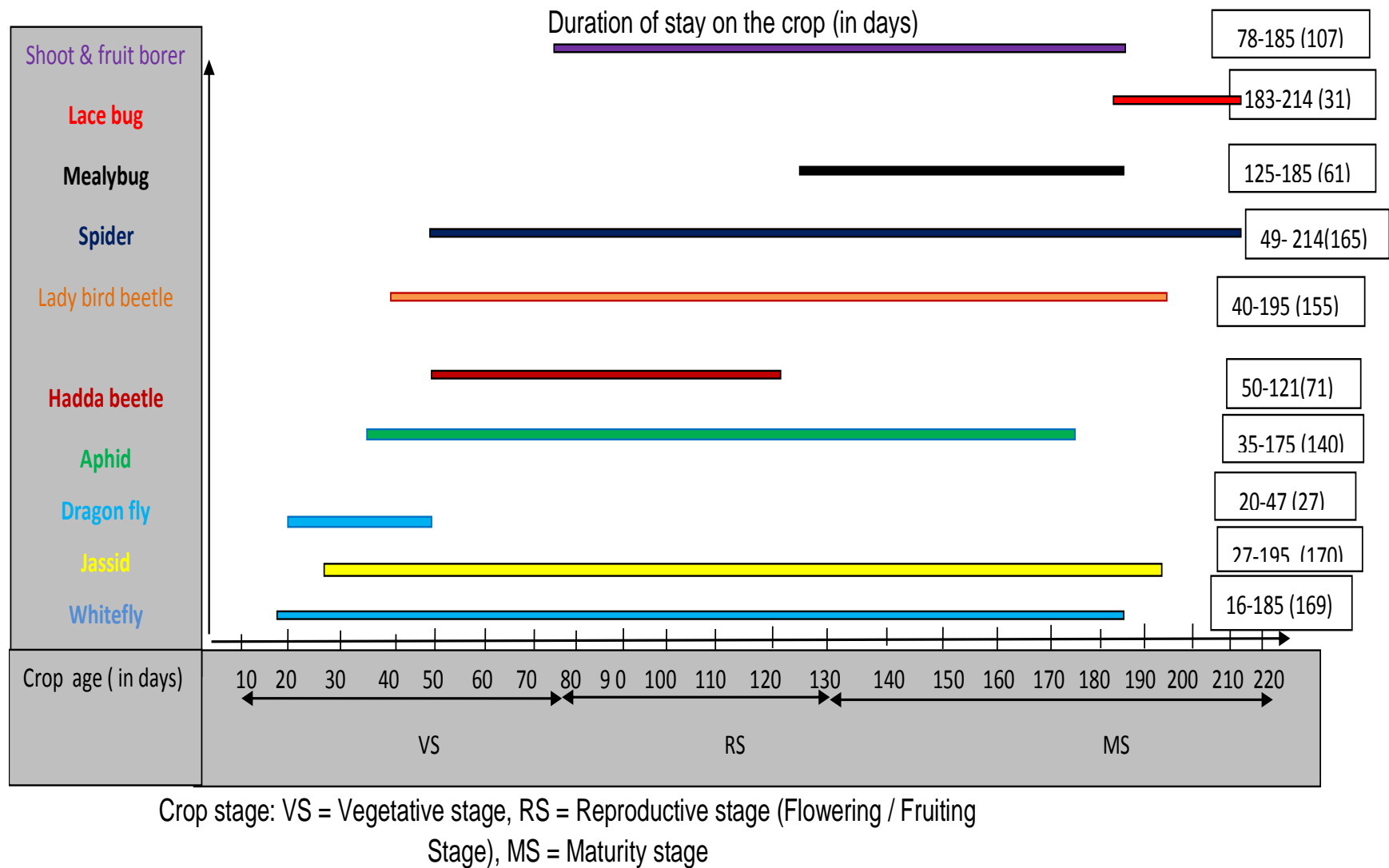


Table.1 Incidence of insect pests and natural enemies in brinjal crop in Rewa district during *Kharif & Rabi* 2016-2017

S. No.	Common name of insect pests/ Natural enemy	Scientific name	Order	Family	Crop age (DAT)	Period of activity	Crop stage
1.	Whitefly	<i>Bemisia tabaci</i> (Genn.)	Hemiptera	Aleyrodidae	16	2 nd October to 20 th March	VS
2.	Jassid	<i>Amrasca biguttula biguttula</i> (Ishida)	Hemiptera	Cicadellidae	27	13 th October to 30 th March	VS
3.	Aphid	<i>Myzus persicae</i> (Sulzer)	Hemiptera	Aphididae	35	21 st October to 10 th March	VS
4.	Hadda beetles	<i>Epilachna vigintioctopunctata</i>	Coleoptera	Coccinellidae	50	5 th November to 15 th January	VS
5.	Mealybug	<i>Coccidohystrix insolita</i> (Green)	Hemiptera	Pseudococcidae	125	19 th January to 20 th March	FFS
6.	Lace bug	<i>Urentius sentis</i> (Distant)	Hemiptera	Tingidae	183	18 th March to 14 th April	FFS
7.	Shoot and Fruit borer	<i>Leucinodes orbonalis</i> (Guenn.)	Lepidoptera	Pyalidae	84	3 rd December to 20 th March	VS/FFS
(Natural enemies)							
8.	Lady bird beetle	<i>Cheliomenes sexmaculata</i> Fabricius.	Coleoptera	Coccinellidae	40	26 th October to 30 th March	VS/FFS
9.	Dagon fly	<i>Crocothemis servilia</i>	Odonata	Libellulidae	20	6 th October to 2 nd November	VS/FFS
Spiders							
10	Striped lynx spider	<i>Oxyopes salticus</i>	Araneae	Oxyopidae	49	25 th October to 14 th April	VS/FFS
	White banded crab spider	<i>Misumenoids formosipes</i>	Araneae	Thomisidae			
	Bark sac spider	<i>Clubiona spp.</i>	Araneae	Clubionidae			

Natural enemies

Among the natural enemies of the insect pests of the brinjal crop, lady bird beetle, dragonfly and many species of spiders were seen in the crop ecosystem from October 2016 to April 2017.

Lady bird beetle

Among the natural enemies the occurrence of lady bird beetle was seen when it was 43 days old after transplanting and thereafter remained active upto the end of 30th March 2017.

Spiders

Among the natural enemies sufficient number of various species of spiders namely, striped lynx spider, white banded crab spider and bark sac spider were seen in the crop from 49 days after transplanting and found active throughout the experimentation period i.e. 2nd week of April.

Dragonfly

The Dragonfly was seen in abundance from on 20 days after transplanting and remained active therein up to the end of 5th week of October 2016.

Thus, overall 7 insect pests (5 sap feeder, one foliage feeder and one borer) and three natural enemies were recorded on the brinjal crop, during *Kharif & Rabi* 2016-2017 from the agro-climatic condition of Rewa district.

Among the insect pests; five species were noted from Hemiptera, one species from Coleoptera and one species from Lepidoptera order. While among the natural enemies Ladybird beetle and Dragonfly were noted from Coleoptera and Odonata order respectively. In addition to the spiders which belong to order the Araneae.

Incidence of these insect pests and natural enemies on brinjal has also been reported by various workers, Gangwar and Singh (2014) while Latif *et al.*, (2009) reported twenty species of harmful arthropods belonging to 17 families, and 6 orders. In the present study the aphid species recorded in the crop were *Myzus persicae* sulzer but Elanchezhyan *et al.*, (2008) and Kadam *et al.*, (2006) reported *Aphis gossypii* species in the brinjal crop.

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