SHORT COMMUNICATION

SCREENING OF LITCHI GENOTYPES AGAINST BARK EATING CATERPILLAR, *INDARBELLA* SP.

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Abstract: Bark-eating caterpillar, *Indarbella sp.* was found to be the most heavily infested pest on litchi at Ambikapur**,** Surguja district of Chhattisgarh. Twenty one year old twenty genotypes of litchi were tested against *Indarbella sp* no any single genotype with no bark-eating caterpillar attack had been found, all the genotypes were categorized as heavy infestation category. The incidence and intensity of bark eating caterpillar was showed significantly differences on different litchi genotype, the genotype Dehradun was found minimum per cent incidence (53.33 -56.67) and low numbers of active holes/ tree (5.3- 5.7) during the course of study year 2015 and 2016. The mean incidence of bark eating caterpillar on Dehradun genotype was 55.00 percent and 5.5 numbers of active holes/ tree.

Keywords: Litchi, Bark eating caterpillar, *Indarbella* sp.

INTRODUCTION

Litchi, *Litchi chinensis* (Sonn.) is the one of the most important sub-tropical fruit belongs to the family Sapindaceae. It is native to southern China and introduced in India during the end of 17th century. The top five litchi producing countries are China, India, Taiwan, Thailand, and Vietnam. India ranked second after China in area as well production. India and China account for 91 percent of the world's litchi production. India produced total 26,509 million metric tonnes with an area of 83 thousand hectares and average productivity of 7.00 metric tonnes per hectare (Anonymous, 2013). Litchi requires precise climatic conditions, there are only few states namely, Bihar, West Bengal, Uttaranchal, Uttar Pradesh, Himachal Pradesh, Assam, Tripura, Punjab and Jharkhand growing the fruits commercially. Litchi is affected by numbers of factors. Among the factors insect pests and post-harvest losses are a major constraint. It has been infested by numbers of insect pest (Hameed *et al.*, 2001). There are two species of bark eating caterpillars, *Indarbela tetraonis* Moore and *Indarbela quadrinotata* Walker (Verma and Khurana, 1974; Khurana and Gupta, 1972.). The pest is distributed throughout Indian subcontinent, mainly U.P., M.P., Bihar, Rajasthan, Haryana, Orissa, A.P., T.N. and Maharashtra. Particularly in Bihar *Indarbela tetraonis* Moore is a very serious pest of litchi, guava, mango and ber (Sharma and Kumar, 1986). It was found to be the most economically important pest, which showed significant variation in infestation on the stem of old and young litchi varieties. The incidence of bark eating caterpillar on old plant varied from 0.75 to 2.25 fecal garlands per plant. The incidence was started from the month of September with distinct fecal garland in the month of February (Anonymous, 1999). Damage is caused by caterpillar, which bore into trunk, main stems and thick branches of litchi tree and destroying xylum tissues resulting into poor growth and fruiting of the tree. Caterpillars remain within the tunnel inside the stem during day, come out in night and feed upon the bark. Older and uncared trees are more affected by the pest. Infestation may be noticed by the presence of ribbons of wood chips, frass and silken thread over the bark surface (Hameed *et al.*, 2001; Atwal and Dhaliwal, 2010). After hatching in June caterpillar feeds up to March-April and completes only one generation in a year (Hameed *et al.*, 2001). Uses of chemicals are most common and popular method of control. Growers have to spend much as input for establishment of the orchard which is not beneficial for managing insect pest along with cost of pesticides for maintaining quality of fruit. Thus, for the bright future of litchi growers, it is necessary to identify of the insect pest problems in Chhattisgarh hills and also selection of better sources of resistance against few or some economically important pests. Varietal resistance to the insect pest may be helpful for its management. Thus, the present studies were conducted to screen the litchi genotypes against bark eating caterpillar, *Indarbella sp*.

MATERIAL AND METHOD

Screen of litchi genotypes against bark eating caterpillar, *Indarbella sp*. was studied at the horticulture orchard of RMD College of Agriculture and Research Station, Ambikapur**,** Surguja Chhattisgarh during January 2015 to December 2015 and January 2016 to December 2016. Twenty genotypes viz. Ambika litchi -1, Seedless-1, Seedless-2, Kalkattia, Damdam, Rose scented, China, Dehradoon, Sahi, Early bedana, Bombaya, poorvi, Kasaba, Late large red, Surguja selection -2,

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Surguja selection-5, Surguja selection-6, Surguja selection-7, Surguja selection-8, and Surguja selection-9 of 21 year old litchi plantation, replicated thrice in Randomized Block Design (RBD). The observations of different litchi genotypes screening against bark eating caterpillar, *Indarbella sp***.** were carried out in the term of incidence, intensity and magnitude of infestation. The incidence of bark eating caterpillar, *Indarbella sp*. was recorded on the basis of numbers of active tunnels during peak period September to October. The presence of larvae over the bark, with pieces of bark, excrements and silken thread were considered as the sign of active tunnels.The intensity of bark eating caterpillar, *Indarbella sp*. was recorded in the term of per cent tree infestation. For quantifying the intensity of infestation method was suggested by Verma and Khurana (1976).

$$\text{Infestation (\%)} = \frac{\text{Total number of active holes}}{\text{Total no.infested tree}} \times 100$$

The magnitude of infestation was estimated by following the score classes as given by Mathew (1997).

Score	Magnitude of infestation
0	Healthy tree with no borer attack
1	Tree infested by only one borer (low infestation)
2	Tree affected by 2 to 4 borers (medium infestation)
3	Tree with more than 4 borers (heavy infestation)

RESULT AND DISCUSSION

The litchi genotypes were heavily infested by bark eating caterpillars, *Indarbela sp.* during the course of study. The data recorded on the incidence and intensity of these pest were showed significantly difference on different litchi genotypes. The genotype Dehradoon was found minimum percent incidence (53.33 -56.67) and low numbers of active holes/ tree (5.3- 5.7) during the course of study year 2015 and 2016. The mean incidence of bark eating caterpillar on Dehradoon genotype was 55.00 percent and 5.5 numbers of active holes/ tree (table 1). Similarly anonymous, 1999 reported that the incidence of bark eating caterpillar *Indarbela s*p. was noticed on the stem of old and young litchi varieties during 1997-98. The results revealed that the number of fecal garland varied from 0.75 to 2.25 per plant in different old varieties which were more than ten year of age where as the fecal garland in young varieties varied from 0.0 to 0.80 per plant. Among the old varieties, Shahi was most susceptible to bark eating caterpillar as highest number of fecal garland was recorded in it followed by Rose scented. The variety Surguja Selection II had lowest number of fecal garland (0.75) representing its least susceptibility to bark eating caterpillar. Gupta *et al.* (2014) also studied on the incidence and intensity of bark eating caterpillar *Indarbela s*p. in low hills of Himachal Pradesh the incidence varied between 91.5 and 98.0 per cent in citrus, litchi, mango and guava orchards with litchi as the most preferred host (with caterpillar incidence index value of 3.95).

Table 1. Incidence, intensity and Magnitude of bark eating caterpillar, *Indarbella sp*. on different litchi genotype at Ambikapur during the crop growth years 2015 and 2016

Genotype	Incidence (%)			Intensity (No. of active holes/tree)			Magnitude of infestation
	2015	2016	Mean	2015	2016	Mean	
Ambika litchi-1	66.67 (54.76)	60.00 (50.83)	63.33	6.7	6.0	6.4	heavy infestation
Seedless-2	63.33 (53.05)	66.67 (55.05)	65.00	6.3	6.7	6.5	heavy infestation
Kalkattia	56.67 (48.83)	66.67 (54.76)	61.67	5.7	6.7	6.2	heavy infestation
Damdam	66.67 (54.76)	63.33 (52.75)	65.00	6.7	6.3	6.5	heavy infestation
Rose Scented	56.67 (48.83)	63.33 (52.75)	60.00	5.7	6.3	6.0	heavy infestation
China	76.67 (61.20)	76.67 (61.20)	76.67	7.7	7.7	7.7	heavy infestation
Surguja selection-2	73.33 (59.68)	70.00 (56.98)	71.67	7.3	7.0	7.2	heavy infestation
Seedless-1	70.00 (57.27)	60.00 (50.83)	65.00	7.0	6.0	6.5	heavy infestation
Dehradoon	53.33 (46.90)	56.67 (48.83)	55.00	5.3	5.7	5.5	heavy infestation
Shahi	73.33 (58.98)	66.67 (54.76)	70.00	7.3	6.7	7.0	heavy infestation
Early Bedana	63.33 (53.83)	76.67 (61.90)	70.00	6.3	7.7	7.0	heavy infestation
Bombaya	76.67 (61.20)	76.67 (61.20)	76.67	7.7	7.7	7.7	heavy infestation
Purvi	56.67 (48.91)	73.33 (59.68)	65.00	5.7	7.3	6.5	heavy infestation

Kasaba	83.33 (66.61)	80.00 (63.90)	81.67	8.3	8.0	8.2	heavy infestation
Surguja selection-6	80.00 (63.90)	80.00 (63.90)	80.00	8.0	8.0	8.0	heavy infestation
Surguja selection-7	73.33 (58.98)	73.33 (58.98)	73.33	7.3	7.3	7.3	heavy infestation
Surguja selection-8	70.00 (57.68)	86.67 (68.83)	78.33	7.0	8.7	7.9	heavy infestation
Surguja selection-9	80.00 (63.90)	76.67 (61.20)	78.33	8.0	7.7	7.9	heavy infestation
Surguja selection-5	66.67 (54.76)	73.33 (58.98)	70.00	6.7	7.3	7.0	heavy infestation
Late large red	80.00 (63.90)	80.00 (63.90)	80.00	8.0	8.0	8.0	heavy infestation
SE(m)	**3.94**	**3.56**		**0.59**	**0.53**		
C.D.	**11.32**	**10.23**		**1.7**	**1.5**		

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