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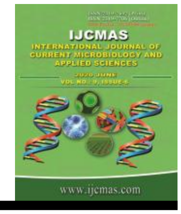

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Screening of Field Bean Genotypes against Major Pod Borers

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Among the thirty field bean genotypes screened against pod borers, no single entry was found to be highly resistant and five genotypes were identified as resistant (GL-661, GL-12, GL-418, GL-438 and GL-382). Whereas, thirteen genotypes were categorized as moderately resistant. Susceptible group of field bean cultivars comprised of seven genotypes and highly susceptible group contained 5 genotypes (HA-3, Local, GL-10, GL-68 and HA-4).

Introduction

Lablab purpureus (L.) commonly called as field bean is one of the ancient leguminous crops cultivated mainly in southern parts of India. Though the crop is cultivated in almost all regions of Karnataka, it is highly grown as a mixed crop with finger millet and sorghum and to a smaller extent as a pure crop under rainfed as well as irrigated conditions. The damage by insect pests is considered as one of the major drawbacks in achieving the potential yield in field bean. Many number of pests severely ravage the buds, flowers and developing seeds of bean crop resulting in crop loss. Govindan (1974) reported around 55 species of insects and one species of mite feeding on the crop from seedling stage till the harvest in Karnataka.

Among sucking pests lablab bug, *Coptosoma cribraria* (Fabricius), *Riptortus pedestris* (Fabricius) and *Nezara viridula* (Linnaeus) occurred commonly in large numbers throughout the cropping period (Govindan, 1974). The significant crop damage was attributed to the pod borer complex including *Helicoverpa armigera* (Hubner), *Adisura atkinsoni* (Moore), *Maruca testulalis* (Geyer), *Etiella zinckenella* (Treitschke), *Cydia ptychora* (Meyrick), *Exelastis atomosa* (Walshinghan), *Sphenarches caffer* (Zeller) and *Lampides boeticus* (Linnaeus) and *Callosobruchus theobromae* (L.) which are of considerable importance causing 80 per cent pod damage (Katagihallimath and Siddappaji, 1962). The inflorescence is attacked by several species of borers, of which *E. atomosa*, *A. atkinsoni* and *H. armigera* have been considered as major pests. Currently, spotted borer, *M. vitrata* is attaining a major pest status on Lablab varieties, blooming throughout the year. The seed yield loss caused by *A. atkinsoni* has reported to be more than 95 per cent (Chakravarthy, 1983) and pod damage, more than 49.43 per cent (Mallikarjunappa, 1989).

By considering the seriousness of damage caused by the pod borers it is felt necessary to find efficient and precise control measures. Since, *L. purpureus* is a vegetable crop, the eco-friendly suppression methods like the use of resistant varieties and application of need-based pesticides based on information of insect-pest dynamics should be adopted.

Host plant resistance remains the most effective tool in integrated pest management which is compatible with other methods of control without any additional cost to growers (Nadeem *et al.*, 2010). Hence the present research was undertaken to screen field bean genotypes against major pod borers.

Materials and Methods

To evaluate the reaction of field bean genotypes to pod borer complex, 30 germplasm including popular variety (HA-4 and HA-3) and local cultivar of field bean were sown in Rabi season in October 2017. Each genotype was sown in two rows of 2 m length with a row to row spacing of 60 cm and plant to plant spacing of 20 cm. All the recommended package of practices was followed to raise the crop except for the plant protection measures.

During the period of study, incidence of prevalent pod borers were recorded on 5 randomly tagged plants of each genotype in each row from flowering till harvest at 10 days interval and cumulative data were expressed as incidence of insect pests on inflorescence and pods. Based on the infestation levels genotypes were selected for further determination of biochemical and parameters of pods.

At the time of harvest, data on total number of pods and number of damaged pods in five plants in each genotype was recorded and per cent pod damage was computed by using following formula.

Percentage pod damage =

$$\frac{\text{Total number of damaged pods}}{\text{Total number of pods}} \times 100$$

Further, based on the per cent pod damage inflicted by pod borers, the genotypes were grouped into different categories of resistance and susceptibility. The mean and standard deviation (SD) of per cent pod damage was worked out. The classification of genotypes was done based on mean ± SD as mentioned below (Rudranaik *et al.*, 2009 and Mallikarjuna, 2009).

Highly resistant: Genotypes with per cent pod damage less than mean-2(SD).

Resistant: Genotypes with per cent pod damage between mean-2(SD) and meanSD

Moderately resistant: Genotypes with per cent pod damage between mean-SD and mean.

Susceptible: Genotypes with per cent pod damage between mean and mean+SD.

Highly Susceptible: Genotypes with per cent pod damage between mean+SD and mean+2(SD) and above.

Results and Discussion

The larval population of major pod borers viz., *E. atomosa* and *H. armigera* were recorded only during *Rabi* since the population of *A. atkinsoni* and *M. vitrata* were sparsely distributed. The data on mean number of larvae of *E. atomosa* and *H. armigera* per plant (Table 1 and 2, respectively) indicated that none of the genotypes / cultivars was found free from incidence of the pests.

However, the genotype GL-661 that recorded the lowest larval population of *E. atomosa* (0.60 larvae/ plant) was considered to be the least susceptible. In addition GL-12 (0.79 larvae/ plant) and GL-418 (0.81 larvae/ plant) were found at par showing less susceptible reactions. The genotypes HA-4, Local, HA-3, GL-10, GL-68 and GL-66 with highest larval population of 2.11, 2.04, 1.98, 1.86, 1.86 and 1.86 per plant, respectively were considered as highly susceptible (Table 1).

Similarly, the genotype GL-661 that recorded the lowest larval population of *H. armigera* (0.05 larvae/ plant) was considered to be the least susceptible. In addition GL12 (0.08 larvae/ plant), GL-418 (0.08 larvae/ plant) and GL-658 (0.09 larvae/ plant) were found at par showing less susceptible reactions. The genotypes HA-4, GL-68, HA-3, GL10, Local and GL-66 with highest larval population of 0.37, 0.32, 0.29, 0.27, 0.26 and 0.25 per plant, respectively were considered as highly susceptible (Table 2).

The present findings are similar to Halder and Srinivasan (2010) who reported that the genotypes light brown local, HA-3 and HA-1 harboured highest number of spotted pod borer larvae which were highly susceptible. Whereas, the resistant genotypes H-3 UAS and GP-5 harbored less number of larvae. Also, Umbarkar *et al.*, (2011) reported that among the ten genotypes of green gram screened for their reaction to gram pod borer, *H. armigera*, GM-2K-5, GM- 9926 and GM-2K-3 harboring less number of larvae per plant were found less susceptible than genotypes, GM-02-13 and GM-04-04 harboring highest number of larvae per plant.

Per cent pod damage inflicted by pod borer complex in different genotypes of field bean during Rabi 2017-18

The harvested pods of different genotypes were assessed for the damage caused by pod borers. Data on per cent pod damage was estimated in all thirty genotypes of field bean and presented in Table 3.

The pod damage caused by pod borers among the cultivars was significant and ranged from 11.67 per cent to 51.4 per cent. The results showed that GL-661 recorded the least damage (11.67 %) and was found to be superior over other genotypes. It was followed by GL-12 (14.38 %) and this was on par with the GL-418 (16.17 %), GL-438 (17.11 %) and GL-382 (17.99 %).

Among other cultivars which recorded less per cent pod damage was GL-331 (20.67 %) and it was found to be on par with GL-658, GL-464 and GL-391 these cultivars recorded pod damage of 22.22, 22.88 and 22.94 per cent, respectively.

The higher per cent pod damage was observed in HA-4 (51.4 %) which was on par with GL-68 (51.02 %). The higher per cent pod damage was also observed in GL10, Local and HA-3 with 48.21, 47.91 and 46.83 per cent, respectively. The remaining cultivars recorded per cent pod damage ranged from 24.84 per cent in GL-336 and 35.53 per cent in GL-376.

Table.1 Incidence of plume moth, *E. atomosa* in different genotypes of field bean

Sl. No.	Genotypes	Average no. of larvae per plant						
		50 DAS	60 DAS	70 DAS	80 DAS	90 DAS	100 DAS	Mean
1	Ha-4	0.30 (0.89)	0.50 (1.00)	0.80 (1.14)	0.40 (0.95)	0.10 (0.77)	0.10 (0.77)	0.37 (0.93)
2	Ha-3	0.30 (0.89)	0.40 (0.95)	0.55 (1.02)	0.40 (0.95)	0.10 (0.77)	0.00 (0.71)	0.29 (0.89)
3	KNR	0.10 (0.77)	0.20 (0.84)	0.30 (0.89)	0.30 (0.89)	0.20 (0.84)	0.00 (0.71)	0.18 (0.82)
4	GL-10	0.10 (0.77)	0.20 (0.84)	0.30 (0.89)	0.50 (1.00)	0.50 (1.00)	0.00 (0.71)	0.27 (0.88)
5	GL-12	0.00 (0.71)	0.00 (0.71)	0.20 (0.84)	0.20 (0.84)	0.10 (0.77)	0.00 (0.71)	0.08 (0.76)
6	GL-66	0.20 (0.84)	0.30 (0.89)	0.50 (1.00)	0.30 (0.89)	0.10 (0.77)	0.10 (0.77)	0.25 (0.87)
7	GL-68	0.20 (0.84)	0.50 (1.00)	0.40 (0.95)	0.50 (1.00)	0.30 (0.89)	0.00 (0.71)	0.32 (0.91)
8	GL-142	0.00 (0.71)	0.30 (0.89)	0.20 (0.84)	0.20 (0.84)	0.00 (0.71)	0.10 (0.77)	0.13 (0.79)
9	GL-199	0.00 (0.71)	0.25 (0.89)	0.15 (0.81)	0.30 (0.89)	0.10 (0.77)	0.00 (0.71)	0.13 (0.79)
10	GL-233	0.00 (0.71)	0.35 (0.92)	0.30 (0.89)	0.20 (0.84)	0.10 (0.77)	0.10 (0.77)	0.18 (0.82)
11	GL-252	0.10 (0.77)	0.00 (0.71)	0.50 (1.00)	0.60 (1.05)	0.00 (0.71)	0.10 (0.77)	0.22 (0.85)
12	GL-331	0.00 (0.71)	0.10 (0.77)	0.25 (0.89)	0.25 (0.89)	0.00 (0.71)	0.20 (0.84)	0.13 (0.79)
13	GL-336	0.00 (0.71)	0.30 (0.89)	0.20 (0.84)	0.40 (0.95)	0.10 (0.77)	0.10 (0.77)	0.18 (0.82)
14	GL-337	0.10 (0.77)	0.10 (0.77)	0.20 (0.84)	0.30 (0.89)	0.30 (0.89)	0.20 (0.84)	0.20 (0.84)
15	GL-360	0.10 (0.77)	0.40 (0.95)	0.30 (0.89)	0.50 (1.00)	0.00 (0.71)	0.00 (0.71)	0.22 (0.85)
16	GL-372	0.10 (0.77)	0.50 (1.00)	0.10 (0.77)	0.30 (0.89)	0.20 (0.84)	0.00 (0.71)	0.20 (0.84)
17	GL-376	0.20 (0.84)	0.35 (0.92)	0.40 (0.95)	0.30 (0.89)	0.00 (0.71)	0.00 (0.71)	0.21 (0.84)
18	GL-382	0.10 (0.77)	0.00 (0.71)	0.20 (0.84)	0.30 (0.89)	0.20 (0.84)	0.00 (0.71)	0.13 (0.79)
19	GL-391	0.10 (0.77)	0.20 (0.84)	0.10 (0.77)	0.30 (0.89)	0.20 (0.84)	0.00 (0.71)	0.15 (0.81)
20	GL-403	0.10 (0.77)	0.30 (0.89)	0.15 (0.81)	0.30 (0.89)	0.30 (0.89)	0.00 (0.71)	0.19 (0.83)
21	GL-412	0.00 (0.71)	0.10 (0.77)	0.20 (0.84)	0.30 (0.89)	0.20 (0.84)	0.00 (0.71)	0.13 (0.79)
22	GL-418	0.10 (0.77)	0.00 (0.71)	0.10 (0.77)	0.20 (0.84)	0.00 (0.71)	0.10 (0.77)	0.08 (0.76)
23	GL-438	0.00 (0.71)	0.10 (0.77)	0.20 (0.84)	0.30 (0.89)	0.00 (0.71)	0.00 (0.71)	0.10 (0.77)
24	GL-464	0.10 (0.77)	0.20 (0.84)	0.10 (0.77)	0.20 (0.84)	0.10 (0.77)	0.00 (0.71)	0.12 (0.79)
25	GL-527	0.10 (0.77)	0.30 (0.89)	0.30 (0.89)	0.20 (0.84)	0.30 (0.89)	0.20 (0.84)	0.23 (0.85)
26	GL-530	0.10 (0.77)	0.30 (0.89)	0.50 (1.00)	0.40 (0.95)	0.10 (0.77)	0.00 (0.71)	0.23 (0.85)
27	GL-621	0.10 (0.77)	0.35 (0.92)	0.45 (0.97)	0.30 (0.89)	0.10 (0.77)	0.00 (0.71)	0.22 (0.85)
28	GL-658	0.00 (0.71)	0.05 (0.74)	0.10 (0.77)	0.30 (0.89)	0.10 (0.77)	0.00 (0.71)	0.09 (0.77)
29	GL-661	0.00 (0.71)	0.00 (0.71)	0.10 (0.77)	0.20 (0.84)	0.00 (0.71)	0.00 (0.71)	0.05 (0.74)
30	Local	0.20 (0.84)	0.35 (0.92)	0.50 (1.00)	0.30 (0.89)	0.20 (0.84)	0.00 (0.71)	0.26 (0.87)
	SE m±	**NS**	**NS**	**NS**	**NS**	**0.07**	**NS**	**0.04**
	CD @ 5%					**0.2**		**0.12**

DAS: Days after sowing; Figures in the parenthesis indicate $\sqrt{x + 0.5}$ transformed values

Table.2 Incidence of *H. armigera* in different genotypes of field bean

Sl. No.	Genotypes	Average no. of larvae per plant						
		50 DAS	**60 DAS**	**70 DAS**	**80 DAS**	**90 DAS**	**100 DAS**	**Mean**
1	Ha-4	1.50 (1.41)	2.60 (1.76)	3.00 (1.87)	2.80 (1.82)	1.95 (1.57)	0.80 (1.14)	2.11 (1.62)
2	Ha-3	1.15 (1.28)	2.50 (1.73)	2.30 (1.67)	2.40 (1.70)	2.10 (1.61)	0.70 (1.10)	1.86 (1.54)
3	KNR	0.80 (1.14)	1.90 (1.55)	2.20 (1.64)	2.30 (1.67)	1.70 (1.48)	0.50 (1.00)	1.57 (1.44)
4	GL-10	1.48 (1.41)	2.45 (1.72)	2.00 (1.58)	2.20 (1.64)	2.30 (1.67)	0.70 (1.10)	1.98 (1.57)
5	GL-12	0.15 (0.81)	0.80 (1.14)	1.30 (1.34)	1.40 (1.38)	0.80 (1.14)	0.30 (0.89)	0.79 (1.14)
6	GL-66	1.10 (1.26)	2.40 (1.70)	2.40 (1.70)	2.35 (1.69)	2.30 (1.67)	0.60 (1.05)	1.86 (1.54)
7	GL-68	1.45 (1.40)	2.60 (1.76)	2.40 (1.70)	2.50 (1.73)	2.10 (1.61)	0.80 (1.14)	1.86 (1.54)
8	GL-142	0.70 (1.10)	1.55 (1.43)	1.90 (1.55)	1.90 (1.55)	2.00 (1.58)	0.40 (0.95)	1.41 (1.38)
9	GL-199	0.60 (1.05)	1.40 (1.38)	0.70 (1.10)	0.70 (1.10)	1.80 (1.52)	0.40 (0.95)	1.27 (1.33)
10	GL-233	0.95 (1.20)	2.00 (1.58)	2.20 (1.64)	2.15 (1.63)	2.00 (1.58)	0.55 (1.02)	1.64 (1.46)
11	GL-252	0.70 (1.10)	1.80 (1.52)	1.70 (1.48)	1.60 (1.45)	1.60 (1.45)	0.50 (1.00)	1.32 (1.35)
12	GL-331	0.30 (0.89)	1.20 (1.30)	1.50 (1.41)	1.50 (1.41)	1.20 (1.30)	0.30 (0.89)	1.00 (1.22)
13	GL-336	0.50 (1.00)	1.50 (1.41)	1.60 (1.45)	1.60 (1.45)	1.50 (1.41)	0.40 (0.95)	1.18 (1.30)
14	GL-337	0.85 (1.16)	1.80 (1.52)	2.50 (1.73)	2.50 (1.73)	2.00 (1.58)	0.60 (1.05)	1.71 (1.49)
15	GL-360	0.80 (1.14)	1.90 (1.55)	2.40 (1.70)	2.70 (1.79)	1.80 (1.52)	0.50 (1.00)	1.68 (1.48)
16	GL-372	0.65 (1.07)	1.60 (1.45)	1.50 (1.41)	1.80 (1.52)	1.80 (1.52)	0.45 (0.97)	1.30 (1.34)
17	GL-376	1.10 (1.26)	2.20 (1.64)	2.60 (1.76)	2.40 (1.70)	2.00 (1.58)	0.50 (1.00)	1.80 (1.52)
18	GL-382	0.30 (0.89)	1.35 (1.36)	1.20 (1.30)	1.30 (1.34)	1.20 (1.30)	0.30 (0.89)	0.94 (1.20)
19	GL-391	0.45 (0.97)	1.40 (1.38)	1.50 (1.41)	1.45 (1.40)	1.40 (1.38)	0.40 (0.95)	1.10 (1.26)
20	GL-403	0.80 (1.14)	1.70 (1.48)	1.90 (1.55)	1.80 (1.52)	1.70 (1.48)	0.50 (1.00)	1.40 (1.38)
21	GL-412	0.95 (1.20)	1.90 (1.55)	2.40 (1.70)	2.40 (1.70)	2.45 (1.72)	0.50 (1.00)	1.77 (1.51)
22	GL-418	0.20 (0.84)	0.90 (1.18)	1.30 (1.34)	1.20 (1.30)	0.90 (1.18)	0.35 (0.92)	0.81 (1.14)
23	GL-438	0.30 (0.89)	0.90 (1.18)	1.40 (1.38)	1.35 (1.36)	1.30 (1.34)	0.40 (0.95)	0.94 (1.20)
24	GL-464	0.40 (0.95)	1.30 (1.34)	1.60 (1.45)	1.70 (1.48)	1.30 (1.34)	0.40 (0.95)	1.12 (1.27)
25	GL-527	1.00 (1.22)	2.10 (1.61)	2.30 (1.67)	2.20 (1.64)	1.90 (1.55)	0.50 (1.00)	1.67 (1.47)
26	GL-530	1.05 (1.24)	2.40 (1.70)	2.20 (1.64)	2.10 (1.61)	2.00 (1.58)	0.60 (1.05)	1.73 (1.49)
27	GL-621	1.05 (1.24)	2.20 (1.64)	2.35 (1.69)	2.20 (1.64)	2.00 (1.58)	0.55 (1.02)	1.73 (1.49)
28	GL-658	0.35 (0.92)	1.10 (1.26)	1.35 (1.36)	1.40 (1.38)	1.00 (1.22)	0.35 (0.92)	0.93 (1.20)
29	GL-661	0.10 (0.77)	0.30 (0.89)	1.00 (1.22)	1.20 (1.30)	0.70 (1.10)	0.30 (0.89)	0.60 (1.05)
30	Local	1.25 (1.32)	2.60 (1.76)	2.50 (1.73)	2.60 (1.76)	2.40 (1.70)	0.90 (1.18)	2.04 (1.59)
	SE m±	**0.09**	**0.13**	**0.07**	**0.14**	**0.07**	**0.05**	**0.09**
	CD @ 5%	**0.25**	**0.38**	**0.19**	**0.41**	**0.21**	**0.15**	**0.24**

Figures in the parentheses indicate arc sine transformed values.

Table.3 Per cent pod damage inflicted by pod borers in different genotypes of field bean

Sl. No	Genotypes	Pod damage (%)
1	Ha-4	51.4 (45.80)
2	Ha-3	46.83 (43.17)
3	KNR	29.12 (32.65)
4	GL-10	48.21 (43.97)
5	GL-12	14.38 (22.27)
6	GL-66	34.97 (36.25)
7	GL-68	51.02 (45.58)
8	GL-142	26.01 (30.63)
9	GL-199	25.05 (30.03)
10	GL-233	31.13 (33.91)
11	GL-252	26.98 (31.28)
12	GL-331	20.67 (27.04)
13	GL-336	24.84 (29.89)
14	GL-337	29.39 (32.82)
15	GL-360	28.59 (32.31)
16	GL-372	26.89 (31.22)
17	GL-376	35.53 (36.39)
18	GL-382	17.99 (25.09)
19	GL-391	22.94 (28.61)
20	GL-403	27.78 (31.80)
21	GL-412	30.65 (33.61)
22	GL-418	16.17 (23.71)
23	GL-438	17.11 (24.43)
24	GL-464	22.88 (28.57)
25	GL-527	31.34 (34.04)
26	GL-530	33.61 (35.41)
27	GL-621	33.73 (35.50)
28	GL-658	22.22 (28.10)
29	GL-661	11.67 (19.97)
30	Local	47.91 (43.80)
	SE m±	**1.06**
	CD @ 5%	**3.08**

Figures in the parentheses indicate arc sine transformed values.

Table.4 Scoring of field bean Genotypes based on damage intensity of pod borers

Sl. No.	Category	Per cent pod damage	Genotypes
1	Highly resistant (HR) (Mean-2SD)	0000 - 8.47	--------
2	Resistant (R) (Mean-SD)	8.48 - 19.01	GL-661, GL-12, GL-418, GL438, GL-382
3	Moderately Resistant (MR) (Mean)	19.02 - 29.55	GL-331, GL-658, GL-464, GL391, GL-336, GL-199, GL-142, GL-372, GL-252, GL-403, KNR, GL-360, GL-337
4	Susceptible (S) (Mean+SD)	29.56 - 40.10	GL-412, GL-233, GL-527, GL530, GL-621, GL-66, GL-376
5	Highly Susceptible (HS) (Mean+2SD)	40.11 - 57.55	HA-3, Local, GL-10, GL-68, HA-4

The results of present study are comparable with the findings of Vinod *et al.*, (2011) who reported that per cent pod damage inflicted by pod borers *M. vitrata* and *E. atomosa* in field bean genotypes varied from 9.58 to 89.42 per cent. EC-92956 (9.58 %) recorded least damage followed by TFB-110, MAC-7-1 and PLS-42 and highest damage was in EC-55059 (89.42 %). Sunitha *et al.*, (2007) assessed 84 entries of field bean against pod borers. There was significant difference among the 84 genotypes screened with pod damage ranging from 18 to 59 per cent. The genotype AVT-FB (SD)-15- 6-4 had suffered highest pod damage (59.12%), while TCR-137 sustained least pod damage of 18.75 per cent.

Categorization of different field bean genotypes in response to pod borers damage

Based on mean per cent pod damage, field bean genotypes were categorized into five groups i.e. highly resistant, resistant, moderately resistant, susceptible and highly susceptible according to the reports of Rudranaik *et al.*, (2009) and Mallikarjuna (2009) and presented in Table 4.

Among the thirty field bean genotypes screened against pod borers, no single entry was found to be highly resistant. Five genotypes viz., GL-661, GL-12, GL-418, GL438 and GL-382 were identified as resistant falling under the range of 8.48 to 19.01per cent pod damage. Thirteen genotypes (GL-331, GL-658, GL-464, GL-391, GL-336, GL199, GL-142, GL-372, GL-252, GL-403, KNR, GL-360, and GL-337) recorded mean pod damage in the range of 19.02 to 29.55 per cent and was categorized as moderately resistant. Susceptible group of field bean genotypes comprised of seven genotypes (GL 412, GL-233, GL-527, GL-530, GL-621, GL-66 and GL-376) was found to have per cent pod damage ranging from 29.56-40.10. The cultivars which recorded the mean per cent pod damage 40.11 to 57.55 were classified under highly susceptible group containing 5 genotypes viz., HA-3, Local, GL-10, GL-68 and HA-4.

The present findings are in conformity with Rudranaik *et al.*, (2009) who evaluated 68 germplasm accessions for pod borer reaction and classified them as resistant, moderately resistant, moderately susceptible, susceptible and highly susceptible based on per cent pod damaged. Out of 68 accessions, six accessions were rated as highly resistant with least per cent pod damage. While, three were rated as moderately resistant. Whereas, 21 accessions were rated as moderately susceptible and remaining accession were rated as susceptible and highly susceptible.

Mallikarjuna (2009) screened 50 cultivars of field bean against pod borers, and revealed three germplasm lines as highly resistant, three lines as resistant, seventeen lines as moderately resistant, twenty lines as susceptible and seven lines were proved to be highly susceptible. Vinod *et al.,* (2011) also screened 40 germplasms of field bean, based on damage inflicted by the pod borers grouped into 3 categories viz., less susceptible, moderately susceptible and highly susceptible.

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