



Screening of Mungbean [*Vigna radiata* (L.) Wilczek] Genotypes against Major Insect Pests in Field Conditions

Ravi Kumar Rajak¹, Pankaj Kumar¹, Ragni Devi¹, V.P. Chaudhary¹,
Subhash Chandra², Brajrajsharan Tiwari³, Sivil Anuragi⁴

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ABSTRACT

Background: India's most important pulse crop is mungbean. Pulses are the primary source of dietary protein; consequently, they can provide the protein recommended dietary intake for the vegetarian population of India. More than 200 insect pests are known to affect pulse crops.

Methods: A total of 50 mungbean germplasms were sown in two rows of 2 m in length to screen for major insect pests under field conditions from the last week of June to mid-September of 2022 and 2023 at the Genetics Plant Breeding (G.P.B.) Farm, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya (UP). All appropriate agronomical practices were followed when growing the crop.

Results: Four major insect pests viz., whitefly, jassid, thrips and pod borer damage were found during the field screening of 50 mungbean germplasm. The whitefly population was minimum in MI 98-64 (3.0 whitefly/cage) followed by JLPM 702-1 (3.1 whitefly/cage). The maximum whitefly infestation was observed in germplasm BM 4 (5.9 and 4.6 whitefly/cage). Minimum jassid population was observed in KM 2417 and PM 4 (0.6 jassid/cage). Germplasm IPM 1603-7 and PM 1723 were free from thrips. Pod borer damage per cent was minimum in ML 2738 (2.7%) and MI 98-64 (3.6%) when the data from both years were combined.

Key words: Jassid, Kharif, Mungbean, Screening, Thrips, White fly.

INTRODUCTION

Mungbean [*Vigna radiata* (L.) Wilczek] is a very significant pulse crop in India after the gram and pigeonpea (Ved et al., 2008). Mungbean, which contains protein, minerals and vitamins, is used to produce both dried and green fresh legume foods (Das et al., 2014). In India, the productivity of this legume mungbean is 629 kg per hectare and we consume it extensively for making papad, biscuits, bread, soup and consuming fresh sprouts by swelling them in water (Sehrawat et al., 2013). Mungbean seeds contain a high concentration of essential nutrients, including minerals (amounts in 100 g) such as calcium (132 mg), iron (6.74 mg), magnesium (189 mg), phosphorus (367 mg) and potassium (1246 mg), as well as vitamins like ascorbic acid (4.8 mg), thiamine (0.621 mg), riboflavin (0.233 mg), niacin (2.251 mg), pantothenic acid (1.910 mg) and vitamin A (114 IU) (Haytowitz and Matthews, 1986). Mungbean accounts for a production of 2.45 million tons (Sireesha et al., 2024). Over 80 per cent of the mungbean harvest in India originates from just 10 states viz., Rajasthan, Madhya Pradesh, Maharashtra, Bihar, Karnataka, Tamil Nadu, Gujarat and Andhra Pradesh, Odisha and Telangana. Several factors contribute to the low yield of mungbean in India, with one of the key issues being insect pests. From the moment they are planted until the time they are stored, mungbean face damage from a variety of insect pests, with 65 species of such insects having been recorded in the country (Meena et al., 2022). The insect pests that have been identified on mungbean include whiteflies (*Bemisia tabaci* Bagnall), jassid (*Empoasca kerri* Pruthi), thrips

¹Department of Entomology, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya-224 229, Uttar Pradesh, India.

²Department of Plant Pathology, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya-224 229, Uttar Pradesh, India.

³Department of Entomology, Banda University of Agriculture and Technology, Banda-210 001, Uttar Pradesh, India.

⁴Department of Seed Science and Technology, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya-224 229, Uttar Pradesh, India.

Corresponding Author: Ravi Kumar Rajak, Department of Entomology, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya-224 229, Uttar Pradesh, India. Email: ravikumarrajak0106@gmail.com

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(*Caliothrips indicus* Bagnall) pod borers (*Helicoverpa armigera* Hubner and *Maruca testulalis* Geyer), green bug (*Nezara viridula* Linn.), semilooper (*Plusia orichalcea* Fab.), stem fly (*Ophiomyia phaseoli* Tryon.), tortricid moth (*Cydia ptychota* Meyr), galerucid beetle (*Madurasia obscura* Jacoby) and cutworm (*Agrotis ipsilon* Hufn) (Nitharwal et al., 2013).

MATERIALS AND METHODS

The field study for this investigation was carried out at G. P. B. Farm of Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya, Uttar Pradesh, India, during the Kharif seasons of 2022 and 2023. The experimental location is situated in the sub-tropical climatic zone of the Indo-Gangetic plains, at 26.47°N latitude and 82.12°E longitude and with an altitude of 113 meters above mean sea level. The area's climate is characterized as subtropical and semi-arid, with an average annual precipitation of approximately 1070 mm. Most of the rainfall occurs between the last weeks of June and mid-September. The average minimum and maximum temperatures in the area range from 7.9 to 27.7 and 18.6 to 38.0°, respectively. A total of 50 germplasm were planted in 2 rows of 2 m length for studying major insect pests in field conditions from late June to mid-September in 2022 and 2023. All recommended agricultural practices were followed for crop cultivation. Pest populations were monitored in an unprotected plot at 7-day intervals starting from 20 days after sowing and continuing until maturity. Whitefly and Jassid populations were observed using a rectangular cage measuring 45 cm in length, 30 cm in width and 90 cm in height, placed randomly selected 5 places. Thrips population was recorded on five randomly chosen plants from the onset of 50 percent flowering, measured in terms of the number of thrips per five flower buds. Upon harvesting, five plants were randomly selected and the number of healthy and damaged pods was calculated to determine the percentage of pod damage caused by pod borers (Sidramappa *et al.*, 2024).

RESULTS AND DISCUSSION

Fifty mungbean germplasms viz., AKM 4, AKM 12-28, AKM 8802, BM 2019-10, BM 2021-2, BM 4, COGG 912, GJM 1701, SML 1839, IGKM 05-06-27, IGKM 06-10-7, IPM 1205-2, IPM 13-6, IPM 1603-3, IPM 1603-7, IPM 2-14, IPM 2-3, IPM 2K-14-9 (VARSHA), IPM 410-3, IPM 512-1, JLPM 702-1, JLPM 707-27, K 851, KM 2417, LGG 610, LGG 628, MGG 519, MH 1908, MH 1142, MH 1772, MH 1857, MH 2-15, MI 750-1, MI 98-64, ML 2506, ML 2738, ML 818, ML 2748, OBGG 104, OBGG 106, OBGG 112, OUM 11-5, PM 1903, PM 1711, PM 1723, PM 1918, PM 6, PM 4, PMS 8 and PUSA 0672 were screened for significant insect pests in two successive crop seasons under field conditions i.e., Kharif 2022 and 2023. The frequency of the major insect pests from crop seeding to pre-harvest was monitored every week. The information gathered during the testing period on various insect pests is given as follow.

Whitefly, *Bemisia tabaci* (Gennadius)

The population of whitefly was recorded on all 50 mungbean germplasm during Kharif 2022 and 2023 to see the performance of germplasms based on the level of

infestation of whitefly. The whitefly/cage varied from 3.4 to 5.9, 2.6 to 4.6 and 3.0-5.6 during Kharif 2022, 2023 and in pooled data of both the year, respectively. During Kharif 2022, the whitefly population was minimum in MI 98-64 (3.4 whitefly/cage) followed by JLPM 702-1, IPM 410-3 and IPM 512-1 (3.4, 3.6, 3.7 and 3.7 whitefly/cage, respectively) and maximum in PM 1723 (6.6 whitefly/cage) (Table 1). In the 2nd year of evaluation, whitefly population was minimum in JLPM 702-1 and MI 98-64 (2.6 whitefly/cage) followed by IGKM 05-06-27 and MH 1908 (2.8 whitefly/cage). Maximum whitefly population was noticed in germplasm BM 4, ML 818, PM 1723 (4.6 whitefly/cage) (Table 2). The whitefly population was minimum in MI 98-64 (3.0 whitefly/cage) followed by JLPM 702-1 (3.1 whitefly/cage) and maximum in ML818 and PM 1723 (5.6 whitefly/cage) in the combined data for both years (Table 3).

The present study is supported by Chauhan *et al.* (2018) who observed that the white fly population varied from 3.66 to 23.30 whiteflies/cage after screening 50 mungbean germplasm samples. The highest reported whitefly population, according to the data, was found in germplasm RMG-1092 (23.30 whiteflies per cage). This was followed by AKM 12-14 and GAM-5 (13.66 whiteflies per cage), Pant M-6 (13.33 whiteflies per cage), PM 11-25 (12.66 whiteflies per cage) and LGG 450 (11.66 whiteflies per cage). But the lowest population was noted in GM 11-02 and MDGVV 16 (3.66 white flies per cage), then TMB 1343 (4.00 white flies per cage), ML 2410 and IPM 312-9 (4.33 white flies per cage). The susceptibility and resistance of fifty mungbean germplasm to *Bemisia tabaci* is also examined by Singh *et al.* (2019). Not a single germplasm was discovered to be free of the white fly population, either at the 50% blooming or 50% pod maturity stages. In genotypes SUM 14-7 (2.50 whiteflies per plant) and NDM 97-2 (1.95 whiteflies per plant), the maximum whitefly populations at 50% blooming and 50% pod maturity stages were found, respectively. KM 13-47, PUSA 0672, PUSA 0871, PUSA 1331, PUSA 1332, PUSA 1441 and PUSA 9531 were among the germplasm that did, however, exhibit resistance against whitefly.

Jassid, *Empoasca kerri* (Pruthi)

Based on data from Table 1, it was found that during Kharif 2022, the number of jassid fluctuated between 0.4 and 3.3 per cage. Germplasm KM 2417 had the lowest jassid population (0.4 jassid/cage), followed by LGG 610, PM 4 and PUSA 0672 (0.6 jassid/cage). Germplasm IPM 410-3 had the highest population (3.3 jassid/cage), followed by IPM 2K-14-9 (VARSHA) (3.1 jassid/cage). The lowest reported jassid population in Kharif 2023 was 0.6 jassid/cage in PM 4, whereas the highest population was 2.5 jassid/cage in IPM 410-3 (Table 2). According to the pooled data from both years, the population of jassoids was highest in IPM 410-3 (2.9) and lowest in KM 2417 and PM 4 (0.6) (Table 3).

Chauhan *et al.* (2018) give credence to the present findings and observed that the jassid population ranged

Table 1: Reaction of different mungbean germplasm against major insect pests during *Kharif* 2022.

Germplasm	Whitefly/cage	Jassid/cage	Thrips/ 5 flower buds	% Pod borer damage
AKM 4	4.3	1.0	0.71	9.9
AKM 12-28	4.2	2.1	1.21	10.3
AKM 8802	5.6	1.5	0.80	11.6
BM 2019-10	4.7	2.2	1.03	9.9
BM 2021-2	4.1	2.4	0.81	1.2
BM 4	5.9	1.6	0.80	3.9
COGG 912	5.6	1.3	0.0	11.0
GJM 1701	4.7	1.3	0.46	5.9
SML 1839	4.0	0.9	0.75	11.1
IGKM 05-06-27	4.2	1.8	0.13	9.1
IGKM 06-10-7	5.2	1.6	0.24	10.2
IPM 1205-2	4.6	1.1	0.27	13.0
IPM 13-6	4.6	1.5	0.29	7.5
IPM 1603-3	4.2	2.0	0.43	5.4
IPM 1603-7	4.2	1.7	0.0	6.2
IPM 2-14	4.3	1.8	0.12	9.7
IPM 2-3	4.0	2.1	0.34	1.3
IPM 2K-14-9 (VARSHA)	5.5	3.1	0.0	10.3
IPM 410-3	3.7	3.3	0.11	9.0
IPM 512-1	3.7	2.3	0.28	8.9
JLPM 702-1	3.6	2.2	0.90	7.7
JLPM 707-27	3.9	2.7	0.33	10.0
K 851	4.9	2.1	0.36	12.1
KM 2417	5.7	0.4	0.14	9.6
LGG 610	4.5	0.6	0.90	6.8
LGG 628	4.3	1.1	0.45	2.2
MGG 519	4.3	0.8	0.46	3.3
MH 1908	3.8	0.7	0.19	9.9
MH 1142	4.4	0.8	0.43	11.1
MH 1772	5.3	0.9	0.58	10.1
MH 1857	5.6	0.7	0.59	10.1
MH 2-15	4.3	0.9	0.57	10.7
MI 750-1	4.3	0.7	0.54	9.5
MI 98-64	3.4	1.2	0.66	2.7
ML 2506	5.7	0.7	0.26	11.0
ML 2738	4.3	1.2	0.63	1.4
ML 818	6.5	1.0	0.16	9.3
ML 2748	6.0	0.7	0.15	9.5
OBGG 104	5.8	2.1	0.69	8.8
OBGG 106	4.4	1.3	0.18	10.8
OBGG 112	5.7	0.8	0.72	4.2
OUM 11-5	4.1	0.9	0.25	10.4
PM 1903	5.0	1.2	0.74	8.2
PM 1711	5.1	0.9	0.18	9.9
PM 1723	6.6	0.7	0.0	6.8
PM 1918	5.0	0.7	0.0	2.5
PM6	4.6	1.3	0.16	11.3
PM4	4.6	0.6	0.13	8.3
PMS 8	4.2	0.9	0.11	11.0
PUSA 0672	5.0	0.6	0.74	13.3

Table 2: Reaction of different mungbean germplasm against major insect pests during *Kharif* 2023.

Entry	White fly/cage	Jassid/cage	Thrips/ 5 flower buds	% Pod borer damage
AKM 4	3.1	1.0	0.74	8.6
AKM 12-28	2.9	1.7	1.01	7.6
AKM 8802	4.0	1.4	0.68	11.0
BM 2019-10	3.5	1.8	0.75	11.3
BM 2021-2	3.5	2.0	0.71	11.8
BM 4	4.6	1.3	0.74	14.1
COGG 912	3.9	1.3	0.29	9.1
GJM 1701	3.4	1.2	0.55	10.6
SML 1839	2.9	1.1	0.72	8.8
IGKM 05-06-27	2.8	1.6	0.55	6.5
IGKM 06-10-7	3.4	1.3	0.48	7.9
IPM 1205-2	3.2	1.4	0.37	9.4
IPM 13-6	3.4	1.5	0.40	6.4
IPM 1603-3	3.1	1.7	0.64	4.1
IPM 1603-7	3.3	1.5	0.00	5.6
IPM 2-14	3.1	1.7	0.50	6.9
IPM 2-3	3.1	1.7	0.52	6.3
IPM 2K-14-9 (VARSHA)	4.0	2.3	0.39	7.6
IPM 410-3	3.0	2.5	0.47	6.7
IPM 512-1	2.9	2.0	0.50	7.0
JLPM 702-1	2.6	1.7	0.96	7.3
JLPM 707-27	3.0	2.2	0.53	7.0
K 851	3.6	1.7	0.47	10.8
KM 2417	4.1	0.7	0.00	7.9
LGG 610	3.6	1.1	0.70	5.4
LGG 628	3.1	1.3	0.75	7.5
MGG 519	3.4	1.3	0.52	4.2
MH 1908	2.8	1.3	0.37	7.7
MH 1142	3.2	1.1	0.57	7.9
MH 1772	4.1	1.1	0.60	7.2
MH 1857	3.9	1.0	0.67	8.1
MH 2-15	3.1	1.0	0.54	8.9
MI 750-1	3.1	1.1	0.52	9.9
MI 98-64	2.6	1.4	0.57	4.5
ML 2506	3.8	0.9	0.61	9.4
ML 2738	3.0	1.3	0.72	4.0
ML 818	4.6	1.4	0.52	7.0
ML 2748	4.4	1.1	0.41	7.7
OBGG 104	4.3	2.0	0.57	6.8
OBGG 106	3.3	1.6	0.37	8.1
OBGG 112	4.1	1.6	0.69	8.1
OUM 11-5	3.0	1.7	0.42	8.3
PM 1903	3.5	1.6	0.59	6.1
PM 1711	3.6	1.4	0.39	7.2
PM 1723	4.6	1.4	0.00	6.8
PM 1918	3.5	1.2	0.32	5.7
PM6	3.4	1.0	0.29	7.9
PM4	3.4	0.6	0.39	5.9
PMS 8	2.9	1.0	0.35	8.6
PUSA 0672	3.4	0.7	0.67	9.5

Table 3: Reaction of different mungbean germplasm against major insect pests during *Kharif* 2022 and 2023 (Pooled).

Entry	White fly/cage	Jassid/cage	Thrips/ 5 flower buds	% Pod borer damage
AKM 4	3.7	1.0	0.73	9.3
AKM 12-28	3.6	1.9	1.11	9.0
AKM 8802	4.8	1.5	0.74	11.3
BM 2019-10	4.1	2.0	0.89	10.6
BM 2021-2	3.8	2.2	0.76	6.5
BM 4	5.3	1.5	0.77	9.0
COGG 912	4.8	1.3	0.15	10.1
GJM 1701	4.1	1.3	0.51	8.3
SML 1839	3.5	1.0	0.74	10.0
IGKM 05-06-27	3.5	1.7	0.34	7.8
IGKM 06-10-7	4.3	1.5	0.36	9.1
IPM 1205-2	3.9	1.3	0.32	11.2
IPM 13-6	4.0	1.5	0.35	7.0
IPM 1603-3	3.7	1.9	0.54	4.8
IPM 1603-7	3.8	1.6	0.00	5.9
IPM 2-14	3.7	1.8	0.31	8.3
IPM 2-3	3.6	1.9	0.43	3.8
IPM 2K-14-9 (VARSHA)	4.8	2.7	0.20	9.0
IPM 410-3	3.4	2.9	0.29	7.9
IPM 512-1	3.3	2.2	0.39	8.0
JLPM 702-1	3.1	2.0	0.93	7.5
JLPM 707-27	3.5	2.5	0.43	8.5
K 851	4.3	1.9	0.42	11.5
KM 2417	4.9	0.6	0.07	8.8
LGG 610	4.1	0.9	0.80	6.1
LGG 628	3.7	1.2	0.60	4.9
MGG 519	3.9	1.1	0.49	3.8
MH 1908	3.3	1.0	0.28	8.8
MH 1142	3.8	1.0	0.50	9.5
MH 1772	4.7	1.0	0.59	8.7
MH 1857	4.8	0.9	0.63	9.1
MH 2-15	3.7	1.0	0.56	9.8
MI 750-1	3.7	0.9	0.53	9.7
MI 98-64	3.0	1.3	0.62	3.6
ML 2506	4.8	0.8	0.44	10.2
ML 2738	3.7	1.3	0.68	2.7
ML 818	5.6	1.2	0.34	8.2
ML 2748	5.2	0.9	0.28	8.6
OBGG 104	5.1	2.1	0.63	7.8
OBGG 106	3.9	1.5	0.28	9.5
OBGG 112	4.9	1.2	0.71	6.2
OUM 11-5	3.6	1.3	0.34	9.4
PM 1903	4.3	1.4	0.67	7.2
PM 1711	4.4	1.2	0.29	8.6
PM 1723	5.6	1.1	0.00	6.8
PM 1918	4.3	1.0	0.16	4.1
PM 6	4.0	1.2	0.23	9.6
PM 4	4.0	0.6	0.26	7.1
PMS 8	3.6	1.0	0.23	9.8
PUSA 0672	4.2	0.7	0.71	11.4

from 7.33 to 30.00 insects/cage. IPM 99-125 (26.33 jassid/cage), Samrat (27.33 jassid/cage), COGG-912 (28.00 jassid/cage), MVL 825 (26.00 jassid/cage) and PUSA 672 (26.00 jassid/cage) were the next five germplasms with the highest reported jassid population (30.00 jassid/cage). PUSA 1672 (7.33 jassid/cage) had the lowest population, while IPM 02-3 (8.00 jassid/cage), MDGVV (8.00 jassid/cage), NVL 516 (10.33 jassid/cage), SKNM 12-06 (11.00 jassid/cage) and AKM 12-14 (11.33 jassid/cage) had the next lowest populations.

Thrips, *Caliothrips indicus* (Begnall)

The thrips population per five flower buds varied from 0.00 to 1.21, 0.00 to 1.01 and 0.00-1.11 during *Kharif*, 2022, 2023 and in pooled data, respectively. During *Kharif*, 2022, germplasm COGG 912, IPM 1603-7, IPM 2K-14-9 (VARSHA), PM 1723 and PM 1918 were free from thrips infestation while lowest population was recorded in IPM 410-3 (0.11 thrips/5 flower buds) and maximum in AKM 12-28 (1.21 thrips/5 flower buds) (Table 1). During *Kharif*, 2023, the thrips population was not found in germplasm IPM 1603-7, KM 2417 and PM 1723, while, minimum in COGG 912 and PM 6 (0.29 thrips/5 flower buds) and maximum in AKM 12-28 (1.01 thrips/5 flower buds) (Table 2). Pooled data of both the year presented in Table 3 showed that germplasm IPM 1603-7 and PM 1723 were free from thrips while highest population was recorded in AKM 12-28 (1.11 thrips/5 flower buds).

The current study is endorsed by Chauhan *et al.* (2018) who noted that there were 8.80 thrips per 5 plants in IGKM 06-26-5. This was followed by 8.70 thrips per 5 plants in NKM 15-12, 8.60 thrips per 5 plants in VGG 10-008, 8.20 thrips per 5 plants in RMG 1092 and 8.00 thrips per 5 plants in Pant M 4. Though the NBPGR-150 recorded the lowest thrip population (3.80 thrips/5 plants), GAM 5 (4.00 thrips/5 plants), NVL 516 (4.20 thrips/5 plants), NVL 825 (4.20 thrips/5 plants), AKM 12-24 (4.20 thrips/5 plants) and Pusa 1672 (4.20 thrips/5 plants) were the next highest populations.

Per cent pod borer damage

The pod borer damage percentage varied from 1.2 to 13.3, 4.0 to 14.1 and 2.7 to 11.5 per cent during *Kharif*, 2022, 2023 and in pooled respectively. During *Kharif*, 2022, the pod borer damage was minimum in BM 2021-2 (1.2%) followed by IPM 2-3 (1.3%) and ML 2738 (1.4%). Maximum damage was recorded in PUSA 0672 (13.3%) followed by IPM 1205-2 (13%) (Table 1). In the 2nd year of evaluation, pod borer damage was minimum in ML 2738 (4.0%) and maximum in BM 4 (14.1%) (Table 2). Both year's pooled data revealed that pod borer damage per cent was minimum on ML 2738 (2.7%) followed by MI 98-64 (3.6%) and IPM 2-3 (3.8%), while maximum damage was recorded in K 851 (11.5%) followed by PUSA 0672 (11.4%) and AKM 8802 (11.3%) (Table 3).

Present findings are in partial agreement with the findings of Kol *et al.* (2022) who disclosed that the range of

pod damage percentages was 1.0% to 14.0%. Out of all the germplasm that was tested, germplasm BM-4 had the least amount of pod damage caused by *M. vitrata*, at 1.00 percent. This was found to be comparable to ML 2500, which had 1.00 per cent pod damage, MH 1142, which had 2.5 per cent pod damage, BCM 18-1, IPM 1604 - 1, IPMD 1603 - 7 and Kopergoan, which had 2.5 per cent pod damage, respectively. Whereas the maximum pod damage was observed in OBG 104 with 14.00 per cent. Rani *et al.* (2014) additionally, it was discovered that *M. vitrata* preferred five genotypes: KM-9- 128; KM-9- 136; RMG-492; LGG-527; and LGG-538 were found to be tolerant; on the other hand, the susceptibility of the other twenty-one genotypes ranged from 12.59 per cent (MGG-332) to 20.0 per cent (IPM-02-03 and LGG-522) and thirteen genotypes were highly susceptible, ranging from 43.25 per cent (KM - 8 - 662). The others ranged from 20.21 per cent (UPM - 99 - 3) to 40.0 per cent (KM - 2241), which indicated how fragile they were.

CONCLUSION

Based on the findings of the current experiment, the following conclusions are drawn that could be helpful to researchers, scientists and farmers. Four major insect pests viz., whitefly, jassid, thrips and pod borer damage were found during the field screening of 50 mungbean germplasm. When aggregating the data of both years, the whitefly population was lowest in MI 98-64 (3.0 whitefly/cage), followed by JLPM 702-1 (3.1 whitefly/cage). Minimum jassid population was observed in KM 2417 and PM 4 (0.6 jassid/cage). Germplasm IPM 1603-7 and PM 1723 were free from thrips. Pod borer damage per cent was minimum in ML 2738 (2.7%) and MI 98-64 (3.6%). These germplasm lines may be used as resistant donors for further breeding programme to develop host plant resistance for different insect pests of mungbean.

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Conflict of interest

All authors declared that there is no conflict of interest.

REFERENCES

- Chauhan, R., Singh, A. K., Sharma, K. R. and Ali, A. (2018). Screening of mungbean (*Vigna radiata* L.) germplasm against major sucking pest. *Journal of Pharmacognosy and Phytochemistry*. 7 (5): 1784-1787.
- Das, S., Shekhar, U.D. and Ghosh, P. (2014). Assessment of molecular genetics diversity in some green gram cultivars as revealed by ISSR analysis. *Advances in Applied Science Research*. 5(2): 93-97.

- Haytowitz D.B. andMatthews R.H. (1986). Composition of Foods. Ag. Handb. 8. USDA, Washington DC.
- Kol, U., Singh, V. and Chandrakar, G. (2022). Screening of germplasm of mungbean against pod borer complex. Journal of Current Research Food Science. 3(2): 37-40.
- Meena, V.P., Khinchi, S.K., Bairwa, D.K., Hussain, A., Kumawat, K.C. and Anvesh, K. (2022). Bio-efficacy of Chemical Insecticides and Biopesticides against Gram Pod Borer, *Helicoverpa armigera* (Hubner) and Spotted Pod Borer, *Maruca testulalis* (Geyer) on Greengram, [*Vigna radiata* (L.) Wilczek]. Legume Research. 45(3): 385-390. doi: 10.18805/LR-4416.
- Nitharwal, M., Kumawat, K.C. and Choudhary, M. (2013). Population dynamics of insect pests of green gram, *Vigna radiata* in semi-arid region of Rajasthan. Journal of Insect Science (India). 26 (1): 90-92.
- Rani, S.C., Rao, G.R., Chalam, M. S.V., Kumar, P. A. and Rao, V.S. (2014). Field screening of greengram genotypes against *Maruca vitrata* in Summer. Journal Agricultural Science. 1: 53-60.
- Sehrawat, N., Bhat, K.V., Sairam, R.K. andPawan, K.J. (2013). Identification of salt-resistant wild relatives of mungbean [*Vigna radiata* L. Wilczek]. Asian Journal of Plant Sciences and Research. 3(5): 41-49.
- Sidramappa, P. H., Kuchanur, M., Shobharani, B., Arunkumar, S. A., Kulkarni, H. C. and Sowmya. (2024). Identification of Stable and High Yielding Dual Season Genotypes in Blackgram [*Vigna mungo* (L.) Hepper]. Legume Research. 47(4): 519-524. doi: 10.18805/LR-4523.
- Singh, M., Bairwa, D.K., Dadrwal, B.K. and Chauhan, J. (2019). Screening of green gram genotypes for resistance against sucking insect pests, Journal of Pharmacognosy and Phytochemistry. 8(2): 933-938.
- Sireesha, E., Singh, G., Singh, R. and Singh, B. (2024). Bioefficacy and Economics of Certain Novel Generation Insecticides against Spotted Pod Borer, *Maruca vitrata* (Geyer) in Greengram (*Vigna radiata* L.). Legume Research. 47(2): 328-331. doi: 10.18805/LR-4651.
- Ved, R., Massod, A., Misra, S.K. andUpadhyay, R.M. (2008). Studies on sulphur, zinc and biofertilizers on yield and yield attributes and nutrient content at different growth stages of mungbean. Journal of Food Legumes. 21(4): 240-242.