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Shruti Singh
Department of Horticulture, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh, India

Akhilesh Tiwari
Department of Horticulture, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh, India

SK Pandey
Department of Horticulture, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh, India

TK Singh
Department of Horticulture, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh, India

Anita Babbar
Department of Plant breeding and Genetics, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh, India

Surbhi Jain
Department of Mathematics and Statistics, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh, India

Corresponding Author:
Shruti Singh
Department of Horticulture, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh, India

Evaluation of okra genotypes for incidence of yellow vein mosaic virus, enation leaf curl virus and fruit borer

Shruti Singh, Akhilesh Tiwari, SK Pandey, TK Singh, Anita Babbar and Surbhi Jain

Abstract
The study was conducted to investigate the incidence of Yellow vein mosaic virus, Enation leaf curl virus and Fruit Borer among okra genotype total 14 okra genotypes *viz.* IIVR-11, BO-2, Pusa Makhmali, HRB-55, Parbhani Kranti, VRO-109, Panjab Padmini, Pusa Sawani, Lam-1, Kashi Kranti, Arka Abhay, Kashi Satdhari, EMS-8-1 and Punjab -8 were selected for evaluation **.** Among evaluated genotypes HRB-55 found relatively immune to yellow vein mosaic virus, Arka Abhay found resistant to enation leaf curl virus and Pusa Padmini found resistant to fruit borer based on incidence percentage recorded during the study.

Keywords: Okra**,** yellow vein mosaic virus, enation leaf curl virus, fruit borer, evaluation

Introduction
Okra is an annual vegetable crop that is propagated through seeds in tropical and subtropical areas of the world (*Abelmoschus esculentus* L. Moench, 2n=2x=130). In comparison to leafy vegetables, it is more profitable. In many other nations, including Brazil, West Africa, and India, fresh okra fruits are valued and consumed as vegetables. In addition to being utilised in soups, tender green fruits are cooked in curries (Nwangburuka *et al.* 2012) [12]. Gujrat, Maharashtra, Andhra Pradesh, Uttar Pradesh, Madhya Pradesh, West Bengal, Assam, Rajasthan, Tamil Nadu, Karnataka, Haryana, and Punjab are among the Indian states where okra is produced for market. India is the top producer of okra in the world. Turkey, Iran, Western Africa, Yugoslavia, Bangladesh, Afghanistan, Pakistan, Myanmar, Japan, Malaysia, Malayasia, Brazil, Ghana, Ethiopia, Cyprus, and Southern USA are the other nations that grow okra economically (Koli *et al.*, (2020) [13]. Screening of genotypes on the basis of disease, pest susceptibility and resistant is one of the most efficient method of genotype selection and development. Cultivation of low yielding varieties, lack of varieties/hybrids with high degree of resistance to pests and diseases like fruit and shoot borer, okra yellow vein mosaic virus (YVMV) and enation leaf curl virus (ELCV) are the major reasons of low productivity in India (Patel *et al.*, (2021) [4]. Thus, present investigation was carried out to evaluate okra genotypes resistant to shoot and fruit borer, YVMV and ELCV disease.

Material and Methods
The experiment was conducted at College of Agriculture, Kuthuliya Farm, Rewa, JNKVV, Jabalpur (M.P.) during the summer season of 2020-21. Rewa is situated in the North Eastern part of M.P. The climate of the region is semi-arid and sub-tropical having extreme winter and summer. Rewa is also situated at the latitude of $24^{0}31$ N longitudes $81^{0}15$ and altitude of 306 m above the sea level. The weather as observed during experimental time was cool, winter followed by warm spring. Total 14 genotypes were selected for evaluation *viz.* IIVR-11, BO-2, Pusa Makhmali, HRB-55, Parbhani Kranti, VRO-109, Panjab Padmini, Pusa Sawani, Lam-1, Kashi Kranti, Arka Abhay, Kashi Satdhari, EMS-8-1 and Punjab -8 using randomized block design with three replication. For YVMV, number of plants affected in each treatment was counted and expressed in percentage by using the following formula given by Ali *et al.*, 2005 [1].

$$\text{YVMV incidence (\%)} = \frac{\text{Number of plants infected by YVMV}}{\text{Total number of plants}} \times 100$$

For ELCV, number of plants affected in each treatment was counted and expressed in percentage by using the following formula proposed by Nazeer *et al.*, 2014 [2].

$$\text{ELCV incidence (\%)} = \frac{\text{Number of plants infected by ELCV}}{\text{Total number of plants}} \times 100$$

For Fruit borer at final harvest stage , number of plants affected in each treatment was counted and expressed in percentage by using the following formula given by Rai and Satpathy, 1998 [3].

$$\text{Fruit borer incidence (\%)} = \frac{\text{Number of plants infested by fruit borer}}{\text{Total number of plants}} \times 100$$

Results and Discussion

The appraisal data showed that the percentage incidence of yellow vein mosaic disease have been shown in table 1. Percentage incidence of yellow vein mosaic disease varied from 15.33 to 83.67%. The maximum percentage incidence of yellow vein mosaic disease was recorded in Pusa Makhmali (83.67%) while, the minimum percentage incidence of yellow vein mosaic disease seen in HRB-55 (15.33 %). Similar results were reported by Jamir *et al.*, (2020) [5], Patel *et al.*, (2021) [4] and Rynjah *et al.*, (2018) [6] respect to yellow vein mosaic virus incidence in various okra genotypes. The data pertaining to percentage incidence of enation leaf curl virus disease have been depicted in table. percentage incidence of enation leaf curl virus disease varied from 16 to 42 %. The maximum percentage incidence of enation leaf curl virus disease was recorded in EMS-8-1 (42 %) while, the minimum percentage incidence of enation leaf curl virus disease was recorded in genotype Arka Abhay (16 %). Results are in-line with observation of Yadav *et al.*, (2018) [7], Devi *et al.*, (2019) [8]. The appraisal data showed that the percentage of fruit borer incidence have been shown in table. Percentage of fruit borer incidence varied from 12.33 to 46.67 %. The maximum percentage of fruit borer incidence was recorded in Lam-1 (46.67 %) while, the minimum percentage of fruit borer incidence was recorded in Punjab Padmini (12.33 %). Similar with Nagesh and Mulge (2017) [9], Kumar and Tayde (2018) [10] and Vinayak *et al.*, (2018) [11].

Table 1: Evaluation of okra genotypes for incidence of Yellow vein mosaic virus (YVMV), Enation leaf curl virus (ELCV) and Fruit Borer (FB)

Genotype	Incidence of yellow vein mosaic (%)	Incidence of enation leaf curl (%)	Incidence of fruit borer (%)
IIVR-11	17.67	26.33	34.67
BO-2	55.33	22.00	34.67
Pusa Makhmali	83.67	28.67	16.00
HRB-55	15.33	26.33	36.00
Parbhani Kranti	40.00	24.33	17.67
VRO-109	54.67	22.67	32.00
Punjab Padmini	34.00	24.00	12.33
Pusa Sawani	65.33	40.67	16.00
Lam-1	57.33	36.00	46.67
Kashi Kranti	16.33	37.67	17.33
Arka Abhay	19.00	16.00	25.00
Kashi Satdhari	18.33	26.67	23.67
EMS-8-1	65.67	42.00	16.67
Punjab-8	19.67	41.33	25.00
C.D.	6.34	6.55	4.81

Conclusion

Among evaluated genotypes HRB-55 found relatively immune to yellow vein mosaic virus, Arka Abhay found resistant to enation leaf curl virus and Pusa Padmini found resistant to fruit borer.

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References

1. Ali SK, Habib A, Rasheed S, Iftikhar Y. Correlation of environmental conditions with okra yellow vein mosaic virus and *B. tabaci* population density. Int. J Agric. Biol. 2005;7:142-144.
2. Nazeer W, Tipu AL, Ahmad S, Mahmood K, Mahmood A, Zhoumail BZ. Evaluation of Cotton Leaf Curl Virus Resistance in BC1, BC2, and BC3 Progenies from an Interspecific Cross between *Gossypium arboreum* and *Gossypium hirsutum*. Plos one. 2014;9(11):111861.
3. Rai S, Satpathy S. Recent advances in screening for insect resistance in vegetables. Summer school on advanced technologies in improvement of vegetable crops including cole crops. IARI, New Delhi; c1998. p. 67-74.
4. Patel AA, Patel AI, Vekariya RD, Damor RD, Patel HR, Berani NK. Screening of Okra Genotypes for Shoot and Fruit Borer, Yellow Vein Mosaic Virus Disease and Enation Leaf Curl Virus Disease Over Environments. Int. J Curr. Microbiol. App. Sci. 2021;10(03):516-526.
5. Jamir I, Mandal AK, Devi AP, Bhattacharjee T, Maurya PK, Dutta S, *et al*. Screening of genotypes against viral diseases and assessment of yield loss due to yellow vein mosaic virus in okra grown in the eastern part of India. Indian Phytopatho. 2020;12(4):1-9.
6. Rynjah S, Sathiyamurthy VA, Saraswathi T, Harish S. Field screening of okra [*Abelmoschus esculentus* L. Moench] genotypes against okra yellow vein mosaic virus disease. J Pharma. and Phyto. 2018;7(5):1852-1854.
7. Yadav Y, Maurya PK, Bhattacharjee T, Banerjee S, Jamir I, Mandal AK, *et al*. First evidence on heterotic affinity and combining ability of cultivated okra [*Abelmoschus esculentus* (L.) Moench] inbred lines for tolerance to enation leaf curl virus disease. Agric. Res. & Tech. 2018;18(5):3795-3802.
8. Devi AP, Bhattacharjee T, Banerjee S, Maurya PK,

Chatterjee S, Chattopadhyay A. Heterotic expression of okra hybrids for tolerance to enation leaf curl virus. Int. J. Veg. Sci. 2019;26(2):163-189.
9. Nagesh GC, Mulge R. Screening of okra genotypes against fruit borer (*Earias* spp.) infestation. Int. J Curr. Microbiol. App. Sci. 2017;6(11):1559-1565.
10. Kumar KI, Tayde AR. Screening of okra genotypes against yellow vein mosaic virus disease (OYVMV) under Field conditions in Allahabad. J Pharma. and Phyto. 2018b;7(1):660-662.
11. Vinayak N, Jalgaonkar MM, Kumud N, Anil V, Golvankar G. Varietal preference of okra shoot and fruit borer, *Earias vittella* (fab.) in summer season under field condition in konkan region of Maharashtra. Int. J Curr. Microbiol. App. Sci. 201;7(11):2397-2402.
12. Nwangburuka CC, Denton OA, Kehinde OB, Popoola AR. Genetic variability and heritability in cultivated okra [*Abelmoschus esculentus* (L.) Moench]. In Spanish Journal of Agricultural Research. 2012;10(1):123-129.
13. Koli HK, Patel AI, Vshai JM, Chaudhari BN. Study of Heterosis for Fruit Yield and its Component Traits in Okra [*Abelmoschus esculentus* (L.) Moench]. Int. J Curr. Microbiol. App. Sci. 2020;9(9):1930-1937.