Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.7127

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **6 (5):** 1343-1346 (2018)

Research Article

International Journal of Pure & Applied Bioscience

OPEN ACCESS

Evaluation of Different Okra [*Abelmoschus esculentus* (L.) Moench] Hybrids for Yield and Yield Attributes under Allahabad Agro-climatic Condition

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Received: 14.08.2018 | Revised: 20.09.2018 | Accepted: 27.09.2018

ABSTRACT

The present investigation for the Evaluation of Okra [Abelmoschus esculentus (L.) Moench] Hybrids for yield and yield attributes was carried out at Allahabad region with 11 hybrids and 3 check varieties during kharif -2014 under randomized block design with three replications. The data was recorded for sixteen quantitative characters viz., days to 50% germination, plant height(cm), number of leaves/plant, number of branches/plant, inter nodal length(cm), days to first flower appears, days to emergence of 50% blooming, first pod (fruit) occurring node, length of fruit (cm), fruit girth (cm), fresh weight of fruit (g), number of seeds per fruit, number of fruits per plant, fruit yield per plant (g), fruit yield per hectare (t) and per cent incidence of YVMV.To obtain and estimate the best hybrid for yield (quantitative) attributes and YVMV resistance. Fruit yield was ranged from 14.7 tonnes (OKHYB-12) to 24.5 tonnes (OKHYB-15) with an average of 18.5 tonnes and YVMV infestation on plants (%) was ranged from 0% (OKHYB-6, OKHYB-7 and OKHYB-13) to 64.17% (OKHYB-12) with an average of 28.9%. It is concluded that based on the mean performance of all the sixteen yield attributes, hybrids OKHYB-15, OKHYB-10 and OKHYB-4 were found superior and resistant to YVMV in performances than check varieties (Arka Anamika, Pusa Sawani and HOK-152).

Key words: *Yield attributes, YVMV, Hybrids, Okra, Resistance.*

INTRODUCTION

Okra (*Abelmoschus esculentus* (L.) Moench) also known as lady's finger, Bhindi and gumbo belonging to the family Malvaceae with somatic chromosome number 2n=130. It is basically self-pollinated crop, though essentially self-pollinated because of its showy corolla, the possibility of cross-pollination by insects cannot be ruled out. Consequently, cross pollination to the extent of 4.0-19.0 per cent with maximum of 42.2 per cent is noticed with the insect assisted pollination. Okra is an important vegetable crop, it is widely distributed and cultivated in tropics and subtropics of the worldfor its tender, delicious green fruits which are cooked, canned and consumed in various forms. Nutritionally, it's rich in carbohydrates, fat, fibres, oil, mineral, and vitamins *viz.*, B1, A, and C[7].

Cite this article: Rajesh, J., Prasad, V. M. and Kerketta, A., Evaluation of Different Okra [*Abelmoschus esculentus* (L.) Moench] Hybrids for Yield and Yield Attributes under Allahabad Agro-climatic Condition, *Int. J. Pure App. Biosci.* **6(5):** 1343-1346 (2018). doi: http://dx.doi.org/10.18782/2320-7051.7127

India is one the leading okra producer with the production of 6.346 million tonnes per year from an area of 0.532 million ha, with the productivity of 11.9 t ha-[1]. Okra is highly susceptible to frost and requires warm climate for fruit production. Yellow Vein Mosaic Virus (YVMV) transmitted by white fly (*Bemisia tabaci* Gen.) is the most serious disease of okra. The proportion of the total yield to be sold as marketable yield is largely dependent on incidence of YVMV, which is the important yield determinant in okra. of these YVMV is most serious viral diseases with an incidence of 3.2 to 97.8%Sharma BR, Sharma OP and Bansal RD[9] causing yield loss of 10 to 90 % Jambale ND and Nerkar YS[6].

The reduction in the productivity and yield in okra is mainly due to lack of location specific varieties or hybrids tolerant to pests and diseases such as fruit and shoot borer and yellow vein mosaic virus disease. Hence it is of practical importance to develop a high yielding hybrid or variety coupled with resistance/tolerance to the YVMV.

MATERIAL AND METHODS

The present investigation was carried out using 14 okra hybrids including 3 check varieties viz., (OKHYB-1, OKHYB-2, OKHYB-4, OKHYB-5, OKHYB-6, OKHYB-7, OKHYB-8, OKHYB-10, OKHYB-12, OKHYB-13, OKHYB-15, Pusa Sawani, Arka Anamika and HOK-152) were collected fromIndian Institute of Vegetable Research (IIVR), Varanasi (U.P) and sown during rainy season of the year 2014-2015 in randomized block design with three replications at Vegetable Research Farm, Department of Horticulture, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad (Uttar Pradesh), Row –to- Row and Plant –to- Plant 60cm and 30cm respectively. All the agronomic packages of practices were adopted to grow a healthy crop in each replication. Randomly 5 plants in each genotype were marked for observation. Observations were recorded on 16 economically important traits viz., days to 50% germination, plant height(cm), number of leaves/plant, number of branches/plant, inter nodal length(cm), days to first flower appears, days to emergence of 50% blooming, first pod (fruit) occurring node, length of fruit (cm), fruit girth (cm), fresh weight of fruit (g), number of seeds per fruit, number of fruits per plant, fruit yield per plant (g), fruit yield per hectare (q) and per cent incidence of OYVMV. The soil of the plot was sandy loam in texture having good fertility, properly levelled and well drained.

RESULTS AND DISCUSSION

The results presented in [Table-1] indicated the presence of significant variation for all the parameters of the different hybrids and check varieties.

The 50% germination was ranged from 3 days OKHYB-8 to 6.5 days (OKHYB-12) with an average of 3.7 days. Plant height was ranged from 93.6cm (OKHYB-12) to 163.07cm (OKHYB-15) with an average of 122.7cm, Number of leaver per plant was ranged from 21.87 leaves (OKHYB-7) to 58.07 leaves (Arka Anamika) with an average of 31.4 leaves Similar findings were also reported by Tiwari and Singh., and Gondane., Number of branches per plant was ranged from 2.67 branches (OKHYB-8) to 4.6 branches (Arka Anamika) with an average of 3.3 branches Tiwari and Singh., also reported similar findings**.** Inter nodal length was ranged from 3.55cm (OKHYB-6) to 4.42cm (Pusa Sawani) with an average of 3.9 cm,

Days to first flowering appears was ranged from 34.33 days (OKHYB-8) to 41 days (OKHYB-4) with an average of 37.3 days, Days to emergence of 50% blooming was ranged from 36.33 days (OKHYB-5) to 43.67 days (Arka Anamika) with an average of 40.1 days, First pod occurring node was ranged from 4.8 node (OKHYB-12) to 6.8 node (OKHYB-4) with an average of 5.5 node, Length of fruit was ranged from 10.32 cm (OKHYB-12) to 13.26 cm (OKHYB-15) with an average of 11.3 cm Similar results have been reported by Singh and Jain.[13], Fruit girth was ranged from 5.66 cm (Arka Anamika) to 6.33 cm (OKHYB-15) with an average of 6.0 cm.

Average fresh weight of fruit was ranged from 11.15g (HOK-152), to 14.12g (OKHYB-15) with an average of 13.1g Dhall *et al.*[5], and Saitwal *et al.*[8], also reported more or less similar findings in his experiment. Number of seeds per fruit was ranged from 44.83 seeds (OKHYB-10) to 64.33 seeds (OKHYB-15) with an average of 53.0 seeds these findings are in close conformity with the findings of Muhammad *et al.*[4], Number of fruits per plant was ranged from 21 fruits (OKHYB-12) to 31.27 fruits (OKHYB-15) with an average of 25.4 fruits similar result also reported by Singh and Jain[12]. and Tiwari.[15], Fruit yield per plant was ranged from 265.11g (OKHYB-12) to 441.48g (OKHYB-15) with an average of 333.3g Similar result was also reported by Muhammad *et al.*[4], Agarwal.[1], and Singh and Jain.[12],

Fruit yield per hectare was ranged from 14.7 tonnes (OKHYB-12) to 24.5 tonnes (OKHYB-15) with an average of 18.5 tonnes. Yellow vein mosaic virus (YVMV) incidence was ranged from 0.0% (OKHYB-6, OKHYB-7 and OKHYB-13) to 64.17% (OKHYB-12) with an average of 28.9% Similar results were also reported by Srivastava *et al.*[14], and Jeyarajan *et al.*

Table 1: Performance of okra hybrids for yield and yield attributes during kharif season under Allahabad agro climatic condition

S.No	Treatments Parameters	OKHY B-1	OKHY B-2	OKHY B- 4	OKHY B-5	OKHY B-6	OKHY B-7	OKHY B-8	OKHY B-10	OKHY B-12	OKHY B-13	OKHY B-15	Pusa Sawani	Arka Anamika	HOK-152
1	50% Germination	3.17	3.42	3.25	3.83	3.33	3.08	3	3.58	6.5	3.58	3.5	4	3.58	3.33
2	Plant hight (cm)	121	127.67	137.07	113.73	134.13	112.27	108.59	141.27	93.6	113.6	163.07	115	110.4	126.53
3	Number of leaves/plant	30.93	31.4	32.87	27.6	29.8	21.87	23.6	31.53	23.13	24.73	33.2	29	58.07	42.2
4	No. of Branches/ Plant	3.07	2.67	4.2	3.2	3.53	2.87	2.67	3.47	2.87	2.73	3.8	2.8	4.6	4.33
5	Internodal length (cm)	4.16	3.85	4.32	4.16	3.55	3.57	3.83	3.64	4	3.73	3.73	4.42	4.24	3.77
6	Days to first flower appears	35	35.33	41	35	38.67	35.67	34.33	38.58	38.25	36.67	38.33	36	40.33	39.33
7	Days to emergence of 50% blooming	37.17	37.33	43.67	36.33	42	39	36.67	40.75	40.83	39.33	41.67	39.93	43.67	42.42
8	First pod occurring node	5.2	5.07	6.8	5	6.6	4.93	5.27	5.4	4.8	5	5.4	5.33	6.6	6.07
9	Length of fruit (cm)	11.36	11.15	11.55	11.62	11.68	10.95	11.34	12.28	10.32	10.5	13.26	10.54	10.54	10.77
10	Fruit girth (cm)	6.02	6.33	6.16	6.09	6.19	5.83	6.04	6.11	5.72	5.83	6.23	6.25	5.66	5.79
11	Average fresh weight of fruit (g)	13.52	13.81	13.65	13.22	13.36	13.82	13.34	14.09	12.62	13.16	14.12	12.59	11.18	11.15
12	Number of seeds per fruit	45.47	48.33	62.67	54.42	49.07	47.47	49.93	44.83	51.13	57.33	64.33	55.93	47	64.2
13	Number of fruits per plant	24.63	24.8	28.47	22.32	27.81	22.38	23.07	29.47	21	24.87	31.27	22.87	24.7	27.45
14	Fruit yield per plant (g)	332.97	342.35	388.47	295.08	371.54	309.14	307.87	415.19	265.11	327.24	441.48	287.86	276.43	306.05
15	Fruit yield per hectare (t)	18.5	19	21.6	16.4	20.6	17.2	17.1	23.1	14.7	18.2	24.5	16	15.4	17
16	YVMV incidence levels (%)	60.1	12.16	49.97	14.97	0	0	47.2	31.5	64.17	0	19.4	45.48	16.67	42.37

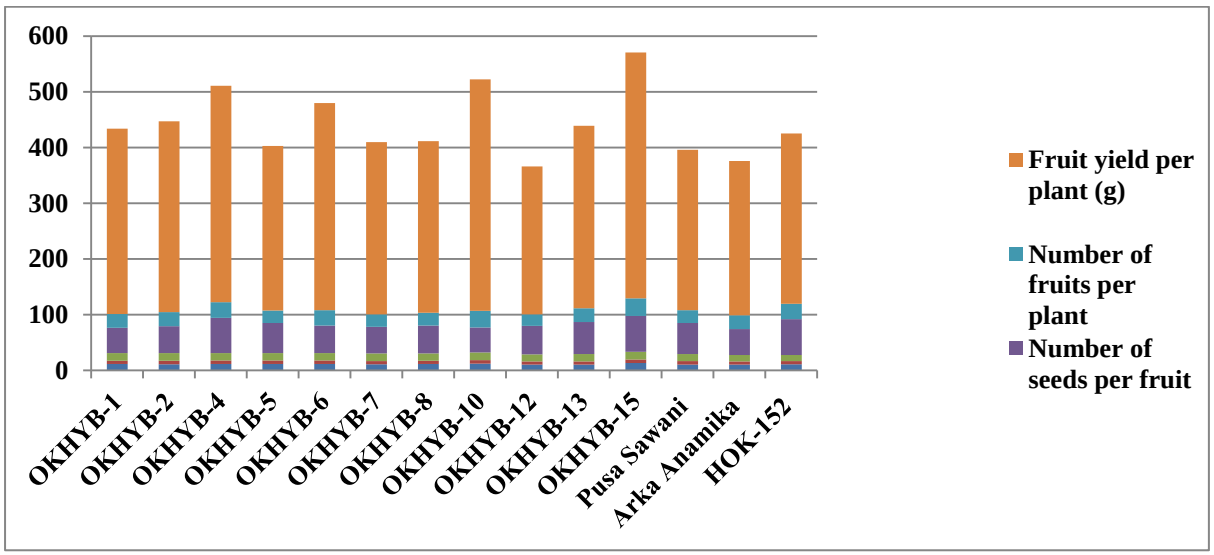

Fig. 1: Performance of Okra hybrids for Yield attributes and Yield

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