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Evaluation of okra [*Abelmoschus esculentus* (L.) Moench.] Hybrids for yield and economics under Allahabad agro climatic condition

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Abstract

The present investigation was carried out at Vegetable Research Farm, Department of Horticulture, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad (Uttar Pradesh), during 2014-15 with an aim to identify the okra hybrids suitable for cultivation under Allahabad agro climatic condition. The results revealed that amongst fourteen tested hybrids of okra, OKHYB-15 was found to be the highest yielding (245.26 q/ha) hybrid which gave net profit of Rs. 2, 65,976 and with a benefit: cost ratio of 2.37 in pooled data. The other promising hybrids of okra suitable for cultivation under Allahabad conditions were OKHYB-10 and OKHYB-4 with a yield potential of 230.65 and 215.81 q/ha respectively and net profit and benefit: cost ratio of these hybrids were Rs. 2,42,600 and 2,19,856 and 2.16 and 1.96, respectively.

Keywords: B:C ratio, hybrids, yield attributes, agro climatic condition and okra

Introduction

Okra (*Abelmoschus esculentus* L. Moench) also known as lady's finger or bhindi belongs to family Malvaceae, having highest chromosome number among vegetables ($2n=130$). It is native to Africa and grown in tropical and subtropical parts of the world. India is one the leading okra producer with the production of 6.346 million tons per year from an area of 0.532 million ha, with the productivity of 11.9 t /ha (National Horticulture Board 2014) and it is cultivated extensively round the year for its immature fruits ^[1]. Tender fruits are used as vegetables or in culinary preparations as sliced or dried pieces. Mature fruits and stem containing crude fiber and are used in paper industry. Its fruits have high nutritive, medicinal and industrial value and export potential. Its fruits are rich in vitamins, calcium, potassium and other mineral matters ^[2]. Okra contains highest amount of iodine which prevents from goiter disease and often recommended by nutritionists because it control cholesterol level and weight reduction programmes. Okra is very effective in frightening against ulcers, physiological conditions and depressions. The antioxidant activity of this crop is due to presence of vitamin A, B and C that prevents the oxidative damages by free radicals also helps in lowering down the aging process ^[3]. Okra production and productivity is seriously affected by the use of low yielding local varieties, sub optimal plant density, heavy attack of insect pests, diseases and weeds etc. One of major problem in okra cultivation is the selection of low yielding varieties due to which productivity in India is less as compared to other countries. Higher production of this crop is possible by the cultivation of varieties or hybrids which show remarkable enhanced returns, compared to other cultivars grown at same climatic conditions and inputs applied. However, productivity could be improved through careful evaluation and selection of proper okra varieties or hybrids based on location ^[4]. Therefore, in the present study, an attempt has been made to evaluate and identify the best hybrids of okra suitable for cultivation under Allahabad region with good net profits.

Materials and Methods

The present investigation was carried out at Vegetable Research Farm, Department of Horticulture, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad (Uttar Pradesh) during 2014-15. Experimental material comprised 14 okra hybrids (Table 1). All hybrids were evaluated in a randomized block design with three replications. The soil of the plot was sandy loam in texture having good fertility, properly leveled and well drained.

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Row –to- Row and Plant –to- Plant 60cm and 30cm respectively. Cultural and agronomic practices were followed as per the standard recommendations and need based plant protection measures were taken up to maintain healthy crop stand. The observations recorded on 5 randomly marked plants in each plot on number of fruits per plant, fresh weight of fruit, fruit yield per plant (g), fruit yield (q/ha) from the net plot area was recorded for comparison. Standard statistical procedure [5] was used to analyze the data and economics of the different entries was calculated.

Table 1: Okra hybrids used in present investigation

| Name of Hybrids | Source |
|-----------------|---------------|
| OKHYB-1 | IIVR,VARANASI |
| OKHYB-2 | IIVR,VARANASI |
| OKHYB-4 | IIVR,VARANASI |
| OKHYB-5 | IIVR,VARANASI |
| OKHYB-6 | IIVR,VARANASI |
| OKHYB-7 | IIVR,VARANASI |
| OKHYB-8 | IIVR,VARANASI |
| OKHYB-10 | IIVR,VARANASI |
| OKHYB-12 | IIVR,VARANASI |
| OKHYB-13 | IIVR,VARANASI |
| OKHYB-15 | IIVR,VARANASI |
| Pusa Sawani | IIVR,VARANASI |
| Arka Anamika | IIVR,VARANASI |
| HOK-152 | IIVR,VARANASI |

Results and Discussion

Increased number of fruits per plant is a direct component leading to higher yield. The data presented in the Table 2, indicated that there was significant variation in number of fruits per plant among the different hybrids. The maximum number of fruits per plant was observed in OKHYB-15 (31.27 fruits) followed by OKHYB-10 (29.47 fruits) and OKHYB-4 (28.47 fruits) whereas minimum number of fruits per plant (21.00 fruits) was found in OKHYB-12 followed by OKHYB-5 (22.32 fruits) similar results also reported by [6] and [7]. Average fresh weight of the fruit is one of the most important character which accounts for yield of crops. Significant differences were noticed among the different hybrids for average fruit fresh weight. The maximum fresh

weight of fruit (g) was observed in hybrids OKHYB-15 (14.12g) followed by OKHYB-10 (14.09g) and OKHYB-7 (13.82g) whereas minimum fresh weight of fruit was found in HOK-152 (11.15g) followed by Arka Anamika (11.18g). This variation might be due to differences in the vegetative growth of hybrids which leads to variation in photosynthesis and ultimately fruit weight [8] and [9] also reported more or less similar findings in his experiment. The fruit yield per plant was maximum in the hybrid OKHYB-15 (441.48g) followed by treatment OKHYB-10 (415.19g), OKHYB-4 (388.47gms) and the minimum fruit yield per plant was observed in OKHYB-12 (265.11g). The yield of fruit per plant is directly related with high number of branches, number of fruits and fruit weight, similar results were reported by [10] and [11]. The fruit yield per hectare was maximum in the hybrid OKHYB-15 (245.26q), followed by treatment OKHYB-10 (230.65q) and treatment OKHYB-4 (215.81q) and the minimum fruit yield per hectare were observed in the treatment OKHYB-12 (147.027q). The difference in pod yield/ha (q) in different Hybrids may be due to difference in genetic make-up and also their adaptability for Allahabad agro climatic conditions. Similar result was also reported by [12] and [13]. Higher money value and less cost of cultivation are desirable characters for getting higher returns. Hence, economics of the hybrid was worked out. The data pertaining to economics of different hybrids is depicted in Table 2. It is revealed from the data obtained that the significantly highest marketable fruit yield of 245.26 q/ha and net return of Rs 2, 65,976 /ha along with benefit cost ratio 2.37 was obtained under okra hybrid OKHYB-15 followed by OKHYB-10 gave fruit yield 230.65 q/ha and net return of Rs 2, 42, 600/ha with benefit: cost ratio of 2.16. While lowest marketable fruit yield 147.027 q/ha and net return of Rs 1, 13,192 /ha along with benefit: cost ratio 1.01 was recorded in hybrid OKHYB-12. Similar results have been reported by [14] and [15]

Conclusion

It is concluded that based on the mean performance of yield, yield attributes and economics hybrid OKHYB-15 was found to maximum gross return (Rs 3, 92,416), net return (Rs 2, 65,976) and benefit: cost ratio (2.37) and recorded the best hybrid among all the other hybrids.

Table 2: Yield and yield attributing parameters and economics of okra hybrids

| Name of the Hybrids | Number of fruits per plant | Pod weight (g) | Fruit yield per plant (g) | Fruit yield per ha(q) | Total cost of cultivation. | Gross return Rs./ ha | net return Rs./ ha | benefit: cost ratio |
|---------------------|----------------------------|----------------|---------------------------|-----------------------|----------------------------|----------------------|--------------------|---------------------|
| OKHYB-1 | 24.63 | 13.52 | 332.97 | 184.97 | 1,23,940 | 2,95,952 | 1,72,012 | 1.53 |
| OKHYB-2 | 24.8 | 13.81 | 342.35 | 190.19 | 1,24,940 | 3,04,304 | 1,79,364 | 1.60 |
| OKHYB-4 | 28.47 | 13.65 | 388.47 | 215.81 | 1,25,440 | 3,45,296 | 2,19,856 | 1.96 |
| OKHYB-5 | 22.32 | 13.22 | 295.08 | 163.93 | 1,23,440 | 2,62,288 | 1,38,848 | 1.23 |
| OKHYB-6 | 27.81 | 13.36 | 371.54 | 206.41 | 1,25,440 | 3,30,256 | 2,04,816 | 1.82 |
| OKHYB-7 | 22.38 | 13.82 | 309.14 | 171.74 | 1,24,440 | 2,74,784 | 1,50,344 | 1.34 |
| OKHYB-8 | 23.07 | 13.34 | 307.87 | 171.03 | 1,24,440 | 2,73,648 | 1,49,208 | 1.33 |
| OKHYB-10 | 29.47 | 14.09 | 415.19 | 230.65 | 1,26,440 | 3,69,040 | 2,42,600 | 2.16 |
| OKHYB-12 | 21 | 12.62 | 265.11 | 147.27 | 1,22,440 | 2,35,632 | 1,13,192 | 1.01 |
| OKHYB-13 | 24.87 | 13.16 | 327.24 | 181.8 | 1,24,440 | 2,90,880 | 1,66,440 | 1.48 |
| OKHYB-15 | 31.27 | 14.12 | 441.48 | 245.26 | 1,26,440 | 3,92,416 | 2,65,976 | 2.37 |
| Pusasawani | 22.87 | 12.59 | 287.86 | 159.91 | 1,15,440 | 2,55,856 | 1,40,416 | 1.25 |
| Arka Anamika | 24.7 | 11.18 | 276.43 | 153.56 | 1,15,940 | 2,45,696 | 1,29,756 | 1.15 |
| HOK-152 | 27.45 | 11.15 | 306.05 | 170.02 | 1,24,440 | 2,72,032 | 1,47,592 | 1.31 |

References

1. Javed H, Aziz MA, Leghari RAK. Resistance in different okra (*Abelmoschus esculentus* L.) cultivars against American bollworm (*Helicoverpa armigera* Hub.). J Agric. Res. 2009; 47:433-438
2. Camciuc M, Bessifre JM, Vilarem G, Gaset A. Volatile components in okra seed coat. Phytochem. 1981; 48:311-315.
3. Phisut N, Rattanawedee M, Aekkasak K. Effect of osmotic dehydration process on the physical, chemical and sensory properties of osmo-dried cantaloupe. International Food Research Journal. 2013; 20(1):189-196.
4. Deepak K, Saryam SK, Mitra AK, Mehta, Prajapati S, Kadwey S. Correlation and Path Co-efficient analysis of quantitative traits in Okra (*Abelmoschus esculentus* L. Moench). The Bioscan 2015; 10(2):735-739.
5. Panse VG, Sukhatme PV. Statistical Methods for Agricultural Workers, ICAR, New Delhi, 1976, 361.
6. Singh DK, Jain SK. Performance of okra cultivars. Annuals Reseach Report. Submitted to D.E.S. Pantnagar, 2002, 3.
7. Tiwari B. Performance of okra [*Abelmoschus esculentus* (L.) Moench] hybrid in Tarai conditions of U.P during rainy season. M.Sc Ag. Thesis submitted to G.B.P.U.A & T, Pantnagar, 2001, 77.
8. Dhall RK, Arora SK, Dhillon TS, Rajan Bansal. Evaluation of advance generations in Okra (*Abelmoschus esculentus* (L.) Moench) for yield and yield contributing characters. Environment and Ecology; 2003; 21(1):95-98. Department of economics, Vivekananda College, Puttur, Karnataka, India. Delhi, 2003, 173-177.
9. Saitwal YS, Solanke SP, Kalalbandi BM, Kale SA, Mendhe ST. Study on yield and quality of Okra [*Abelmoschus esculentus* (L.) Moench.] Hybrids. Asian Journal of Horticulture. 2011; 6(1):11-12.
10. Mahapatra MR, Acharyya P, Sengupta S. Variability and association analysis in okra. Indian Agriculture. 2007; 51:17-26.
11. Simon SY, Gashua IB, Musa I. Genetic variability and trait correlation studies in okra [*Abelmoschus esculentus* (L.) Moench]. Agric. Bio. J North Ame. 2013; 10:532-538
12. Phad GN, Ingle GN, Kalalbandi KB, Godhawale GV, Borgaonkar SB. Performance of new hybrids of Okra [*Abelmoschus esculentus* (L.) Moench] under Parbhani conditions of Marathwada region International Journal of Plant Sciences (Muzaffanagar) 2008; 3(1):222-224.
13. Rashid MH, Yasmin L, kibria MG, Mollik AM. Screening of okra germplasm for resistance to yellow vein mosaic virus under field conditions Pakistan j pl. patho. 2002; 1(2-4):61-62.
14. Singh RK, Mamta Kumari. Economics of hybrid okra (*Abelmoschus esculentus* (L.) Moench). International J Pl. Sci. (Muzaffanagar). 2006; 1(2):363-364.
15. Chaudhary UN, Khancilkar MH, Desai SD, Prabhudesai SS, Choudhary PR, Raut VU. Performance of different okra hybrids under North Konkan coastal zone of Maharashtra. Journals of Soils and Crops. 2006; 16(2):375-378.