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Evaluation of F₁ progenies for fruit, seed and yield character of okra (*Abelmoschu sesculentus* (L.) Moench)

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Abstract

The present investigation entitled “Evaluation of F₁ progenies for fruit, seed and yield character of okra (*Abelmoschus esculentus* (L.) Moench)” was carried out during *khariif* season, 2016-2017, at the Instructional cum-Research-Farm, Department of Horticulture, College of Agriculture, Latur, VNMKV, Parbhani. The experiment was laid out in a Complete Randomized Block Design with eight treatments and three replications. The experiment consisted of eight different treatments viz; T₁(Parbhani Kranti [checks]), T₂ (Pusa-A4 x Parbhani Bhendi), T₃ (Parbhani Bhendi x Phule Utkarsha), T₄ (Pusa A4 x BO-2), T₅ (BO- 2x Kashi Pragati), T₆ (Pusa-A4x Phule Utkarsha), T₇ (BO-2 x Phule Utkarsha), T₈(Hybrid No. 10 [Check]). Significantly maximum length of pod (cm), diameter of pod (cm), number of pods per plant, average weight of pod (g), were recorded by treatment T₂, The maximum number of seed per pod, seed yield per pod, were recorded by treatment T₂. The maximum fruit yield per plant (g), fruit yield per plot, fruit yield per hectare (q/ha) and no. of picking were obtained in treatment T₂. Present investigation indicated that, the highest fruits, seeds and yield (q/ha) of okra should be obtained by treatment T₂.

Keywords: F₁ progenies, fruit, seed and yield character, *Abelmoschu sesculentus* (L.)

Introduction

The total commercial production of Okra in the world was estimated at 4.8 million tons, with India and Nigeria being the predominant producers. Other minor producers include Pakistan, Ghana, Egypt, Ethiopia, Iran, Japan and USA. Worldwide production of the Okra as a fruit vegetable is estimated at 6 million tonnes per year. In West Africa, it is estimated at 500,000 to 600,000 tonnes per year. In Nigeria, there are two distinct season of Okra, the peak and the lean seasons. During the lean season Okra fruits are produced in low quantities, scarce and expensive to get (Bamire and Oke, 2003) in the peak season, it is produced in large quantities much more than what the local populace can consume. To the total production of 4.8 million ton pods of okra in the world, India contributes 70%, Nigeria 15%, Pakistan 2%, Ghana 2%, Egypt 1.7% and Iraq 1.7%. To the total production of 4.8 million ton pods of okra in the world, India contributes 70%, Nigeria 15%, Pakistan 2%, Ghana 2%, Egypt 1.7% and Iraq 1.7%.

Materials and Methods

The present investigation entitled “studies on evaluation of F₁ progenies for fruit, seed and yield characters of okra (*Abelmoschus esculentus* (L.) Moench.)” was undertaken at Experimental Farm, Department of Horticulture, College of Agriculture, Latur, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani with the object to evaluate F₁ progenies for fruit, seed and yield characters of okra and to study the correlation for different characters of F₁ progeny. The study involved six genetically diverse F₁ of okra viz. Pusa-A4 x Parbhani Bhendi, Parbhani Bhendi x Phule Utkarsha, Pusa-A4 x BO-2, BO-2 x Kashi Pragati, Pusa- A4 x Phule Utkarsha, BO-2 x Phule Utkarsha. The six F₁'s were evaluated along with two checks Parbhani Kranti and Hybrid No.10 during *khariif*-2016 in Randomized Block Design with three replications. The data was recorded on five randomly selected plants for the characters viz., length of pod (cm), diameter of pod (cm), number of pods per plant, average weight of pod (g), seed per pod, seed yield per pod, fruit yield per plant (g), fruit yield per plot, fruit yield per hectare (q/ha).

Results and discussion

Various Fruit, Seed and Yield attributes showed significant differences for various Okra varieties.

Fruit Characters: fruit of okra is measured in terms of length of pod (cm), diameter of pod (cm), number of pods per plant, average weight of pod (g), all these parameters showed significant difference among various cultivars.

Length of pod (cm) at harvest the data showed in Table 1 in respect of length of pod revealed that maximum length of pod was recorded in treatment T₂(13.83) which was followed by treatment T₄ (13.32) and treatment T₇ (13.00) respectively. However T₂ was at par with T₄. The minimum length of pod was recorded in treatment T₁ (10.72) which was followed by treatment T₈ (10.93) and treatment T₅ (11.93) respectively. However T₁ was at par with T₈. Rest of the treatments were

intermediate. Kumar *et al.* (2015) reported that hybrids of okra IHR-128 recorded maximum fruit length (12.05 cm) while minimum in Pusa Sawani (9.04 cm).

Diameter of pod at harvest the data showed in Table 1 in respect of diameter of pod revealed that maximum diameter of pod was recorded in treatment T₂(3.33) which was followed by treatment T₆ (3.22) and treatment T₄ (2.71) respectively. However T₂ was at par with T₆. The minimum diameter of pod was recorded in treatment T₃ (2.48) which was followed by treatment T₁ (2.51) and treatment T₇ (2.54) respectively. However T₃ was at par with T₁ and T₇. Rest of the treatments were intermediate. Maheshwari *et al.* (2016) reported that genotypes of okra Sonal recorded maximum diameter of fruit (3.44 cm) while minimum in Harita (2.41cm).

Table 1: Length of pod (cm), diameter of pod (cm), number of pods per plant and average weight of pod of different hybrids okra

Tr. No.	Treatment	Length of pod (cm)	Diameter of pod (cm)	No. of pods/ plant	Average wt. of pod
T ₁	Parbhani kranti	10.72	2.51	8.43	6.43
T ₂	Pusa- A4x Parbhani Bhendi	13.83	3.33	11.0	10.0
T ₃	Parbhanni Bhendix Phule Utkarsha	12.43	2.48	9.13	9.93
T ₄	Pusa- A4 xBO-2	13.32	2.71	10.0	9.97
T ₅	BO-2X Kashi pragati	11.93	2.66	9.30	9.13
T ₆	Pusa- A4x Phule Utkarsha	12.90	3.22	10.0	9.0
T ₇	BO-2X Phule Utkarsha	13.00	2.54	8.46	9.93
T ₈	Hybrid No.-10	10.93	2.63	9.50	7.03
	SE	0.23	0.14	0.48	0.52
	CD 5%	0.72	0.45	1.46	1.60

Number of pods per plant at harvest the data showed in Table 1 in respect of number of pod per plant revealed that maximum number of pod was recorded in treatment T₂ (11) which was followed by treatment T₄ (10) and treatment T₆(10) respectively. However T₂ was at par with T₄ and T₆. The minimum number of pod was recorded in treatment T₁ (8.43) which was followed by treatment T₇ (8.46) and treatment T₃ (9.13) respectively. However T₁ was at par with T₇ and T₃. Rest of the treatments were intermediate.

Average weight of pod (g) at harvest the data showed in Table 1 in respect of weight of pod per plant revealed that maximum number of weight of pod was recorded in treatment T₂(10) which was followed by treatment T₄(9.97) and treatment T₃ (9.93) respectively. However T₂ was at par with T₄ and T₃. The minimum weight of pod was recorded in treatment T₁ (6.43) which was followed by treatment T₈ (7.03) and treatment T₆ (9.0) respectively. However T₁ was at par with T₈. Rest of the treatments were intermediate. Kumar *et al.* (2015) studied on evaluation of okra (*Abelmoschus esculentus*) genotypes for yield and yellow vein mosaic disease and reported that VRO-6 recorded maximum weight of fruit (13.86 g) while minimum in Arka Abhaya (10.35 g).

Seed character: Number of seed per pod at harvest the data showed in Table 2 in respect of number of seed per pod revealed that maximum number of seed per pod was recorded in treatment T₂(47.8) which was followed by treatment T₄ (46.8) and treatment T₆(45.4) respectively. However T₂ was at par with T₆. The minimum number of seed of pod was recorded in treatment T₁ (41.33) which was followed by treatment T₇ (41.43) and treatment T₈ (43.3) respectively. However T₁ was at par with T₇ and T₈. Rest of the treatments were intermediate. Anwanobong and Brisibe (2015) reported that okra hybrids local variety recorded maximum number of seed per pod (43.50) while minimum in LD88 (33.40).

Seed yield per pod (g) at harvest the data showed in Table 2 in respect of seed yield per pod revealed that maximum number of seed yield of pod was recorded in treatment T₂(3.28) which was followed by treatment T₄ (2.94) and treatment T₆(2.90) respectively. However T₂ was at par with T₄. The minimum number of seed yield of pod was recorded in treatment T₇ (2.62) which was followed by treatment T₁ (2.62) and treatment T₈ (2.73) respectively. However T₇ was at par with T₁ and T₈. Rest of the treatments were intermediate.

Table 2: Number of seed per pod and seed yield per pod of different hybrids of okra

Tr. No.	Treatment	No. of seed /pod	Seed yield/pod (g)
T ₁	Parbhani kranti	41.33	2.62
T ₂	Pusa- A4x Parbhani Bhendi	47.80	3.28
T ₃	Parbhanni Bhendix Phule Utkarsha	44.20	2.78
T ₄	Pusa- A4 xBO-2	46.80	2.94
T ₅	BO-2X Kashi pragati	43.46	2.74
T ₆	Pusa- A4x Phule Utkarsha	45.04	2.90
T ₇	BO-2X Phule Utkarsha	41.43	2.61
T ₈	Hybrid No.-10	43.30	2.73
	SE	1.36	0.12
	CD 5%	4.15	0.37

Yield attributes: Yield per plant (kg) at harvest the data showed in Table 3 in respect of yield per plant revealed that maximum yield per plant was recorded in treatment T₂ (0.11) which was followed by treatment T₄ (0.099) and treatment T₃(0.090) respectively. However T₂ was at par with T₄ and T₃. The minimum number of yield per plant was recorded in treatment T₁ (0.054) which was followed by treatment T₈ (0.066) and treatment T₇ (0.084) respectively. Rest of the treatments were intermediate. Farook *et al.* (2002) [3] reported that okra Pusa Green was recorded maximum yield (17.85

t/ha). It was followed by (16.67 and 16.07 t ha yield) obtained from Clemson and Penta Green.

Yield per plot (kg) at harvest the data showed in Table 3 in respect of yield per plot revealed that maximum yield per plot was recorded in treatment T₂ (3.74) which was followed by treatment T₄ (3.38) and treatment T₃(3.08) respectively. The minimum yield per plot was recorded in treatment T₁ (1.84) which was followed by treatment T₈ (2.27) and treatment T₇ (2.85) respectively. Rest of the treatments were intermediate.

Table 3: Yield per plant, yield per plot and yield per hectare of different hybrids of okra

Tr. No.	Treatment	Yield/plant (kg)	Yield /plot(kg)	Yield/ha
T ₁	Parbhani kranti	0.054	1.84	102.22
T ₂	Pusa- A4x Parbhani Bhendi	0.11	3.74	207.58
T ₃	Parbhanni Bhendix Phule Utkarsha	0.090	3.08	170.92
T ₄	Pusa- A4 xBO-2	0.099	3.38	184.06
T ₅	BO-2X Kashi pragati	0.084	2.88	159.99
T ₆	Pusa- A4x Phule Utkarsha	0.090	3.06	169.99
T ₇	BO-2X Phule Utkarsha	0.084	2.85	158.51
T ₈	Hybrid No.-10	0.066	2.27	125.92
	SE	0.02	0.07	4.94
	CD 5%	0.006	0.23	15.0

Yield per ha (q/ha) at harvest the data showed in Table 3 in respect of yield per hectare revealed that maximum yield per hectare was recorded in treatment T₂ (207.58) which was followed by treatment T₄ (184.06) and treatment T₃ (170.92) respectively. However T₄ was at par with T₃. The minimum yield per hectare was recorded in treatment T₁ (102.22) which was followed by treatment T₈ (125.92) and treatment T₇ (158.51) respectively. Rest of the treatments were intermediate.

Number of picking at harvest the data showed in Table 4 in respect of number of pickings revealed that maximum number of picking (8) were recorded in treatment T₂ which was followed by treatment T₄ (7) and treatment T₅ (7) respectively. The minimum number of pickings (5) were recorded in treatment T₁ (5) which was followed by treatment T₃ (6) and treatment T₇ (6) respectively. However T₃ was at par with T₈ and T₇. Rest of the treatments were intermediate.

Table 4: Number of picking of different hybrids of okra

Tr. No.	Treatment	Number of picking
T ₁	Parbhani kranti	5
T ₂	Pusa- A4x Parbhani Bhendi	8
T ₃	Parbhanni Bhendix Phule Utkarsha	6
T ₄	Pusa- A4 xBO-2	7
T ₅	BO-2X Kashi pragati	7
T ₆	Pusa- A4x Phule Utkarsha	7
T ₇	BO-2X Phule Utkarsha	6
T ₈	Hybrid No.-10	7

Conclusion

The studies revealed that the treatment T₂ (Pusa-A4 x Parbhani Bhendi) had shown significantly superior results in terms of fruit, seed and yield attributes like length of pod (cm), diameter of pod (cm), number of pods per plant, average weight of pod (g), seed per pod, seed yield per pod, fruit yield per plant (g), fruit yield per plot, fruit yield per hectare (q/ha) and no. of pickings were obtained in treatment T₂. and Pusa-A4xBo-2 were being the second of okra followed by pusa-A4x Phule Utkarsha. Therefore, on the basis of result obtained in present studies, it is suggested that the variety Pusa-A4 x Parbhani Bhendi these variety are suggested for commercial cultivation.

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