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HETEROSIS FOR FRUIT YIELD AND ITS COMPONENTS IN OKRA (*ABELMOSCHUS ESCULENTUS* L. MOENCH)

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Abstract- Eight parental lines of okra and their 28 F_1 hybrids obtained from half diallel were studied to investigate the extent of heterosis for yield and its attributes. The magnitude of heterosis varied in all the crosses for the characters studied. Maximum positive heterosis for fruit yield per plant over better parent and standard check (JOH 2) was observed to be 62.12 and 44.11 per cent, respectively. The cause of heterosis may be due to its component traits, *viz.*, days to first flowering, nodes per plant, length of inter node, fruit weight and fruits per plant. The best hybrid AOL 09-25 x AOL 09-26 recorded 44.11 per cent heterosis for yield over standard check, may be exploited for commercial cultivation.

Keywords- *Abelmoschus esculentus* (L.) Moench, heterosis, diallel analysis, fruit yield

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Introduction

Okra [*Abelmoschus esculentus* (L.) Moench] is one of the important vegetable crop, grown for its tender green pods in tropics, subtropics and warmer parts of temperate region. It is basically a self-pollinated crop in which emasculation and pollination is feasible with higher success rate of fruit setting. The cost of hybrid seed production at a commercial scale may also be lower in okra due to simple floral biology, more number of seeds per cross, higher rate of successful seed setting and higher percentage of successful crosses. These characteristics offer greater possibilities of crop improvement through hybridization. The magnitude of heterosis provides a basic idea about genetical diversity present in the material. It also helps to choose desirable parents for the development of superior F_1 hybrids for exploiting hybrid vigour and further developing gene pools to be employed in future breeding programme. Therefore, the present experiment was conducted to judge the magnitude of heterosis for fruit yield and its attributes in okra.

MaterialsandMethods

Eight genetically diverse parental lines of okra were crossed in all possible combinations employing half diallel mating design. The present study was conducted at Main Vegetable Research Farm, Anand Agricultural University, Anand, Gujarat. The eight parents *viz.*, AOL 08-10, AOL 09-24, AOL 08-2, AOL 09-25, AOL 09-26, AOL-09-27, GO-2, AOL-09-28 and their 28 F_1's along with standard check, JOH-2 were raised in randomized block design replicated thrice, during July 2010. The planting distance of 60 cm x 30 cm was maintained. The cultural and plant protection practices were carried out as per requirement to raise a healthy crop. Observations were recorded on five randomly selected competitive plants fornine quantitative traits *viz.*, days to first flowering, plant height (cm), nodes per plant, length of inter-node (cm), primary branches per plant, fruit length (cm), fruit weight (g), fruits per plant and fruit yield per plant (g). Heterobeltiosis and standard heterosis were computed as per the methods given by [1] and [2], respectively.

Results and discussion

The findings of heterosis over better parent and check (JOH-2) are presented in [Table-1]. Three best *per se* performing parents and three top ranking heterotic crosses along with number of crosses showing significant desirable heterosis over better parent and standard check (JOH-2) are reported in [Table-2]. The results indicated that the degree and direction of heterosis varied enormously for all the characters studied. Overall, the magnitude of heterotic effects were high for fruit yield per plant and primary branches per plant. Whereas, length of inter-node, fruit weight and fruits per plant displayed moderate heterosis. Nodes per plant, plant height and days to first flowering exhibited the least heterosis.

With respect to days to first flowering, the extent of heterobeltiosis and standard heterosis varied from -9.38 (GO-2 x AOL 09-28) to 20.30 per cent (AOL 09-24 x AOL 09-26) and -19.11 (AOL 09- 27 x GO-2) to 1.91 per cent (AOL 09-26 x AOL 09-28), respectively. Perusal of [Table-2] showed that the first three top ranking standard heterotic hybrids possessed at least one good *per se* performing parent for days to first flowering. Significant negative heterosis was reported by [3-7]. While, [8] reported positive significant heterosis for this trait. This may be due to use of different genetic material.

With respect to plant height, the heterobeltiosis and standard heterosis ranged from -21.80 to 15.92 per cent and -41.08 to 13.77 per cent, respectively. Out of 28 crosses, nine exhibited significant positive heterobeltiosis of which highest value was observed for the cross AOL 08-2 x AOL 09-27 (15.92%) followed by AOL 09-27 x AOL 09-28 (15.10%) and AOL 08-2 x AOL 09-25 (12.79%). While, only one cross combination GO-2 x AOL 09-28 (13.77%) recorded the significant positive standard heterosis. Positive and significant heterosis for this trait was also noted by [3] and [5].

The extent of heterosis over better parent was -31.36 (AOL 09-24 x AOL 08-2) to 22.38 per cent (AOL 09-25 x AOL 09-26) and over standard check was -33.74 (AOL 08-10 x AOL 09-28) to 17.20 per cent (GO-2 x AOL 09-28) for nodes per plant. The number of significant positive crosses were seven in better parental and one in standard heterosis. [6-8] have also reported positive heterosis for this trait. All the three best standard heterotic crosses possessed at least one good *per se* performing parent for nodes per plant. It is interesting to note that all the three top ranking crosses exhibited standard heterosis for this trait also reported occupied maximum standard heterosis for fruits per plant and fruit yield also, suggesting

Table-1 *Heterosis in percentage in F_1 hybrids over better parent (BP) and standard check (SC) for various characters in okra*

Crosses	Days to first flowering		Plant height		Nodes per plant		Length of inter-node	
	BP	SC	BP	SC	BP	SC	BP	SC
AOL-08-10 x AOL-09-24	11.28**	-5.73*	4.15	-20.10**	3.60	-11.11	-5.96**	-10.29
AOL-08-10 x AOL-08-2	0.75	-14.65**	5.39*	-8.76	1.77	-6.49	3.74	-0.96
AOL-08-10 x AOL-09-25	6.30**	-14.01**	-4.64	-15.32*	9.63**	-7.49	-12.72**	-7.78
AOL-08-10 x AOL-09-26	11.28**	-5.73*	-5.79*	-12.95	14.58**	-1.46	-17.68**	-10.93
AOL-08-10 x AOL-09-27	13.53**	-3.82	4.14	-21.54**	18.57**	-6.61	-10.11**	-14.21*
AOL-08-10 x GO-2	-2.26*	-17.20**	-0.50	-0.88	0.12	1.39	-1.07	-1.73
AOL-08-10 x AOL-09-28	12.03**	-5.10*	-21.80**	-41.08**	-21.13**	-33.74**	-6.08**	-10.36
AOL-09-24 x AOL-08-2	8.27**	-8.28**	1.35	-12.25	-31.36**	-20.40*	16.85**	10.99
AOL-09-24 x AOL-09-25	3.94**	-15.92**	2.72	-8.79	-15.30**	-27.33**	25.08**	32.20**
AOL-09-24 x AOL-09-26	20.30**	1.91*	-7.37**	-14.40*	12.11**	-3.58	-17.37**	-10.60
AOL-09-24 x AOL-09-27	15.04**	-2.55	10.66**	-15.60*	1.63	-12.80	8.72**	-2.63
AOL-09-24 x GO-2	12.78**	-4.46	-19.48**	-19.78**	-3.23	-2.02	-16.80**	-17.38**
AOL-09-24 x AOL-09-28	13.53**	-3.82	3.33	-21.19**	3.09	-11.55	0.00	-10.36
AOL-08-2 x AOL-09-25	17.72**	-5.10	12.79**	0.16	-14.29**	-21.24**	21.07**	27.86**
AOL-08-2 x AOL-09-26	15.04**	-2.55	-3.98	-11.27	-18.71**	-25.30**	11.75**	20.91**
AOL-08-2 x AOL-09-27	3.88**	-14.65**	15.92**	0.37	5.10	-3.43	10.10**	4.65
AOL-08-2 x GO-2	15.04**	-2.55	-1.80	-2.17	-1.85	-0.61	-0.62	-1.35
AOL-08-2 x AOL-09-28	14.29**	-3.18	10.00**	-4.76	1.02	-7.18	8.51**	3.11
AOL-09-25 x AOL-09-26	18.90**	-3.82	8.05**	-0.16	22.38**	5.26	-11.70**	-4.40
AOL-09-25 x AOL-09-27	2.36*	-17.20**	5.17*	-6.61	11.33**	-6.05	-4.70*	0.65
AOL-09-25 x GO-2	4.72**	-15.29**	-7.56**	-7.91	-22.68**	-21.71**	12.57**	18.99**
AOL-09-25 x AOL-09-28	6.30**	-14.01**	-0.33	-11.49	-2.37	-17.61*	2.53	8.34
AOL-09-26 x AOL-09-27	13.95**	-6.37**	1.35	-6.35	-0.36	-14.30	1.96	10.35
AOL-09-26 x GO-2	2.00*	-2.55	-21.67**	-21.96**	-19.26**	-18.24*	-11.03**	-3.74
AOL-09-26 x AOL-09-28	6.67**	1.91	-14.77**	-21.25**	1.60	-12.61	-15.41**	-8.45
AOL-09-27 x GO-2	-1.55	-19.11**	0.21	-0.17	2.47	3.76	-2.53	-3.22
AOL-09-27 x AOL-09-28	12.40**	-7.64**	15.10**	-22.00**	-4.02	-19.36*	9.95**	-3.17
GO-2 x AOL-09-28	-9.38**	-7.64**	6.18**	13.77*	7.78**	17.20*	-1.69	-2.41
S. E. (±)	1.34	1.34	10.78	10.78	2.18	2.18	0.39	0.39
Range	-9.38 to 20.30	-19.11 to 1.91	-21.80 to 15.92	-41.08 to 13.77	-31.36 to 22.38	-33.74 to 17.20	-17.68 to 25.08	-17.38 to 32.20

*,** Significant at 5% and 1%, respectively

Table-1 Contd...

Crosses	Primary branches per plant		Fruit length		Fruit weight		Fruits per plant		Fruit yield per plant	
	BP	SC	BP	SC	BP	SC	BP	SC	BP	SC
AOL-08-10 x AOL-09-24	-30.37**	42.42**	3.87	12.41	-12.49**	9.91	8.47	-27.83**	13.54**	-17.43
AOL-08-10 x AOL-08-2	10.84**	39.39**	9.26**	18.75*	-18.88**	0.16	23.80**	-12.16	35.11**	7.53
AOL-08-10 x AOL-09-25	52.28**	21.21	-10.51**	8.69	-13.15**	7.22	13.28*	-24.42*	-3.84	-21.82*
AOL-08-10 x AOL-09-26	-28.93**	30.30*	15.85**	23.63**	2.75	20.05	31.29**	8.62	-13.06**	-30.28**
AOL-08-10 x AOL-09-27	70.91**	42.42**	-14.78**	-2.47	-10.52**	10.47	12.68*	-25.03*	9.17*	-16.72
AOL-08-10 x GO-2	-15.00**	3.03	24.50**	27.27**	12.71**	39.17**	21.45**	-34.78**	13.88**	-20.93*
AOL-08-10 x AOL-09-28	-49.64**	6.06	12.38**	20.91*	5.54*	30.70**	-2.74	-21.79*	-19.37**	-26.59**
AOL-09-24 x AOL-08-2	-20.74**	62.12**	-14.24**	-6.78	-22.08**	-2.12	18.46**	-15.95	13.03**	-10.04
AOL-09-24 x AOL-09-25	-18.52**	66.67**	-8.49**	11.16	13.61**	42.69**	26.31**	-15.73	39.48**	13.40
AOL-09-24 x AOL-09-26	-43.70**	15.15	3.76	12.28	-25.37**	-6.28	-12.07**	-27.25**	12.52**	-9.76
AOL-09-24 x AOL-09-27	-36.30**	30.30**	5.71**	-6.53	-23.70**	-4.16	6.11	-31.16*	2.43	-21.86*
AOL-09-24 x GO-2	1.88	108.33**	1.68	10.03	-16.39**	5.00	10.00*	-8.67	9.78*	-20.17*
AOL-09-24 x AOL-09-28	-4.08	102.02**	-4.91	2.91	-26.33**	-7.48	-20.17**	-35.81**	1.96	-7.18
AOL-08-2 x AOL-09-25	-15.66**	6.06	-14.15**	4.28	-19.98**	-5.73	3.03	-26.90*	0.87	-17.99*
AOL-08-2 x AOL-09-26	-7.00**	70.45**	-0.29	8.38	-5.11	11.50	-27.99**	-40.42**	-14.97**	-31.81**
AOL-08-2 x AOL-09-27	4.34	31.31**	-17.67**	-5.78	-20.92**	-7.12	-4.33	-32.12**	-7.23	-26.17**
AOL-08-2 x GO-2	53.01**	92.42**	-2.19	6.32	-15.30**	-0.49	1.67	-15.59	3.96	-17.26
AOL-08-2 x AOL-09-28	-28.06**	51.52**	3.57	12.57	-11.36**	9.77	-1.32	-20.65	-12.89**	-20.69*
AOL-09-25 x AOL-09-26	-19.39**	47.73**	-10.96**	8.16	5.50	24.29*	38.00**	15.91	62.12**	44.11**
AOL-09-25 x AOL-09-27	45.45**	21.21	-7.59**	12.25	17.01**	37.87**	38.57**	-7.55	-5.13	-22.88*
AOL-09-25 x GO-2	-31.25**	-16.67	-7.87**	11.91	2.62	20.90*	-20.59**	-34.07**	1.65	-17.36
AOL-09-25 x AOL-09-28	-40.05**	26.26*	-4.63*	15.84	-34.27**	-18.60	-16.71**	-33.03**	-16.19**	-23.70**
AOL-09-26 x AOL-09-27	-27.27**	33.33*	-9.04**	4.10	-2.11	12.14	13.17**	-6.37	26.49**	1.44
AOL-09-26 x GO-2	-22.31**	42.42**	-7.23**	-1.00	-5.38	-0.65	-19.48**	-33.15**	18.88**	-4.66
AOL-09-26 x AOL-09-28	3.60	118.18**	0.38	8.00	-15.52**	4.61	-18.10**	-32.24**	-21.80**	-28.80**
AOL-09-27 x GO-2	29.17**	56.57**	4.86*	20.01*	22.07**	39.83**	35.29**	12.33	55.30**	18.47*
AOL-09-27 x AOL-09-28	4.32*	119.70**	-7.35**	6.03	-7.46**	14.58	8.96*	-12.38	12.35**	2.29
GO-2 x AOL-09-28	-41.01**	24.24	-10.23**	-3.41	-28.93**	-12.00	50.12**	24.64*	38.15**	42.75**
S. E. (±)	0.44	0.44	0.91	0.91	1.09	1.09	2.05	2.05	30.98	30.98
Range	-49.64 to 70.91	-16.67 to 119.70	-17.67 to 24.50	-6.78 to 27.27	-34.27 to 22.07	-18.60 to 42.69	-27.99 to 50.12	-40.42 to 24.64	-21.80 to 62.12	-31.81 to 44.11

*,** Significant at 5% and 1%, respectively

greater contribution of nodes per plant towards fruit yield per plant.

In case of length of inter-node, better parental and standard heterosis were -17.68 (AOL 08-10 x AOL 09-26) to 25.08 per cent (AOL 09-24 x AOL 09-25) and-17.38 (AOL 09-24 x GO-2) to 32.20 per cent (AOL 09-24 x AOL 09-25), respectively. Out of a total of 28 cross combinations under study, nine and four crosses showed significant positive heterobeltiosis and standard heterosis, respectively for this trait. It is apparent that all the three top ranking standard heterotic hybrids possessed the best *per se* performing male parents, indicating the greater

contribution of male than female for length of inter-node. [4] confirmed the present findings.
In respect to primary branches per plant, total seven cross combinations exhibited positive significant heterobeltiosis of which top ranking was AOL 08-10 x AOL 09-27 (70.91%) followed by AOL 08-2 x GO-2 (53.01%) and AOL 08-10 x AOL 09-25 (52.28%). While most of the cross combinations manifested positive standard heterosis, of which, 20 crosses rendered significant. The cross combination AOL 09-27 x AOL 09-28 exhibited the maximum economical heterosis (119.17%), whereas, AOL 09-25 x GO-2 recorded the minimum. Most of the hybrids exhibited positive significant heterosis of high magnitude indicating the presence of dominant alleles for this trait. The heterosis for primary branches per plant has also been reported by [4-6].

Table-2 *Three best per se performing parents and three top ranking heterotic crosses along with range of heterosis and number of crosses showing significant heterosis in desired direction for various characters in okra*

Characters	Best *per se* performing parents	Heterosis over better parent (BP)			Heterosis over standard check (SC) (JOH-2)		
		Best crosses	Heterosis (%)	N	Best crosses	Heterosis (%)	N
Days to first flowering	AOL-09-25 AOL-09-27 AOL-08-10	GO-2 x AOL-09-28 AOL-08-10 x GO-2 AOL-09-27 x GO-2	-9.38 -2.26 -1.55	2	AOL-09-27 x GO-2 AOL-08-10 x GO-2 AOL-09-25 x AOL-09-27	-19.11 -17.20 -17.20	16
Plant height (cm)	GO-2 AOL-09-26 AOL-09-25	AOL-08-2 x AOL-09-27 AOL-09-27 x AOL-09-28 AOL-08-2 x AOL-09-25	15.92 15.10 12.79	9	GO-2 x AOL-09-28 AOL-08-2 x AOL-09-27 AOL-08-2 x AOL-09-25	13.77 0.37 0.16	1
Nodes per plant	GO-2 AOL-08-2 AOL-09-26	AOL-09-25 x AOL-09-26 AOL-08-10 x AOL-09-27 AOL-08-10 x AOL-09-26	22.38 18.57 14.58	7	GO-2 x AOL-09-28 AOL-09-25 x AOL-09-26 AOL-09-27 x GO-2	17.20 5.26 3.76	1
Length of internode (cm)	AOL-09-26 AOL-09-25 GO-2	AOL-09-24 x AOL-09-25 AOL-08-2 x AOL-09-25 AOL-09-24 x AOL-08-2	25.08 21.07 16.85	9	AOL-09-24 x AOL-09-25 AOL-08-2 x AOL-09-25 AOL-08-2 x AOL-09-26	32.20 27.86 20.91	4
Primary branches per plant	AOL-09-28 AOL-09-24 AOL-09-26	AOL-08-10 x AOL-09-27 AOL-08-2 x GO-2 AOL-08-10 x AOL-09-25	70.91 53.01 52.28	7	AOL-09-27 x AOL-09-28 AOL-09-26 x AOL-09-28 AOL-09-24 x GO-2	119.70 118.18 108.33	20
Fruit length (cm)	AOL-09-25 AOL-09-27 AOL-08-2	AOL-08-10 x GO-2 AOL-08-10 x AOL-09-26 AOL-08-10 x AOL-09-28	24.50 15.85 12.38	6	AOL-08-10 x GO-2 AOL-08-10 x AOL-09-26 AOL-08-10 x AOL-09-28	27.27 23.63 20.91	5
Fruit weight (g)	AOL-09-24 AOL-09-28 AOL-08-10	AOL-09-27 x GO-2 AOL-09-25 x AOL-09-27 AOL-09-24 x AOL-09-25	22.07 17.01 13.61	5	AOL-09-24 x AOL-09-25 AOL-09-27 x GO-2 AOL-08-10 x GO-2	42.69 39.83 39.17	7
Fruits per plant	GO-2 AOL-09-26 AOL-09-28	GO-2 x AOL-09-28 AOL-09-25 x AOL-09-27 AOL-09-25 x AOL-09-26	50.12 38.57 38.00	14	GO-2 x AOL-09-28 AOL-09-25 x AOL-09-26 AOL-09-27 x GO-2	24.64 15.91 12.33	1
Fruit yield per plant (g)	AOL-09-28 AOL-09-25 AOL-09-2	AOL-09-25 x AOL-09-26 AOL-09-27 x GO-2 AOL-09-24 x AOL-09-25	62.12 55.30 39.48	14	AOL-09-25 x AOL-09-26 GO-2 x AOL-09-28 AOL-09-27 x GO-2	44.11 42.75 18.47	3

N = Number of crosses showing significant desirable heterosis

With regards to fruit length, the extent of heterobeltiosis and standard heterosis varied from -17.67 (AOL 08-2 x AOL 09-27) to 24.50 per cent (AOL 08-10 x GO-2) and -6.78 (AOL 09-24 x AOL 08-2) to 27.27 per cent (AOL 08-10 x GO-2), respectively. Out of 28 crosses studied, only 6 and 5 crosses displayed significant positive heterobeltiosis and standard heterosis for this trait, respectively. Significant positive heterosis for fruit length has also been reported by [4-7] and [9].
Fruit weight is an important yield contributing trait. The range of better parent heterosis and standard heterosis varied from -34.27 to 22.07 per cent and -18.60 to 42.69 per cent for fruit weight, respectively. It is observed that the cross AOL 09-27 x GO-2 ranked first and second in heterobeltiosis and standard heterosis, respectively. This cross combination also occupied second and third rank in fruit yield per plant in heteroblтiosis and standard heterosis, respectively. The results indicated the association of fruit weight and fruit yield per plant. Heterosis for fruit weight was also reported by [4-5], [7] and [9].
With respect to fruits per plant, fourteen cross combinations revealed positive significant heterobeltiosis of which top ranking was GO-2 x AOL 09-28 (50.12 %) followed by AOL 09-25 x AOL 09-27 (38.57 %) and AOL 09-25 x AOL 09-26 (38.00 %). While only one cross combination recorded positively significant standard heterosis for fruits per plant namely GO-2 x AOL 09-28 (24.64 %). It is noted that all the three top ranking standard heterotic crosses in this trait also placed in top three positions for fruit yield per plant indicating contribution of this trait to the economic fruit yield per plant. [4-7] and [9] also reported higher heterosis for fruits per plant.
Fruit yield per plant is the character of economic importance for which considerable degree of heterosis was registered in a number of crosses. For this trait, fourteen and three hybrids manifested significant positive heterobeltiosis and standard heterosis, respectively. The magnitude of heterosis ranged from 21.80 (AOL 09-26 x AOL 09-28) to 62.12 per cent (AOL 09-25 x AOL 09-26) over better parent, while it varied between -31.81 (AOL 08-2 x AOL 09-26) to 44.11 per cent (AOL 09-25 x AOL 09-26) over standard check. Interestingly, the magnitude in positive direction was too high particularly in heterobeltiosis. Perusal of [Table-1] also revealed the number of crosses displaying hterobeltiosis in various yield attributing characters were small, whereas, the number of crosses showing heterobeltiosis in fruit yield were large (14). This result indicated that the favourable combination of yield contributing characters resulted in a higher proportion of cross combinations showing significant positive heterobeltiosis; [4-7] and [9] also reported higher heterosis for fruit yield in okra.
Three most promising hybrids were identified for fruit yield, based on magnitude of standard heterosis over check (JOH-2) from evaluation of 28 crosses [Table-2]. The hybrid AOL 09-25 x AOL 09-26 with the highest *per se* performance ranking first in both types of heterosis involving good x average general combining parents. The hybrid AOL 09-27 x GO-2 involving average x good combiners and ranking second in heterobeltiosis, occupied third rank in *per se* performance, while hybrid GO-2 x AOL 09-28 involving good x average parents and ranking third in heterobeltiosis, stood second in *per se* performance. This might be due to varied constellation of genes in the average parent implicated in the cross combination, thereby resulting in favourable complementation and ultimately the high heterobeltiosis.

Table-3 *Most heterotic crosses along with their per se performance, GCA and SCA effects for fruit yield per plant*

Sr. No.	Crosses	Fruit yield / plant (g)	Heterosis (%) over		SCA	GCA effects of parents	
			BP	SC		Female	Male
1	AOL 09-25 x AOL 09-26	453.99	62.12**	44.11**	143.18**	14.60* (G)	4.15 (A)
2	GO-2 x AOL 09-28	433.27	38.15**	42.75**	117.77**	14.59* (G)	9.28 (A)
3	AOL 09-27 x GO-2	408.08	55.30**	18.47*	98.12**	3.75 (A)	14.59* (G)

*,** Significant at 5% and 1%, respectively, A = Average, G = Good

In the present investigation, the cross combination AOL 09-25 x AOL 09-26 accomplished the top rank followed by GO-2 x AOL 09-28 and AOL 09-27 x GO-2. The result indicated an association among heterosis, combining ability and *per se* performance to some extent suggesting thereby the consideration of all the three aspects in selecting superior cross combination. Moreover, these three top yielding crosses exhibited high sca effects as well as *per se* performance having at least one parent as good general combiner for green fruit yield, it is expected that such type of cross combinations would yield desirable transgressive segregants in later generations. In crops like okra where improved varieties are under cultivation, these crosses could be evaluated and utilized to get desirable segregants for improvement. Hence, these crosses could be advanced for selection in segregating generations to identify superior segregants for the development of improved varieties. The high yielding F_1 hybrid AOL 09-25 x AOL 09-26 showed 44.11 per cent heterosis for fruit yield over standard check JOH-2 may be recommended for commercial exploitation.

Conclusion

The data on heterosis calculated over better parent and standard check JOH-2 revealed superiority of some outstanding cross combinations. A perusal of per se performance and heterosis indicated that crosses AOL -09-25 x AOL 09-26, GO-2 x AOL 09-28 and AOL 09-27 x GO-2 found to be most promising for fruit yield and other desirable traits, hence could be further evaluated to exploit the heterosis or utilized in future breeding programme to obtain desirable segregants for the development of superior genotypes.

Conflict of Interest: None declared

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