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RESEARCH PAPER

Study on the heterosis for yield and yield component in okra [*Abelmoschus esculentus* (L.) Moench]

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Abstract : A field experiment was conducted during summer and rainy season2010 in the Department of Vegetable Science, N.D. University of Agriculture and Technology, Faizabad (U.P.) India, to determine heterosis in F_1 hybrid and inbreeding depression in F_2 generation of 21 okra crosses with respect to seed yield and its component traits. Among the hybrid crosses NDO-10 × ArkaAnamika gave maximum fruit yield by contributing superior yield components while crosses GB-1 × A4 showed lowest value for these attributes.

Key Words : Heterosis, Yield, Yield attributes, Okra

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INTRODUCTION

Okra [*Abelmoschus esculentus* (L.) Moench] is an important vegetable crop. It belongs to the family Malvaceae. It is grown throughout the year in tropical and sub-tropical regions of the world. India is the largest producer of okra in the world. In India the total area covered by okra is 4.98 lac hectare with the production of 57.84 million tons green pod and productivity 11.6 million ton/hectare (Anonymous, 2011). Okra fruit is rich in vitamin A (88 mg per 100 g), vitamin C (13mg/100g), calcium (66mg/100g), potassium (103mg/100g) and also contains other minerals. It is practically important to develop a hybrid variety which responds well to available resources. In okra many varieties have been developed but substrintial increase in productivity potential could not be released probably due to genetic potential ceiling of the genotype. Pitchaimathu and Dutta (2002) noted heterosis for different characters in okra. The crosses MS-1 x IIHR-120, MS-2 x A.A. and MS-5 x Parbhani Kranti were observed most promising hybrid combination. which give early fruit yield, maximum number standard heterosis for plant height, internodal length, days to flowering, fruit length, fruit width, number of fruits per plant and yield was maximum found in AE-219 x AE-1190 over the check (PK). Ravisankar *et al.* (2002) and Panda and Singh (1999) studied heterosis effect of 6 characters in 20 crosses of okra. They observed the highest value of heterosis for pod yield and number of pod per plant. Heterosis breeding is one of the tools for overcoming yield barrier and increasing productivity. So keeping this in view, the present investigations were undertaken to study covering 21 okra germplasms and study the effect of heterosis on growth and yield attributes.

MATERIAL AND METHODS

The present investigation were carried out during summer and rainy season of 2010, at department Of Vegetable science, N.D. University of Agriculture and Technology,

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Faizabad (U.P.) India , in Randomized Block Design with three replications. 21 genotypes were collected from different State Agricultural Universities and ICAR institutes is given in Table A.

Out of 21 genotypes, 17 genotypes were used as a line (female) and four were used as a tester (male parent). 68 crosses were made by adopting the line x tester mating design. Soil of the experimental field was sandy loam with low nitrogen; phosphorus and organic carbon contents and rich in potash. The field was an alkaline in nature. The un-open flower bud was selected in line x tester in the line. The selected bud was emasculated in the evening on the previous day. Emasculated buds were covered by tissue paper bag. The stigma was pollinated with the help of a fine brush covering the entire elongated surface. The flower was rebagged and laveled.

Observation of different yield attributes such as days to 50 per cent flowering, total number of fruiting nodes ,internodal length, number of fruit per plant, fruit length (cm), fruit weight, number of seed per pod, 1000 seed weight and fruit yield was recorded in respect to five randomly selected plant in each F_2 population from each replication. The selected plant was tagged properly, laveled before flowering for recording observations. The experimental data were compiled by taking the mean for each treatment for all observations. The analysis of variance for different observation was made according to method suggested by Panse and Sukhatme (1967).

RESULTS AND DISCUSSION

Heterosis was computed as percentage increase or decrease F_1 values over better parent (Heterosis) and over the best commercial variety (Standard heterosis). In present investigation the relative magnitude of heterosis over the better parent and standard variety (ArkaAnamika) were studied for 9 characters in all 68 crosses (Table 1 and 2). The nature and magnitude of hybrid vigour differed for different traits in various hybrid combinations.

For days taken to flowering negative heterosis is desirable. The heterosis over better parent and standard variety ranged from -9.47 to 2.53 and -7.69 to 1.51 per cent, respectively. Highest heterosis was observed in EC-169358x AA (-9.47%) and NDO-10 × AA over the better parents and standard variety. During rainy season heterosis were found in crosses *viz.*, EC-169358×PK and ArkaAbhay × ArkaAnamika over the better parent and standard variety. Reported by Panda and Singh (1999) and Gaikwad and Lal (2011).

In case of total number of fruiting node, the variation of heterosis ranged from 1.33 to 52.20 per cent and 3.05 to 56.27 per cent over the better parent and standard variety, respectively. The maximum heterosis was recorded in the cross

Table A : Collected genotypes from different state Agricultural Universities and ICAR Institute

Sr. No.	Name of genotypes	Code no.	Source of origin
1.	NDO-10	L_1	N.D.U.A & T., Faizabad
2.	NDO-5	L_2	N.D.U.A & T., Faizabad
3.	NDO-6	L_3	N.D.U.A & T., Faizabad
4.	HB-55	L_4	U.P.U.A.T., Solan
5.	HARBHAJAN	L_5	H.P.U.A.T., Solan
6.	P-7	L_6	P.A.U., Ludhiana
7.	NOL-101	L_7	Nirmal Seed Cop.
8.	GUJRAT BHINDI-1	L_8	G.A.U., Ahmedabad
9.	KS-410	L_9	C.S.A.U. & T., Kanpur
10.	DVR-3	L_{10}	I.I.V.R., Varanasi
11.	KS 307	L_{11}	C.S.A.U & T. Kanpur
12.	ARKA ABHAY	L_{12}	I.I.H.R., Banglore
13.	NK-20	L_{13}	Nirmal Seed Cop.
14.	AE-100	L_{14}	I.A.R.I., New Delhi
15.	EC-169358	L_{15}	Exotic Collection
16.	HRD-108	L_{16}	C.C.S. Agri. Univ., Hissar
17.	JNDO 5	L_{17}	Agri. Univ., Junagarh (Gj)
18.	ARKA ANAMIKA (AA)	T_1	I.I.H.R., Banglore
19.	PARBHANI KRANTI	T_2	MAU, Parbhani
20.	VERSA UPHAR	T_3	HAU, Hissar
21.	A-4	T_4	I.A.R.I., New Delhi

Table 1: Extent of heterosis over better parent (BP) and standard variety (SV) in 68 okra hybrids for 9 characters during summer season (E_1)

Sr. No.	Crosses	Total no. of fruiting node		Inter-nodal length(cm)		No. of fruit per plant		Fruit length at harvest (cm)		Fruit weight (gm)	
		BP	SV	BP	SV	BP	SV	BP	SV	BP	SV
1.	NDO-10 X AA	52.20**	52.20**	-3.15	-3.15	96.17**	96.17**	17.58**	17.58**	13.78**	16.98**
2.	NDO-10 X PK	48.71**	56.27**	3.62	4.72	71.94**	84.15**	19.19**	29.67**	15.31**	24.82**
3.	NDO-10 X VU	30.64**	31.53**	-42.22**	-38.58**	56.15**	59.56**	27.66**	31.87**	3.15	9.43*
4.	NDO-10 X A4	13.99	13.22	-10.56	0	81.14**	73.22*	25.85**	21.70**	-0.06	2.67
5.	NDO-5 X AA	34.11**	35.93**	4.72	4.72	89.62**	89.62**	16.76**	16.76**	1.60	1.60
6.	NDO-5 X PK	23.23**	29.49**	-11.19	-6.3	61.22**	72.68**	15.91**	26.10**	3.51	12.05*
7.	NDO-5 X BU	31.44**	33.22**	-30.60**	-26.77**	66.31**	69.95**	7.98	11.54*	-0.96	5.08
8.	NDO-5 X A4	24.41**	26.10**	15.67*	20.05**	88.00**	79.78**	11.93*	8.24	-3.54	-3.63
9.	NDO-6 X AA	47.80**	47.80**	-3.94	-3.94	80.87**	80.87**	22.25**	22.25**	8.27	8.27
10.	NDO-6 X PK	40.65**	47.80**	-2.31	0	90.82**	104.37**	14.90**	25.00**	1.90	10.30*
11.	NDO-6 X VU	31.65**	32.54**	-7.69	-5.51	58.82**	62.30**	15.43**	19.23**	-1.50	4.50
12.	NDO-6 X A4	27.84**	26.10**	2.31	4.72	82.29**	74.32**	20.45**	16.48**	7.10	1.60
13.	HB-55 X AA	43.39**	43.39**	-18.90*	-18.90*	98.91**	98.91**	20.60**	20.60**	2.40	4.21
14.	HB-55 X PK	31.29**	37.97**	-19.57*	12.6	67.86**	79.78**	16.92**	27.20**	6.19	14.95**
15.	HB-55 X VU	33.33**	34.24**	-19.26*	-14.17	62.03**	65.57**	8.78	12.36*	-1.50	4.5
16.	HB-55 X A4	25.60**	24.75**	-11.59	-3.94	89.14*	80.87**	15.06**	11.26*	-4.45	-2.76
17.	Harbhajan X AA	36.12**	37.97**	-15.75	-15.75	99.45**	99.45**	28.30**	28.30**	-4.21	-4.21
18.	Harbhajan X PK	31.29**	37.97**	-7.25	0.79	66.33**	78.14**	21.72**	32.42**	2.44	10.89*
19.	Harbhajan X VU	24.08**	25.76**	-10.37	-4.72	67.98**	72.68**	21.01**	25.00**	-4.51	1.31
20.	Harbhajan X A4	18.73*	20.34*	16.20*	29.92**	96.57**	87.98**	24.86**	21.43**	4.96	-0.44
21.	P-7 X AA	15.96*	20.68**	-6.3	-6.3	89.69**	89.62**	34.07**	34.07**	-3.63	-3.63
22.	P-7 X PK	24.52**	30.85**	-2.17	6.3	52.04**	62.84**	26.77**	37.91**	-0.24	7.98
23.	P-7 X VU	11.40	15.93*	8.89	15.75	55.61**	59.02**	9.57*	13.19**	-0.14	5.95
24.	P-7 X A4	5.86	10.17	-31.69**	-23.62**	72.00**	64.48**	23.01**	18.96**	-8.32	-8.85
25.	NOL-101 X AA	17.45*	18.64*	12.6	12.6	74.86**	74.86**	21.98**	21.98**	3.92	3.92
26.	NOL-101 X PK	22.90**	29.15**	5.07	14.17	49.49**	60.11**	10.61**	20.33**	-1.05	7.11
27.	NOL-101 X VU	21.48	22.71**	1.48	7.87	47.59**	50.82**	13.56**	17.31**	-5.34	0.44
28.	NOL-101 X A4	6.71	7.80	-2.11	9.45	70.29**	62.84**	19.03**	15.11**	5.57	0.15
29.	GB-1 X AA	24.75**	24.75**	15.32	12.6	84.15**	84.15**	23.08**	23.08**	14.95**	14.95**
30.	GB-1 X PK	22.26**	28.47*	23.39**	20.47*	56.12**	67.21**	27.27**	38.46**	6.73	15.53**
31.	GB-1 X VU	15.49*	16.27*	11.29	8.66	50.27**	53.55**	27.66**	31.87**	-3.97	1.89
32.	GB-1 X A4	12.93	12.54	26.61**	23.62**	78.86**	71.04**	6.53	3.02	-4.43	-9.14*
33.	KS-410 X AA	22.67**	24.75**	-5.51	-5.51	86.34**	86.34**	30.77**	30.77**	4.02	6.53
34.	KS-410 X PK	25.48**	31.86**	-3.91	-3.15	59.18**	70.49**	25.00*	35.99**	1.10	9.43*
35.	KS-410 X VU	19.68*	21.69**	3.12	3.94	59.89**	63.39**	14.36**	18.13**	0.68	6.82
36.	KS-410 X A4	1.33	3.05	8.59	9.45	64.57**	57.38**	19.60**	15.66**	1.19	3.63
37.	DVR-3 X AA	35.81**	42.1**	7.14	-5.51	59.95**	69.95**	32.69**	32.69**	11.76*	11.76*
38.	DVR-3 X PK	39.68**	46.78**	15.18	1.57	45.92**	56.28**	27.02**	38.19**	5.93	14.66**
39.	DVR-3 X VU	21.94**	28.14**	33.93**	18.11*	36.90**	39.89**	23.40**	27.47**	-6.43	-0.73
40.	DVR-3 X A4	5.81	11.19	27.68**	12.6	61.71**	54.64**	27.84**	23.63**	-1.19	-3.92

Table 1 Contd……..

Table 1: Contd.……..

ss	KS-307 X AA	29.19**	30.51**	13.49	12.6	65.03**	65.03**	30.22**	30.22**	22.90**	24.24**
42.	KS-307 X PK	30.97**	37.63**	4.76	3.94	44.39**	54.64**	16.67**	26.92**	18.26**	28.01**
43.	KS-307 X VU	11.41	12.54	7.14	6.3	44.39**	47.54**	13.56**	17.31**	-1.23	7.79
44.	KS-307 X A4	7.72	8.81	7.94	7.09	58.68**	51.91**	19.03**	15.11**	-3.11	-0.44
45.	A.Abhey X AA	26.44**	26.44**	-6.3	-6.3	91.26**	91.26**	11.26*	11.26*	16.11**	16.11**
46.	A.Abhey X PK	22.90**	29.15**	-7.25	0.79	75.00**	87.43**	8.84*	18.41**	9.41*	18.43**
47.	A.Abhey X VU	14.48	15.25*	-1.48	4.72	71.66**	75.41**	8.24	11.81*	8.89*	15.53**
48.	A.Abhey X A4	7.9	6.44	0.7	12.6	64.00**	56.83**	5.97	2.47	12.61*	6.82
49.	NK-20 X AA	21.69**	21.69**	9.45	9.45	52.46**	52.46**	8.52	8.52	16.11**	16.11**
50.	NK-20 X PK	25.16**	31.53**	-15.94*	-8.66	43.37**	53.55**	13.64**	2.63**	12.09**	21.34**
51.	NK-20 X VU	13.47	14.24	8.89	15.75	40.11**	43.17**	19.15**	23.08**	0.96	7.11
52.	NK-20 X A4	10.31	8.81	10.56	23.62**	52.00**	45.36**	7.95	4.4	7.1	1.6
53.	AE-100 X AA	23.05**	23.05**	-26.77**	-26.77**	68.85**	68.85**	11.81*	11.81*	9.14*	9.14*
54.	AE-100 X PK	20.00**	26.10**	-19.57*	-12.6	56.63**	67.76**	6.82	16.21**	6.19	14.95**
55.	AE-100 XVU	4.38	5.08	-0.74	5.51	47.59**	50.82**	6.38	9.89*	9.17*	15.82**
56.	AE-100 X A4	11.34	9.83	15.00*	26.77**	63.43**	56.28**	9.37	5.77	-9.42	-14.08**
57.	EC-169358 X AA	13.92	19.32*	0.00	0	56.78**	70.49**	23.28**	38.19**	32.30**	38.75**
58.	EC-169358 X PK	28.39**	34.92**	-2.17	6.3	51.76**	65.03**	26.47**	41.76**	31.40**	42.24**
59.	EC-169358 X VU	14.56*	20.00*	8.15	14.96	41.21**	53.55**	15.93**	29.95**	19.56**	26.85**
60.	EC-169358 X A4	6.15	11.19	4.35	13.39	47.24**	60.11**	9.07*	22.25**	1.58	6.53
61.	HRD-108 X AA	20.00*	20.00*	14.96	14.96	69.40**	69.40**	0.82	0.82	18.72**	18.72**
62.	HRD-108 X PK	28.71**	35.25**	12.32	22.05**	48.47**	59.02**	-2.53	6.04	12.63**	21.92**
63.	HRD-108 X VU	14.81	15.59**	18.52	25.98**	45.45**	48.63**	-11.97*	-9.07	8.34	14.95**
64.	HRD-108 X A4	7.22	5.76	13.38	26.77**	69.71**	62.30**	-8.81	-11.81*	2.17	-0.44
65.	JNDO-5 X AA	16.40*	22.71**	-2.36	-2.36	71.04**	71.04**	10.16*	10.16*	19.16**	23.66**
66.	JNDO-5 X PK	27.01**	33.90**	-2.99	2.36	53.57**	64.48**	9.09*	18.68**	18.80**	28.59**
67.	JNDO-5 X VU	14.79*	21.02**	9.70	15.75	69.36**	62.84**	-1.86	1.37	-0.96	5.08
68.	JNDO-5 X A4	2.89	8.47	12.69	18.90*	72.86**	65.30**	-2.56	-5.77	-7.41	-3.92
Range of heterosis		1.33	3.05	-42.22	-38.58	36.90	39.89	-11.97	-11.81	-9.42	-14.08
		52.20	56.27	33.93	29.92	99.95	104.37	34.07	38.46	32.30	42.24

Table 1 : Contd.……

Sr. No.	Crosses	No. of seed per pod		Days taken to flowering		1000-seed weight (g)		Fruit yield per plant (g)	
		BP	SV	BP	SV	BP	SV	BP	SV
1.	NDO-10 X AA	84.88**	84.88**	-4.52**	-4.52**	11.60**	10.60**	55.41**	55.41**
2.	NDO-10 X PK	114.69**	99.71**	-6.59**	-2.84**	13.55**	5.60**	21.95**	21.16**
3.	NDO-10 X VU	52.96**	42.73**	0.51	-1.51*	9.54**	10.20**	17.07**	16.32**
4.	NDO-10 X A4	92.26**	80.52**	-6.91**	-3.18**	18.57**	-0.40	13.17**	12.44**
5.	NDO-5 X AA	54.44**	51.74**	-4.75**	-6.02**	12.10**	11.20**	53.80**	53.80**
6.	NDO-5 X PK	70.63**	58.72**	-0.68	-2.01**	13.12**	5.20**	18.35**	13.57**
7.	NDO-5 X BU	52.34**	42.15**	0.68	-1.34	10.08**	9.20**	35.15**	19.39**
8.	NDO-5 X A4	54.18**	44.77**	0.34	-1.00	23.10**	3.40*	45.77**	30.69**
9.	NDO-6 X AA	51.74**	51.74**	-7.69**	-7.69**	6.91**	5.20**	47.98**	47.98**
10.	NDO-6 X PK	56.56**	45.64**	-6.71**	-4.68**	3.23*	-4.00**	15.82**	11.15**
11.	NDO-6 X VU	47.98**	38.08**	-1.71	-3.68**	4.47**	2.80*	25.09**	11.95**
12.	NDO-6 X A4	51.70**	42.44**	-3.44**	-1.34	10.00**	-7.60**	38.19**	21.00**
13.	HB-55 X AA	104.36**	104.36**	-0.17	-1.17	6.60**	6.60**	22.46**	22.46**
14.	HB-55 X PK	69.69**	57.85**	0.34	-0.67	6.67**	-0.8	8.52**	6.95**
15.	HB-55 X VU	58.26**	47.67**	0.85	-1.17	2.58	3.20*	16.23**	14.54**

Table 2 Contd. ……..

Table 1 : Contd……..

16.	HB-55 X A4	63.78**	53.78**	2.53**	1.51*	13.81**	-4.40**	17.05**	15.35**
17.	Harbhajan X AA	99.71**	99.71**	-5.85**	-5.58**	6.74**	-1.80	21.49**	21.49**
18.	Harbhajan X PK	89.69**	76.45**	-7.25**	3.68**	0.43	-7.60**	12.30**	12.12**
19.	Harbhajan X VU	74.77**	63.08**	-1.54*	-3.51**	7.17**	-1.40	16.38**	16.64**
20.	Harbhajan X A4	89.16**	77.62**	-7.09**	-3.51**	8.57**	-8.80**	17.96**	17.77**
21.	P-7 X AA	117.85**	107.85**	-5.85**	-5.85**	8.02**	5.00**	15.99**	15.99**
22.	P-7 X PK	91.87**	78.49**	-5.24**	-3.18**	4.95**	-2.40	14.17**	10.66**
23.	P-7 X VU	81.00**	68.90**	-1.71	-3.68**	4.94	2.00	7.83**	4.52**
24.	P-7 X A4	104.02**	91.57**	-5.24**	-3.18	10.24**	-7.40**	2.83	-0.32
25.	NOL-101 X AA	78.20**	78.20**	-3.68**	-3.68**	4.22**	-1.20	17.61**	17.61**
26.	NOL-101 X PK	59.06**	57.27**	-7.99**	-3.68**	5.16**	-2.20	15.82**	11.15**
27.	NOL-101 X VU	43.61**	34.01**	-1.54*	-3.51**	5.06**	-0.40	34.65**	21.16**
28.	NOL-101 *X* A4	49.85**	40.70**	-5.43**	-1.00	14.52**	-3.80**	12.21**	0.97
29.	GB-1 X AA	110.76**	110.76**	-3.43**	-3.43**	4.37**	0.20	4.36**	4.36**
30.	GB-1 X PK	93.31**	77.03**	-6.17**	-3.34**	6.02**	-1.40	1.01	-3.07*
31.	GB-1 X VU	84.75**	72.38**	1.02	-1.00	3.75*	0.40	-2.04	-6.79****
32.	GB-1 X A4	87.62**	16.16**	-3.73**	-0.84	4.52**	-12.20**	-4.92**	-9.53**
33.	KS-410 X AA	103.78**	113.78**	-6.02**	-6.02**	10.20**	10.20**	17.12**	17.12**
34.	KS-410 X PK	89.69**	76.45**	-5.11**	-0.64	12.47**	4.60**	17.74**	3.39*
35.	KS-410 X VU	79.44**	67.44**	-1.37	-3.34**	5.17**	5.80**	16.41**	11.15**
36.	KS-410 X A4	52.63**	43.31**	-6.04**	-1.17	14.52**	-3.80**	9.31**	4.36**
37.	DVR-3 X AA	56.98**	56.98**	-3.52**	-3.85**	7.65**	7.00**	41.20**	41.20**
38.	DVR-3 X PK	95.31**	81.69**	-0.50	-0.84	11.83**	4.00**	33.84**	28.43**
39.	DVR-3 X VU	99.29**	86.05**	-1.54*	-3.51	6.44**	5.80**	41.93**	30.69**
40.	DVR-3 X A4	121.98**	108.43**	-0.84	-1.17	20.48**	1.20	39.12**	28.11**
41.	KS-307 X AA	134.30**	134.30**	-5.69**	-5.69**	10.02**	10.00**	33.12**	33.12**
42.	KS-307 X PK	115.31**	100.29**	-3.89**	-0.84	16.77**	8.60**	34.68**	29.24**
43.	KS-307 X VU	111.84**	97.67**	-1.02	-3.01**	8.35**	9.00**	32.49**	27.14**
44.	KS-307 X A4	54.18**	44.77**	-4.05	-1	26.43**	6.20**	27.61**	22.46**
45.	A.Abhey X AA	48.55**	48.55**	-6.02**	-6.02**	9.40**	-2.20	21.00**	21.00**
46.	A.Abhey X PK	45.63**	35.47**	-7.70**	-5.85-	8.95**	-2.60	35.06**	29.56**
47.	A.Abhey X VU	15.58`	7.85	-4.27**	6.19**	10.51**	-1.20	19.68**	7.11**
48.	A.Abhey X A4	31.89**	23.84*	-5.41**	-3.51	12.14**	-5.80**	21.19**	5.33**
49.	NK-20 X AA	113.95**	113.95**	-3.68**	-3.68**	17.06**	0.20	36.03**	36.03**
50.	NK-20 X PK	90.31**	77.03**	-6.67**	-3.34	13.79.**	-2.60	32.15**	26.82**
51.	NK-20 X VU	63.55**	52.62**	1.19	-0.84	14.95**	-1.60	32.67**	18.74**
52.	NK-20 X A4	100.00**	87.79**	-3.66**	1.17	11.67**	-6.20**	30.11**	13.09**
53.	AE-100 X AA	55.94**	48.26**	-3.34**	-3.34**	22.03**	-1.4	25.85**	25.85**
54.	AE-100 X PK	37.19**	27.62**	-3.68**	-3.51**	17.82**	-4.80**	21.04**	16.16**
55.	AE-100 XVU	6.23	-0.87	1.19	-084	20.30**	-2.80*	20.40**	7.75**
56.	AE-100 X A4	29.72**	21.80*	-5.12**	-0.84	5.69**	-14.7**	29.02**	12.76**
57.	EC-169358 X AA	144.19**	144.19**	-5.69**	-5.59**	10.00**	10.00**	43.33**	52.83**
58.	EC-169358 X PK	92.50**	97.07**	-9.47**	-5.69**	11.18**	3.40*	29.09**	37.64**
59.	EC-169358 X VU	85.67**	73.27**	-4.10**	-6.02**	3.78**	4.40**	27.73**	36.19**
60.	EC-169358 X A4	123.22**	109.59**	-6.90**	-3.01**	21.68**	2.2	19.85**	27.79**
61..	HRD-108 X AA	124.71**	124.71**	-3.51**	-3.51**	3.05*	1.4	36.51**	38.93**
62.	HRD-108 X PK	96.56**	82.85**	-7.99**	-3.68**	-0.65	-7.60**	19.05**	21.16**
63.	HRD-108 X VU	91.59**	78.78**	-1.19	-3.18**	-4.47**	-6.00**	12.38**	14.38**
64.	HRD-108 X A4	122.60**	119.01**	-5.88**	-1	8.81**	-8.60**	6.03**	7.92**
65.	JNDO-5 X AA	91.28**	91.28**	-3.01**	-3.01**	3.40*	3.40*	25.62**	31.50**
66.	JNDO-5 X PK	77.50**	5.12**	-4.91**	-2.84**	7.96**	0.4	17.13**	22.62**
67.	JNDO-5 X VU	67.29**	56.10**	-1.71*	-3.68**	1.79	2.4	10.80**	15.99**
68.	JNDO-5 X A4	79.88**	68.90**	-0.65	1.51*	18.10**	-0.8	11.42**	16.64**
Range of heterosis		6.23	-0.87	-9.47	-7.69	-4.47	-14.60	-4.92	-9.53
		144.19	144.19	2.53	1.51	26.43	11.60	55.41	55.41

Table 2 : Extent of heterosis over better parent (BP) and standard variety (SV) in 68 okra hybrids for 9 characters during rainy season (E_2)

Sr. No.	Crosses	Total no. of fruiting node		Inter-nodal length (cm)		No. of fruit per plant		Fruit length at harvest (cm)		Fruit weight (gm)	
		BP	SV	BP	SV	BP	SV	BP	SV	BP	SV
1.	NDO-10 X AA	59.94**	59.94**	-3.03	-3.03	113.92**	113.92**	30.81**	30.81**	14.66**	23.03**
2.	NDO-10 X PK	55.21**	62.18**	-2.86	3.03	81.57**	103.09**	25.96**	41.62**	15.89**	25.00**
3.	NDO-10 X VU	37.50**	37.50**	-28.57**	-24.24**	69.23**	81.44**	34.67**	44.86**	8.64	16.57**
4.	NDO-10 X A4	22.12**	22.12**	-6.85	3.03	93.30**	93.30**	36.34**	34.86**	-1.57	5.62
5.	NDO-5 X AA	50.64**	50.64**	4.55	4.55	108.25**	108.25**	26.49**	26.49**	3.58	5.62
6.	NDO-5 X PK	47.55**	54.17**	-12.86	-7.58	76.04**	96.91**	22.12**	37.30**	8.33	16.85**
7.	NDO-5 X BU	35.90**	35.90**	-25.00**	-20.45**	78.37**	91.24**	13.07**	21.62**	3.97	10.39*
8.	NDO-5 X A4	31.80**	28.85**	14.29*	21.21**	104.76**	99.48**	22.40**	21.08**	-3.53	-1.63
9.	NDO-6 X AA	53.02**	54.49**	6.06	6.06	101.55**	101.55**	32.43**	32.43**	9.39	11.24*
10.	NDO-6 X PK	50.61**	57.37**	4.35	0	79.72**	101.03**	21.39**	36.49**	4.69	12.92*
11.	NDO-6 X VU	39.68**	41.03**	-5.8	-1.52	71.63**	84.02**	22.36**	31.62**	3.7	10.11*
12.	NDO-6 X A4	33.65**	34.94**	-5.8	-1.52	98.41**	93.30**	29.78**	28.38**	0	1.69
13.	HB-55 X AA	51.60**	51.60**	-12.88	-12.88	108.08**	112.37**	29.19**	29.19**	1.06	7.3
14.	HB-55 X PK	49.39**	56.09**	-12.14	-6.82	71.89**	92.27**	15.38**	29.73**	8.85	17.42**
15.	HB-55 X VU	45.83**	45.83**	-20.00**	-15.15*	69.23**	81.44**	14.32**	22.97**	1.32	7.58
16.	HB-55 X A4	39.13**	35.33**	-5.63	1.52	90.91**	94.85**	14.48**	13.24*	-6.08	-0.28
17.	Harbhajan X AA	46.47**	46.47**	-13.64	-13.64	109.28**	109.28**	37.30**	37.30**	-1.4	-1.4
18.	Harbhajan X PK	45.71**	52.24**	-1.43	4.55	72.35**	92.78**	28.12**	44.05**	9.37*	17.98**
19.	Harbhajan X VU	34.94**	34.94**	-15.00*	-9.85	75.00**	87.63**	28.64**	38.38**	2.65	8.99
20.	Harbhajan X A4	32.89**	28.21**	8.9	20.45**	102.65**	97.42**	31.15**	29.73**	12.43*	6.74
21.	P-7 X AA	31.99**	36.22**	-6.06	-6.06	89.30**	109.79**	35.68**	35.68**	8.2	11.24*
22.	P-7 X PK	37.42**	43.59**	-0.71	5.3	66.36**	86.08**	31.73**	48.11**	12.50**	21.35**
23.	P-7 X VU	24.53**	38.53**	-0.71	5.3	64.65**	82.47**	38.44**	48.92**	14.29**	21.35**
24.	P-7 X A4	17.08*	20.83*	-17.12*	-8.33	69.77**	88.14**	28.96**	27.57**	-1.09	1.69
25.	NOL-101 X AA	34.94**	34.94**	12.12	12.12	87.63**	87.63**	32.43**	32.43**	10.67*	10.67*
26.	NOL-101 X PK	34.05**	40.06**	-14.29*	-9.09	55.30**	73.71**	13.46**	27.57**	7.55	16.01**
27.	NOL-101 X VU	29.17**	29.17**	-3.57	2.27	63.46**	75.26**	17.09**	25.95**	7.94	14.61**
28.	NOL-101 X A4	-18.65*	-18.91*	-5.48	4.55	78.31**	73.71**	26.23**	24.86**	17.46**	11.52**
29.	GB-1 X AA	34.62**	34.62**	12.88	12.88	96.39**	96.39**	34.59**	34.59**	20.22**	20.22**
30.	GB-1 X PK	34.05**	40.06**	12.12	12.12	60.37**	79.38**	32.21**	48.65**	18.75**	28.09**
31.	GB-1 X VU	26.92**	26.92**	12.12	12.12	7.58**	72.16**	33.42**	43.51**	6.35	12.92*
32.	GB-1 X A4	28.67**	23.72**	20.45**	20.45**	93.65**	88.66**	18.58**	17.30**	1.7	0.56
33.	KS-410 X AA	34.08**	34.94**	-3.03	-3.03	106.19**	106.19**	42.16**	42.16**	15.19**	17.13**
34.	KS-410 X PK	36.50**	42.63**	0.76	0.76	75.58**	96.39**	28.37**	44.32**	12.50**	21.35**
35.	KS-410 X VU	31.21**	32.05**	-3.03	-3.03	72.12**	84.54**	19.60**	28.65**	13.76**	20.79**
36.	KS-410 X A4	14.01	14.74	8.33	8.33	85.71**	80.93**	28.69**	27.30**	8.29	10.11*
37.	DVR-3 X AA	44.34**	51.28**	6.78	-4.55	80.41**	80.41**	43.78**	43.78**	20.95**	21.63**
38.	DVR-3 X PK	50.76**	58.01**	12.71	0.76	48.39**	65.98**	31.25**	47.57**	15.36**	24.44**
39.	DVR-3 X VU	28.44**	34.62**	25.42**	12.12	46.15**	56.70**	26.38**	35.95**	4.23	10.67*
40.	DVR-3 X A4	17.13*	22.76**	22.03**	9.09	73.02**	68.56**	37.70**	36.22**	2.79	3.37
41.	KS-307 X AA	41.51**	44.23**	-4.62	-6.06	78.35**	78.35**	41.08**	41.08**	34.44**	35.96**
42.	KS-307 X PK	44.48**	50.96**	4.62	3.03	54.84**	73.20**	25.48**	41.08**	26.56**	36.52**
43.	KS-307 X VU	21.07*	23.40**	10.77	9.09	52.88**	63.92**	21.11**	30.27**	11.11*	17.98**
44.	KS-307 X A4	17.30*	19.55*	9.23	7.58	69.47**	65.98**	30.05**	28.65**	7.5	8.71
45.	A.Abhey X AA	40.38**	40.38**	-7.58	-7.58	110.77**	112.89**	24.32**	24.32**	25.28**	25.28**

Table 2 : Contd.……..

Table 2 : Contd.……

46.	A.Abhey X PK	24.54**	90.13**	-4.29	1.52	85.25**	107.22**	11.78*	25.68**	16.67**	25.84**
47.	A.Abhey X VU	24.04**	24.04**	-5	0.76	84.62**	97.94**	23.62**	32.97**	16.40**	23.60**
48.	A.Abhey X A4	21.05*	17.95*	0.68	11.36	76.53**	78.35**	24.86**	23.51**	18.34**	12.36*
49.	NK-20 X AA	34.62**	34.62**	18.18*	18.18*	72.07**	69.07**	13.51*	13.51*	25.56**	25.56**
50.	NK-20 X PK	37.73**	43.91**	-9.29	-3.79	49.31**	67.01**	6.25	19.46**	19.79**	19.21**
51.	NK-20 X VU	25.64**	25.64**	10.00	16-67*	47.12**	57.73**	24.37**	33.78**	12.43*	19.38**
52.	NK-20 X A4	22.48*	16.99*	6.85	18.18*	74.07**	69.59**	32.24**	30.81**	7.1	1.69
53.	AE-100 X AA	36.86**	36.86**	-29.55**	-29.55**	89.69**	89.69**	14.05*	14.05*	8.71	8.71
54.	AE-100 X PK	34.05**	40.06**	-11.43	-6.06	68.66**	88.66**	8.89	22.43**	10.68*	19.38**
55.	AE-100 XVU	16.67*	16.67*	-1.43	4.55	62.50**	74.23**	19.10**	28.11**	9.26*	16.01**
56.	AE-100 X A4	18.12*	12.82	0	7.58	84.66**	79.90**	22.68**	21.35**	18.93**	12.92*
57.	EC-169358 X AA	22.68**	26.60**	-6.82	-6.82	70.88**	98.97**	3.97	20.27**	30.26**	42.70**
58.	EC-169358 X PK	31.90**	37.82**	-2.86	3.03	66.37**	93.81**	31.54**	52.16**	36.41**	49.44**
59.	EC-169358 X VU	19.25*	23.08**	5.71	12.12	58.85**	85.05**	34.11**	55.14**	25.64**	37.64**
60.	EC-169358 X A4	17.39*	21.15*	1.41	9.09	57.52**	83.51**	24.30**	43.78**	-1.28	8.15**
61..	HRD-108 X AA	20.51*	20.51*	13.64	13.64	80.93**	80.93**	38.38**	38.38**	17.42**	17.42**
62.	HRD-108 X PK	29.45**	35.26**	14.29*	21.21	69.59**	89.59**	10.58*	24.32**	18.49**	27.81**
63.	HRD-108 X VU	21.79*	21.79*	13.57*	20.45	61.06**	72.68**	17.59**	26.49**	10.05*	16.85**
64.	HRD-108 X A4	11.41	6.41	5.68	21.21	79.47**	75.77**	16.12**	14.86*	-3.71	5.34
65.	JNDO-5 X AA	23.64**	30.77**	1.52	1.52	72.55**	81.44**	27.30**	27.30**	26.11**	27.53**
66.	JNDO-5 X PK	26.36**	33.65**	0	6.06	53.00**	71.13**	17.79**	32.43**	21.35**	30.90**
67.	JNDO-5 X VU	13.03	19.55*	10.00	16.67	70.19**	82.47**	6.28	14.32*	3.7	10.11*
68.	JNDO-5 X A4	6.76	12.82	1.43	7.58	69.12**	77.84**	17.21**	15.95**	-8.06	-7.02
Range of heterosis		6.76	6.41	-29.55	-29.55	47.12	56.70	3.97	13.51	-8.06	-7.02
		59.94	59.94	25.42	20.45	113.92	113.92	43.78	55.14	36.41	49.44

Table 2 : Contd.……

Sr. No.	Crosses	No. of seed per pod		Days taken to flowering		1000-Seed weight (gm)		Fruit yield per plant (gm)	
		BP	SV	BP	SV	BP	SV	BP	SV
1.	NDO-10 X AA	73.93**	73.93**	-0.81	-0.81	11.51**	11.51**	45.90**	45.90**
2.	NDO-10 X PK	95.76**	84.96**	-4.21**	-0.49	13.01**	5.16**	14.38**	13.78**
3.	NDO-10 X VU	47.73**	38.85**	5.03**	1.62	9.50**	9.72**	13.07**	12.48**
4.	NDO-10 X A4	85.25**	69.92**	-4.23**	-0.97	18.16**	-0.6	8.50**	7.93**
5.	NDO-5 X AA	45.36**	45.36**	-2.27	-2.27	10.00**	9.13**	45.25**	45.25**
6.	NDO-5 X PK	54.38**	45.86**	-0.32	-0.16	12.58**	4.76**	23.62**	16.38**
7.	NDO-5 X BU	45.60**	36.84**	6.03**	2.59	9.40**	8.53**	31.93**	14.43**
8.	NDO-5 X A4	52.19**	39.60**	0	0.16	22.88**	3.37*	26.84**	10.01**
9.	NDO-6 X AA	43.11**	43.11**	-5.35**	-5.35**	4.42**	3.17*	36.28**	36.28**
10.	NDO-6 X PK	46.95**	38.85**	-5.06**	-2.76*	3.20*	-3.97**	19.89**	12.87**
11.	NDO-6 X VU	42.13**	33.58**	2.85*	-0.49	4.22**	2.98*	29.51**	10.14**
12.	NDO-6 X A4	48.36**	36.09**	-0.63	1.78	9.91**	-7.54**	50.99**	19.38**
13.	HB-55 X AA	82.96**	42.96**	1.8	0.81	6.35**	6.35**	12.74**	12.74**
14.	HB-55 X PK	51.72**	43.36**	1.47	0.49	6.61**	-0.79	20.99**	13.91**
15.	HB-55 X VU	47.20**	38.35**	3.69**	0.32	2.57	2.78*	24.25**	7.28*
16.	HB-55 X A4	42.90**	31.08**	3.27**	2.27	13.68**	-4.37**	37.20**	18.47**
17.	Harbhajan X AA	82.46**	82.46**	-4.86**	-4.86**	5.56**	-1.98	11.18**	11.18**
18.	Harbhajan X PK	71.35**	61.90**	-5.18**	-2.11	-0.21	-7.34**	14.78**	8.06**
19.	Harbhajan X VU	59.73**	50.13**	-0.84	-4.05**	5.13**	-2.38	11.02**	2.21
20.	Harbhajan X A4	80.05**	65.16**	-6.75**	-3.73**	8.49**	-8.73**	20.90**	11.31**

Table 2: Contd.……..

Table 2 : Contd……

21.	P-7 X AA	90.48**	90.48**	-6.32**	-6.32**	7.55**	4.56**	8.32**	8.32**
22.	P-7 X PK	73.47**	63.91**	-6.51**	-4.54**	4.90**	-2.38	11.46**	4.94
23	P-7 X VU	69.07**	58.90**	-1.51	-4.70**	4.69**	1.79	14.99**	-0.26
24.	P-7 X A4	92.08**	76.19**	-6.35**	-4.38**	10.14**	-7.34**	28.64**	11.57**
25.	NOL-101 X AA	78.43**	59.65**	-5.67**	-5.67**	4.18**	-1.19	8.19**	8.19**
26.	NOL-101 X PK	52.38**	36.34**	-7.02**	-5.51**	5.12**	-2.18	14.64**	7*.93
27..	NOL-101 X VU	34.17**	20.05*	-2.01	-5.19**	4.81**	-0.6	18.81**	1.04
28	NOL-101 X A4	37.54**	23.06**	-4.94**	-3.40**	4.15**	-3.97**	30.92**	3.51
29.	GB-1 X AA	84.34**	84.34**	-4.54**	-4.54**	4.56**	0	-2.47	-2.47
30.	GB-1 X PK	62.60**	53.63**	-5.60**	-4.38**	5.76**	-1.59	-3.73	-9.36**
31..	GB-1 X VU	61.07**	51.38**	1.51	-1.78	3.32*	-1.19	7.03*	-8.97**
32.	GB-1 X A4	69.13**	55.14**	-2.88*	-1.62	3.77*	-12.70**	3.17	-15.47**
33.	KS-410 X AA	94.74**	94.74**	-1.94	-1.94	10.32**	10.32**	15.08**	15.08**
34.	KS-410 X PK	17.19**	67.42**	-4.06**	-0.32	12.15**	4.37**	13.26**	6.63
35.	KS-410 X VU	72.27**	61.90**	2.18	-1.13	6.14**	6.35**	22.17**	3.9
36.	KS-410 X A4	55.46**	42.61**	2.19	1.13	14.62**	-3.57*	20.81**	1.17
37.	DVR-3 X AA	51.13**	51.13**	-1.79	-2.43*	8.00**	7.14**	28.09**	28.09**
38.	DVR-3 X PK	84.35**	74.19**	0.65	0	12.15**	4.37**	26.38**	18.99**
39.	DVR-3 X VU	87.73**	76.44**	0.84	-2.43*	6.80**	5.95**	37.61**	17.04**
40.	DVR-3 X A4	104.92**	87.97**	0.98	0.32	21.23**	1.98	39.52**	14.30**
41.	KS-307 X AA	112.53**	112.53**	-3.57**	-3.57**	10.12**	10.12**	10.40**	10.40**
42.	KS-307 X PK	98.14**	87.22**	-1.43	0.49	16.42**	8.33**	30.39**	22.76**
43.	KS-307 X VU	96.80**	84.96**	1.34	-1.49	8.91**	9.13**	38.76**	19.64**
44.	KS-307 X A4	94.64**	41.85**	-0.95	0.97	26.42**	63.35**	36.80**	17.95**
45.	A.Abhey X AA	50.26**	47.62**	-6.03**	-6.48**	9.78**	1.98	15.47**	15.47**
46.	A.Abhey X PK	43.24**	35.34**	-5.70**	-6.16**	6.44**	-4.96**	22.79**	15.60**
47.	A.Abhey X VU	18.93**	11.78	-2.51*	-5.67**	11.11**	-0.79	35.93**	15.60**
48.	A.Abhey X A4	48.63**	36.34**	-2.12	-5.59*	11.79**	-5.95**	28.78**	1.82
49.	NK-20 X AA	127.78**	95.24**	-5.35**	-5.35**	17.72**	0.2	21.20**	21.20**
50.	NK-20 X PK	99.71**	71.18**	-7.77**	-5.67**	14.22**	-2.78*	20.86**	13.78**
51.	NK-20 X VU	69.59**	45.36**	0.5	-2.76*	15.38**	-1.79	27.68**	8.58**
52.	NK-20 X A4	102.92**	73.93**	-2.85	-0.65	11.56**	-6.15**	33.22**	5.33
53.	AE-100 X AA	65.45**	36.84**	-6.00**	-6.00**	21.87**	-1.59	15.99**	15.99**
54.	AE-100 X PK	49.09**	23.31**	-7.50**	-6.00**	17-94**	-4.76**	16.71**	9.88**
55.	AE-100 XVU	21.52*	0.5	-0.84	-4.05**	19.16**	-3.77**	21.56**	3.38
56.	AE-100 X A4	37.58**	13.78	-5.06**	-3.73**	2.65**	-14.68**	28.29**	1.43
57.	EC-169358 X AA	117.17**	117.17**	-4.86**	-4.89**	9.92**	9.92**	35.45**	38.62**
58.	EC-169358 X PK	77.98**	68.17**	-8.13**	-4.70**	10.87**	3.17*	23.13**	26.01**
59.	EC-169358 X VU	72.00**	61.65**	-1.84	-5.02**	3.96**	4.17**	28.08**	31.08**
60.	EC-169358 X A4	107.65**	90.48**	-6.11**	-2.92*	20.99**	1.79	14.10**	16.78**
61..	HRD-108 X AA	78.70**	78.70**	-3.73**	-3.73**	2.82*	1.19	19.64**	19.64**
62.	HRD-108 X PK	81.96**	71.93**	-6.55**	-2.92*	-0.85	6.74**	11.88**	5.33
63.	HRD-108 X VU	79.73**	68.92**	-0.67	-3.89**	-4.84**	-6.35**	5.28	-1.43
64.	HRD-108 X A4	107.65**	90.48**	-5.64**	-2.43*	8.49**	-8.73**	-1.67	-7.93*
65.	JNDO-5 X AA	77.19**	77.19**	-2.43*	-2.43*	2.98*	2.98*	13.65**	13.65**
66.	JNDO-5 X PK	66.45**	57.27**	-2.27	-2.11	7.68**	0.2	11.74**	5.2
67.	JNDO-5 X VU	50.40**	41.35**	3.18*	-0.16	1.39	1.59	6.96*	-0.13
68.	JNDO-5 X A4	59.84**	46.62**	1.94	2.11	17.45**	-1.19	4.47	-2.21
Range of heterosis		21.52	0.50	-8.13	-6.48	-4.84	-14.68	-3.73	-15.47
		127.78	117.17	6.03	2.59	26.42	11.51	50.99	45.90

NDO-10× ParbhaniKranti (56.27%) over the standard variety during summer season. During rainy season highest heterosis was observed in the cross NDO-10×ParbhaniKranti over the standard variety for this traits and ranged from 6.67 to 59.94 and 6.41 to 62.18 per cent over the better parent and standard variety, respectively. Heterosis for this traits was also reported by Sood and Sharma (2000) and Gaikwad and Lal (2011).

Negative estimates were recorded desirably for intermodal length for which heterosis over the better parent and standard variety varied from -42.22 to 33.93 and -38.58 to 29.92 per cent, respectively. In rainy season highest heterosis was recorded in the hybrid AE-100x ArkaAnamika (-29.55%) both over better parent and standard variety for this traits. Heterosis ranged from -29.55 to 25.42 and -29.55 to 20.45 per cent over the better parent and standard variety. Ahmed *et al.* (1999) and Ravisankar *et al.* (2002) has reported negative heterosis for inter-nodal length.

For number of fruit per plant all the hybrids showed positive and significant heterosis when tested against check variety Arka Anamika. The number of pods per plant is one of the most important components of yield in respect of which is a positive heterosis are desirable. The highest heterosis for number of fruit per plant was observed by hybrid NDO-6 × Parbhani Kranti (104.37 %) over the standard variety during summer and in rainy season hybrid NDO-10×ArkaAnamika (113.92%) over the better parent and standard variety. Chaudhary *et al.* (1991) also reported similar trend of heterosis for this trait.

The hybrids with positive heterosis are desirable for fruit length at harvest. Heterosis for fruit length at harvest ranged from-11.97 to 34.07 and 11.81 to 38.46 per cent over the better parent and standard variety, respectively. The best F_1 hybrid P7×ArkaAnamika and GB-1×PK showed the highest value of better parent and standard variety in rainy season, best crosses DVR-3×AA and EC-169358×VU exhibited the highest values over the better parent and standard variety, respectively during summer. Similar results were also reported by Sivagamasundhari *et al.* (1992).

Heterosis with respect to fruit weight was expressed in positive as well as negative direction. The hybrid EC-1693950 × AA and EC-169358 × PK showed the highest hetrosis over better parent and standard variety. In rainy season, the F_1 hybrid EC-169358 × PK exhibited the highest standard heterosis both over better parent and standard variety. (Singh and Sharma, 1990 and Sivagamasundhari *et al.,* 1992).

Heterosis for number of seed per pod was expressed in positive as well as negative direction. In the present study, the cross EC-169358 × AA recorded highest heterosis over both better parent and standard variety for this trait.During rainy season, the hybrids NK-20 × AA (127.78) and EC0169358 × AA recorded maximum heterosis over the better parent and standard varieties. Almost similar results were noted by Yadav and Chonkar (1991).

Heterosis for 1000-seed weight over the better parent and standard variety were recorded 26.43 and 11.60 per cent, respectively. Maximum heterosis observed in KS-360 × A4 (26.42%) over the better parent during rainy season. Singh and Singh (1979) reported similar findings.

As yield per plant is a complex trait in being a multiple products of several basic components. In the present study heterosis for fruit yield per plant and standard variety varied from -4.92 to 55.41 and -9.53 to 55.41 per cent, respectively. The maximum heterosis were found in NDO-10 × AA over the better parent and standard variety during summer season. However, in rainy season highest heterosis were exhibited in NDO-10 × A4 (50.99%) and NDO-10 × AA (44.90) over the better parent and standard variety, respectively. Increase in yield heterotic hybrids of Okra was also reported by various workers (Ravishankar *et al.,* 2002 and Singh *et al.,* 2011).

Conclusion :

Out of 68 F_1 hybrids were NDO-10 × Arka Anamika for fruit yield per plant and 1000- seed weight, NDO-10 x PK for total no. of fruiting node, Harbhajan × A4 for intermodal length, NDO-6 × PK for no. of fruit per plant, GB-1 × PK, for fruit length at harvest and for fruit weight EC-169358 × PK, EC-169358 × AA for number of seed per pod,NDO-6 × AA for days taken to flowering, heterosis per cent over the standard variety. During rainy season F_1's hybrids recorded better heterosis in respect of fruit yield per plant,1000- seed weight and number of fruit per plant over the standard variety. The manifestation of heterosis for fruit yield per plant is evidence by significant superiority of hybrid over the better parent and standard variety ranged from -4.92 to 55.41 per cent and -9.53 to 55.41 per cent, respectively. In general, the crosses which displayed superiority over the better parent and standard variety for fruit yield per plant also exhibited significant heterosis during summer and rainy season.

Thus, the result obtained in present investigation revealed that heterotic hybrids can be developed from the present germplasm earliness, more number of nodes, maximum fruit length and high fruit yield per plant. These traits are responsible for major yield contributing traits and are also associated with each other. Hence, these are being taken into consideration either, simultaneously or alone for selecting a high yielding genotype of okra.

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