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Heterosis studies in okra (*Abelmoschus Esculentus* (L.) Moench) through line x tester analysis

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ABSTRACT

Okra is a commercially and nutritionally vital vegetable crop, yet its average productivity remains constrained by reliance on low-yielding varieties and extreme vulnerability to biotic stresses such as Yellow Vein Mosaic Virus and the fruit and shoot borer. This investigation was undertaken to study heterosis and combining ability to identify high-yielding and disease-resistant F_1 hybrids. The experiment was conducted during the Kharif 2025 and Summer 2026 seasons. Seven exotic female lines and four male testers were crossed utilizing a Line $\times$ Tester mating design to generate 28 F_1 hybrids. The 41 treatments, comprising the parents, hybrids, and two standard commercial checks, were evaluated in a Randomized Block Design with two replications. Data were recorded for fourteen quantitative characters, including growth parameters, yield attributes, and disease or pest incidence. Analysis of variance revealed highly significant genetic variability among the genotypes for all evaluated traits. The cross combination EC305689 $\times$ Parbhani Kranti emerged as the most superior hybrid, exhibiting the highest fruit yield per plant (275.00 g), yield per plot (3.02 kg), and yield per hectare (8.06 tonnes). Furthermore, this specific hybrid demonstrated highly significant standard heterosis for yield traits and recorded the lowest incidence of Yellow Vein Mosaic Virus (5.46%) and fruit and shoot borer (18.75%). The combining ability analysis indicated a predominance of non-additive gene action governing most yield-contributing traits. Among the parents, the female line EC305689 and the male tester *Pusa Sawani* were identified as the best general combiners for overall fruit yield. The exploitation of these superior parental lines and the specific elite hybrid EC305689 $\times$ Parbhani Kranti holds significant promise for commercial cultivation and future heterosis breeding programs aimed at simultaneously improving okra productivity and biotic stress resistance.

Keywords: Okra, Line x Tester, Heterosis, Standard Heterosis, Heterobeltiosos

Introduction

Okra (*Abelmoschus esculentus* L. Moench), universally recognized as lady's finger, is a commercially indispensable and nutritionally vital vegetable crop belonging to the family Malvaceae. The crop is primarily prized for its tender, immature green pods, which serve as a nutritional powerhouse offering a rich source of vitamins, essential minerals, and mucilaginous dietary fiber. Beyond its dietary importance, okra possesses substantial industrial and pharmacological utility, and its physiologically mature seeds contain high-quality edible oil (13–22%) and protein (20–24%).

India commands a premier position in the global agricultural landscape regarding both the total acreage and production of okra, contributing more than 60% of the total global output. Despite this leading global status, the average national productivity of okra remains critically stagnant and falls short of its true genetic potential. This persistent yield plateau is primarily driven by the continued reliance on low-yielding, open-pollinated traditional varieties and the crop's extreme vulnerability to devastating biotic stresses. Among these, Yellow Vein Mosaic Virus (YVMV) transmitted by the whitefly acts as one of the most severe bottlenecks to profitable cultivation. Consequently, there is an urgent and continuous imperative for plant breeders to develop high-yielding, superior-quality, and multi-disease-resistant hybrids.

To achieve quantum leaps in crop productivity and break the existing yield barriers, the exploitation of heterosis has proven to be a robust and highly viable breeding strategy. Heterosis breeding allows for the simultaneous integration of complex quantitative traits, such as yield components and broad-spectrum disease resistance, from genetically diverse parental lines into a single, uniform F_1 generation. However, the foundation of any successful hybrid breeding program relies entirely on the judicious selection of parental lines, making the biometrical evaluation of General Combining Ability (GCA) and Specific Combining Ability (SCA) indispensable. Therefore, the present investigation was undertaken with the objective of studying heterosis and combining ability for important quantitative characters in okra, aiming to systematically isolate elite parental genotypes and superior F_1 hybrids for immediate commercial exploitation.

Materials and Methods

Experimental Site and Plant Materials: The present investigation was carried out during the *Kharif* 2025 and Summer 2026 seasons at the Instructional-Cum-Research Farm, Department of Horticulture, College of Agriculture, Latur, under Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani. The experimental plant material comprised seven exotic okra lines (IC4507, IC3302, IC3769, EC305685, EC305689, EC305609, and EC305675) obtained from the National Bureau of Plant Genetic Resources (NBPGR), New Delhi, which served as female parents. Four established varieties (Arka *Anamika*, Arka Abhay, Parbhani Kranti, and *Pusa* Sawani) were utilized as male testers.

Crossing Programme: The parental materials were planted in the crossing block during *Kharif* 2025, adopting a spacing of 60 cm between rows and 30 cm between plants. To generate the hybrids, emasculation of the identified female flower buds was performed in the evening between 4:30 and 6:00 PM, and the buds were subsequently covered with selfing bags to prevent outcrossing. Artificial hand pollination was carried out the following morning between 7:00 and 10:00 AM using freshly collected pollen from the respective male parents. A Line $\times$ Tester (7×4) mating design was successfully executed to develop 28 unique F_1 cross combinations.

Field Evaluation and Agronomic Practices: The field evaluation was conducted during Summer 2026. A total of 41 treatments, comprising the 28 F_1 hybrids, 7 lines, 4 testers, and 2 standard commercial checks (Mahyco Bhindi No.10 and Parbhani Kranti), were evaluated. The experiment was laid out in a Randomized Block Design (RBD) with two replications. Each treatment plot consisted of 20 plants maintained at a spacing of 60 cm $\times$ 30 cm. Standard recommended agronomic practices were strictly followed, including the incorporation of Farm Yard Manure (FYM) at 15 t/ha during soil preparation and the application of fertilizers at the rate of 100:50:50 kg NPK/ha.

Observations Recorded: Data collection was performed on five randomly selected and tagged representative plants per treatment in each replication. Systematic observations were recorded for key growth parameters (plant height at final harvest, average internodal length, number of primary branches, total nodes per plant, and days to 50% flowering). Fruit characteristics (length, diameter, average fruit weight, and total fruits per plant) and yield parameters (fruit yield per plant, cumulative yield per plot, and estimated yield per hectare) were meticulously documented. Furthermore, the crop was screened for biotic stress, and the percent incidences of fruit and shoot borer infestation and Yellow Vein Mosaic Virus (YVMV) were calculated using standard indices.

Statistical Analysis: The recorded data across all quantitative characters were subjected to standard analysis of variance (ANOVA) for a Randomized Block Design (RBD) as suggested by Panse and Sukhatme (1985) to test the significance of differences among the treatments. The magnitude of heterosis over the mid-parent (relative heterosis), better parent (heterobeltiosis; Fonseca and Patterson, 1968), and standard commercial checks was estimated. Combining ability analysis was performed on traits exhibiting significant cross differences, following the procedure outlined by Kempthorne (1957), to estimate the General Combining Ability (GCA) of the parents, the Specific Combining Ability (SCA) of the crosses, and the proportional genetic variances.

Results and Discussion

The evaluation of heterosis calculated over the mid-parent (relative heterosis), better-parent (heterobeltiosis), and standard checks (Mahyco Bhindi No.10 and Parbhani Kranti) revealed substantial genetic variability among the 28 hybrids across all fourteen traits.

1. Growth parameters

Vegetative traits form the architectural foundation for subsequent yield.

- **Plant Height:** Significant positive heterosis is generally associated with greater photosynthetic area and improved plant vigor. The cross EC305685 $\times$ Arka *Anamika* recorded the highest mid-parent (19.63%) and better-parent (19.25%) heterosis, while IC3769 $\times$ Parbhani Kranti exhibited the highest standard heterosis (35.76% over check-I). Similar findings of significant positive heterosis for plant height in okra have been reported by Nagesh *et al.* (2014), Kumar *et al.* (2015), Varma *et al.* (2015), Kumar *et al.* (2017), Kerure *et al.* (2018), and Sidapara *et al.* (2021).
- **Number of Branches per Plant:** Increased branching provides more fruit-bearing sites. EC305685 $\times$ Parbhani Kranti exhibited the highest positive better-parent heterosis (18.46%), while EC305689 $\times$ Parbhani Kranti recorded the highest standard heterosis (30.19% over check-I). These results align with findings by Kumar *et al.* (2015), Bhatt *et al.* (2016), Sugani *et al.* (2018), Sidapara *et al.* (2021), and Shwetha *et al.* (2021).
- **Number of Nodes per Plant:** The cross EC305689 $\times$ Parbhani Kranti outperformed all others, recording the highest positive heterosis across all parameters, including 23.61% over the mid-parent and 22.91% over check-I. Substantial positive heterosis for this trait was similarly observed by Nagesh *et al.* (2014), Kumar *et al.* (2015), Kumar *et al.* (2017), Sugani *et al.* (2018), and Sidapara *et al.* (2021).
- **Internodal Length:** Negative heterosis is highly desirable to achieve compact plants with increased node density. The hybrid EC305689 $\times$ Parbhani Kranti exhibited the highest desirable negative heterosis (-20.20% mid-parent and -21.13% better-parent). Similar desirable negative heterosis was reported by Varma *et al.* (2015), Bhatt *et al.* (2016), Kerure *et al.* (2018), Shwetha *et al.* (2021), and Sidapara *et al.* (2021).

2. Earliness trait

- **Days for 50% Flowering:** Negative heterosis is advantageous as it indicates early maturity and faster time to market. EC305689 $\times$ Arka *Anamika* recorded the highest desirable better-parent heterosis (-12.15%), whereas IC4507 $\times$ Arka Abhay exhibited the highest standard heterosis (-9.28%). These findings are in agreement with Medagam *et al.* (2013), Sugani *et al.* (2018), Kerure *et al.* (2018), Shwetha *et al.* (2021), and Zate *et al.* (2021) [1].

3. Fruit characteristics

- **Number of Fruits per Plant:** EC305689 $\times$ Parbhani Kranti exhibited the highest positive heterosis across all metrics, reaching 37.89% over check-I. Strong non-additive gene action for fruit production has been similarly reported by Nagesh *et al.* (2014), Varma *et al.* (2015), Kumar *et al.* (2017), Paul *et al.* (2017), Sugani *et al.* (2018), and Sidapara *et al.* (2021).
- **Fruit Length:** Longer fruits directly contribute to marketable yield. EC305689 $\times$ Parbhani Kranti registered the highest better-parent (10.48%) and standard heterosis (19.02% over check-II). Positive heterosis for fruit length was also noted by Nagesh *et al.* (2014), Kumar *et al.* (2015), Varma *et al.* (2015), Sugani *et al.* (2018), and Sidapara *et al.* (2021).
- **Fruit Diameter:** EC305685 $\times$ Parbhani Kranti recorded the highest mid-parent (14.76%) and better-parent (14.19%) heterosis, while EC305689 $\times$ Parbhani Kranti excelled in standard heterosis (24.57% over check-I). These results conform to findings by Kumar *et al.* (2015), Bhatt *et al.* (2016), Kerure *et al.* (2018), Shwetha *et al.* (2021), and Sidapara *et al.* (2021).

- **Weight of Fruit:** EC305689 × Parbhani Kranti recorded the highest positive heterosis for fruit weight (25.06% mid-parent, 40.31% over check-I). Similar positive heterotic responses were reported by Nagesh *et al.* (2014), Kumar *et al.* (2015), Varma *et al.* (2015), Paul *et al.* (2017), Sugani *et al.* (2018), and Sidapara *et al.* (2021).

4. Yield parameters

- **Fruit Yield per Plant:** The hybrid EC305689 × Parbhani Kranti emerged as the most outstanding cross, exhibiting the highest positive heterosis of 26.29% over the mid-parent, 21.15% over the better-parent, 41.75% over check-I, and 32.21% over check-II. The significance of positive heterosis for yield per plant has been confirmed by Shukla *et al.* (1990), Senthil Kumar *et al.* (2010), Nagesh *et al.* (2014), Kumar *et al.* (2015), Sugani *et al.* (2018), Kerure *et al.* (2018), Sidapara *et al.* (2021), and Zate *et al.* (2021) [1].
- **Fruit Yield per Plot:** EC305689 × Parbhani Kranti recorded the highest standard heterosis for yield per plot (37.59% over check-I). These results are in agreement with Shukla *et al.* (1990), Senthil Kumar *et al.* (2010), Nagesh *et al.* (2014), Kumar *et al.* (2015), Sugani *et al.* (2018), Kerure *et al.* (2018), and Sidapara *et al.* (2021).

- **Fruit Yield per Hectare:** EC305689 × Parbhani Kranti exhibited standard heterosis of 33.09% over check-I. The importance of exploiting hybrid vigor for per-hectare productivity has been similarly emphasized by Shukla *et al.* (1990), Senthil Kumar *et al.* (2010), Nagesh *et al.* (2014), Kumar *et al.* (2015), Sugani *et al.* (2018), Kerure *et al.* (2018), Sidapara *et al.* (2021), and Zate *et al.* (2021) [1].

5. Biotic stress resistance

Strictly negative heterosis is required for these traits to confirm field resistance.

- **Fruit and Shoot Borer Infestation:** The hybrid IC3769 × Arka Anamika exhibited the highest desirable negative mid-parent (-26.17%) and better-parent (-28.83%) heterosis. Evaluated against commercial standards, EC305689 × Parbhani Kranti proved highly superior (-27.18% over check-I). Similar desirable negative heterosis for pest resistance was reported by Kerure *et al.* (2018), Sugani *et al.* (2018), Sidapara *et al.* (2021), and Zate *et al.* (2021) [1].
- **Yellow Vein Mosaic Virus (YVMV):** The cross EC305689 × Parbhani Kranti demonstrated exceptional field resistance, registering the highest desirable standard heterosis (-27.13% over check-I, -12.56% over check-II). This aligns with previous findings of favorable gene interactions conferring YVMV resistance reported by Kerure *et al.* (2018), Sugani *et al.* (2018), Sidapara *et al.* (2021), and Zate *et al.* (2021) [1].

Table No: 1 Heterosis percentage mid parent, better parent, and standard check in line x tester crosses in okra

Sr.no	Genotypes	Plant height				Number of branches per plant			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
1	IC4507 x Arka Anamika	3.15	0.71	14.99 **	2.36	8.47 **	6.33	15.27 **	8.56 *
2	IC4507 x Arka Abhay	-0.30	-2.07	12.21 **	-0.11	-2.77	-5.54	2.40	-3.55
3	IC4507 x Parbhani Kranti	2.89	2.28	17.19 **	4.32 *	19.03 **	-2.53	5.66	-0.48
4	IC4507 x Pusa Sawani	4.93 **	3.66	18.77 **	5.72 **	6.62 *	6.29	15.95 **	9.21 **
5	IC3302 x Arka Anamika	3.51	-0.47	17.68 **	4.76 *	1.57	-3.00	10.98 **	4.52
6	IC3302 x Arka Abhay	-0.76	-4.01 *	13.50 **	1.03	-16.07 **	-20.54 **	-9.09 *	-14.38 **
7	IC3302 x Parbhani Kranti	3.05	0.87	19.26 **	6.16 **	30.09 **	4.35	19.38 **	12.44 **
8	IC3302 x Pusa Sawani	11.41 **	8.37 **	28.14 **	14.06 **	3.76	1.35	15.95 **	9.21 **
9	IC3769 x Arka Anamika	-4.12 *	-8.94 **	10.51 **	-1.63	7.90 **	1.01	20.58 **	13.57 **
10	IC3769 x Arka Abhay	-3.27	-7.60 **	12.14 **	-0.18	-13.47 **	-19.68 **	-4.12	-9.69 **
11	IC3769 x Parbhani Kranti	15.75 **	11.87 **	35.76 **	20.85 **	26.66 **	0.00	19.38 **	12.44 **
12	IC3769 x Pusa Sawani	8.00 **	3.74	25.90 **	12.07 **	2.10	-2.30	16.64 **	9.85 **
13	EC305685 x Arka Anamika	19.63 **	19.25 **	30.17 **	15.87 **	16.21 **	15.16 **	19.90 **	12.92 **
14	EC305685 x Arka Abhay	2.69	1.75	12.44 **	0.09	-6.71 *	-6.71	-4.63	-10.18 **
15	EC305685 x Parbhani Kranti	12.54 **	10.18 **	24.75 **	11.04 **	41.34 **	18.46 **	21.10 **	14.05 **
16	EC305685 x Pusa Sawani	10.19 **	8.55 **	21.36 **	8.03 **	8.12 **	4.72	14.24 **	7.59 *
17	EC305689 x Arka Anamika	-10.59 **	-15.08 **	3.05	-8.27 **	-8.92 **	-13.26 **	-0.17	-5.98
18	EC305689 x Arka Abhay	-7.60 **	-11.73 **	7.12 **	-4.65 *	-20.92 **	-25.34 **	-14.07 **	-19.06 **
19	EC305689 x Parbhani Kranti	13.18 **	9.39 **	32.75 **	18.17 **	41.34 **	13.11 **	30.19 **	22.62 **

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Table No: 2

Table No: 3

Table 1. Contd....

Sr.no	Genotypes	Plant height				Number of branches per plant			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
20	EC305689 x Pusa Sawani	9.33 **	5.03 *	27.46 **	13.46 **	10.79 **	7.90 *	24.19 **	16.96 **
21	EC305609 x Arka Anamika	3.16	1.24	10.51 **	-1.63	-4.63	-6.75	-2.92	-8.56 *

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Sr.no	Genotypes	Plant height				Number of branches per plant			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
22	EC305609 x Arka Abhay	-1.26	-3.68	6.44 **	-5.25 *	-18.03 **	-19.13 **	-17.32 **	-22.13 **
23	EC305609 x Parbhani Kranti	-3.73 *	-7.19 **	5.08 *	-6.46 **	24.72 **	5.69	5.15	-0.97
24	EC305609 x Pusa Sawani	13.79 **	10.37 **	23.39 **	9.84 **	10.20 **	5.35	14.92 **	8.24 *
25	EC305675 x Arka Anamika	-1.40	-3.85	4.95 *	-6.58 **	-7.21 *	-7.67 *	-2.92	-8.56 *
26	EC305675 x Arka Abhay	-19.37 **	-21.84 **	-13.63 **	-23.11 **	-17.29 **	-18.43 **	-14.24 **	-19.22 **
27	EC305675 x Parbhani Kranti	10.00 **	5.39 *	19.32 **	6.22 **	31.10 **	8.65 *	14.24 **	7.59 *
28	EC305675 x Pusa Sawani	13.24 **	9.16 **	22.03 **	8.63 **	9.85 **	7.86 *	17.67 **	10.82 **
	SE ±	1.4607	1.6867			0.0876	0.1011		

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Sr.no	Genotypes	Number of nodes per plant				Inter nodal length			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
1	IC4507 x Arka Anamika	8.18 **	6.10 **	7.75 **	8.53 **	7.42 **	4.50 **	23.96 **	2.43
2	IC4507 x Arka Abhay	-11.27 **	-15.64 **	-14.32 **	-13.70 **	24.69 **	24.56 **	39.73 **	15.46 **
3	IC4507 x Parbhani Kranti	0.79	-1.72	-0.19	0.54	-10.16 **	-14.59 **	6.29 **	-12.17 **
4	IC4507 x Pusa Sawani	8.65 **	7.37 **	9.04 **	9.84 **	-14.73 **	-17.93 **	-0.48	-17.76 **
5	IC3302 x Arka Anamika	2.31	-0.51	2.81	3.56	14.77 **	11.07 **	31.77 **	8.88 **
6	IC3302 x Arka Abhay	-17.35 **	-22.06 **	-19.45 **	-18.87 **	27.14 **	26.60 **	41.72 **	17.11 **
7	IC3302 x Parbhani Kranti	4.45 **	0.99	4.37 *	5.13 **	-12.14 **	-16.89 **	3.42	-14.54 **
8	IC3302 x Pusa Sawani	5.82 **	3.68 *	7.14 **	7.92 **	6.48 **	1.97	23.65 **	2.17
9	IC3769 x Arka Anamika	-16.37 **	-19.63 **	-14.89 **	-14.27 **	7.71 **	4.09 **	23.49 **	2.04
10	IC3769 x Arka Abhay	-7.14 **	-13.42 **	-8.32 **	-7.65 **	12.66 **	12.02 **	25.40 **	3.62 *
11	IC3769 x Parbhani Kranti	9.52 **	4.66 *	10.83 **	11.63 **	-6.54 **	-11.71 **	9.87 **	-9.21 **
12	IC3769 x Pusa Sawani	9.88 **	6.39 **	12.65 **	13.47 **	7.04 **	2.36	24.12 **	2.57
13	EC305685 x Arka Anamika	10.07 **	9.53 **	6.95 **	7.73 **	6.47 **	2.81 *	30.97 **	8.22 **
14	EC305685 x Arka Abhay	-1.88	-4.48 *	-7.64 **	-6.97 **	-4.72 **	-10.50 **	14.01 **	-5.79 **
15	EC305685 x Parbhani Kranti	13.35 **	13.24 **	9.50 **	10.29 **	-12.87 **	-13.88 **	9.71 **	-9.34 **
16	EC305685 x Pusa Sawani	10.61 **	9.23 **	8.32 **	9.11 **	-12.39 **	-14.50 **	8.92 **	-10.00 **
17	EC305689 x Arka Anamika	-8.05 **	-10.17 **	-8.05 **	-7.39 **	-10.74 **	-13.81 **	9.79 **	-9.28 **
18	EC305689 x Arka Abhay	-2.51	-7.65 **	-5.47 **	-4.78 *	3.19 *	-3.06 *	23.49 **	2.04
19	EC305689 x Parbhani Kranti	23.61 **	20.08 **	22.91 **	23.80 **	-20.20 **	-21.13 **	0.48	-16.97 **

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Table 2. Contd....

Sr.no	Genotypes	Number of nodes per plant				Inter nodal length			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
20	EC305689 x Pusa Sawani	19.72 **	17.85 **	20.63 **	21.51 **	-16.55 **	-18.56 **	3.74 *	-14.28 **
21	EC305609 x Arka Anamika	2.68	-0.78	-3.12	-2.41	10.82 **	9.33 **	29.70 **	7.17 **
22	EC305609 x Arka Abhay	-1.81	-2.07	-10.33 **	-9.68 **	19.75 **	17.93 **	36.15 **	12.50 **
23	EC305609 x Parbhani Kranti	8.85 **	5.79 **	2.09	2.83	5.14 **	1.34	26.11 **	4.21 **
24	EC305609 x Pusa Sawani	16.48 **	11.72 **	10.79 **	11.60 **	-1.04	-3.41 *	17.12 **	-3.22 *
25	EC305675 x Arka Anamika	-1.95	-5.25 **	-7.48 **	-6.81 **	8.48 **	4.70 **	24.20 **	2.63
26	EC305675 x Arka Abhay	0.15	-0.12	-8.55 **	-7.88 **	18.70 **	17.85 **	31.93 **	9.01 **
27	EC305675 x Parbhani Kranti	11.20 **	8.07 **	4.29 *	5.05 *	13.60 **	7.17 **	33.36 **	10.20 **
28	EC305675 x Pusa Sawani	11.72 **	7.16 **	6.27 **	7.04 **	-11.24 **	-15.23 **	2.79	-15.07 **
	SE ±	0.2078	0.2399			0.0915	0.1056		

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Sr.no	Genotypes	Days for 50% flowering				Number of fruits per plant			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2

(continued on next page)

Sr.no	Genotypes	Days for 50% flowering				Number of fruits per plant			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
1	IC4507 x Arka <i>Anamika</i>	-0.54	-2.13	-5.15 **	-5.15 **	17.02 **	4.15 *	14.00 **	5.38 *
2	IC4507 x Arka Abhay	-5.38 **	-6.38 **	-9.28 **	-9.28 **	3.85	-5.81 **	3.09	-4.71 *
3	IC4507 x Parbhani Kranti	0.53	0.00	-2.06	-2.06	1.51	0.33	9.82 **	1.51
4	IC4507 x <i>Pusa</i> Sawani	-3.74 **	-4.26 **	-7.22 **	-7.22 **	11.88 **	10.30 **	20.73 **	11.60 **
5	IC3302 x Arka <i>Anamika</i>	2.76 *	2.20	-4.12 **	-4.12 **	18.23 **	4.48 *	16.25 **	7.46 **
6	IC3302 x Arka Abhay	-1.10	-2.17	-7.22 **	-7.22 **	-0.73	-10.62 **	-0.55	-8.07 **
7	IC3302 x Parbhani Kranti	0.54	-2.11	-4.12 **	-4.12 **	11.33 **	9.15 **	21.45 **	12.27 **
8	IC3302 x <i>Pusa</i> Sawani	-0.55	-2.15	-6.19 **	-6.19 **	6.93 **	4.58 *	16.36 **	7.56 **
9	IC3769 x Arka <i>Anamika</i>	4.86 **	3.19 *	0.00	0.00	21.68 **	7.91 **	19.09 **	10.08 **
10	IC3769 x Arka Abhay	-2.15	-3.19 *	-6.19 **	-6.19 **	-2.02	-11.47 **	-2.29	-9.68 **
11	IC3769 x Parbhani Kranti	2.65 *	2.11	0.00	0.00	11.13 **	9.39 **	20.73 **	11.60 **
12	IC3769 x <i>Pusa</i> Sawani	5.88 **	5.32 **	2.06	2.06	8.26 **	6.29 **	17.31 **	8.44 **
13	EC305685 x Arka <i>Anamika</i>	1.52	-5.66 **	3.09 *	3.09 *	27.49 **	17.97 **	18.40 **	9.45 **
14	EC305685 x Arka Abhay	-1.01	-7.55 **	1.03	1.03	2.50	-3.26	-2.91	-10.25 **
15	EC305685 x Parbhani Kranti	0.50	-4.72 **	4.12 **	4.12 **	14.14 **	10.65 **	18.29 **	9.34 **
16	EC305685 x <i>Pusa</i> Sawani	-2.51 *	-8.49 **	0.00	0.00	12.93 **	9.74 **	16.73 **	7.90 **
17	EC305689 x Arka <i>Anamika</i>	-5.05 **	-12.15 **	-3.09 *	-3.09 *	5.76 **	-5.17 *	2.07	-5.65 **
18	EC305689 x Arka Abhay	-2.51 *	-9.35 **	0.00	0.00	-6.25 **	-14.32 **	-7.78 **	-14.76 **
19	EC305689 x Parbhani Kranti	-3.96 **	-9.35 **	0.00	0.00	28.54 **	28.11 **	37.89 **	27.46 **

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Table 3. Contd....

Sr.no	Genotypes	Days for 50% flowering				Number of fruits per plant			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
20	EC305689 x <i>Pusa</i> Sawani	-4.00 **	-10.28 **	-1.03	-1.03	26.25 **	25.51 **	35.09 **	24.87 **
21	EC305609 x Arka <i>Anamika</i>	9.78 **	8.60 **	4.12 **	4.12 **	13.38 **	13.09 **	-2.95	-10.29 **
22	EC305609 x Arka Abhay	4.86 **	4.30 **	0.00	0.00	-2.12	-3.92	-14.40 **	-20.87 **
23	EC305609 x Parbhani Kranti	8.51 **	7.37 **	5.15 **	5.15 **	10.34 **	-0.54	6.33 **	-1.71
24	EC305609 x <i>Pusa</i> Sawani	4.30 **	4.30 **	0.00	0.00	21.85 **	10.09 **	17.09 **	8.24 **
25	EC305675 x Arka <i>Anamika</i>	3.30 *	3.30 *	-3.09 *	-3.09 *	20.43 **	20.38 **	2.87	-4.91 *
26	EC305675 x Arka Abhay	6.01 **	5.43 **	0.00	0.00	3.75	1.63	-9.45 **	-16.30 **
27	EC305675 x Parbhani Kranti	7.53 **	5.26 **	3.09 *	3.09 *	19.17 **	7.21 **	14.62 **	5.95 **
28	EC305675 x <i>Pusa</i> Sawani	10.87 **	9.68 **	5.15 **	5.15 **	20.68 **	8.82 **	15.75 **	6.99 **
SE $\pm$		0.6041	0.6975			0.2591	0.2992		

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Table No: 4

Sr.no	Genotypes	Fruit Length				Fruit Diameter			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
1	IC4507 x Arka <i>Anamika</i>	9.70 **	8.33 **	11.02 **	12.86 **	-2.05	-2.51	7.61 *	0.32
2	IC4507 x Arka Abhay	-16.81 **	-17.73 **	-13.79 **	-12.36 **	-26.11 **	-26.58 **	-19.72 **	-25.16 **
3	IC4507 x Parbhani Kranti	-2.73	-3.11	0.08	1.74	-1.95	-4.43	4.50	-2.58
4	IC4507 x <i>Pusa</i> Sawani	10.00 **	7.82 **	10.49 **	12.32 **	7.05 **	5.70	15.57 **	7.74 *
5	IC3302 x Arka <i>Anamika</i>	2.58	0.00	5.21 **	6.95 **	-4.52	-8.12 **	9.69 **	2.26
6	IC3302 x Arka Abhay	-12.94 **	-13.10 **	-8.58 **	-7.07 **	-9.89 **	-14.20 **	2.42	-4.52
7	IC3302 x Parbhani Kranti	2.24	1.31	6.59 **	8.35 **	5.43 *	-1.45	17.65 **	9.68 **
8	IC3302 x <i>Pusa</i> Sawani	4.09 *	0.73	5.98 **	7.73 **	5.97 *	0.29	19.72 **	11.61 **
9	IC3769 x Arka <i>Anamika</i>	2.52	-0.72	5.90 **	7.65 **	3.89	3.09	15.57 **	7.74 *
10	IC3769 x Arka Abhay	-13.69 **	-14.45 **	-8.74 **	-7.23 **	-19.18 **	-20.68 **	-11.07 **	-17.10 **
11	IC3769 x Parbhani Kranti	0.60	-0.99	5.61 **	7.36 **	12.18 **	8.02 **	21.11 **	12.90 **
12	IC3769 x <i>Pusa</i> Sawani	3.87 *	-0.15	6.51 **	8.27 **	3.48	0.93	13.15 **	5.48
13	EC305685 x Arka <i>Anamika</i>	12.06 **	7.00 **	6.91 **	8.68 **	12.86 **	10.03 **	21.45 **	13.23 **
14	EC305685 x Arka Abhay	-9.10 **	-15.13 **	-11.06 **	-9.59 **	9.27 **	7.69 *	16.26 **	8.39 **
15	EC305685 x Parbhani Kranti	10.37 **	3.74 *	7.16 **	8.93 **	14.76 **	14.19 **	19.72 **	11.61 **
16	EC305685 x <i>Pusa</i> Sawani	9.99 **	5.79 **	4.11 *	5.83 **	6.38 *	5.52	12.46 **	4.84

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Sr.no	Genotypes	Fruit Length				Fruit Diameter			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
17	EC305689 x Arka <i>Anamika</i>	-12.07 **	-14.58 **	-9.48 **	-7.98 **	-20.79 **	-23.24 **	-9.69 **	-15.81 **
18	EC305689 x Arka Abhay	-20.39 **	-20.84 **	-16.10 **	-14.72 **	-14.11 **	-17.65 **	-3.11	-9.68 **
19	EC305689 x Parbhani Kranti	11.89 **	10.48 **	17.08 **	19.02 **	12.50 **	5.88 *	24.57 **	16.13 **

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Table 4. Contd....

Sr.no	Genotypes	Fruit Length				Fruit Diameter			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
20	EC305689 x Pusa Sawani	11.94 **	7.94 **	14.40 **	16.29 **	4.01	-0.88	16.61 **	8.71 **
21	EC305609 x Arka <i>Anamika</i>	-9.89 **	-14.12 **	-14.19 **	-12.77 **	-9.47 **	-11.60 **	-2.42	-9.03 **
22	EC305609 x Arka Abhay	-21.67 **	-27.01 **	-23.51 **	-22.24 **	-15.26 **	-16.35 **	-9.69 **	-15.81 **
23	EC305609 x Parbhani Kranti	-0.59	-6.73 **	-3.66 *	-2.07	-11.92 **	-12.50 **	-7.96 *	-14.19 **
24	EC305609 x Pusa Sawani	12.44 **	7.93 **	6.22 **	7.98 **	12.09 **	11.36 **	18.69 **	10.65 **
25	EC305675 x Arka <i>Anamika</i>	4.02 *	-0.49	-0.57	1.07	-7.46 **	-12.54 **	-3.46	-10.00 **
26	EC305675 x Arka Abhay	-15.54 **	-20.99 **	-17.20 **	-15.83 **	1.68	-2.88	4.84	-2.26
27	EC305675 x Parbhani Kranti	6.19 **	0.00	3.29	5.00 *	11.99 **	9.00 **	13.15 **	5.48
28	EC305675 x Pusa Sawani	9.52 **	5.54 **	3.86 *	5.58 **	12.50 **	8.12 **	15.22 **	7.42 *
	SE $\pm$	0.1897	0.2190			0.0384	0.0444		

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Table No: 5

Sr.no	Genotypes	Weight of fruit				Fruit yield per plant			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
1	IC4507 x Arka <i>Anamika</i>	7.72 *	5.58	16.07 **	7.35 *	8.83 **	6.64	15.98 **	8.17 *
2	IC4507 x Arka Abhay	-5.67	-7.71 *	1.46	-6.16	-7.84 *	-9.48 *	-1.55	-8.17 *
3	IC4507 x Parbhani Kranti	1.34	0.26	10.23 *	1.94	1.07	0.47	9.28 *	1.92
4	IC4507 x Pusa Sawani	9.66 **	8.72 *	19.53 **	10.55 **	13.06 **	12.80 **	22.68 **	14.42 **
5	IC3302 x Arka <i>Anamika</i>	3.71	-0.37	14.15 **	5.57	4.15	0.23	13.14 **	5.53
6	IC3302 x Arka Abhay	-13.04 **	-16.61 **	-4.45	-11.63 **	-10.77 **	-13.93 **	-2.84	-9.38 *
7	IC3302 x Parbhani Kranti	8.98 **	5.66	21.06 **	11.96 **	8.54 **	5.94	19.59 **	11.54 **
8	IC3302 x Pusa Sawani	5.01	2.02	16.89 **	8.11 *	4.90	2.74	15.98 **	8.17 *
9	IC3769 x Arka <i>Anamika</i>	7.67 *	1.40	21.13 **	12.03 **	11.21 **	4.57	23.97 **	15.63 **
10	IC3769 x Arka Abhay	-14.52 **	-19.63 **	-3.99	-11.21 **	-16.49 **	-21.30 **	-6.70	-12.98 **
11	IC3769 x Parbhani Kranti	9.21 **	3.79	23.98 **	14.67 **	8.78 **	3.70	22.94 **	14.66 **
12	IC3769 x Pusa Sawani	4.10	-0.87	18.42 **	9.53 **	4.32	-0.22	18.30 **	10.34 **
13	EC305685 x Arka <i>Anamika</i>	16.68 **	14.65 **	21.03 **	11.93 **	14.43 **	13.58 **	18.56 **	10.58 **
14	EC305685 x Arka Abhay	-9.47 **	-10.88 **	-6.27	-13.32 **	-9.93 **	-10.81 **	-6.44	-12.74 **
15	EC305685 x Parbhani Kranti	16.03 **	12.95 **	21.53 **	12.39 **	16.18 **	13.67 **	22.16 **	13.94 **
16	EC305685 x Pusa Sawani	9.22 **	6.10	14.65 **	6.03	8.42 *	5.71	14.43 **	6.73
17	EC305689 x Arka <i>Anamika</i>	-10.27 **	-14.59 **	-0.25	-7.75 *	-11.99 **	-16.74 **	-2.58	-9.13 *
18	EC305689 x Arka Abhay	-20.04 **	-24.02 **	-11.26 **	-17.93 **	-21.02 **	-25.11 **	-12.37 **	-18.27 **
19	EC305689 x Parbhani Kranti	25.06 **	20.14 **	40.31 **	29.76 **	26.29 **	21.15 **	41.75 **	32.21 **

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Table 5. Contd....

Sr.no	Genotypes	Weight of fruit				Fruit yield per plant			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
20	EC305689 x Pusa Sawani	20.46 **	15.96 **	35.42 **	25.25 **	19.22 **	14.76 **	34.28 **	25.24 **
21	EC305609 x Arka <i>Anamika</i>	-8.06 *	-11.07 **	-6.13	-13.18 **	-10.27 **	-14.81 **	-11.08 **	-17.07 **
22	EC305609 x Arka Abhay	-15.16 **	-17.79 **	-13.54 **	-20.04 **	-18.81 **	-23.10 **	-19.33 **	-24.76 **
23	EC305609 x Parbhani Kranti	5.06	0.70	8.34 *	0.20	2.94	-3.60	3.61	-3.37
24	EC305609 x Pusa Sawani	13.14 **	8.21 *	16.93 **	8.14 *	13.78 **	6.19	14.95 **	7.21
25	EC305675 x Arka <i>Anamika</i>	-1.82	-5.10	0.18	-7.35 *	-2.67	-5.43	-1.29	-7.93 *
26	EC305675 x Arka Abhay	-12.72 **	-15.49 **	-11.12 **	-17.80 **	-12.04 **	-14.74 **	-10.57 *	-16.59 **

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Sr.no	Genotypes	Weight of fruit				Fruit yield per plant			
27	EC305675 x Parbhani Kranti	10.19 **	5.53	13.54 **	5.01	9.64 **	5.04	12.89 **	5.29
28	EC305675 x Pusa Sawani	13.77 **	8.74 *	17.50 **	8.67 *	9.73 **	4.76	13.40 **	5.77
	SE ±	0.4494	0.5189			6.4561	7.4549		

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Table No: 6

Sr.no	Genotypes	Fruit yield per plot				Fruit yield per hectore			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
1	IC4507 x Arka Anamika	8.38 **	8.05 **	22.32 **	11.88 **	9.42 **	8.05 *	17.41 **	10.40 **
2	IC4507 x Arka Abhay	-2.66	-7.49 **	4.10	-4.79	-12.62 **	-13.74 **	-6.27	-11.87 **
3	IC4507 x Parbhani Kranti	-1.02	-1.62	10.71 **	1.25	-0.65	-1.29	7.26 *	0.85
4	IC4507 x Pusa Sawani	8.29 **	7.09 **	20.50 **	10.21 **	9.69 **	8.73 **	18.15 **	11.09 **
5	IC3302 x Arka Anamika	-0.69	-2.52	14.58 **	4.79	6.32 *	4.02	15.18 **	8.30 **
6	IC3302 x Arka Abhay	-11.13 **	-17.25 **	-2.73	-11.04 **	-10.86 **	-12.82 **	-3.47	-9.23 **
7	IC3302 x Parbhani Kranti	6.18 **	3.29	21.41 **	11.04 **	9.54 **	7.82 *	19.39 **	12.26 **
8	IC3302 x Pusa Sawani	4.70 *	1.36	19.13 **	8.96 **	6.37 *	4.47	15.68 **	8.77 **
9	IC3769 x Arka Anamika	5.73 *	2.26	23.92 **	13.33 **	7.80 **	2.98	19.80 **	12.65 **
10	IC3769 x Arka Abhay	-9.31 **	-16.73 **	0.91	-7.71 **	-15.86 **	-19.65 **	-6.52	-12.10 **
11	IC3769 x Parbhani Kranti	6.86 **	2.44	24.15 **	13.54 **	11.37 **	7.02 *	24.50 **	17.07 **
12	IC3769 x Pusa Sawani	3.65	-1.13	19.82 **	9.58 **	3.55	-0.71	15.51 **	8.61 **
13	EC305685 x Arka Anamika	16.26 **	10.06 **	24.60 **	13.96 **	13.30 **	11.76 **	18.40 **	11.33 **
14	EC305685 x Arka Abhay	-0.11	-0.22	1.14	-7.50 **	-7.90 **	-9.12 **	-3.80	-9.54 **
15	EC305685 x Parbhani Kranti	12.02 **	6.97 *	18.91 **	8.75 **	10.87 **	8.69 **	16.58 **	9.62 **
16	EC305685 x Pusa Sawani	10.68 **	6.21 *	16.86 **	6.88 *	8.69 **	6.80 *	14.03 **	7.21 *
17	EC305689 x Arka Anamika	-14.62 **	-17.72 **	0.46	-8.13 **	-9.88 **	-12.31 **	-1.82	-7.68 *
18	EC305689 x Arka Abhay	-16.62 **	-23.69 **	-6.83 *	-14.79 **	-19.85 **	-22.03 **	-12.71 **	-17.92 **
19	EC305689 x Parbhani Kranti	17.97 **	12.69 **	37.59 **	25.83 **	21.42 **	18.87 **	33.09 **	25.14 **

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis.

Sr.no	Genotypes	Fruit yield per plot				Fruit yield per hectore			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
20	EC305689 x Pusa Sawani	13.05 **	7.46 **	31.21 **	20.00 **	16.86 **	14.15 **	27.81 **	20.17 **
21	EC305609 x Arka Anamika	-13.50 **	-18.11 **	-7.29 *	-15.21 **	-4.84	-9.74 **	-4.37	-10.09 **
22	EC305609 x Arka Abhay	-14.51 **	-14.61 **	-13.44 **	-20.83 **	-13.51 **	-17.93 **	-13.12 **	-18.31 **
23	EC305609 x Parbhani Kranti	6.44 **	1.64	12.98 **	3.33	4.32	-1.62	5.53	-0.78
24	EC305609 x Pusa Sawani	11.97 **	7.45 **	18.22 **	8.13 **	11.86 **	5.72	12.87 **	6.13
25	EC305675 x Arka Anamika	-4.62	-10.66 **	1.14	-7.50 **	-1.20	-6.93 *	-1.40	-7.29 *
26	EC305675 x Arka Abhay	-13.99 **	-15.06 **	-13.90 **	-21.25 **	-11.91 **	-16.99 **	-12.13 **	-17.38 **
27	EC305675 x Parbhani Kranti	10.63 **	4.51	16.17 **	6.25 *	11.79 **	4.69	12.29 **	5.59
28	EC305675 x Pusa Sawani	13.63 **	7.87 **	18.68 **	8.54 **	17.17 **	9.97 **	17.41 **	10.40 **
	SE ±	0.0535	0.0618			0.1671	0.1930		

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis

Table No: 7

Table 6. Contd....

Sr.no	Genotypes	Fruit and shoot borer				Yellow vein mosaic virus			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
1	IC4507 x Arka Anamika	-9.68 *	-16.50 **	-16.50 **	-13.11 **	-6.71 **	-6.90 **	-22.67 **	-7.20 **
2	IC4507 x Arka Abhay	6.13	-0.48	-3.50	0.42	9.46 **	2.08	-2.00	17.60 **
3	IC4507 x Parbhani Kranti	4.30	2.61	-9.98 *	-6.32	2.77	1.12	-16.00 **	0.80
4	IC4507 x Pusa Sawani	-10.85 **	-15.40 **	-20.02 **	-16.77 **	-8.73 **	-8.95 **	-24.00 **	-8.80 **
5	IC3302 x Arka Anamika	0.48	-0.94	1.94	6.08	19.28 **	17.65 **	-2.67	16.80 **
6	IC3302 x Arka Abhay	5.89	2.83	5.83	10.12 *	8.80 **	0.00	-4.00	15.20 **
7	IC3302 x Parbhani Kranti	-6.48	-13.38 **	-10.85 *	-7.23	-6.34 **	-6.38 *	-24.67 **	-9.60 **

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Sr.no	Genotypes	Fruit and shoot borer				Yellow vein mosaic virus			
8	IC3302 x <i>Pusa Sawani</i>	-16.90 **	-20.28 **	-17.96 **	-14.63 **	-3.21	-4.95 *	-20.67 **	-4.80
9	IC3769 x Arka <i>Anamika</i>	-26.17 **	-28.83 **	-23.30 **	-20.19 **	-2.78	-6.85 **	-22.93 **	-7.52 **
10	IC3769 x Arka Abhay	-6.11	-10.81 **	-3.88	0.02	6.56 **	-4.65 *	-8.47 **	9.84 **
11	IC3769 x Parbhani Kranti	-10.81 **	-19.10 **	-12.82 **	-9.27 *	-3.29	-6.05 *	-24.47 **	-9.36 **
12	IC3769 x <i>Pusa Sawani</i>	-10.43 **	-15.93 **	-9.40 *	-5.72	-0.38	-4.95 *	-20.67 **	-4.80
13	EC305685 x Arka <i>Anamika</i>	-10.50 **	-13.75 **	-13.75 **	-10.24 *	6.90 **	5.56 *	-12.67 **	4.80
14	EC305685 x Arka Abhay	9.52 *	7.13	3.88	8.10	4.91 *	-3.47	-7.33 **	11.20 **
15	EC305685 x Parbhani Kranti	-12.85 **	-15.20 **	-21.36 **	-18.17 **	-6.21 **	-6.36 *	-24.47 **	-9.36 **
16	EC305685 x <i>Pusa Sawani</i>	-0.47	-1.42	-6.80	-3.01	-4.06	-5.67 *	-21.27 **	-5.52 *
17	EC305689 x Arka <i>Anamika</i>	4.63	0.00	0.00	4.06	15.86 **	13.30 **	-6.27 **	12.48 **
18	EC305689 x Arka Abhay	12.51 **	9.13 *	5.83	10.12 *	18.51 **	8.06 **	3.73	24.48 **
19	EC305689 x Parbhani Kranti	-18.58 **	-20.11 **	-27.18 **	-24.23 **	-8.61 **	-9.37 **	-27.13 **	-12.56 **

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis

Table 7. Contd....

Sr.no	Genotypes	Fruit and shoot borer				Yellow vein mosaic virus			
		MPH	BPH	SH1	SH2	MPH	BPH	SH1	SH2
20	EC305689 x <i>Pusa Sawani</i>	-11.12 **	-12.71 **	-17.48 **	-14.12 **	-7.55 **	-9.98 **	-24.87 **	-9.84 **
21	EC305609 x Arka <i>Anamika</i>	9.09 *	7.55	10.68 *	15.17 **	14.00 **	12.27 **	-4.20 *	14.96 **
22	EC305609 x Arka Abhay	11.72 **	8.49 *	11.65 **	16.19 **	9.71 **	3.61	-0.53	19.36 **
23	EC305609 x Parbhani Kranti	7.96 *	0.00	2.91	7.09	-3.78	-6.56 **	-20.27 **	-4.32
24	EC305609 x <i>Pusa Sawani</i>	-11.83 **	-15.42 **	-12.95 **	-9.42 *	-7.03 **	-8.05 **	-21.53 **	-5.84 *
25	EC305675 x Arka <i>Anamika</i>	14.55 **	10.91 **	18.45 **	23.26 **	-8.47 **	-10.85 **	-22.20 **	-6.64 **
26	EC305675 x Arka Abhay	12.45 **	7.27	14.56 **	19.22 **	0.40	-4.17	-8.00 **	10.40 **
27	EC305675 x Parbhani Kranti	-4.39	-12.93 **	-7.01	-3.23	-4.10	-7.87 **	-19.60 **	-3.52
28	EC305675 x <i>Pusa Sawani</i>	-6.91	-12.25 **	-6.29	-2.49	-9.33 **	-11.31 **	-22.60 **	-7.12 **
SE $\pm$		0.8952	1.0337			0.1279	0.1477		

*and ** significance at 5% and 1% level. M_{PH} = Mid parent heterosis, B_{PH} = Better parent heterosis, S_H = Standard check heterosis

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