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# Heterosis for fruit yield and its components over environments in okra [*Abelmoschus esculentus* (L.) Moench]

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## ABSTRACT

**Heterosis for fruit yield and its components was studied in a set of line x tester crosses of 12 lines and 4 testers, over better parent and standard check (Arka Anamika). For fruit yield, maximum heterosis of 20.04 % (PB-266 x Arka Abhay) and 32.08 % (KS-404 x Arka Abhay) was observed over better parent and standard check, respectively. Out of 48 hybrids, 4 hybrids showed significant positive heterosis over better parent, while 31 hybrids exceeded the standard check for fruit yield over the environments. Maximum heterosis over better parent of 66.67 % was observed for number of nodes at first flowering in the hybrid JOL-1 x Punjab-7 whereas, the highest standard heterosis was depicted by the hybrid KS-404 x Punjab-7 of 49.62 % for number of fruits per plant. In general, the present study revealed that magnitude of heterotic effects were high for fruit yield per plant and fruit length; moderate for internodal length and number of nodes per plant and low for plant height, number of nodes at first flowering and 10-fruits weight.**

**Key words :** Heterosis, Standard heterosis, Line x tester and okra

## INTRODUCTION

Okra [*Abelmoschus esculentus* (L.) Moench] is the important vegetable crop of India, is grown successfully during both summer and rainy seasons for its green tender fruits. It is a good source of vitamin A, B, and C, protein and mineral elements. Its fast growth, short duration and photoinsensitive nature, genetical study can be completed in short span of time. Moreover, its large flower and monadelphous nature of the stamens make emasculation and pollination process easier. With the ease in fruit set and good number of seeds per pod, okra can be well exploited for hybrid vigour.

Exploitation of hybrid vigour is an important tool for making genetical improvement of yield and its attributing characters in okra. The magnitude of heterosis for fruit yield and its components provides a basis for determining genetic diversity and also serves as a guide for the choice of desirable parents for developing superior $F_1$ hybrids to exploit hybrid vigour and for building gene pools to be employed in breeding programme. Keeping this in view, the present investigation was carried out to know the extent of heterobeltiosis and standard heterosis for fruit yield and its components in okra crosses obtained from 12 lines x 4 testers mating method.

## MATERIALS AND METHODS

Twelve lines of okra (AOL-03-1, HRB-108-2, JOL-1, JOL-02-10, JOL-05(K)-2, JOL-06(K)-2, JOL-2K-19, Kamini, KS-404, Pant Bhindi, PB-266 and VRO-5) were crossed with four testers *viz.*, Arka Abhay, GO-2, Punjab-7 and Red Bhindi in a line x tester fashion to produce 48 single cross hybrids. Thus, 16 parental lines and 48 hybrids along with a standard check (Arka Anamika) were evaluated in a Randomized Block Design with three replications at three sowing dates (environments) *i.e.* early summer, 2007 ($E_1$), summer, 2007 ($E_2$) and late summer, 2007 ($E_3$) at Instructional Farm, Department of Agronomy, Junagadh Agricultural University, Junagadh. Each genotype was sown in a single row of 3 m length spaced at 60 cm apart with plant to plant spacing of 30 cm. All the recommended agronomic practices and plant protection measures were followed to raise the good crop. Data for morphological characters were recorded on five randomly selected competitive plants/genotype/replication/environment on eleven characters (Table 1). Heterotic effects were computed over three environments as the percentage increase(+) or decrease(-) of $F_1$ mean values over better parent (BP) and standard check (Arka Anamika) for fruit yield and its components using standard procedure.

## RESULTS AND DISCUSSION

The pooled analysis of variance (Table 1) revealed large variability and indicated highly significant variances of parents as well as hybrids for all the traits. The contrast

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