

## Line x tester analysis for combining ability in okra [*Abelmoschus esculentus* (L.) Moench]

M.D. KHANPARA<sup>1</sup>, L.L. JIVANI\*, J.H. VACHHANI, H.G. SHEKHAT AND D.R. MEHTA<sup>2</sup>  
Main Oilseeds Research Station, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA

### ABSTRACT

Eight lines and four testers of okra were evaluated for general and specific combining ability through line x tester mating method. The gene action was observed predominantly additive for days to 50 % flowering, days to first picking, number of nodes per plant, plant height, number of branches per plant, fruit length and fruit yield per plant, while predominance of non-additive gene action was observed for internodal length and fruit girth. The parents Pant Bhindi and D-1-87-5 were good general combiners for fruit yield per plant, number of nodes per plant and number of fruits per plant. KS-404 and BO-13 also were found good general combiners for early flowering and picking. Similarly, BO-13 and IC-990049 for shorter internodal length, Chhodawadi and Parbhani Kranti for tall plant, Pant Bhindi and EC-329372 for more number of branches per plant, Parbhani Kranti for fruit length, Chhodawadi and Pant Bhindi for fruit girth were found good general combiners. None of the crosses was proved to be good for fruit yield per plant.

**Key words :** Combining ability, Gca, Sca, Gene action, L x t analysis, Okra

### INTRODUCTION

Okra [*Abelmoschus esculentus* (L.) Moench] is one of the most important vegetable crops of India. The information about combining ability is of immense helping to the plant breeders in choice of suitable parents for hybridization programme and provides valuable information regarding cross combinations to be exploited commercially. The nature and magnitude of gene action will enable the breeder in deciding suitable breeding methodology to be adopted in the crop improvement programmes. Therefore, present investigation was undertaken to estimate combining ability for fruit yield and its component characters in okra.

### MATERIALS AND METHODS

Eight lines (females) viz., Chhodawadi, HRB-108-2, D-1-87-5, KS-404, Pant Bhindi, BO-13, EC-329372 and IC-990049 were crossed with four testers (males) namely; JOL-1, GO-2, Parbhani Kranti and HRB-55 in a line x tester fashion during summer season of 2005 to produce 32 F<sub>1</sub> hybrids. The experimental material, consisting of 44 entries including 12 parents (8 lines and 4 testers) and their 32 crosses, was planted in a Randomized Block Design with three replications during *kharif* season of 2005 at Instructional Farm, Junagadh Agricultural University, Junagadh. Each entry was represented by a single row plot of 10 plants, spaced at 45 x 30 cm. All the recommended agronomic practices and plant protection measures were followed to raise the

good crop. The observations were recorded on five randomly selected competitive plants for fruit yield and its component characters (Table 1). The data were analyzed for combining ability following Kempthorne (1957).

### RESULTS AND DISCUSSION

The analysis of variance for combining ability (Table 1) revealed that mean squares due to lines were significant for all the traits. Mean squares due to testers were also significant for all the characters except number of nodes per plant, number of branches per plant and fruit yield per plant, which indicated the existence of genetic diversity among the parents. However, mean squares due to lines were larger in magnitude than those due to testers for all the traits except internodal length and fruit length, indicating comparatively much diversity among the lines than the testers for these characters. While, line x tester interaction mean squares were significant for days to 50 % flowering, days to first picking, number of nodes per plant, internodal length, fruit length, fruit girth and number of fruits per plant, when tested against error mean squares. The lower magnitude of variances in the line x tester interaction suggested greater uniformity among the crosses than parents. Whereas, mean squares due to lines for days to 50 % flowering, days to first picking, number of nodes per plant, fruit girth and number of fruits per plant were significant when tested against line x tester interaction. The mean squares due to testers and line x tester

\* Author for correspondence.

<sup>1</sup>Regional Cotton Research Station, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA

<sup>2</sup>Department of Agricultural Botany, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA