

Heterotic study for seed cotton yield and fibre quality parameters in *Gossypium hirsutum* L.

S.P. PANDIT², V.A. LODAM¹, B.A. SAKHARE² AND M.R. WANDHARE²

¹N.M. College Agriculture, Navsari Agricultural University, NAVSARI (GUJARAT) INDIA

²Department of Agricultural Botany, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, AKOLA (M.S.) INDIA

Email : lodam000agricos@gmail.com

An field experiment was conducted at Cotton Research Unit, Department of Agricultural Botany, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during *Kharif* 2007-2008 to estimate heterosis for seed cotton yield and fibre quality parameters. Twenty two hybrids were obtained by crossing two lines and eleven testers in a line x tester mating design. These parents and hybrids were grown in Randomized Block Design with three replications. The parents vs. hybrids indicated substantial amount of heterosis present in the population. Among 22 hybrids, hybrid AKH-0601 x BBP-1 exhibited highest economic heterosis (52.4%) for seed cotton yield which was followed by AKH-0601 x BBP-6 (47.5%) and AKH-0601 x BBPSPS-25 (45.9%). These hybrids also exhibited significant and desirable standard heterosis for yield components traits as well as for fibre quality parameters.

Key words : Heterosis, Seed cotton, Fibre quality parameters

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INTRODUCTION

Cotton is an important commercial crop which provides raw material in the form of lint to the textile industry. It is grown in tropical and sub-tropical regions of more than 110 countries the over world. In India, nearly 70 per cent of the area is occupied with commercially hybrids. Cotton had tremendous potential for improvement of quantitative and qualitative characters by better commercial exploitation of hybrid vigour (Chinnadurai and Rangaswamy, 1974). Therefore, present investigation was undertaken to find out the extent of heterosis for seed cotton yield and fibre quality traits in upland cotton (*G. hirsutum* L.).

RESEARCH METHODOLOGY

An experiment was conducted during *Kharif*, 2007-2008 at Cotton Research Unit, Akola. The experimental materials comprised of 2 lines (females) namely; AKH 081 and AKH 0601 and 11 testers (males) namely; BBP-1, BBPSPS-4, BBP-6, BBP-8, BBPSPS-10, BBPSPS-25, BBPSPS-41, BBP-109, BBP-126, BBP-187 and BBP-188 were taken to generate 22 crosses by Line x Tester crossing method. These 22 hybrids along with 13 parents were grown in Randomized Block Design with

three replications. Each plant is spaced planted of 90 cm between rows and 60 cm between plants. Five plants were chosen to record the data on plant height (cm), number of sympodia per plant, number of bolls per plant, boll weight (g), seed index, lint index, seed cotton yield per plant, 2.5 per cent span length, micronaire value, fibre strength, uniformity ratio and ginning percentage. Heterosis was estimated over the standard parent (PKV Hy. 5) of Meredith and Bridge (1972).

RESEARCH FINDINGS AND ANALYSIS

The analysis of variance for mean square due to parents for all the characters were found significant indicating considerable amount of variability among the thirteen genotypes for various traits (Table 1). The mean square due to hybrids as well as parents vs. hybrids comparison for all the characters were found highly significant indicating substantial amount of heterosis present in the population. The measure of heterosis over standard parent (PKV Hy. 5) are rational parameters for assessing its practically utility. Therefore, in present investigation heterosis is reported over standard parent. Several workers reported substantial heterosis for various agronomic and quality traits.