

Understanding the Genetic Variability of Seed Oil, Seed Protein and Seed Index Traits in Upland Cotton (*G. hirsutum*.L)

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ABSTRACT

The genetic variability of seed oil, seed protein and seed index characters were studied in twenty eight hybrids synthesised using four adapted varieties as females (lines) and the seven *G. hirsutum* accessions as males (testers) in Line X Tester mating design. It was found that seed oil, seed protein and seed index are predominantly controlled by non-additive gene action. The oil content of lines ranged from 19.27 per cent in MCU 5 to 21.04 per cent in MCU 12 and in testers it was between 17.74 per cent (F 1861) and 22.07 per cent (TCH 1641). The mean values were 16.77 and 20.03 for lines and testers respectively. In hybrids it varied between 17.01 percent (MCU 12 x TCH 1641) and 22.90 per cent (Surabhi x TCH 1646). The mean was 20.94 per cent for hybrids. The protein content in lines ranged from 19.39 per cent to 27.69 per cent and varied from 20.83 to 26.87 per cent in testers. In case of hybrids it varied from 14.18 per cent (Surabhi x TCH 1646) to 31.71 per cent (MCU 5 x SOCC17). The mean was 22.34 per cent for hybrids. The mean yield for lines was 90.35 g per plant and for testers it was 79.47g per plant. The seed index varied from 8.87g in SVPR 2 to 10.44 g in MCU 12 among the lines and 8.05 g in F 1861 to 11.11 g in F 776 among the testers. The present study indicated that to breed intra-*hirsutum* hybrids for seed oil, focus may be given to improve the characters like seed protein and seed index as they have positive correlation with each other.

INTRODUCTION

Cotton (*Gossypium* spp.) is an important cash crop cultivated over an area of 9 million hectares in India. Cotton production in India is 310 lakh bales during 2007- 08. Cotton, also known as "King of fibres" plays a remarkable role in national economy. Cotton crop is mainly cultivated for fibre. The cotton seed, which is a by-product, is an important source of edible oil. Cotton seed is the second largest source of vegetable oil in the world. The refined cotton seed oil is the one of the best edible oil, which is used most part of the world including USA, Uzbekistan, and china etc,. Nowadays the refined cotton seed oil is used for edible purposes in India.

In India primary source of edible oil production is 59.52 lakh tons and secondary source of edible oil production is 19.90 lakh tons. Among these the current availability of cotton seed oil is ranged from 6 to 7 lakh tons per annum. In India, a total quantity of about 67.7 lakh bales (@ 333 kg cotton seed/