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"Global food security and food safety:
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Improvement in Old World and New World Cotton Species to Ensure Food Security

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Abstract

Cotton is a crop of tropical and sub-tropical regions and it has a major share in economy of Pakistan, both as a fiber and feed crop. Lint of cotton is used as a fiber and seed is used to make edible oil for human consumption and press cake for feed industry. Cotton press cake is considered as premium feed for milking animals. *Gossypium hirsutum* is main species of cotton (new world cotton) grown in Pakistan but is prone to insect-pest and diseases. Gossypium arboreum (old world cotton) is another species widely grown before the introduction of *Gossypium hirsutum* and is tolerant to insect-pest and disease. Seed products are very important in terms of food security, but most of the studies concentrate only on fiber. Therefore, this two-year study was conducted to investigate genetic diversity of the two aforementioned cotton species for fiber and seed production and to assess the association of agronomic traits with seed cotton and seed yield. The study was conducted at the experimental form of The Islamia University of Bahawalpur, Pakistan. Twenty genotypes of each species were investigated in this study. Seed cotton yield of *Gossypium hirsutum* varied from 4000 kg ha^{-1} to 6500 kg ha^{-1} and seed yield varies from 2350 kg ha^{-1} to 3800 kg ha^{-1}. Seed cotton yield of *Gossypium hirsutum* varied from 3590 kg ha^{-1} to 5850 kg ha^{-1} and seed yield varies from 2410 kg ha^{-1} to 3500 kg ha^{-1}. In both species all agronomic traits (monopodial branches, sympodial branches, boll weight and number of locules) were positively correlated with seed cotton and seed yield. Presence of huge variation for seed cotton and seed yield and positive association of the both traits with agronomic traits depicts possibility of improvement in both seed cotton and seed yield which will contribute both in food security as a new food crop.

Keywords: Cotton, food security , oil and press cake, seed yield

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