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EVALUATION OF TWO ADVANCED COTTON MUTANT LINES IN A DIFFERENT CLIMATIC AREA FROM THEIR GEOGRAPHIC ORIGIN

Crop yields are prone to decrease even with small climatic change due to the predominance of dry lands and their high temperature sensitivity. Understanding the effects of climate change on cotton phenology and yields, may help in assessing and introducing optimal management systems to enhance the quantity and quality of cotton yields. Evaluation of advanced mutant lines in different climatic areas from their geographic origin can provide better understanding of the newly developed line under diverse environmental conditions. Seeds of two advanced cotton mutant lines, NIAB-KIRAN and NIAB-414, developed in Pakistan using gamma irradiation, were tested in Syrian conditions along with two local cotton varieties (Aleppo-118 and Deir Al-Zour 22) during the growing seasons May–October in 2016 and 2017. The cotton genotypes were evaluated consistently for their two years performance for the attributes like; 1st sympodial node number, 1st sympodial node height, number of bolls up to the 10th sympodia, number of shedding bolls up to the 10th sympodia, plant height, and yield per plant. Data analysis (ANOVA) showed the consistent behavior of NIAB-414 in both years, considering all studied traits except for 1st sympodial node number and height. A remarkable steadiness in number of shedding bolls, plant height and yield were noted in this mutant line. Positive correlations ($R=0.676$) was noted between height and number of bolls, and less but still positive correlation value ($R=0.246$) between height and number of shedding bolls. Principal component analysis (PCA) of studied agricultural traits (Fig. 1) displayed the proximity of NIAB-414 data in both seasons, whereas, NIAB-KIRAN showed different height and yields. Evaluation of advanced mutant lines in different geographical and climatic areas will fortify analysis and assist in exploring new traits under different environmental conditions.

Country or International Organization

Atomic Energy Commission of Syria

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