Evaluating the effect of temperature on flower and boll opening density for selection of climate resilient cultivars in cotton

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ABSTRACT:
Climate change is a great challenge that badly affects the agricultural economy all over the world. Studies on evaluating the effect of temperature on flower, boll opening density for selection of climate resilient cultivars in cotton were conducted for two crop seasons during 2016 and 2017. FH-Lalazar, FH-Kahkashan, FH-Noor, FH-326 and MNH-992 cultivars were used for experimentation following randomized complete block design with three replications. Temperature during 2016 was higher than 2017 that badly affected the flower and boll opening density. On the basis of fruiting behaviour FH-Noor and MNH-992 were early maturing as compared with FH-326. Cluster analysis exhibited that cluster-2 consisted of three months i.e., July, August and September. Maximum flowers on all cultivars were observed during these three months contributing maximum yield. Principal component analysis results demonstrated that first two Principal components having Eigen values ≥1 induced accumulative 90.7% variations. The variability was mainly due to minimum and maximum temperature. In fact, we could state that based on the correlation of 0.647% variation of this, principal component is primarily a measure of the minimum temperature. It was concluded that reproductive stage of cotton is very sensitive to increasing temperature and cultivation of FH-326 that will be very useful in the changing climate.

Keywords:
Climate change, Cotton, Cultivars, Correlation, Principal component analysis.