ANALYZING THE COMPONENTS OF HYBRID COTTON YIELD AND ITS RELATIONSHIP WITH ENVIRONMENT

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Abstract

Cotton hybrids show commercially useful level of heterosis for lint yield. In low-yielding environments percent heterosis for lint yield is higher than in high-yielding environments. Lint yield is a product of several yield components. Boll number has been reported to contribute the most to lint yield. Boll number is a product of number of fruiting sites and boll retention. We studied two cotton hybrids to understand whether hybrids retain more fruits or initiate more fruiting sites to attain this level of heterosis in low-yielding environments. Two hybrids, Deltapine51 x Stoneville474, Stoneville474 x LA 887 and their parental lines were tested at 8 locations representing both high and low-yielding environments. Data were collected for lint yield and yield components. Hybrids had higher lint yield, lint percent and bolls per hectare as compared to parents. Percent heterosis for lint yield and boll number was negatively correlated with environment gradient for lint yield. Percent heterosis for boll retention had a significant negative correlation with environment mean. Present data indicates that in low-yielding environments hybrids retain more bolls than parents, leading to higher boll number and lint yield. Other yield components had small, statistically non-significant contributions. Higher yield of hybrids over parents is a result of small contributions from different yield components. Among all lint yield components, boll retention had the most significant effect on hybrid yield in low-yielding environments.