## INFLUENCE OF VARIOUS WITHIN BOLL YIELD COMPONENTS ON LINT YIELD AND FIBER QUALITY IN ADVANCED COTTON BREEDING LINES Gurpreet Virk John L. Snider Peng Chee Simerjeet Virk Navneet Kaur Ved Parkash University of Georgia Tifton, GA

## Abstract

Cotton is mainly grown for its fiber, thus higher lint yields and improved fiber quality are of utmost importance. Crossing elite breeding lines produces progeny with a range of yield and fiber quality traits that can be exploited in future crosses to drive genetic improvement. It is well-established that yield in a given crop is the product of cumulative intercepted photosynthetically active radiation (IPAR), radiation use efficiency (RUE), and harvest index (HI). Harvest index can be further influenced by altering within-boll yield components such as seed surface area, fiber density, and fiber mass. A study was conducted at the Lang Rigdon farm, Tifton Georgia, University of Georgia, to quantify the relative contribution of each process to yield and to identify traits that improve productivity in advanced breeding lines. Data collection was divided into three sub categories: 1) growth and phenological measurements such as light interception, photosynthetic parameters, and canopy-level radiation use efficiency, and 3) end of season measurements such as light interception, photosynthetic parameters, and canopy-level radiation use efficiency, and 3) end of season measurements such as lint yield, fiber quality data, harvest index and yield component data. All advanced breeding lines produced comparable yields during the 2020 season; however, genotypes differed significantly in the components manipulated to achieve the same yield. Intra-boll yield components and fiber characteristics were particularly affected by genotype.