

CULTIVAR, IRRIGATION MANAGEMENT, AND PGR STRATEGY: EFFECTS ON COTTON GROWTH, YIELD, AND MATURITY**Devendra Prasad Chalise****John L. Snider****Lavesta C. Hand****George Vellidis****Alessandro Ermanis****Guy D. Collins****Amrit Pokhrel****Joshua M. Lee****University of Georgia****Tifton, GA****Lorena N. Lacerda****University of Minnesota****St. Paul, MN****Yafit Cohen****Agricultural Research Organization****Volcani Center, Israel****Abstract**

Drought is known to negatively impact growth and yield, whereas excessive irrigation can limit yield by producing rank growth. PGR application limits internode elongation, producing shorter plants, higher fruit retention at lower nodes, and earlier maturity. Thus, it has been questioned whether the negative impacts of excess irrigation could be mitigated through more aggressive PGR management practices. The objective of this study was to address the effects of cultivar, irrigation management, and PGR strategy on cotton growth, maturity, and yield. A two-year study was carried out using three cultivars (DP 1646, DG 3615, DG 3799), three different irrigation treatments (rainfed, recommended irrigation strategy (100% ET), and over-irrigated (125% ET)), and three different PGR treatments (aggressive, moderate, and untreated) during the 2020 and 2021 growing seasons. Cultivar, irrigation, and PGR affected plant height. An interaction was observed between irrigation and PGR in both years, with the shortest plants observed in aggressively treated plots under dryland conditions. In 2020, PGR treatment hastened cutout by 2-3 weeks in irrigated plots, but no effect was observed for physiological maturity in dryland plots. Only PGR treatment affected cutout date in 2021, with aggressively treated plants reaching cutout earlier. 2020 and 2021 differed substantially in rainfall, with 2020 being a dry year in which yield responded positively to irrigation and 2021 being a wet year in which yield responded negatively to irrigation. There was no effect of PGR treatment or an interaction between PGR and any other effect for lint yield.