

COTTON FRUITING ENDURANCE - DETERMINATION OF MATURITY OVER TWO IRRIGATION REGIMES**Christopher L. Main****University of Tennessee****Jackson, TN****Keith L. Edmisten****North Carolina State University****Raleigh, NC****Glen L. Ritchie****University of Georgia****Tifton, GA****Joel C. Faircloth****Steven M. Brown****A. Reed Parker****Scott W. Fuchs****Mustafa McPherson****Dow AgroSciences****Indianapolis, IN****Abstract**

The length of time until a cotton variety matures often determines the geographic distribution of where it can be planted to achieve maximum yield. Typically, later maturing varieties are planted in more southern areas where longer growing seasons are experienced. Conversely, earlier maturing varieties are planted in shorter season areas in the northern tier of the U.S. cotton belt. Some varieties however, can be planted successfully in short or long season environments with equal success. The length of fruiting period could be implicated in how a variety performs across multiple environments. Four cotton cultivars DP 444 BFG/RR, PHY 375 WRF (early maturing varieties), DP 555 BG/RR, and PHY 565 WRF (late maturing varieties) were planted under two different irrigation regimes. Full irrigation provided the crop with 1 inch of water per week from emergence until open boll. Reduced irrigation provide the crop with 1 inch of water per week from emergence until 50 days after planting, then resuming 1 inch per week when late maturing varieties were at physiological cutout (nodes above white flower [NAWF] = 5). In-season measures of plant height, nodes, and NAWF were recorded weekly from 1st bloom to NAWF = 0. Plant mapping of fruiting positions 1, 2, and 3 for all nodes was conducted when plots displayed 60% open bolls. Yield and fiber data were also recorded. Plant heights increased each week after bloom until the 5th week of bloom for the reduced irrigation treatments and continued to increase until the 8th week of bloom for the full irrigation regime. Similarly, NAWF decreased each week after the 2nd week of bloom with the reduced irrigation regime declining faster than the full irrigation regime. Full irrigation regime had more plant height, total nodes, and greater nodes above cracked boll (NACB) compared to the reduced irrigation regime. Full season varieties matured slower than early season varieties based on NACB and percent open bolls. Both the Tennessee and Georgia locations saw reduced yields from the full irrigation regime due to above average rainfall during the growing season. No yield differences were recorded for varieties planted in Tennessee, while the full season varieties had higher yields in Georgia due to the extended growing season. Plasticity in fruiting pattern was a function of irrigation regime and strong variety effects could have been masked by above average rainfall.