

**EFFECTS OF WEED-FREE PERIODS ON PLANT  
DEVELOPMENT IN ULTRA-NARROW ROW AND  
CONVENTIONAL ROW COTTON**

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This study was conducted in 1999 and 2000 to compare plant growth and lint yield effects due to row spacing and variable weed-free durations after cotton (*Gossypium hirsutum* L.) emergence. Six time intervals, 0, 2, 4, 6, 8, and 10 weeks, were maintained by weekly hand removal of weeds. One square meter of plant material was removed at 77 and 83 days after planting in 1999 and 2000, respectively. Stems, leaves, squares, bolls, and weeds were separated and dried at 70°C for 48 hours. Prior to drying, sub-samples of leaves were taken for leaf area and specific leaf weight calculations. Statistical analysis was conducted using both main-effects of the study, row spacing and weeks weed-free ( $p=0.05$ ). Due to contrasting environmental conditions, data was not combined between years. The ultra-narrow row system produced stem dry weights at 6, 8, and 10 weeks similar to 10 weeks weed-free in conventional spacing in 1999. In 2000, 4, 6, 8, and 10 weeks weed-free in UNR produced greater stem biomass than conventional spacing, but was not significant. UNR spacing gave a 2-week advantage to leaf production compared to conventional spacing in both 1999 and 2000. Square dry weights were greater at 4, 6, 8, and 10 weeks weed-free in the UNR system compared to conventional spacing at similar competition intervals, but were not significant. No significant trends were seen in boll dry weights in both years. The total cotton dry weight, stems, leaves, squares, and bolls, was greater both years in UNR but not significant except for 8 weeks and 6 and 8 weeks in 1999 and 2000, respectively. Lint yields were significantly greater in UNR plots in 1999 at 4, 6, 8, and 10 weeks, but conventional yields were severely decreased due to excessive rainfall. 2000 had no significant lint yield differences except at the 2 week weed-free period, in which UNR was significantly greater. This study showed that cotton grown in ultra-narrow rows produced greater amounts of total plant matter on a land area basis, but not specifically in reproductive structures. In 2000, yield data showed that UNR cotton required 2 weeks weed-free, while conventional planting needed 4 weeks, to produce lint yields comparable to weed-free stands.