REFINING END-OF-SEASON COTTON IRRIGATION RECOMMENDATIONS

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Abstract

Irrigation termination recommendations for cotton tend to be keyed to first open boll, a better indicator of the maturity of the first fruit than whole crop. Three furrow-irrigated large-plot irrigation studies were conducted in north Arkansas during the 2000 growing season addressing irrigation termination. The studies were on the University of Arkansas Northeast Research and Extension Center (NEREC) at Keiser, on a field containing areas of Sharkey silty clay and Sharkey-Steele complex soils; on Field 27 of Wildy Farms near Manila, Arkansas, containing areas of Sharkey silty clay, Sharkey-Steele complex and Routon-Dundee-Crevasse complex soils; and, on Field 89 of Wildy Farms, containing areas of Routon-Dundee-Crevasse complex and Amagon sandy loam soils. Cultural practices up until irrigation termination followed University of Arkansas Cooperative Extension Service recommendations. Irrigation treatments consisted of five different irrigation termination times at each site, with the first termination treatment at approximately physiological cutout (i.e., nodes above white flower (NAWF) = 5). An additional treatment was added each subsequent irrigation. In each case, rainfall exceeding 1 in was considered equivalent to an irrigation. Defoliant was applied without ethephon at approximately 50% open bolls. First harvest was made once most of the leaves were removed. After first harvest, ethephon was applied and a second harvest was made after the remaining bolls had opened. NAWF data were collected weekly from each plot.

The timing of the final irrigation ranged from 5 d (77 DD60) before cutout up to 32 d (729 DD60) after cutout at NEREC; from 8 d (186 DD60) before cutout up to 17 d (356 DD60) after cutout at Wildy Field 27; and from cutout up to 26 d (558 DD60) after cutout at Wildy Field 89. Two of the three studies showed significant differences in seedcotton yield with later irrigation. The one case where seedcotton yield differences were not significant (NEREC), average cutout for the field was 72 d, less than the 80 d associated with the COTMAN target development curve, suggesting a stressed crop. All three studies showed significant earliness effects, with lower percent first harvest associated with later irrigation. Additional studies are planned to compile sufficient data to develop new recommendations.

Reprinted from the *Proceedings of the Beltwide Cotton Conference*
Volume 1:588-589 (2001)
National Cotton Council, Memphis TN