

Cotton Irrigation Scheduling

ANDREA JONES

PORTAGEVILLE, MO.

Ever wonder if irrigation scheduling is a good idea on Delta Cotton? Is it worth your time? In a recent study we found cotton to cutout prematurely if farmed dryland or irrigation is started too late. Using all of the growing season maximizes yield and improves fiber quality. Genetics controls much of the fiber length but if cotton is stressed during the first fifteen to twenty one days fiber length will be shortened in the boll. Good irrigation will help prevent some of the bales classing less than 1 3/32nds of an inch.

There are several irrigation scheduling methods. Much time can be invested in scheduling but if you just don't have time to spend behind a computer there is a quick, easy, and effective method you can use. A Woodruff Irrigation Chart is a method of scientifically applying irrigation without the need of a computer. The method uses historic weather data and modern crop coefficients to develop a chart to determine when to irrigate. It does this by calculating an accumulative crop water use curve for the crop and locale in question. A second curvilinear line,

representing the onslaught of drought, is drawn parallel to the crop water use curve being offset vertically by a distance equal to the water holding capacity of the soil. The X-axis represents time, while the Y-axis represents inches of water.

The user pencils in the rainfall amounts in a vertical fashion on the day they occur, using the same scale as the crop water use curve. The 2nd and subsequent rainfall events are penciled in on the graph on the appropriate date. These subsequent lines start at a level equal in elevation to the top of the last penciled-in rainfall event, thus a stair-step pattern is formed. Irrigation occurs before the stair-step crosses the bottom, drought line. Irrigation amounts are penciled in the same manner as rainfall events. If a rainfall or irrigation amount takes the stair-step across the top line, any portion above the accumulative curve is considered deep-percolation and thus discounted. Then the irrigator begins the stair-step, not at the top of the rainfall line, but at a level equal to where the rainfall line and the accumulative water use line crossed. Δ

ANDREA JONES: Research Associate/Cotton Production, University of Missouri