

End of Corn Irrigation Season Study, 2003

Dr. Freddie Lamm, Research Irrigation Engineer
KSU Northwest Research Extension Center, Colby, Kansas
flamm@oznet.ksu.edu

A study is underway at the KSU Northwest Research-Extension Center at Colby Kansas to develop improved criteria for decisions about terminating the irrigation season for field corn. Currently, 7 treatments are being examined consisting of 7 different dates to shut off irrigation. In 2003, these dates increased in 1 week increments beginning one week after silking. The actual shutoff dates were July 29, August 5, 12, 19, 26, September 2 and 9. Prior to treatment initiation, all treatments received the same amount of irrigation. Additionally, all treatments were fully irrigated up until the point of their respective termination date. Seasonal irrigation amounts were 11.35, 14.90, 18.10, 20.20, 21.95, 23.00, and 24.00 inches for the 7 respective termination dates. *It should be strongly noted that the purpose of this study is not to establish a given shutoff date or a given irrigation requirement and that the results are not meant to be interpreted in that fashion. Rather, the dates and irrigation amounts were used to impose differing levels of water stress during the period of grain filling. This is to provide information about how grain filling is affected.* Further analysis and additional study will be necessary to incorporate this and other information into an improved season termination criteria.

The results from 2003 are provided here primarily to emphasize that the grain filling stage is a very important period in corn production and that grain filling rates can be altered by water stress. In 2003, heavy spider mite damage probably lowered the ultimate yields of the adequately irrigated treatments (approximately termination dates August 19 and later). The results show that a grain filling rate of 3 to 3.5 bushels/day was achieved during the 28 day period (August 26 to September 23) for the treatments that were adequately irrigated (Trts 4 and 5). In 2003, the yields for the heaviest irrigated treatments (Trt 6 and 7) were lower due to spider mite damage. For the treatments (Trts 1 to 3) with higher water stress, grain filling rates for the 28-day period averaged only 1.5 to 2.4 bushels/day. *The results do show that large yield differences can occur just due to improper irrigation management during the grain filling stage. More analysis and more years of study are needed to incorporate these results into new criteria.*

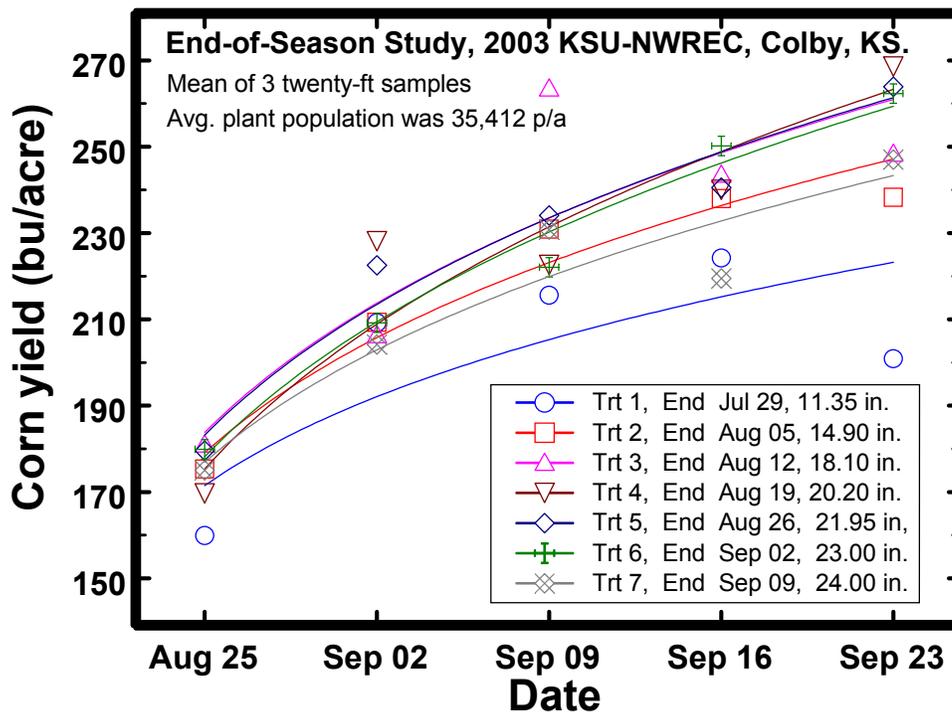


Figure 1. Corn yield for different dates (stages of maturity) as affected by 7 different irrigation termination dates and amounts at Colby, Kansas. Note: Physiological maturity was on September 23.