

**EVALUATION OF SPRINKLER-INDUCED FLOWER
LOSSES AND YIELD REDUCTIONS**

**John J. Burke
USDA-ARS
Lubbock, TX
T.D. Valco
Cotton Incorporated
Cary, NC**

Abstract

Cotton pollen is highly sensitive to water, rupturing within 1-2 minutes after being placed in the water. Greenhouse studies were performed to determine how much water was needed to reduce yields. These studies showed that a single spray with 1 ml of water reduced seed set and lint development by 55%. Additional spray applications resulted in further losses and ultimately flower shedding. Field studies used a center pivot equipped with sprinklers and drag socks to determine the effect of water application method and timing on flower losses and yield reductions. Treatments included four different time of day applications (8 am to 10 am, 10 am to noon, noon to 2 pm, and 2 pm to 4 pm) with 3/4 acre-inch of water. The plots were irrigated 8-times from August 1 to September 1, 2000 and 11 times from July 10 to August 21, 2001. Flowers were tagged immediately prior to irrigation and tracked for the rest of the season. No significant differences in flower losses were observed in the 8 to 10 am treatment; however, flower losses progressively increased under the sprinkler treatments compared to the drag sock treatments as the day progressed with maximum losses occurring in the 2 pm to 4 pm treatments. Evaluation of lint yields following two irrigations per week showed 27 to 36% reductions in 2000 and 12% yield reductions under sprinkler irrigation in 2001. The results of this study suggest that approximately 50% of the potential yield for a given day can be lost if the open flowers come in contact with water.