

COTTON YIELD AND FIBER QUALITY AS AFFECTED BY SIMULATED HERBICIDE DRIFT. Molly E. Marple, Kassim Al-Khatib, and Dallas E. Peterson, Graduate Research Assistant, Professor, and Professor, Department of Agronomy, Kansas State University, Manhattan KS 66506.

. Field experiments were conducted in 2004, 2005, and 2006 at Manhattan, KS to evaluate cotton injury and yield reduction from hormonal-type herbicides. The first experiment, conducted in 2004 and 2005, compared cotton response to 2,4-D amine, 2,4-D ester, dicamba, clopyralid, picloram, fluroxypyr, and triclopyr each applied at 0, 1/100, 1/200, 1/300, and 1/400 of the field use rates when cotton was in the 5 to 6 leaf stage. Field use rates for all experiments were 561, 561, 561, 280, 561, 210, and 561 g ai/ha for 2,4-D amine, 2,4-D ester, dicamba, clopyralid, picloram, fluroxypyr, and triclopyr, respectively. All herbicides caused visual injury to cotton, but injury symptoms and persistence varied among the herbicides. Cotton injury and yield reduction corresponded to herbicide rates and was greater for 2,4-D than the other herbicides evaluated. All rates of 2,4-D evaluated reduced cotton yield, while cotton yield was not reduced by any rates of clopyralid and triclopyr. A second experiment was conducted in 2005 and 2006 to determine the influence of cotton growth stage on crop injury and yield reduction from dicamba and 2,4-D amine. Dicamba and 2,4-D amine were applied at 0, 1/200 and 1/400 rates to cotton at the 3 to 4 leaf, pre-flower, mid-flower, and early boll stages of growth. Cotton yields were not reduced by any of the herbicide treatments in 2005. In 2006, cotton yield was reduced by the pre-flower treatment time, but not by the other applications. A third experiment was conducted in 2005 and 2006 to evaluate the effect of multiple exposures of 2,4-D drift on cotton. 2,4-D amine at 0, 1/400, 1/800, and 1/1200 rates was applied 1, 2 or 3 times, at 2 week intervals following the initial application timing at the pre-flower stage of cotton. Cotton injury and yield loss generally increased as the number of exposures increased. Cotton yield was reduced with multiple applications but not with single applications. Cotton injury from hormonal herbicide drift depends on the herbicide, herbicide rate, exposure stage, and number of exposures. 2,4-D was the most injurious hormonal herbicide to cotton, and yield loss was greatest when exposed at the pre-flower stage of growth and with multiple exposure events.