SIMULATED DRIFT OF GLYPHOSATE AND IMAZAMOX ON WINTER WHEAT. Zach A. Deeds, Dallas E. Peterson, Kassim Al-Khatib, and Phillip W. Stahlman, Graduate Research Assistant, and Professors, Department of Agronomy, Kansas State University, Manhattan, KS 66506.

Off-target movement, or drift, of herbicides can have a significant influence on the growth and development of winter wheat. Glyphosate and imazamox are common pre-plant burndown and postemergence herbicides that may be applied to fields in close proximity to wheat in the spring. Consequently, dirft of these herbicides onto wheat at critical stages of growth and development could cause serious injury and yield reductions. Field research was conducted at Hays and Manhattan, Kansas in 2002 and 2003 to determine the effects of simulated drift of glyphosate and imazamox on winter wheat.

Glyphosate and imazamox at 1/100X, 1/33X, 1/10X, and 1/3X of typical field use rates were applied to wheat in the early jointing or the early flower stages of growth. The 1X use rates of glyphosate and imazamox were 840 g ae/ha and 35 g ai/ha, respectively. All treatments were applied at 187 L/ha spray volume and with the recommended adjuvant rates. Crop injury was evaluated at 4 weeks after treatment, and wheat was harvested at the end of the season to determine yields and the viability of the harvested seed.

A significant interaction occurred among the locations and years, probably due to differences in precipitation amounts and distribution through the growing season. Wheat injury and yield loss increased as herbicide rate was increased, with minimal effect from either herbicide at the 1/100X rate, and near complete kill and yield loss of wheat from both herbicides applied at the 1/3X rate, regardless of application stage. The greatest differences between herbicides and treatment stages occurred at the 1/33 and 1/10X rates. In general, wheat injury and yield reduction was greater from glyphosate than imazamox. Wheat injury and yield loss generally was greater from herbicide treatment at the jointing stage than at the heading stage of wheat development. Drought stress on the wheat at Hays in 2002 appeared to reduce the effect of the herbicide treatments on the wheat compared to the other year and location. Germination tests on the harvested grain sample suggested that the viability of the wheat seed was not reduced if plants survived the herbicide treatment and produced a harvestable crop.

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