A TWO YEAR STUDY ON THE RESPONSE OF COMMERCIAL PROCESSING TOMATOES TO SIMULATED DICAMBA DRIFT. Greg R. Kruger, William G. Johnson, Doug Doohan, Timothy A. Koch, and Stephen C. Weller, Graduate Research Assistant, Associate Professor, Department of Botany and Plant Pathology, Purdue University, Associate Professor, Research Assistant, Department of Horticulture and Crop Science, The Ohio State University, Ohio Agricultural Research and Development Center, Wooster, OH 44691, Professor, Department of Horticulture and Landscape Architecture, Purdue University, West Lafayette, IN 47907.

Herbicide drift onto processing tomatoes is a major concern for growers in Indiana and Ohio on the 5,828 ha grown annually. Several studies have shown that auxin herbicides can cause injury symptoms on tomatoes, but there is little quantitative evidence of the impact of drift on yields. With the future planned release of dicamba resistant soybean, it is possible that dicamba use during the soybean growing season will become more common and the potential for off-target drift, volatility or tank contamination will increase. The purpose of this study conducted in Lafayette, IN in 2007 and 2008 and in Wooster, OH in 2008 was to determine injury potential to processing tomato from dicamba drift. . The experiment was established as a dose response study with two application timings: either at the early vegetative stage (2 weeks after transplanting) or at the early bloom stage (~ 5 weeks after transplanting). Simulated drift rates of dicamba were 1/3rd, 1/10th, 1/30th, 1/100th, 1/300th, and 1/1000th based on an X rate of 0.56 kg ae/ha of dicamba. Treatments were applied with a backpack sprayer delivering 140 l/ha at 117.2 kPa of pressure. Spray solutions contained 2.8 kg/ha of AMS and 0.25%v/v NIS with the dicamba. Crop injury, yield (both red fruit and green fruit), and flower loss were evaluated. Data were analyzed using non-linear log-logistic modeling in R and combined across locations, years, and cultivars. A 25% estimated flower loss occurred at 0.0133 kg ae/ha (~1/42nd of 0.56 kg ae/ha) at the first application timing, and 0.0064 kg ae/ha (~1/88th of 0.56 kg ae/ha) for the second application timing. A 25% reduction in red fruit weight occurred at 0.0119 kg ae/ha (~1/47th of 0.56 kg ae/ha) at the first application timing, but it occurred at 0.0075 kg ae/ha (~1/75th of 0.56 kg ae/ha) for the second application timing. Injury and yield loss increased as rate of drift increased. This study showed that even at low dicamba rates (1/80th of 0.56 kg ae/ha) its drift can significantly impact processing tomato yields.

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