SIMULATED GLYPHOSATE DRIFT TO IRRIGATED POTATO (*SOLANUM TUBEROSUM).* Collin P. Auwarter and Harlene M. Hatterman-Valenti, Research Specialist and Professor, Department of Plant Sciences, North Dakota State University, Fargo, ND 58105

Field research was conducted at the Northern Plains Potato Grower's Association Irrigation Research site near Tappen, ND to evaluate simulated glyphosate drift applied to Russet Burbank potato. The objective of this study was to compare the injury from glyphosate applied at the tuber hooking (TH), tuber initiation (TI), early tuber bulking (EB), and late tuber bulking/early senescence stage (LB). Glyphosate was applied at rates one-third, one-sixth, one-twelfth, and one-twenty-fourth the standard use rate (0.25, 0.125, 0.0625, and 0.0313 lb ae/A) on July 6, July 26, and August 23 on the TI, EB and LB stages, and at 0.25 lb ae/A on June 20 on the TH stage with a CO2 pressurized sprayer equipped with 8002 flat fan nozzles with a spray volume of 20 GPA and a pressure of 40 psi. The amount of AMS added to the spray solution was also reduced accordingly.

Potatoes treated with glyphosate at the TH stage had a significantly lower yield of tubers >4 oz than the untreated, 51 cwt/A compared to 451 cwt/A.

Potatoes treated with 0.25 lb/A glyphosate earlier in the growing season (TH or TI) had >70% cull tubers (<4 oz).

Potatoes treated at the EB stage showed little total yield effects compared to the untreated, however potatoes treated at the EB stage yielded higher at the 0 to 4 oz, 4 to 6 oz, and 6 to 10 oz and yielded lower at the 10 to 12 oz, 12 to 14 oz, and >14 oz sizes.

Potatoes treated with 0.25 and 0.125 lb/A glyphosate at the LB stage showed a significant yield loss compared to the untreated. Potatoes treated with 0.25 lb/A at the LB stage had a yield loss of 200 cwt/A and potatoes treated with 0.125 lb/A at the LB stage a yield loss of 100 cwt/A compared to the untreated.

Daughter tubers are being stored throughout the winter to determine if daughter tubers from plants treated with glyphosate show any affects compared to daughter tubers from plants not treated with glyphosate.

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