

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

Previous research has shown that simulated glyphosate drift to seed potato (*Solanum tuberosum* L.) late in the growing season causes virtually no visible injury symptoms but can influence sprouting of daughter tubers and in return reduce yield. However, questions remain as to whether glyphosate drift during late tuber bulking is the most sensitive potato growth stage. The objective of this study was to compare the injury from glyphosate applied to Red Lasoda potatoes at the tuber set stage (TS) and early bulking stage (EB) to the 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 18 and August 14 and at the 0.25 lb ae/A rate on September 11 with a CO₂ pressurized sprayer equipped with 8002 flat fan nozzles with a spray volume of 30 GPA and a pressure of 40 psi. The amount of AMS added to the spray solution was also reduced accordingly.

Potatoes treated with 0.25 lb/A glyphosate at the EB stage produced significantly more tubers than other treatments. However, this was primarily due to the greater number of cull tubers (≤ 4 oz). Potatoes treated with 0.25 lb/A glyphosate at the EB stage produced 40% more cull tubers than potatoes treated with 0.125 lb/A glyphosate at the EB stage and 2.5 times more culls tubers than the untreated check.

Potatoes treated with glyphosate earlier during the growing season (TS or EB) had lower yields compared to those treated with the same rate at the later growth stage (LB). Plants treated with ≤ 0.0625 lb/A glyphosate at the TS or EB growth stages or with 0.25 lb/A glyphosate at the LB stage had total yields similar to the untreated check. Plants treated with 0.25 lb/A at TS or EB, and plants treated with 0.125 lb/A glyphosate at the EB stage consistently yielded higher for cull tubers and tubers graded at the 4 to 6 oz. size, whereas they consistently yielded less for grades 6 to 10 oz, 10 to 12 oz, and > 12 oz sizes.

Daughter tubers are being stored throughout the winter to determine if daughter tubers from plants treated with glyphosate at the TS and EB stages will be affected similar to those daughter tubers from plant treated with glyphosate at the LB stage.