

PREEMERGENCE WEED CONTROL OPTIONS IN IRRIGATED POTATO. Harlene M Hatterman-Valenti\* and Collin P Auwarter, Assistant Professor, and Research Specialist, Plant Sciences Department, NorthDakota State University,Fargo, Fargo, ND 58105.

A field trial was initiated during 2004 at the Northern Plains Potato Growers Association Irrigated Research site near Tappen, ND to evaluate season-long weed management options for irrigated Russet Burbank. Several herbicides have recently been registered for use on potato, which almost doubled the weed management options for growers. Russet Burbank 2 oz seed pieces were planted May 2 and hilled June 5. Herbicides were applied immediately following hilling to the middle two of four row plots with a CO<sub>2</sub> pressurized sprayer equipped with 8002 flat fan nozzles with a spray volume of 20 GPA and a pressure of 30 psi. Green foxtail, redroot pigweed, common lambsquarters, and black nightshade seed were broadcast prior to hilling to increase weed pressure and species uniformity. Crop injury and efficacy evaluations on June 17 indicated that flumioxazin at 0.047 lb ai/A alone and in combination with other herbicides caused more injury than treatments with dimethenamid-P, EPTC, metolachlor, metribuzin, pendimethalin, s-metolachlor, or sulfentrazone. Green foxtail control was greater than 85% for all treatments except EPTC at 4.38 lb ai/A + sulfentrazone at 0.047 lb ai/A. Similarly, all treatments provided greater than 90% redroot pigweed control except pendimethalin at 1.42 lb ai/A and all treatments provided greater than 90% common lambsquarters control except EPTC at 4.38 lb ai/A, dimethenamid-P at 0.98 lb ai/A, and s-metolachlor at 0.95 lb ai/A. By July 7 little potato injury was observed with any of the treatments while weed control evaluations were similar to those of June 17. On August 23 excellent green foxtail and redroot pigweed control was obtained by most of the herbicide treatments. Common lambsquarters control decreased below 85% for most of the herbicides applied alone with the exceptions of pendimethalin at 1.42 lb ai/A and flumioxazin at 0.047 lb ai/A.

Yield results indicated that the greatest total yield of 490 cwt/A occurred with EPTC + metribuzin followed by EPTC (4.38+0.5, 4.38 lb ai/A). Total yields were greater than 400 bags for all treatments except flumioxazin at 0.047 lb ai/A, dimethenamid-P at 0.7 lb ai/A, EPTC + flumioxazin (4.38+0.047 lb ai/A). The percentage of tubers at least 6 oz was greater than 70% when V-10142 or pendimethalin were applied at either 0.27 and 1.42 lb ai/A, respectively whereas the lowest percentage of tuber 6 oz or more occurred with flumioxazin at 0.047 lb ai/A. Yield results suggest that even though plants visually outgrew the initial injury with flumioxazin, the injury may have reduced the yield. French fry quality data and tuber sugar analysis will be conducted in the future to assess processing quality. Growers appear to have several weed management options for season-long control in irrigated potato.