

PREEMERGENCE WEED CONTROL IN ONION. Collin Auwarter, Carrie E. Schumacher, Harlene Hatterman-Valenti, Research Specialist, Graduate Assistant, Assistant Professor Department of Plant Sciences, North Dakota State University, Fargo, ND 58105-5051. Paul Hendrickson, Irrigation Specialist, Carrington Research Extension Center, Carrington, ND 58421.

Field research was conducted at Absaraka, Carrington, and Oaks, ND, in 2005 to identify the efficacy of preemergence herbicides bromoxynil, DCPA, dimethenamid-P, and pendimethalin applied for early season-weed control. Weed control and crop injury were evaluated for each herbicide. Onion variety 'Teton' pelleted seed was planted on May 3 using a Stanhay four double-row planter unit, with 10 cm paired rows and 35 cm between main rows. Herbicide treatments were applied with a CO₂-presurized backpack sprayer to 2 m wide by 6 m long plots at a volume of 190 L/ha with a pressure of 0.06 kPa. DCPA, pendimethalin, and dimethanamid-p were applied directly after planting at 3 rates. DCPA had rates of 2950, 5890, 11,800 g ai/ha, Pendimethalin had 530, 1070, and 2130 g ai/ha and dimethanamid-p had 420, 840, and 1680 g ai/ha. Bromoxynil was applied 10 DAP, May 13, at 180, 350, and 700 g ai/ha. Also, glyphosate rate at 772 g ai/ha was applied 10 DAP along with pendimethalin at 1070 g ai/ha and in another treatment with pendimethalin at 1070 g ai/ha applied at the one-leaf stage, June 9. At 4 WAT all herbicides had adequate weed control of common lambsquarters (*Chenopodium album* L.) and redroot pidweed (*Amaranthus retroflexus* L.). Pendimethalin plus glyphosate 10 DAP had 97.5% control 4 WAT and bromozynil applied 10 DAP had 87% control. High rates for all herbicides had 96% control and low rates average had 84% control 4 WAT. Plots were virtually weed free all season long. Average onion height for the high rate was 73.8 cm while low and medium rates had a 76.0 cm average height. Weedy check had a 70.4 cm average height and hand weeded check height was 75.0 cm. DCPA had the highest stand numbers while dimethanamid-P and penimethalin at one leaf stage plus glyphosate 10 DAP had the lowest stand numbers with 13 plants/2 m of row. Herbicide and rate interaction had a significant effect on large grade yield and total yield. Glyphosate 10 DAP followed by pendamethalin applied at the one-leaf stage had a yield of 68.7 t/ha, while pendimethalin plus glyphosate 10 DAP had a yield of 88.0 t/ha. All treatment yields were significantly better than weedy check (13.7 t/ha), while hand weeded yield was 82.2 t/ha.