

WEED CONTROL IN GLYPHOSATE RESISTANT SUGARBEET. Aaron L. Carlson, John L. Luecke, and Alan G. Dexter, Research Technician, Research Specialist, and Professor, Department of Plant Sciences, North Dakota State University and University of Minnesota, Fargo, ND 58105.

Field experiments were conducted at seven locations in western Minnesota and eastern North Dakota in 2007 to evaluate sugarbeet injury and weed control from glyphosate used alone, glyphosate in combination with other herbicides, and registered herbicide treatments. 'Beta RZ02RR07' sugarbeet was seeded 1.25 inches deep in 22-inch rows. Counter 15G insecticide at 12 pounds product per acre was applied modified in-furrow at planting. Preemergence ethofumesate was applied to appropriate plots immediately after planting. Up to four postemergence treatments were made at 6 to 31 day intervals. Desmedipham & phenmedipham & ethofumesate plus triflurosulfuron plus clopyralid plus clethodim M plus methylated seed oil were applied four times at a micro-rate of 0.08+0.004+0.03+0.03 lb ai/A +1.5% v/v; at a mid-rate of 0.12/0.12/0.16/0.22+0.004+0.03+0.03 lb/A+1.5% v/v; and at a conventional rate without oil at 0.25/0.33/0.33/0.5+0.008+0.06+0.03 lb/A. All treatments were applied in 17 gpa water at 40 psi through 8002 nozzles to the center four rows of six-row by 30-foot long plots. Sugarbeet injury and weed control were evaluated approximately 10 and 20 dat. Glyphosate was always applied at 1.0 lb ae/A.

All treatments of glyphosate or glyphosate plus a registered sugarbeet herbicide gave 0 to 4% sugarbeet injury. Glyphosate plus flumiclorac at 0.015 lb ai/A caused from 45 to 96% sugarbeet injury. Control of all weed species from glyphosate followed by glyphosate was similar to control from glyphosate plus flumiclorac fb glyphosate, glyphosate plus triflurosulfuron at 0.008 or 0.032 lb/A fb glyphosate, glyphosate plus clopyralid at 0.03 or 0.06 lb/A fb glyphosate, glyphosate plus clethodim M at 0.09 lb/A fb glyphosate, or PRE ethofumesate fb glyphosate. Weed control from glyphosate applied once on the earliest date of application generally was less than weed control from all other glyphosate-containing treatments because weeds emerged after the early application.

Glyphosate alone gave greater pigweed or waterhemp control than the micro-rate at five locations and similar control at two locations. Glyphosate alone gave greater pigweed or waterhemp control than the mid-rate at four locations and similar control at three locations. Conventional-rate treatments or PRE ethofumesate at 3.75 lb/A fb POST desmedipham & phenmedipham & ethofumesate at 0.25/0.33/0.33/0.5 lb/A gave pigweed or waterhemp control similar to glyphosate alone at all seven locations. Micro-rate, mid-rate, conventional-rate, and PRE ethofumesate fb POST desmedipham & phenmedipham & ethofumesate gave common lambsquarters control similar to glyphosate alone at all locations.

At Cavalier ND, micro-rate, mid-rate, and conventional-rate treatments gave 62, 75, and 90% kochia control, respectively. Glyphosate applied four times gave 99% kochia control, better than from the micro-rate or mid-rate treatments. The conventional-rate treatment and PRE ethofumesate followed by POST desmedipham & phenmedipham & ethofumesate gave kochia control similar to glyphosate applied four times.

At Milan MN, micro-rate and mid-rate treatments which included MSO gave 91% velvetleaf control while the conventional-rate treatment without MSO gave 84% control. Preemergence ethofumesate fb POST desmedipham & phenmedipham & ethofumesate gave 46% velvetleaf control. Glyphosate alone gave 92% velvetleaf control. Velvetleaf control from glyphosate alone was similar to velvetleaf control from the micro-rate or mid-rate treatments.