

**DEXTER, ALAN G., JOHN L. LUECKE, Department of Plant Sciences, North Dakota State University, and the University of Minnesota, Fargo, ND 58105, and MARK W. BREDEHOEFT, Southern Minnesota Beet Sugar Cooperative, Renville, MN 56284.-UpBeet efficacy in eastern North Dakota and Minnesota.**

### **ABSTRACT**

UpBeet (triflurosulfuron, DPX-66037) is a sulfonylurea herbicide that should be registered for use in sugarbeet in the United States in 1996. UpBeet was applied alone and in combination with other herbicides at several locations in eastern North Dakota and Minnesota in 1993 and 1994. The objective of the experiments was to determine weed control and sugarbeet injury from UpBeet and herbicide combinations including UpBeet, to compare treatments including UpBeet to other herbicide treatments, and to determine the influence of adjuvants on UpBeet and herbicide combinations including UpBeet.

Herbicides were applied through 8001 nozzles at 40 psi in 8.5 gpa of water carrier. All herbicides were applied twice with the first application to cotyledon to two-leaf sugarbeet and the second application seven days later. Betamix (desmedipham + phenmedipham) or Betanex (desmedipham) at 0.25/0.33 lb ai/A (first rate/second rate); Betanex + UpBeet at 0.25 + 0.0156/0.33 + 0.0156 lb/A; Betanex + Stinger (clopyralid) at 0.25 + 0.09/0.33 + 0.09 lb/A; Betanex + Stinger + UpBeet at 0.16 + 0.06 + 0.01/0.25 + 0.06 + 0.01 lb/A; Betanex + Stinger + UpBeet at 0.25 + 0.09 + 0.0156/0.33 + 0.09 + 0.0156 lb/A; Betamix Progress (desmedipham + phenmedipham + ethofumesate, 1:1:1 ratio) at 0.25/0.33 lb/A; Betamix Progress + UpBeet at 0.25 + 0.0156/0.33 + 0.0156 lb/A; Betamix Progress + Stinger at 0.25 + 0.09/0.33 + 0.09 lb/A; and Betamix Progress + Stinger + UpBeet at 0.16 + 0.06 + 0.01/0.25 + 0.06 + 0.01 lb/A were the herbicide treatments compared.

Averaged over six locations, Betanex, Betanex + UpBeet, Betanex + Stinger and Betanex + Stinger + UpBeet at the low rate gave similar sugarbeet injury while Betanex alone gave less sugarbeet injury than Betanex + Stinger + UpBeet at the high rate, Betamix Progress, Betamix Progress + UpBeet, Betamix Progress + Stinger, and Betamix Progress + Stinger + UpBeet. Betamix Progress plus Stinger gave more sugarbeet injury than Betamix Progress alone.

Betanex + UpBeet gave better control of redroot pigweed than Betanex while Betamix Progress and Betamix Progress + Stinger gave less control of redroot pigweed than Betanex. Betamix Progress + UpBeet gave better control of common lambsquarters than Betamix Progress but Betanex + UpBeet gave common lambsquarters control similar to Betanex. Treatments that included Stinger at 0.09 lb/A twice generally gave the best control of common lambsquarters. The addition of UpBeet to Betanex or Betamix Progress resulted in improved control of wild buckwheat. Betamix Progress gave better control of wild buckwheat than Betanex and Betamix Progress + Stinger gave better control of wild buckwheat than Betamix Progress. Treatments that included UpBeet gave 94 to 99% control of kochia while other treatments only gave 25 to 43% control.

Treatments that included UpBeet at 0.0156 lb/A twice gave 71 to 76% control of green foxtail and yellow foxtail, better than other tested treatments. Betamix + UpBeet gave better control of common mallow than Betamix, Betamix + Stinger or Betamix Progress.

UpBeet plus any of seven tested adjuvants gave better weed control than UpBeet alone at Crookston, MN in 1994. Mor-Act (emulsified petroleum oil) and an experimental emulsified canola oil increased weed control from UpBeet more than R-11 (non-ionic surfactant), Scoil (emulsified methylated seed oil), Dash HC, R-11 + 28% nitrogen solution, and Sylgard 309 (silicone surfactant). However, Betamix + UpBeet gave weed control similar to Betamix + UpBeet + any of the same seven adjuvants. Betamix apparently substituted for the adjuvant at Crookston. Betanex + Stinger + UpBeet was applied alone and in combination with R-11 and Scoil at six locations. Sugarbeet injury and kochia control was generally greater when adjuvants were added but adjuvants did not improve control of redroot pigweed, common lambsquarters, or wild buckwheat. At one location, sugarbeet treated with Betanex + UpBeet + Stinger yielded more than sugarbeet treated with Betanex + UpBeet + Stinger + Scoil.