

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. Postemergence herbicide combinations in North Dakota and Minnesota.

ABSTRACT

UpBeet first received registration for use on sugarbeet in the United States in June of 1996. UpBeet was applied to 110% of the sugarbeet acreage in eastern north Dakota and Minnesota in 1996 based on an annual survey of sugarbeet growers when multiple applications to the same field were totaled as multiple acres. UpBeet does not control all the common weeds in eastern North Dakota and Minnesota so UpBeet generally was used in combination with other postemergence herbicides. UpBeet, used in combinations, will provide improved control of pigweed spp., kochia, common mallow, nightshade spp., smartweed spp., Venice mallow, nightflowering catchfly, wild mustard, velvetleaf and common sunflower. The objectives of the experiments reported in this paper were a) compare weed control from two herbicide applications to control from three applications, b) measure weed control from very low rates of UpBeet plus other herbicides and c) evaluate the effect of an oil adjuvant on weed control and sugarbeet injury from the low rates tested.

Sugarbeet was seeded in 1996 at Fargo, ND on May 2; St. Thomas and Minto, ND on May 13; Crookston, MN on May 14; Ortonville, MN on May 15; Gardner, ND on May 16; Redwood Falls, MN on May 17; and Olivia, MN on May 24. The first postemergence herbicide treatments were applied when sugarbeet plants were in the cotyledonary to 2-leaf growth stage. Subsequent herbicide treatments were applied with 6 or 7 days between applications. Herbicides were applied through 8001 nozzles in 8.5 gpa of water carrier at 40 psi and 3 mph.

Three applications at reduced rates gave better weed control than two applications at higher rates. For example, Betanex + UpBeet + MethOil (a methylated seed oil adjuvant) applied three times at 0.08 + 0.004 lb/A + 1.5% v/v gave better control of redroot pigweed, prostrate pigweed, wild buckwheat and kochia than Betanex or Betamix Progress, applied twice at 0.25/0.33 lb/A and better than Betamix Progress + UpBeet applied twice at 0.25 + 0.0156/0.33 + 0.0156 lb/A. Also, Betanex + UpBeet + MethOil applied three times at 0.08 + 0.004 lb/A + 1.5% v/v at a cost of \$38/A for herbicide and adjuvant gave similar or superior weed control compared to Betanex + UpBeet applied three times at 0.16 + 0.008 lb/A at a cost of \$66/A. Betanex + UpBeet + MethOil gave better control of kochia, wild buckwheat and common cocklebur than the same treatment without MethOil. Betanex + UpBeet + Stinger + MethOil gave better control of wild buckwheat and common cocklebur than Betanex + UpBeet + MethOil. Sugarbeet was not significantly injured by any of the herbicide treatments tested.