

ABSTRACT

Previous research has indicated that weed control is enhanced when desmedipham and/or phenmedipham is applied in combination with triflurosulfuron, clopyralid or oil additives; however, these combination treatments have increased the risk of crop injury. Recent research in North Dakota and Minnesota indicated that the injury risk with these combination treatments became minimal at low rates (micro-rates) while still maintaining acceptable weed control. The objective of this research was to compare weed control and sugarbeet response with standard and micro-rate postemergence herbicide programs.

Plots were established at the Research and Extension Centers at Torrington and Powell in 1997 and 1998 under sprinkler and furrow irrigation, respectively. Plots were 4 (30 inch) rows by 40 ft at Torrington and 5 (22 inch) rows by 30 ft at Powell and were arranged as a randomized complete block with three replications. Sugarbeet (var. Monohikari and Mono Hy Rz) were planted to stand at Torrington and Powell, respectively. Herbicide rates in the micro-rate program were reduced 50 to 75% compared to the standard program and were applied with or without an oil additive (Sun-It) at 1 qt/A. Herbicide treatments were applied with a CO₂ pressurized knapsack sprayer delivering 10 gpa at 40 psi. All herbicide applications were made at 5 to 7 day intervals at both locations. Predominant weed species at the two sites included redroot pigweed, common lambsquarter, kochia, hairy nightshade, wild buckwheat, and green foxtail. In addition, wild mustard and redstem filaree were uniformly present in all plots at Powell.

Broadleaf weed control was similar and grass control 20 to 30% better with the micro-rate treatments containing oil compared to the standard rate program without oil. Micro-rate treatments without oil were generally ineffective. The three-way combination treatments of desmedipham/phenmedipham plus triflurosulfuron and clopyralid were more effective than the two-way combination treatments. Sugarbeet injury ranged from 6 to 12% with the various treatments and was least in the micro-rate plots.