

MILLER, STEPHEN D. and K. JAMES FORNSTROM. Department of Plant Sciences and Civil Engineering, University of Wyoming, Laramie, WY 82071. **Weed control and sugarbeet response with dimethenamid and CGA-77102.**

#### ABSTRACT

Sugarbeets require good weed control throughout the season to optimize yield. This may be accomplished through three or four herbicide applications prior to and during the growing season. They may all be applied postemergence or as a complementary preemergence/postemergence system. CGA-77102 (the active isomer of metolachlor) and dimethenamid are being evaluated extensively in sugarbeets as potential new herbicide chemistry. The objective of this research was to evaluate weed control and sugarbeet tolerance with these two compounds when applied preplant incorporated, preemergence, postemergence or at layby.

Plots were established at the Research and Extension Center, Torrington, WY in 1997 and 1998 under sprinkler and furrow irrigation; respectively. The soil type in the experimental area was a sandy loam (80% sand, 12% silt, 8% clay, 1.1% organic matter and pH 7.6). Monohikari sugarbeets were planted to stand (68,000 seed/A) in all plots both years. Individual plots were 4 rows by 30 ft arranged in a randomized complete block design with three replications. Herbicide treatments were applied with a tractor mounted sprayer delivering 40 or 20 gpa at 26 psi for soil or foliar applied treatments; respectively. Preplant treatments were incorporated immediately prior to planting sugarbeets with a pto-driven rotary incorporator and layby treatments; incorporated with irrigation water ( $\approx$  0.5 inch) both years. Predominate weed species at the experimental site included kochia, common lambsquarter, hairy nightshade, redroot pigweed and green foxtail.

Harvest stands of sugarbeets were reduced 5 to 36% or 4 to 23% by preplant or preemergence applications of acetanilide herbicides; respectively. Sugarbeet injury and stand reductions were greater with preplant or preemergence applications of dimethenamid than with CGA-77102. Sugarbeet exhibited good tolerance to early post or layby applications of both herbicides. Complementary soil applied/foliar applied applications of CGA-77102 dramatically increased sugarbeet injury. Weed control was similar with CGA-77102 and dimethenamid at 1.24 and 1.0 lb/A; respectively, regardless of application timing.