

MILLER, STEPHEN D. and K. JAMES FORNSTROM; Plant, Soil, and Insect Sciences and Civil Engineering Departments, respectively, University of Wyoming, University Station Box 3354, Laramie, WY 82071. - Weed control in sugar beets with fall herbicide applications in a fall cover crop.

ABSTRACT

Fall application of preplant incorporated herbicides eliminates the need for spring tillage and allows an earlier start for sugar beets in the spring. Fall herbicide applications; however, increase the risk of soil erosion. Studies were conducted at Torrington, Wyoming in 1993 and 1994 on a light textured sandy loam soil (79% sand, 11% silt, 10% clay with 1.1% organic matter) to compare the efficacy of fall and spring herbicide applications in sugar beets established in a living winter wheat mulch. The living mulch system employs conventional tillage followed by winter wheat planting between the future sugar beet rows in mid to late September. The sugar beets are planted in mid-April and the winter wheat sprayed out before the sugar beets emerge with glyphosate. Preplant herbicide treatments are applied in a band centered over the future sugar beet rows and incorporated with a pto driven rotary incorporator. Weed control was similar to slightly better and sugar beet injury less with fall compared to spring preplant herbicide applications. Little herbicide movement out of the treated band was observed with any of the herbicide treatments regardless of when applied as winter wheat growth was unaffected. Cycloate - ethofumesate combinations were more effective than either herbicide applied alone. To compensate for herbicide loss in the fall treatments during the winter months application rates were increased 25 to 33%. Early preplant herbicide applications (21 to 28 days prior to sugar beet planting) caused 2 to 5% less sugar beet injury than applications at planting while maintaining similar weed control levels at comparable herbicide rates. Combining fall herbicide applications with the living mulch concept on light textured soils is a feasible means for maintaining adequate crop residue and minimizing soil erosion during the winter months.