

MANAGING WEEDS IN SUGARBEET WITH PREEMERGENCE AND POSTEMERGENCE HERBICIDES. Trevor M. Dale, Karen A. Renner, James Stewart, and Lee Hubbell, Graduate Research Assistant and Professor, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824; Research Manager, Michigan Sugar Company, Carrolton, MI 48724; and Research Manager, Monitor Sugar Company Bay City, MI 48707.

Sugarbeet weed control in Michigan has followed a program approach with both PRE and POST herbicide applications. Cycloate, pyrazon, or ethofumesate are applied PRE to provide residual weed control, and POST herbicides such as desmedipham & phenmedipham + triflusaluron + clopyralid, are then applied twice (commonly referred to as a standard split application) to control weeds not controlled by the PRE herbicides. Weed control is very expensive, and cultivation or hand labor is frequently needed. In 2000 the "micro-rate", a combination of desmedipham & phenmedipham at 0.09 kg/ha or desmedipham & phenmedipham & ethofumesate at 0.09 kg/ha + triflusaluron at 0.004 kg/ha + clopyralid at 0.026 kg/ha + 1.5% methylated seed oil (MSO), received registration in Michigan. The micro-rate provides good to excellent annual weed control and allows the grower to apply POST herbicides throughout the day and not just in the evening. However, the proper timing of each of the four to five micro-rate applications is important to achieve complete weed control and some growers have reported more injury from micro-rate applications.

The objective of this study was to evaluate weed control, sugarbeet injury, yield, and quality in sugarbeet treated with various herbicide programs. Herbicide treatments consisted of a factorial arrangement of five PRE herbicides, including no PRE, cycloate at 3.36 kg/ha, pyrazon 4.48 kg/ha, ethofumesate at 1.68 kg/ha, s-metolachlor at 1.42 kg/ha, and five POST herbicides, including no POST, desmedipham & phenmedipham at 0.56 kg/ha + triflusaluron at 0.017 kg/ha, desmedipham & phenmedipham & ethofumesate at 0.56 kg/ha + triflusaluron at 0.017 kg/ha, desmedipham & phenmedipham at 0.09 kg/ha + triflusaluron at 0.004 kg/ha + clopyralid at 0.026 kg/ha + 1.5% MSO, desmedipham & phenmedipham & ethofumesate at 0.09 kg/ha + triflusaluron at 0.004 kg/ha + clopyralid at 0.026 kg/ha + 1.5% MSO. The experimental design was a RCB arranged in a 5 X 5 factorial with four replicates. There were three locations in 2001 and two locations in 2002. PRE only treatments were hand weeded to determine the effect of herbicide only on sugar beet yield and quality.

Common lambsquarters control was 95% or greater in all treatments combined over locations. Cycloate, pyrazon, and ethofumesate increased common lambsquarters and *Amaranthus* control compared to the no PRE treatment. S-metolachlor increased *Amaranthus* control compared to the no PRE treatment. Common lambsquarters and *Amaranthus* control was 95 to 97% among POST treatments. Yields were similar among all treatments. Postemergence treatments applied at the micro-rate or standard-split provided similar weed control and sugarbeet yield when applied after preemergence herbicides. Sugarbeet injury was not affected by preemergence herbicides, and was slightly higher with desmedipham & phenmedipham & ethofumesate at the micro-rate compared to other postemergence treatments.