RENNER, KAREN A.[1]*, KYLE J. FIEBIG[1], and JAMES F. STEWART[2], [1]Michigan State University, Department of Crop and Soil Sciences, East Lansing, MI 48824-1325 and [2]Imperial Sugar Co., Caro, MI 48723. **Sugarbeet and weed response to split and micro-rates of postemergence herbicides in Michigan.**

ABSTRACT

In 2000, 34% of Michigan's sugarbeet growers applied postemergence herbicides as micro-rate applications. This resulted in 41% of Michigan's sugar beet acres being treated with micro-rate herbicides. The majority of these sugar beet fields were treated with three (30%), four (39%), or five (20%) micro-rate applications. The timing between these micro-rate applications ranged from 7 to 21 days dependent on field and weather conditions. Seventy-six growers reported a concern for injury to sugarbeet following micro-rate applications. In previous research, sugarbeet response to postemergence (POST) herbicides was reduced by micro-rate applications compared to standard split applications. Research was conducted at three sites in 2000 to compare sugarbeet and weed response to standard split and micro-rate applications of POST herbicides. Herbicide treatments included desmedipham + phenmedipham (Betamix) + triflusulfuron (UpBeet) and desmedipham + phenmedipham + ethofumesate (Betamix Progress) + triflusulfuron (UpBeet), with and without clopyralid (Stinger). Betamix and Progress treatments included the current formulation and a formulation that contained oil. All micro-rate applications included methylated seed oil at 1.5%.

Sugar beets were planted at the Michigan Sugar site on March 29th, the Saginaw Valley Bean and Beet research farm on April 27th, and the East Lansing site on May 2nd. Micro-rate applications were started at the Michigan Sugar site 27 days after planting, at the Saginaw Valley site 18 days after planting, and at the East Lansing site 9 days after planting. These timings were based on the time that weeds were 1/8 inch or less in the field. Micro-rate applications were then made on a 7 to 8 day spray schedule with a total of five micro-rate applications at each site. Standard split applications were started at each site 7 days after the first micro-rate application. Weeds in these treatments were 1/4 to ½ inch tall at the time of the first standard split application. Sugarbeet response and weed control were evaluated five days after the fourth micro-rate application (the second part of the standard split application). Sugarbeet populations were also counted at this time. Plots were harvested and yield and % sugar converted to determine recoverable white sucrose per acre.

Micro-rate applications of Betamix were more injurious to sugarbeet than standard split applications at one of three sites. Sugarbeet response to micro-rate compared to standard split applications of Progress did not differ at any site. The addition of Stinger to micro-rate or standard split applications of Betamix or Progress did not increase sugarbeet response. Weed response was evaluated at two of three sites. Redroot pigweed and common lambsquarters were controlled by all standard split and micro-rate applications of Betamix or Progress, with and without Stinger, at one site. At the East Lansing site, redroot pigweed and velvetleaf control were greater in micro-rate treatments of Betamix + UpBeet + Stinger + methylated seed oil (MSO) compared to standard split applications of Betamix at 0.25 lb ai/acre + UpBeet + Stinger. Redroot pigweed, velvetleaf, and common ragweed control were also greater at East Lansing following micro-rate applications of Progress + UpBeet + Stinger + MSO compared to standard split applications of Progress at 0.25 lb ai/acre + UpBeet + Stinger followed by Progress at 0.33 lb ai/acre + UpBeet + Stinger. The East Lansing site

was not harvested because of the differences in weed control. There were no differences in sugar yield in the micro-rate compared to standard split treatments at either of the two harvested sites.