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INFLUENCE OF ADJUVANT ON WEED CONTROL AND SUGARBEET INJURY FROM HERBICIDE COMBINATIONS

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Past research has demonstrated that methylated seed oil adjuvants or a mixture of methylated seed oil plus basic blend adjuvants, when compared to other adjuvant types, generally provided the best combination of enhanced weed control and acceptable levels of sugarbeet injury when used with combinations of postemergence sugarbeet herbicides. Also, the basic blend adjuvants increase the pH of the spray solution and reduce the precipitation and nozzle plugging that are a common problem with micro-rate treatments. The micro-rate treatment in this experiment was Betamix + UpBeet + Stinger + one of the grass control herbicides + adjuvant at rates shown in Table 2. All adjuvant rates are given at % v/v. Numerous brands of methylated seed oil adjuvants, basic blend adjuvants and mixtures of methylated seed oil plus basic blend adjuvants are sold. The objective of this experiment was to compare adjuvants for their influence on plant phytotoxicity from sugarbeet herbicide combinations. Only a few of the many available adjuvants were tested in this experiment. Scoil, Sub 4 MSO, Destiny and MSO are methylated seed oil adjuvants. Quad 7 is a basic blend adjuvant. Sub 4 + 3 is a pH modifier. Bas and Z64 contain both methylated seed oil and basic blend adjuvants. Rivet is a mixture of methylated seed oil and organosilicone surfactant.

Dates and conditions for the experiment are provided in Table 1. Sugarbeet was seeded with a six-row plate planter and the rest of the crops were seeded with a grain drill. Redroot pigweed was a natural infestation. Herbicides were applied across the rows of crops to the center 7 feet of 11-foot-wide plots in 17 gpa water at 40 psi through 8002 nozzles. Sugarbeet injury and control of other species were evaluated visually July 4 at Crookston and June 28 at Fargo.

The three grass herbicides plus Scoil applied once at fall rates gave no sugarbeet injury, no control of redroot pigweed and 99 to 100% grass control (Table 2). The micro-rate with Select at 2 fl oz and Scoil applied four times gave 10% sugarbeet injury, 99% redroot pigweed control and 100% grass control. A conventional rate of Betamix + UpBeet + Stinger + Select (no oil) applied three times at 24/32/49 fl oz + 0.25 oz + 2 fl oz gave 22% sugarbeet injury, 98 % redroot pigweed control and 77% grass control. The increased rate of Betamix in the conventional rate treatment resulted in increased sugarbeet injury and the absence of oil adjuvant resulted in reduced grass control.

The comparison of adjuvants was with Poast at 5.1 fl oz in the micro-rate applied four times (Table 2). The micro-rate + Sub 4 + 3 + Sub 4 MSO at 0.13% + 1% gave less control of redroot pigweed and grass than the micro-rate + the best adjuvants. Increasing the Sub 4 MSO rate from 1% to 1.5% resulted in