Influence of Agriliance Adjuvants on Half-Rate Herbicide Programs in Sugarbeets in 2007.

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A field study was initiated near Scottsbluff, Nebraska to compare the effectiveness of various herbicides applied postemergence for selective weed control in sugarbeet. The experimental design was a randomized complete block with four replications. Plots were 11 feet wide by 30 feet long and were located on a sandy loam soil with a pH of 8.3 and organic matter content of 0.8%. Sugarbeet, 'Beta 7341R', were planted on April 26 and irrigated on May 1 and 9 to enhance sugarbeet seed germination and early season crop vigor. Postemergence herbicide application began on May 15 when sugarbeet were in the cotyledon growth stage. Herbicides were applied with a tractor-mounted sprayer calibrated to deliver 20 gallons of water per acre at 36-psi pressure with Spraying Systems 11002 VS nozzles. Environmental conditions and weed growth stages at the time of herbicide application are given in Table 1.

When compared to the nontreated check none of the herbicide treatments reduced sugarbeet stand (Table 2). Crop injury from herbicides was evaluated on June 3 and June 11. On June 11, sugarbeet injury was greater in plots treated with the Half-Rate plus Select Max plus Scoil compared to areas treated with the Half-Rate without the addition of Select Max.

Weed populations were moderate and consisted of common lambsquarters, redroot pigweed, hairy nightshade, common purslane, kochia, and stinkgrass at densities of 219, 13, 27, 56, 5, and 8 plants per 46 sq ft respectively. Common lambsquarters was present at the greatest density. Kochia present in the plot area had been shown to be SU-tolerant on several different occasions. All the herbicide treatments did an excellent job of controlling common lambsquarters, redroot pigweed, hairy nightshade, and common purslane (Table 2). The addition of the adjuvant AG 05006 at 0.75% v/v to the Half-Rate provided excellent kochia control. Scoil at 1.5% or Destiny at 1.5% added to the Half-Rate provided similar crop tolerance and weed control. The adjuvant AG 05006 was combined with the Half-Rate at 1.5, 1.0, or 0.75% v/v with the trend for the 0.75% rate to provide the greatest kochia control. The adjuvant AG 05055 at

2.5% v/v also seemed to have potential for use with the Half-Rate herbicide program.

Table 1. Environmental Conditions at the Time of Herbicide Application.

Date	Air temperature	Humidity	Wind speed & direction	Time of day	Crop growth stage	Weed height					
						Colq	Rrpw	Hans	Copu	Kocz	Stgr
	(F)	(%)	(mph)			- - - - - - - - - - (inches) - - - - - - - - - -					
May 15	52	59	5 NW	9:00 am	cotyledon	1.5	1	0.75	—	0.5	—
May 21	73	40	5 SE	10:00 am	2 true-leaves	2.0	1.5	1	1	1	1
May 30	55	64	11 NW	10:00 am	4 true-leaves	3	2.5	1.5	1.5	3	1.5

Rainfall and irrigation before and after herbicide application:

Date	Amount
	- (inches) -
May 1	0.75
May 3	0.26
May 9	0.50

Date	Amount
	- (inches) -
May 21	0.23
May 22	0.75
May 29	0.23

Date	Amount
	- (inches) -
June 6	0.75
June 7	0.08

Table 2. Influence of Agriliance Adjuvants on Half-Rate Herbicide Programs in Sugarbeets in 2007.

Herbicide treatment	Rate	Time of application [1]	Sugarbeet			Percent weed control 6/6 [3]						
			Visual injury [2]		Stand							
			6/3	6/11	6/6	Colq	Rrpw	Hans	Copu	Kocz	Stgr	Avg
	(lb/acre)		----(%)----		(plants/acre)	----------(%)----------						
Nontreated	—	—	0	0	51100	0	0	0	0	0	0	0
Betamix + Upbeet + Stinger + Scoil (1.5%)	0.16 + 0.008 + 0.04	Cot										
Betamix + Upbeet + Stinger + Scoil	0.16 + 0.008 + 0.04	2 TL										
Betamix + Upbeet + Stinger + Scoil	0.16 + 0.008 + 0.04	4 TL	13	10	50730	99	99	99	99	80	99	95
Betamix + Upbeet + Stinger + Destiny (1.5%)	0.16 + 0.008 + 0.04	Cot										
Betamix + Upbeet + Stinger + Destiny	0.16 + 0.008 + 0.04	2 TL										
Betamix + Upbeet + Stinger + Destiny	0.16 + 0.008 + 0.04	4 TL	10	7	53000	99	99	99	99	74	99	94
Betamix + Upbeet + Stinger + AG 05006 (1.5%)	0.16 + 0.008 + 0.04	Cot										
Betamix + Upbeet + Stinger + AG 05006	0.16 + 0.008 + 0.04	2 TL										
Betamix + Upbeet + Stinger + AG 05006	0.16 + 0.008 + 0.04	4 TL	16	14	50300	99	99	99	99	85	93	95
Betamix + Upbeet + Stinger + AG 05006 (1.0%)	0.16 + 0.008 + 0.04	Cot										
Betamix + Upbeet + Stinger + AG 05006	0.16 + 0.008 + 0.04	2 TL										
Betamix + Upbeet + Stinger + AG 05006	0.16 + 0.008 + 0.04	4 TL	16	15	44700	99	97	99	99	25	99	86
Betamix + Upbeet + Stinger + AG 05006 (0.75%)	0.16 + 0.008 + 0.04	Cot										
Betamix + Upbeet + Stinger + AG 05006	0.16 + 0.008 + 0.04	2 TL										
Betamix + Upbeet + Stinger + AG 05006	0.16 + 0.008 + 0.04	4 TL	15	11	52400	99	99	99	99	99	96	98
Betamix + Upbeet + Stinger + AG 05055 (2.5%)	0.16 + 0.008 + 0.04	Cot										
Betamix + Upbeet + Stinger + AG 05055	0.16 + 0.008 + 0.04	2 TL										
Betamix + Upbeet + Stinger + AG 05055	0.16 + 0.008 + 0.04	4 TL	16	11	54300	99	99	99	99	85	99	96
Betamix + Upbeet + Stinger + Select Max + Scoil (1.5%)	0.16 + 0.008 + 0.04 + 0.022	Cot										
Betamix + Upbeet + Stinger + Select Max + Scoil	0.16 + 0.008 + 0.04 + 0.022	2 TL										
Betamix + Upbeet + Stinger + Select Max + Scoil	0.16 + 0.008 + 0.04 + 0.022	4 TL	21	23	54530	99	99	99	99	94	99	98
Betamix + Upbeet + Stinger	0.33 + 0.016 + 0.08	Cot										
Betamix + Upbeet + Stinger	0.33 + 0.016 + 0.08	2 TL										
Betamix + Upbeet + Stinger + Select Max	0.33 + 0.016 + 0.08 + 0.068	4 TL	14	18	51100	99	99	99	99	94	99	98
Betamix + Upbeet + Stinger	0.33 + 0.016 + 0.08	Cot										
Betamix + Upbeet + Stinger	0.33 + 0.016 + 0.08	2 TL										
Betamix + Upbeet + Stinger + Select Max	0.33 + 0.016 + 0.08 + 0.091	4 TL	16	21	51300	99	99	99	99	74	93	93
LSD at 5%	—	—	7	11	NS	1	2	NS	NS	41	6	

[1] Time of application: sugarbeet cotyledon (Cot) growth stage, sugarbeet 2 true-leaf (2 TL), and sugarbeet 4 true-leaf (4 TL) growth stage.

[2] Visual injury evaluated on a scale from 0 to 100 with 0 equal to no injury and 100 equal to death of the plant.

[3] Weed control calculated from weed counts taken on June 6. Weed abbreviations: common lambsquarters (Colq), redroot pigweed (Rrpw), hairy nightshade (Hans), common purslane (Copu), kochia (Kocz), and stinkgrass (Stgr).