

Adjuvants with imazamox + fomesafen. Zollinger, Richard K. and Jerry L. Ries. An experiment was conducted near Wahpeton, ND, to evaluate crop response and weed control of herbicides with various adjuvants applied POST. 'Vista' navy bean was planted on June 3, 2003. POST treatments were applied on July 7 at 12:15 pm with 76 F air, 84 F soil surface, 44% relative humidity, 20% clouds, 4 to 8 mph NW wind, dry soil surface, moist subsoil, poor crop vigor, and no dew present to V2 to V3 navy bean. Weed species present were: 1 to 5 inch (10 to 30/yd<sup>2</sup>) redroot pigweed; 2 to 4 inch (1 to 3/yd<sup>2</sup>) common cocklebur; 2 to 6 inch (5 to 15/yd<sup>2</sup>) wild-proso millet; 1 to 5 inch (10 to 35/yd<sup>2</sup>) common ragweed; 2 to 10 inch (5 to 20/ft<sup>2</sup>) yellow foxtail; and 1 to 4 inch (5 to 10/yd<sup>2</sup>) common lambsquarters. Treatments were applied to the center 6.7 feet of the 10 by 40 foot plots with a backpack-type plot sprayer delivering 8.5 gpa at 40 psi through 8001 flat fan nozzles. The experiment had a randomized complete block design with three replicates per treatment.

All treatments completely controlled yellow foxtail, redroot pigweed, and common cocklebur. Conditions at application were ideal because of good soil moisture and warm temperatures. Dry bean were initially stressed at application from excess water but weed growth was good and uniform. Very little precipitation was measured and dry conditions existed for most of the growing season. The weed spectrum was ideal to measure imazamox activity primarily on common lambsquarters and fomesafen activity primarily on common ragweed. Reduced rates of imazamox and fomesafen were used to measure adjuvant enhancement. As the fomesafen rate increased when applied with imazamox, control of wild-proso millet, common lambsquarters, and common ragweed decreased. The only explanation is that nonionic surfactant did not provide the necessary adjuvant load since full imazamox rates were used and both imazamox and fomesafen activity increases with oil adjuvants. This mix is used by dry bean growers when common ragweed is present but adjuvant usage is restricted to NIS because of the imazamox label. Reducing the imazamox rate by 50% to 0.016 lb/A, which is half the label rate, and increasing the fomesafen rate to 0.063, which is slightly more than half the label rate for dry bean, and adding an MSO + basic pH blend adjuvant (Renegade) generally overcame the antagonism. The dry bean micro-rate treatment of one application of low rates of bentazon + sethoxydim + imazamox + fomesafen + Renegade gave nearly complete weed control. (Dept. of Plant Sciences, North Dakota State University, Fargo).

Table. Adjuvants with imazamox + fomesafen (Zollinger and Ries).

Treatment <sup>1</sup>	Rate (lb/A)	July 21			August 4		
		PANMI (%)	CHEAL (%)	AMBEL (%)	PANMI (%)	CHEAL (%)	AMBEL (%)
Imazamox+fomesafen+NIS	0.031+0.063	50	89	58	43	93	90
Immx+fome+NIS	0.031+0.1	40	63	49	33	57	57
Immx+fome+NIS	0.031+0.125	37	55	50	30	55	50
Immx+fome+Linkage	0.031+0.063	57	74	82	48	75	72
Immx+fome+Renegade	0.016+0.1	85	84	82	83	83	85
Bentazon+sethoxydim+fome+ immx+Renegade	0.038+0.075+0.075+ 0.007	92	92	96	94	95	95
LSD (0.05)		7	7	11	9	7	5

<sup>1</sup>NIS = nonionic surfactant = Activator 90 at 0.25% v/v; Linkage = basic pH blend at 1% v/v; Renegade = methylated seed oil basic blend at 1% v/v.