Spray nozzle and adjuvant effects on fomesafen (Flexstar formulation) efficacy. Ramsdale, Brad K., Sam J. Lockhart, and Calvin G. Messersmith. The experiment was conducted to examine the influence of drift-reducing nozzles and adjuvants on fomesafen (Flexstar formulation) efficacy. Bioassay species were planted as 6-ft-wide strips side-by-side. Plots 12 ft wide were laid out perpendicular to the strips so that each plot contained all three assay species. Treatments were applied 10 gpa with an all-terrain vehicle equipped with a four-nozzle boom (20-inch spacing) offset to one side. Experimental design was a randomized complete block with four replicates. Weed control was evaluated visually where 0 equaled no visible injury and 100 equaled complete death of assay species.

Experiment location	Fargo	Casselton
Planting date	May 22	May 24
Treatment date	June 18	June 20
Air temperature (F)	75	72
Relative humidity (%)	65	40
Wind (mph)	12-15	5
Sky (% clouds)	80	40
Flax		
variety	'Neche'	'Neche'
height (inch)	5-7	6-8
Sunflower		
variety	F_2 oilseed	F_2 oilseed
height (inch)	5-7	6-8
Tame buckwheat		
variety	'Mancan'	'Mancan'
height (inch)	5-7	8-10

The Extended Range nozzle at 40 psi represented a standard flat-fan nozzle application. Fomesafen (Flexstar formulation) at 0.13 lb/A provided complete control of flax and tame buckwheat for all treatments. Sunflower control by fomesafen at Fargo was not affected by nozzle type when applied with petroleum oil, methylated vegetable oil, or nonionic surfactant. However, fomesafen plus basic pH blend adjuvant provided greater sunflower control when applied through Extended Range nozzles than drift-reducing nozzles. Sunflower control by fomesafen at Casselton was not affected by nozzle type when applied with petroleum oil, methylated vegetable oil, or basic pH blend adjuvants. However, fomesafen plus nonionic surfactant provided greater sunflower control when applied through Extended Range nozzles than drift-reducing nozzles. Fomesafen efficacy was generally similar regardless of adjuvant. (This material is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under Agreement No. 00-34361-9038. Dept. of Plant Sciences, North Dakota State University, Fargo)

Table 1. Spray nozzle and adjuvant effects on fomesafen (Flexstar formulation) efficacy, Fargo, ND. (Ramsdale, Lockhart, and Messersmith)

					June 27			July 8
Treatment[ab]	Rate	Nozzle[c]	Pressure	Speed	Sunflower	Tame buckwheat	Flax	Sunflower
	(lb/A)		(psi)	(mph)	(%)	(%)	(%)	(%)
Fomesafen + PO	0.13 + 1.5 pt	XR 11002	40	6	80	99	99	49
Fomesafen + PO	0.13 + 1.5 pt	TT 11002	20	4.2	79	99	99	48
Fomesafen + PO	0.13 + 1.5 pt	AI 11002	60	7.1	81	99	99	50
Fomesafen + PO	0.13 + 1.5 pt	TDXL-110-02	60	7.1	83	99	99	53
Fomesafen + MVO	0.13 + 1.5 pt	XR 11002	40	6	86	99	99	60
Fomesafen + MVO	0.13 + 1.5 pt	TT 11002	20	4.2	84	99	99	52
Fomesafen + MVO	0.13 + 1.5 pt	AI 11002	60	7.1	87	99	99	58
Fomesafen + MVO	0.13 + 1.5 pt	TDXL-110-02	60	7.1	89	99	99	63
Fomesafen + NIS	0.13 + 0.25%	XR 11002	40	6	80	99	99	49
Fomesafen + NIS	0.13 + 0.25%	TT 11002	20	4.2	79	99	99	49
Fomesafen + NIS	0.13 + 0.25%	AI 11002	60	7.1	84	99	99	55
Fomesafen + NIS	0.13 + 0.25%	TDXL-110-02	60	7.1	87	99	99	56
Fomesafen + BB	0.13 + 1%	XR 11002	40	6	92	99	99	65
Fomesafen + BB	0.13 + 1%	TT 11002	20	4.2	80	99	99	50
Fomesafen + BB	0.13 + 1%	AI 11002	60	7.1	83	99	99	54
Fomesafen + BB	0.13 + 1%	TDXL-110-02	60	7.1	83	99	99	53
LSD (5%)					6	NS	NS	8

[a] PO = Herbimax petroleum oil concentrate; MVO = Scoil methylated vegetable oil; NIS = Activator 90 nonionic surfactant; BB = Quad 7 basic pH blend adjuvant.
[b] All treatments were applied at 10 gpa.
[c] XR = Extended Range; TT = Turbo TeeJet; AI = AI TeeJet; TDXL = TurboDrop XL.

Table 2. Spray nozzle and adjuvant effects on fomesafen (Flexstar formulation) efficacy, Casselton, ND. (Ramsdale, Lockhart, and Messersmith)

					July 1			July 9
Treatment[ab]	Rate	Nozzle[c]	Pressure	Speed	Sunflower	Tame buckwheat	Flax	Sunflower
	(lb/A)		(psi)	(mph)	(%)	(%)	(%)	(%)
Fomesafen + PO	0.13 + 1.5 pt	XR 11002	40	6	85	99	99	65
Fomesafen + PO	0.13 + 1.5 pt	TT 11002	20	4.2	88	99	99	71
Fomesafen + PO	0.13 + 1.5 pt	AI 11002	60	7.1	76	99	99	55
Fomesafen + PO	0.13 + 1.5 pt	TDXL-110-02	60	7.1	76	99	99	55
Fomesafen + MVO	0.13 + 1.5 pt	XR 11002	40	6	91	99	99	76
Fomesafen + MVO	0.13 + 1.5 pt	TT 11002	20	4.2	87	99	99	70
Fomesafen + MVO	0.13 + 1.5 pt	AI 11002	60	7.1	88	99	99	66
Fomesafen + MVO	0.13 + 1.5 pt	TDXL-110-02	60	7.1	88	99	99	66
Fomesafen + NIS	0.13 + 0.25%	XR 11002	40	6	97	99	99	91
Fomesafen + NIS	0.13 + 0.25%	TT 11002	20	4.2	80	99	99	60
Fomesafen + NIS	0.13 + 0.25%	AI 11002	60	7.1	84	99	99	61
Fomesafen + NIS	0.13 + 0.25%	TDXL-110-02	60	7.1	80	99	99	60
Fomesafen + BB	0.13 + 1%	XR 11002	40	6	94	99	99	79
Fomesafen + BB	0.13 + 1%	TT 11002	20	4.2	84	99	99	65
Fomesafen + BB	0.13 + 1%	AI 11002	60	7.1	90	99	99	68
Fomesafen + BB	0.13 + 1%	TDXL-110-02	60	7.1	83	99	99	60
LSD (5%)					11	NS	NS	15

[a] PO = Herbimax petroleum oil concentrate; MVO = Scoil methylated vegetable oil; NIS = Activator 90 nonionic surfactant; BB = Quad 7 basic pH blend adjuvant.
[b] All treatments were applied at 10 gpa.
[c] XR = Extended Range; TT = Turbo TeeJet; AI = AI TeeJet; TDXL = TurboDrop XL.