

Spray nozzle and adjuvant effects on acifluorfen 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 acifluorfen 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 at 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	'Neché'	'Neché'
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. Acifluorfen provided 90% or greater control of flax and tame buckwheat for all treatments, which minimized differences among treatments. Acifluorfen applied through drift reducing nozzles provided similar sunflower control compared to application through an Extended Range nozzle regardless of adjuvant. Acifluorfen was most effective when applied with a methylated vegetable oil adjuvant and least effective with a nonionic surfactant. Sunflower control by acifluorfen plus the basic pH blend adjuvant was generally similar to acifluorfen plus petroleum oil. (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 acifluorfen efficacy, Fargo, ND. (Ramsdale, Lockhart, and Messersmith)

Treatment ^{ab}	Rate (lb/A)	Nozzle ^c	Pressure (psi)	Speed (mph)	June 27			July 8
					Sunflower (%)	Tame buckwheat (%)	Flax (%)	Sunflower (%)
Acifluorfen + PO	0.13 + 1.5 pt	XR 11002	40	6	74	97	98	35
Acifluorfen + PO	0.13 + 1.5 pt	TT 11002	20	4.2	71	95	97	38
Acifluorfen + PO	0.13 + 1.5 pt	AI 11002	60	7.1	74	97	96	35
Acifluorfen + PO	0.13 + 1.5 pt	TDXL-110-02	60	7.1	74	98	98	39
Acifluorfen + MVO	0.13 + 1.5 pt	XR 11002	40	6	84	96	99	58
Acifluorfen + MVO	0.13 + 1.5 pt	TT 11002	20	4.2	86	99	99	61
Acifluorfen + MVO	0.13 + 1.5 pt	AI 11002	60	7.1	82	99	98	60
Acifluorfen + MVO	0.13 + 1.5 pt	TDXL-110-02	60	7.1	83	99	98	55
Acifluorfen + NIS	0.13 + 0.25%	XR 11002	40	6	65	96	98	25
Acifluorfen + NIS	0.13 + 0.25%	TT 11002	20	4.2	64	94	96	24
Acifluorfen + NIS	0.13 + 0.25%	AI 11002	60	7.1	68	96	98	31
Acifluorfen + NIS	0.13 + 0.25%	TDXL-110-02	60	7.1	72	95	96	35
Acifluorfen + BB	0.13 + 1%	XR 11002	40	6	75	99	99	45
Acifluorfen + BB	0.13 + 1%	TT 11002	20	4.2	78	99	99	44
Acifluorfen + BB	0.13 + 1%	AI 11002	60	7.1	75	99	99	45
Acifluorfen + BB	0.13 + 1%	TDXL-110-02	60	7.1	74	97	98	36
LSD (5%)					6	3	2	7

^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 acifluorfen efficacy, Casselton, ND. (Ramsdale, Lockhart, and Messersmith)

Treatment ^{ab}	Rate (lb/A)	Nozzle ^c	Pressure (psi)	Speed (mph)	July 1			July 9
					Sunflower (%)	Tame buckwheat (%)	Flax (%)	Sunflower (%)
Acifluorfen + PO	0.13 + 1.5 pt	XR 11002	40	6	55	97	99	31
Acifluorfen + PO	0.13 + 1.5 pt	TT 11002	20	4.2	53	94	99	26
Acifluorfen + PO	0.13 + 1.5 pt	AI 11002	60	7.1	61	96	99	35
Acifluorfen + PO	0.13 + 1.5 pt	TDXL-110-02	60	7.1	56	97	99	35
Acifluorfen + MVO	0.13 + 1.5 pt	XR 11002	40	6	73	99	99	44
Acifluorfen + MVO	0.13 + 1.5 pt	TT 11002	20	4.2	69	99	99	41
Acifluorfen + MVO	0.13 + 1.5 pt	AI 11002	60	7.1	73	99	99	48
Acifluorfen + MVO	0.13 + 1.5 pt	TDXL-110-02	60	7.1	73	99	99	49
Acifluorfen + NIS	0.13 + 0.25%	XR 11002	40	6	44	94	99	21
Acifluorfen + NIS	0.13 + 0.25%	TT 11002	20	4.2	39	90	99	18
Acifluorfen + NIS	0.13 + 0.25%	AI 11002	60	7.1	44	92	99	25
Acifluorfen + NIS	0.13 + 0.25%	TDXL-110-02	60	7.1	51	93	99	26
Acifluorfen + BB	0.13 + 1%	XR 11002	40	6	66	99	99	39
Acifluorfen + BB	0.13 + 1%	TT 11002	20	4.2	63	99	99	34
Acifluorfen + BB	0.13 + 1%	AI 11002	60	7.1	66	99	99	39
Acifluorfen + BB	0.13 + 1%	TDXL-110-02	60	7.1	69	99	99	39
LSD (5%)					8	4	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.