

Weed control in direct-seeded field pea

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Weed control and field pea response to selected soil- and POST-applied herbicides were evaluated in a randomized complete-block design with three replicates. The field experiment was conducted on a Heimdahl loam soil with 6.9 pH and 3.2% organic matter at the NDSU Carrington Research Extension Center. Herbicide treatments were applied with a CO₂ pressurized hand-held plot sprayer at 17 gal/A at 35 psi through 8002 flat-fan nozzles. Fall treatments were applied November 9, 2006 with 31 F, 70% RH, 25% clear sky, and 9 mph wind. On May 2, inoculated 'Admiral' field pea was seeded into standing wheat stubble in 7-inch rows at a rate of 300,000 pure live seeds/A. PRE treatments were applied on May 3 with 52 F, 66% RH, 40% clear sky, and 10 mph wind. Rainfall totaled 1.1 inches within 2 d following PRE application. Early POST (EPOST) treatments were applied on May 24 with 47 F, 78% RH, clear sky, and no wind to 3- to 4-inch tall field pea, 1- to 3-leaf foxtail (green and yellow) and 2-leaf redroot pigweed. POST treatments were applied on June 8 with 47 F, 82% RH, clear sky, and 10 mph wind to 6- to 8-inch tall field pea, 1- to 4-leaf foxtail, 0.5- to 1-inch tall common lambsquarters, and 2- to 4-leaf pigweed. Average plant density in untreated plots in early June: field pea = 11 plants/ft², foxtail = 5 plants/ft², and broadleaf weeds = 1 to 2 plants/ft². Preharvest (PH) treatments were applied on July 17 with 80 F, 66% RH, 50% clear sky, and 4 mph wind to physiologically-mature field pea. The trial was harvested with a plot combine on August 1.

Broadleaf weed control was excellent with all herbicide treatments except Linuron at 0.5 lb/A (Table). No crop injury was observed with the fall or spring PRE treatments (data not shown). Slight pea height reduction occurred with treatments that included bentazon+sethoxydim+MSO+UAN (Table). PH crop desiccation treatments were highly effective for whole plant dry down when visually evaluated 1 wk after application. Seed yield was similar among treatments, likely due to low crop injury, a competitive crop stand and low weed density. Test weight with linuron was lower than the untreated check, while other herbicide treatments were similar to the untreated check.

Table. Weed control and crop response with soil- and POST-applied herbicides in direct-seeded field pea, Carrington, 2007.

Treatment ¹	Application timing ²	Rate lb ai/A	Field pea						Seed Yield bu/A	Test Weight lb/bu
			July 3			Plant height reduction		Brown foliage		
			Foxtail spp. ³ -----% control	Common lambs- quarters	Redroot pigweed	6/22	7/6	7/25		
Untreated	x	x	0	0	0	0	0	x	45.5	64.7
Pendimethalin/ bentazon+sethoxydim+MSO+UAN	Fall/POST	1.5/0.5+ 0.1+1%+2pt	98	99	98	3	3	x	47.3	64.2
Sulfentrazone/ bentazon+sethoxydim+MSO+UAN	Fall/POST	0.105/0.5+ 0.1+1%+2pt	99	99	99	4	3	x	42.9	64.5
Sulfentrazone/ bentazon+sethoxydim+MSO+UAN	PRE/POST	0.105/0.5+ 0.1+1%+2pt	99	99	99	7	3	x	51.4	64.4
Pendimethalin/ bentazon+sethoxydim+MSO+UAN	PRE/POST	1.5/0.5+ 0.1+1%+2pt	99	99	99	8	2	x	48.8	64.4
Sulfentrazone+pendimethalin/ bentazon+sethoxydim+MSO+UAN	PRE/POST	0.07+0.75/ 0.5+0.1+1%+2pt	99	99	99	3	2	x	46.1	64.7
Imazethapyr/ bentazon+sethoxydim+MSO+UAN	PRE/POST	0.016/0.5+ 0.1+1%+2pt	99	99	99	7	3	x	50.0	64.1
Linuron	PRE	0.5	70	78	78	0	0	x	57.3	63.7
Linuron	PRE	1	68	96	91	0	0	x	56.7	64.0
KIH 485	PRE	0.15	91	98	99	0	2	x	54.3	64.7
KIH 485	PRE	0.3	98	99	99	0	0	x	54.4	64.4
Imazamox+bentazon+sethoxydim+MSO +UAN	POST	0.016+1+0.2+ 1%+2pt	96	99	98	12	5	x	43.8	65.0
Imazamox+bentazon+sethoxydim+MSO +UAN	POST	0.016+0.5+0.1+ 1%+2pt	98	99	94	4	2	x	47.6	64.5
Imazamox+bentazon+sethoxydim+MSO +UAN	EPOST	0.016+0.5+0.1+ 1%+2pt	90	96	94	2	2	x	51.2	64.7
Imazamox+bentazon+sethoxydim+MSO +UAN/ Imazamox+bentazon+sethoxydim+MSO +UAN	EPOST/ POST	0.008+0.5+ 0.1+1%+2pt/ 0.008+0.5+ 0.1+1%+2pt	99	99	99	12	7	x	47.6	64.8
Imazamox+bentazon+sethoxydim+MSO +UAN	POST	0.032+1+0.2+ 1%+2pt	96	99	98	9	0	x	40.3	65.3
Sulfentrazone+imazethapyr/ flumioxazin+MSO	PRE/PH	0.105+0.016/ 0.063+2pt	96	99	99	0	0	96	55.9	64.7
Sulfentrazone+imazethapyr/ paraquat+NIS	PRE/PH	0.105+0.016/ 0.5+0.25%	96	99	99	0	0	100	49.5	64.7
C.V. (%)			15	5	6	85	163	1	14	1
LSD (0.05)			21	8	8	6	NS	2	NS	0.7

¹MSO=Destiny, a methylated seed oil from WinField, St. Paul, MN; Pendimethalin=Prowl H₂O, BASF; UAN=urea ammonium nitrate. Paraquat=Gramoxone Inteon, Syngenta; NIS=Preference, a nonionic surfactant from WinField, St. Paul, MN.

²Fall=November 9, 2006; PRE=May 3, 2006; EPOST=May 24; POST=June 8; PH=July 17.

³Foxtail spp.=yellow and green.