Weed control with soil- and POST-applied herbicides in field pea. Endres, Gregory J., Robert A. Henson, and Blaine G. Schatz. Weed control and field pea response to selected soil- and POST-applied herbicides were evaluated in a randomized complete block with three replicates. The experiment was conducted on a Heimdahl loam soil with 6.8 pH and 3.4% organic matter at Carrington, ND in 2002. The trial area was cultivated on April 30 with a Melroe culti-harrow. Herbicide treatments were applied at 18 gal/A and 30 to 35 psi through 80015 flat fan nozzles to 5 by 25 ft plots with a CO_2 pressurized hand-held plot sprayer. PPI treatments were applied on May 2 with 38 F, 44% RH, 7 mph wind, and clear sky and immediately incorporated twice using a Melroe culti-harrow set at a 2-inch depth. On May 3, inoculated 'Toledo' field pea was planted in 7-inch rows at pure live seed rates of 300,000 seeds/A. Guard plots were planted between treated plots. PRE treatments were applied on a dry soil surface on May 3 with 73 F, 26% RH, 11 mph wind, and 40% clear sky. A total of 1.12 inches of rainfall occurred during the 5-day period following application of PRE treatments. Early POST (EPOST) treatments were applied on May 30 with 72 F, 36% RH, 16 mph wind, and clear sky to 2-inch tall field pea, 1- to 3-leaf green and yellow foxtail, 0.5- to 1-inch tall common lambsquarters, 0.5-inch tall redroot and prostrate pigweed, and 0.5- to 1-inch tall wild buckwheat. POST treatments were applied on June 7 with 69 F, 37% RH, 8 mph wind, and 30% clear sky to 5- to 6-inch tall field pea, 3- to 4-leaf yellow and green foxtail, 1- to 2-inch tall common lambsquarters, 0.5- to 1-inch tall redroot and prostrate pigweed, and 1- to 3-inch tall wild buckwheat. Late POST (LPOST) treatments were applied on June 17 with 73 F, 58% RH, 10 mph wind, and 90% clear sky to 7- to 9-inch tall field pea, 4- to 5-leaf and tillering yellow and green foxtail, 3- to 6-inch tall common lambsquarters, 1- to 3-inch tall redroot and prostrate pigweed, and 2- to 8-inch tall wild buckwheat. Average plant density in untreated plots: field pea = 11/ft^2, yellow and green foxtail = 4/ft^2, common lambsquarters = 1/ft^2, redroot and prostrate pigweed = 7/ft^2, and wild buckwheat = 2/ft^2. Paraquat was preharvest applied at 0.5 lb/A across the trial on August 10. Field pea was hand harvested due to heavy growth of wild buckwheat on August 16, dried, and threshed with a plot combine.

Good to excellent foxtail control (82 to 99%) was achieved with all treatments (Table 1). Imazethapyr&pendimethalin generally provided excellent control of all weeds in the trial including wild buckwheat and pea seed yield was 42.0 to 47.4 bu/A (Table 2). Broadleaf weed control with PRE imazethapyr was greater compared to sulfentrazone treatments. The addition of 28%N to imazamox + bentazon at 0.188 lb/A + NIS did not increase weed control or pea injury. Imazamox + bentazon at 0.188 lb/A + Quad7 provided 95 to 99% control of common lambsquarters while imazamox + bentazon at 0.188 lb/A + NIS or NIS + 28%N provided 68 to 90% control. Imazethapyr + bentazon + sethoxydim + Quad7 provided good control of wild buckwheat (84 to 88%) and low pea injury (7%). Plots treated with Bentazon + sethoxydim + MSO generally yielded less due to poor late-season wild buckwheat control than plots treated with Imazamox + bentazon + NIS or Quad7. Similar weed control generally was achieved with imazamox + bentazon at 0.188 or 0.5 lb/A. LPOST application of imazamox + bentazon at 0.188 lb/A + NIS + 28%N gave weed control and pea yield similar to earlier application. (Carrington Research Extension Center, North Dakota Agric. Exp. Stn., North Dakota State Univ.)

Table 1. Weed control in field pea (Endres, Henson, and Schatz).

		4 wk after treatment				8 wk after treatment			
Treatment[a]	Rate	Foxtail spp.[b]	Common lambs-quarters	Pigweed spp.[b]	Wild buck-wheat	Foxtail spp.	Common lambs-quarters	Pigweed spp.	Wild buck-wheat
	(lb/A)	(% control)							
Untreated	---	0	0	0	0	0	0	0	0
PPI									
Imazethapyr& pendimethalin	0.031& 0.5	93	99	97	90	94	99	96	85
Imep&pend +pend	0.031&0.5 +0.9	96	99	99	97	95	99	97	93
PRE									
Imep	0.031	91	96	89	75	88	90	90	75
Sulfentrazone/ sethoxydim+MSO	0.125/ 0.2+2pt	99	70	68	27	96	72	65	34
Suen/seth +MSO(POST)	0.25/0.2 +2pt	99	81	71	66	97	66	60	66
Suen+metribuzin/ seth+MSO (POST)	0.187+0.25/ 0.2+2pt	99	67	65	58	99	62	55	47
EPOST									
Imazamox +bentazon +NIS+28%N	0.031 +0.188 +0.25%+2pt	95	91	95	82	89	76	93	78
POST									
Bent+seth+MSO	1+0.2+2pt	91	92	84	65	87	87	79	49
Imep+NIS	0.031+0.25%	93	75	81	75	84	70	83	77
Immx+bent +NIS	0.031+0.188+ 0.25%	94	82	92	74	88	68	92	71
Immx+bent +NIS+ 28%N	0.031+0.188+ 0.25%+2pt	95	90	97	76	90	76	95	74
Immx+bent +NIS+ 28%N	0.031+0.5 +0.25%+2pt	96	99	96	81	86	96	95	79
Immx+bent +seth+Quad7	0.016+1 +0.2+1%	91	99	96	79	82	95	90	71
Imep+bent +seth+Quad7	0.031+1 +0.2+1%	95	99	90	88	88	98	86	84
Immx+bent +Quad7	0.031+0.188+ 1%	98	99	97	75	90	95	93	73
Immx+bent +Quad7	0.031+0.5 +1%	97	95	97	75	91	92	94	74
LPOST									
Immx+bent +NIS+28%N	0.031+0.188+ 0.25%+2pt	87	85	92	72	90	81	91	71
LSD (0.05)		5	14	8	16	7	16	12	22

[a]MSO=Destiny, a methylated seed oil from Agriliance, St. Paul, MN; NIS=Preference, a nonionic surfactant from Agriliance, St. Paul, MN; Quad7=a surfactant blend from AGSCO, Grand Forks, ND.

[b]Foxtail spp.=Yellow and green; Pigweed spp.=Redroot and prostrate.

Table 2. Field pea response to herbicide treatments (Endres, Henson, and Schatz).

Treatment[a]	Rate	Crop injury Wk after treatment 2	4	Seed yield
	(lb/A)	---------- (%) ----------		(bu/A)
Untreated		0	0	17.5
Imazethapyr&pendimethalin	0.031&0.5	0	0	42.0
Imep&pend+pend	0.031&0.5+0.9	0	0	47.4
PRE				
Imep	0.031	0	0	44.9
Sulfentrazone/sethoxydim+MSO (POST)	0.125/0.2+2pt	0	0	32.1
Suen/seth+MSO (POST)	0.25/0.2+2pt	0	0	33.7
Suen+metribuzin/ seth+MSO (POST)	0.187+0.25/0.2+2pt	0	0	36.4
EPOST				
Imazamox+bentazon+NIS+28%N	0.031+0.188+0.25%+2pt	0	0	37.2
POST				
Bent+seth+MSO	1+0.2+2pt	0	0	24.2
Imep+NIS	0.031+0.25%	0	0	34.3
Immx+bent+NIS	0.031+0.188+0.25%	0	0	39.5
Immx+bent+NIS+28%N	0.031+0.188+0.25%+2pt	0	0	41.1
Immx+bent+NIS+28%N	0.031+0.5+ 0.25%+2pt	0	0	39.2
Immx+bent+seth+Quad7	0.016+1+0.2+1%	0	0	38.1
Imep+bent+seth+Quad7	0.031+1+0.2+1%	7	7	32.2
Immx+bent+Quad7	0.031+0.188+1%	0	0	41.8
Immx+bent+Quad7	0.031+0.5+1%	0	0	41.9
LPOST				
Immx+bent+NIS+28%N	0.031+0.188+0.25%+2pt	0	0	31.8
LSD (0.05)		3	3	11.7

[a]MSO=Destiny, a methylated seed oil from Agriliance, St. Paul; NIS=Preference, a nonionic surfactant from Agriliance, St. Paul, MN; Quad7=a surfactant blend from AGSCO, Grand Forks, ND.