

**Pea herbicide management trial at Waseca, MN - 1998.** Becker, Roger L., Vincent A. Fritz, James B. Hebel, Douglas W. Miller, and Bradley D. Kinkaid. The objective of this experiment was to evaluate weed control and pea injury with several soil applied and postemergence herbicides. This study was conducted on a Webster clay loam soil with pH 6.4. A randomized complete block design with three reps was utilized. Plot size was 10 feet by 20 feet. 'Columbia' peas were seeded at 550,000 plants/A on May 13, 1998. Herbicide application data are provided below. Peas were harvested on July 10, 1998 from a 42 by 110 inch area within each plot. Weed control and pea harvest data are provided in the tables below.

Application Data

Treatment	PPI	PRE	POST
Date	5/12/98	5/15/98	6/3/98
Air Temp (°F)	65	79	56
Sky	--	cloudy	partly cloudy
Wind (mph)	SE 15-18	SE 13-15	NW 15
Relative Humidity (%)	--	--	63
Gift			
Size (inch)	--	--	0.5-3.5
Broadleaf weeds			
Size (inch)	--	--	2
Rainfall before			
Application			
Week 1 (inch)	0.84	0.83	0.47
Rainfall after			
Application			
Week 1 (inch)	1.55	1.53	0.44
Week 2 (inch)	1.40	1.4	0.55

Preplant incorporated and preemergence treatments generally did not provide complete giant foxtail or broadleaf weed control. All preemergence or preplant treatments provided giant foxtail control in the range of 43 to 69%. Broadleaf weed control was variable as well with clomazone showing weak activity on common lambsquarters and redroot pigweed. Clomazone applied preplant incorporated improved control of giant foxtail and common cocklebur compared with identical rates applied preemergence by the July ratings. However, control of lambsquarters, redroot pigweed and velvetleaf did not consistently show performance differences with one application method over the other comparing clomazone used alone or in a tank mixture with trifluralin.

Postemergence treatments of imidazolinone herbicides provided excellent weed control but did injure pea as reflected in pea yields, which were equal to that of the weedy check. This is possibly due to the fact that applications were made at or beyond the fourth node stage of pea growth when weeds were in the 2- to 4-inch stage of growth. Quizalofop provided excellent grass control and no broadleaf activity, yet resulted in pea yields equal to that of the highest yielding treatments. This shows the competitiveness of giant foxtail compared to mixed-species broadleaf weeds in reducing pea yields. It also shows that grass weeds are key target for pea

management if the broadleaf weeds species present do not pose product quality concerns. Treatments with CGA-248757 provided excellent weed control of all broadleaf species, but reduced pea yield below that of the weedy check due to herbicide injury. Treatments with similar rates of CGA-248757 did not result in significant pea growth or yield reductions last season indicating the effects of climate on expected level of injury with this herbicide. It should be noted that the CGA-248757 treatments did have moderate to poor foxtail control from the trifluralin component in the mixture.

Pea growth was variable in all plots. Growth reduction varied depending on weed competition and herbicide injury. The only herbicide injury that was distinct was that with imidazolinone herbicides and with CGA-248757.

Table 1. Pea herbicide weed management trial at Waseca, MN - 1998. (Becker et al.)

Treatment <sup>1</sup>	Rate <sup>1</sup> (lb ai/A)	Weed control									
		Gift		Cocb		Colq		Rrpw		VeLe	
		6/15	7/9	6/15	7/9	6/15	7/9	6/5	7/9	6/15	7/9
----- (%) -----											
<b>Preplant Incorporated</b>											
Trifluralin	0.75	78	43	58	18	88	90	78	90	58	47
Pendimethalin	1.5	61	52	18	22	93	76	92	75	40	43
Clomazone	0.375	67	59	70	42	78	63	70	38	79	85
Clomazone	0.5	76	60	38	47	87	63	65	13	83	92
Clomazone + trifluralin	0.375 + 0.375	63	53	80	13	83	53	80	67	75	82
Clomazone + trifluralin	0.5 + 0.5	79	69	73	45	82	93	90	78	83	48
<b>Preplant Incorporated and (Preemergence)</b>											
Trifluralin + (clomazone)	0.375 + (0.375)	86	64	62	10	77	93	55	93	60	80
<b>Preemergence</b>											
Clomazone	0.5	62	38	60	18	77	50	18	13	66	53
Sulfentrazone	0.31	87	59	99	95	99	95	99	95	93	95
Metolachlor & safener	3.0	77	48	45	42	70	43	71	53	52	42
<b>Postemergence</b>											
Imazamox + NIS <sup>2</sup> + 28%N <sup>3</sup>	0.032 + 0.25% + 1.25%	83	99	99	100	99	100	99	100	95	100
Imazethapyr + NIS + 28%N	0.047 + 0.25% + 1.25%	87	97	99	100	99	100	99	100	91	100
CGA 248757 + imazamox + NIS + 28%N	0.0036 + 0.032 + 0.25% + 1.25%	85	99	99	100	99	100	99	100	99	100
CGA 248757 + imazethapyr + NIS + 28%N	0.0036 + 0.047 + 0.25% + 1.25%	85	94	99	100	99	100	99	100	99	100
Quizalofop + COC <sup>4</sup>	0.096 + 1.0%	93	96	-	-	-	-	-	-	-	-
<b>Preplant Incorporated and (Postemergence)</b>											
Trifluralin + (CGA 248757 + COC)	(0.75) + (0.0045 + 1.25%)	87	40	99	98	99	98	99	98	99	98
Trifluralin + CGA 248757 + bentazon + COC)	(0.75) + (0.0036 + 1.0 + 1.25%)	87	43	99	98	99	98	99	98	99	98
Trifluralin + (bentazon + COC)	(0.75) + (1.0 + 1.25%)	71	51	99	98	99	98	99	98	99	98
Handweeded check		71	46	98	98	98	98	95	98	98	98
Weedy check		--	--	--	--	--	--	--	--	--	--
<b>LSD (0.05)</b>		16	17	39	39	17	29	23	26	17	26

<sup>1</sup> Treatments and rates in parenthesis represent a separate application.

<sup>2</sup> NIS = Class Preference nonionic surfactant.

<sup>3</sup> 28%N = 28% UAN fertilizer solution.

<sup>4</sup> COC = Class Crop Oil Concentrate.

Table 2. Pea herbicide weed management trial at Waseca, MN - 1998. (Becker et al.)

Treatment <sup>3</sup>	Rate <sup>3</sup> (lb ai/A)	Pea injury				Pea harvest			
		Chlorosis		S.R. <sup>1</sup>		G.R. <sup>2</sup>		Tend. <sup>4</sup>	Yield (cwt/A)
		6/15	7/9	6/15	7/9	6/15	7/9		
----- (%) -----									
<b>Preplant Incorporated</b>									
Trifluralin	0.75	0	0	0	11	0	94	23.7	
Pendimethalin	1.5	0	0	0	6	0	94	22.0	
Clomazone	0.375	0	2	0	9	0	94	27.3	
Clomazone	0.5	0	0	0	9	0	94	22.7	
Clomazone + trifluralin	0.375 + 0.375	0	0	0	5	0	99	24.0	
Clomazone + trifluralin	0.5 + 0.5	0	0	0	10	0	95	26.0	
<b>Preplant Incorporated and (Preemergence)</b>									
Trifluralin + (clomazone)	0.375 + (0.375)	0	1	0	6	0	96	26.3	
<b>Preemergence</b>									
Clomazone	0.5	0	0	0	7	7	99	24.3	
Sulfentrazone	0.31	0	2	0	34	3	97	20.7	
Metolachlor & safener	3.0	0	3	0	15	2	93	18.7	
<b>Postemergence</b>									
Imazamox + NIS <sup>5</sup> + 28%N <sup>6</sup>	0.032 + 0.25% + 1.25%	0	0	0	31	4	91	20.3	
Imazethapyr + NIS + 28%N	0.047 + 0.25% + 1.25%	0	0	0	19	0	87	18.0	
CGA 248757 + imazamox + NIS + 28%N	0.004 + 0.032 + 0.25% + 1.25%	24	0	0	51	8	87	15.7	
CGA 248757 + imazethapyr + NIS + 28%N	0.004 + 0.047 + 0.25% + 1.25%	17	0	0	57	10	92	17.0	
Quizalofop + COC <sup>7</sup>	0.096 + 1.0%	2	0	0	5	0	94	24.0	
<b>Preplant Incorporated and (Postemergence)</b>									
Trifluralin + (CGA 248757 + COC)	(0.75) + (0.0045 + 1.25%)	45	0	0	78	17	89	3.3	
Trifluralin + CGA 248757 + bentazon + COC)	(0.75) + (0.0036 + 1.0 + 1.25%)	20	6	0	52	8	87	10.3	
Trifluralin + (bentazon + COC)	(0.75) + (1.0 + 1.25%)	0	10	0	30	5	91	16.0	
Handweeded check		0	0	0	20	0	94	23.3	
Weedy check		0	0	0	0	0	94	15.3	
<b>LSD (0.05)</b>		8	ns	ns	14	7	5	5	

<sup>1</sup> S.R. = Stand reduction.

<sup>2</sup> G.R. = Growth reduction.

<sup>3</sup> Treatments and rates in parenthesis represent a separate application.

<sup>4</sup> Tend. = Tenderometer reading (relative scale of measure).

<sup>5</sup> NIS = Class Preference nonionic surfactant.

<sup>6</sup> 28%N = 28% UAN fertilizer solution.

<sup>7</sup> COC = Class Crop Oil Concentrate.