

**Pea - weed competition 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 competitiveness of two pea varieties with weeds under 4 levels of weed pressure. This study was conducted on a Webster clay loam soil with pH 6.4. A randomized complete block design with four reps was utilized. Plot size was 10 feet by 20 feet. 'Bolero' (leaf type) and 'Stampede' (afila type) peas were seeded at 500,000 plants/A on May 13, 1998. Four weed management levels were established using varying herbicide treatments. 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
Date	5/12/98
Air Temp (°F)	65
Wind (mph)	SE 15-18
Week 1 (inch)	0.84
Rainfall after Application	
Week 1 (inch)	1.55
Week 2 (inch)	1.40

Generally speaking the leaf-type pea (cv. Bolero) did not compete as effectively with weeds as did the afila pea (cv. Stampede). Visual control estimates showed significantly more giant foxtail present in the leaf-type pea when no herbicide was used due to competitiveness of the pea canopy architecture type. There also were higher giant foxtail populations in plots seeded to the leaf-type pea in the high intensity weed management treatment (pendimethalin + imazethapyr) (Table 2). This difference in competition between the two leaf types of pea was also reflected in giant foxtail biomass with a significantly higher level of biomass produced in the leaf-type pea with the low weed management treatment (pendimethalin at 0.375).

Of the broadleaf weeds present, only visual control ratings of redroot pigweed differed between the two leaf types indicating more redroot pigweed present in untreated plots seeded to the leaf-type pea. There were no differences in broadleaf weed population densities or biomass within any of the weed management levels compared between leaf type or within leaf type compared among management levels. Additionally, pea biomass, pea yield, and pea tenderometer readings did not differ between leaf type compared among weed management levels. There were differences in pea biomass and pea yield (but not tenderometer readings) compared among weed management levels within leaf type as expected by design due to incrementally increasing weed pressure.

None of these species, including giant foxtail, showed any differences in secondary flushes of these weeds due to differences in the canopy architecture. There was a nonsignificant trend for more giant foxtail seedlings where there was less pre-existing giant foxtail canopy.

Table 1. Pea - weed competition trial at Waseca, MN - 1998. Weed population densities. (Becker et al.)

Treatment	Rate (lb ai/A)	Weed Population Densities (6-25-98)					
		Gift	Cocb	Colq	Corw	Rrpw	Vele
		----- (#/ft <sup>2</sup> ) -----					
<b>Bolero Pea</b>							
Untreated check	--	30.0 (0.0) <sup>1</sup>	0.1 (0.0)	1.0 (0.7)	0.0 (0.0)	0.8 (0.0)	1.8 (0.3)
Pendimethalin	0.375	25.3 (1.1)	0.0 (0.0)	0.1 (0.3)	0.0 (0.0)	0.2 (0.2)	2.6 (0.0)
Pendimethalin	0.75	15.1 (0.7)	0.1 (0.0)	0.3 (0.4)	0.0 (0.0)	0.1 (0.0)	1.3 (0.2)
Pendimethalin + imazethapyr	0.75 + 0.047	14.8 (4.7)	0.0 (0.0)	0.3 (0.1)	0.0 (0.0)	0.0 (0.0)	1.1 (0.2)
<b>Stampede Pea</b>							
Untreated check	--	23.3 (0.0)	0.0 (0.0)	0.3 (0.5)	0.1 (0.0)	0.0 (0.3)	3.3 (0.0)
Pendimethalin	0.375	21.3 (2.3)	0.0 (0.0)	0.2 (0.3)	0.0 (0.0)	0.0 (0.0)	2.0 (0.3)
Pendimethalin	0.75	8.3 (3.0)	0.1 (0.0)	0.1 (0.2)	0.0 (0.0)	0.1 (0.0)	1.2 (0.0)
Pendimethalin + imazethapyr	0.75 + 0.047	1.3 (5.8)	0.1 (0.0)	0.1 (0.0)	0.0 (0.0)	0.0 (0.1)	0.0 (0.1)
<b>LSD (0.05)</b>		12.3 (ns)	ns (ns)	ns (ns)	ns (ns)	ns (ns)	ns (ns)

<sup>1</sup> Numbers in parenthesis are late emerging understored seedlings, generally less than 3 inches in height..

Table 2. Pea - weed competition trial at Waseca, MN - 1998. Visual weed control ratings. (Becker et al.)

Treatment	Rate (lb ai/A)	Mid-season Weed Control (6-15-98)				
		Gift	Cocb	Colq	Rrpw	Vele
		----- (%) -----				
<b>Bolero Pea</b>						
Untreated check	--	0	0	0	0	0
Pendimethalin	0.375	21	50	50	36	5
Pendimethalin	0.75	64	99	82	83	58
Pendimethalin + imazethapyr	0.75 + 0.047	67	86	97	97	75
<b>Stampede Pea</b>						
Untreated check	--	37	50	50	50	26
Pendimethalin	0.375	53	74	77	77	33
Pendimethalin	0.75	78	74	87	89	73
Pendimethalin + imazethapyr	0.75 + 0.047	94	88	98	98	96
<b>LSD (0.05)</b>		36	55	52	46	34

Table 3. Pea - weed competition trial at Waseca, MN. Pea yield and composition, July 10, 1998. (Becker et al.)

Treatment	Rate (lb ai/A)	Pea Yield Cwt/A	Pea Tend. <sup>1</sup>	Total Biomass Cwt/A	Composition						
					Pea	Gift	Cocb	Colq	Pesw	Smpw	Vele
		----- (%) -----									
<b>Bolero Pea</b>											
Untreated check	--	21.7	158	171	53.4	43.4	0.0	0.9	0.0	1.0	1.4
Pendimethalin	0.375	29.8	162	176	57.7	40.0	0.0	0.2	0.0	0.3	1.8
Pendimethalin	0.75	38.9	156	189	80.0	15.5	0.6	0.1	0.0	0.4	3.3
Pendimethalin + imazethapyr	0.75 + 0.047	43.4	145	206	83.4	14.5	1.6	0.1	0.0	0.0	0.3
<b>Stampede Pea</b>											
Untreated check	--	26.3	152	165	62.0	35.4	0.3	0.3	0.0	0.1	2.0
Pendimethalin	0.375	31.5	159	178	73.0	24.7	0.3	0.1	0.1	0.0	1.8
Pendimethalin	0.75	41.4	149	195	86.4	19.7	3.1	0.2	0.0	0.2	0.5
Pendimethalin + imazethapyr	0.75 + 0.047	50.4	152	200	96.0	3.8	0.0	0.0	0.0	0.0	0.2
<b>LSD (0.05)</b>		9.4	ns	24	15.9	15.8	ns	0.5	ns	ns	1.7

<sup>1</sup> Tend. = Tenderometer reading.