

Project Number: 13K 3419 5228

Title: Weed control in green peas.

Personnel: Tim Miller and Carl Libbey, WSU NWREC

Reporting Period: 2007-08

Accomplishments: Two pea studies were conducted in 2007, a stale seedbed trial and a new herbicide trial. Eight herbicides were tested for crop safety in green peas at different treatment timings; a total of 35 treatments were applied this season.

Results: Results will be presented at the Western Washington Horticultural Association meeting in January, 2008.

Stale seedbed trial. Green pea (cv. 'Charo') was seeded at WSU Mount Vernon NWREC May 25 into strips of land that had been prepared for seeding at fourteen, seven, or three days prior to the seeding date. A check strip was also seeded into a freshly-prepared seedbed (zero days prior to seeding). Herbicides were applied June 2 immediately prior to pea shoot emergence, but POST to many weed seedlings. Pea emergence and weed control was estimated June 26 (3 weeks after treatment (WAT)) and July 12 (6 WAT). Due to large numbers of weeds in the plots by July, peas were not harvested. The experimental design was a split-block, randomized complete block with four replicates.

Weed control using PRE treatment with POST herbicides was effective for several treatments, but was best for Roundup, Gramoxone, and Rely, with mid-July weed control ranging from 81 to 89% (Table 1). ET and flame were second-tier products in this trial, although they performed better than no PRE treatment. Stale seedbeds up to 14 days did not generally aid in the control of weeds in this experiment, so it appears that simply delaying these non-selective treatments to coincide with pea emergence was adequate to allow for weed seed germination. Pea stand was not very good in these trials, ranging only from 32-52% of a full stand, so pressure from weeds was likely higher in these plots than if a more uniform pea stand had occurred. The poor stand was not, however, due to seedbed or herbicide applications, as even untreated plots seeded with a freshly-prepared seedbed were sparsely populated (33 to 60% of a full stand).

New herbicide trial. Green pea (cv. 'Charo') was seeded at WSU Mount Vernon NWREC May 22 and herbicides were applied preemergence (PRE) May 23 and POST June 16. Cucumber injury and weed control was estimated June 26 (5 WAT) and July 12 (7 weeks after PRE treatment, 4 weeks after POST treatment). Pea plants within a randomly placed 1-m² quadrat in each plot were pulled from the soil August 6-7. These plants were counted and pods containing harvestable peas stripped and counted. From those pods, 100 pods were randomly selected and opened, and peas weighed. Total pea yield for each plot was then calculated. Due to severe crop injury, no peas were harvested from plots treated from POST applications of Everest and Granite. The experimental design was a randomized complete block with three replicates.

Crop injury was slight for most PRE treatments at both evaluations, with the exception of moderate injury from the high rate of Valent product #1 (21% injury by July; Table 2). Weed control resulting from PRE applications, however, was poor (35 to 61% by July). Most POST applications resulted in unacceptably high injury (ranging from 83-95% injury by July), with the exception of Valent product #2. Weed control from that treatment, however, was also poor. These weed control ratings indicate that a higher application rates or tank mixtures or sequential applications with other products would be necessary for these herbicides to be useful in green pea production. Pea yields from all PRE treatments and the POST with Valent product #2 were better than from non-treated peas. Based on these data, additional testing with these products is warranted in 2008.

Table 1. Effect of stale seedbed on weed control from several herbicides applied immediately prior to pea emergence (2007).

Treatment	Rate	Weed rating (June 26, 3 WAT)				Weed rating (July 12, 6 WAT)			
		0 days	3 days	7 days	14 days	0 days	3 days	7 days	14 days
	Product/a	%	%	%	%	%	%	%	%
Roundup	2 pt	94 ab	95 a	93 abc	94 ab	85 abc	80 bcd	83 abcd	80 bcde
Gramoxone	2.4 pt	94 ab	94 ab	94 ab	94 ab	85 abc	84 abc	85 abc	91 a
Rely	4 pt	86 de	94 ab	87 cde	90 abcd	81 bcde	89 ab	80 bcde	80 bcde
ET	2.5 fl.oz	79 fg	86 de	71h	54 i	73 ef	85 abc	69 f	34 i
Flame	---	83 ef	88 bcde	84 def	70 h	74 def	76 cdef	73 ef	51 gh
None	---	74 gh	76 gh	60 i	0 j	58 g	55 gh	48 h	0 j

Means followed by the same letter are not significantly different ($P < 0.05$). Peas planted May 25; herbicides applied June 2 (POST to weeds, PRE to crop).

Table 2. Effect of herbicide treatment on pea growth and weed control (2007).

Treatment	Rate	Timing	Crop injury		Weed control		Plant stand	Pod production	Yield
			Jun 26	Jul 12	Jun 26	Jul 12			
	Product/a		%	%	%	%	1000 pl/a	Pods/pl.	tons/a
Everest	0.3 oz	PRE	0 d	4 d	20 ef	35 d	284 a	4.3 a	3.4 abc
Everest	0.6 oz	PRE	0 d	6 d	24 ef	39 d	255 a	4.4 a	3.1 abc
Granite	1.4 fl.oz	PRE	0 d	1 d	41 de	39 d	230 a	4.5 a	3.0 abc
Valent #1	4.3 oz	PRE	8 cd	6 d	56 bcd	45 cd	297 a	4.6 a	3.9 a
Valent #1	8.5 oz	PRE	15 c	21 c	60 abcd	61 bc	275 a	4.5 a	3.5 ab
Valent #2	2.7 oz	PRE	0 d	0 d	45 cde	48 cd	275 a	4.2 a	3.5 ab
Valent #2	5.3 oz	PRE	0 d	5 d	41 de	45 cd	264 a	4.2 a	3.0 bc
Everest	0.3 oz	POST	48 b	89 ab	65 abcd	73 ab	---	---	---
Everest	0.6 oz	POST	48 b	93 a	80 ab	81 ab	---	---	---
Granite	1.4 fl.oz	POST	61 a	95 a	86 a	89 a	---	---	---
Valent #1	4.3 oz	POST	40 b	83 b	76 ab	80 ab	92 b	2.4 b	0.1 d
Valent #2	2.7 oz	POST	3 d	7 d	72 abc	50 cd	293 a	4.3 a	3.9 ab
Weedy	---	---	0	0	0	0	272 a	3.7 a	2.5 c

Means followed by the same letter are not significantly different ($P < 0.05$). Peas planted May 22; herbicides applied May 23 (PRE) and June 16 (POST); peas harvested August 6-7.