

Project Number: 13K 3419 5228

Title: Weed control in green peas.

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Reporting Period: 2009-10

Accomplishments: Two pea studies were conducted in 2009, a stale seedbed trial and a new herbicide trial. Ten herbicides were tested for crop safety in green peas at four different treatment timings; a total of 39 treatments were applied this season.

Results:

Stale seedbed trial. Green pea was seeded at WSU Mount Vernon NWREC May 21 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). Residual herbicides were applied May 30 and contact herbicides were applied June 6, immediately prior to pea shoot emergence, but POST to many weed seedlings. Pea injury and weed control was estimated July 28. Pea vines and weeds from 1-m² sections in the center of each plot were separated at harvest maturity and fresh weight was determined August 3-5. The experimental design was a split-split-block, randomized complete block with four replicates.

Peas in stale seedbeds prepared fourteen days prior to seeding were seriously injured by initial “contact” herbicides and flame (70%, Table 1). Injury at the other timings was slight, but measureable, with injury decreasing with shorter stale seedbeds. This may indicate that pea seed was seeded more shallowly in older seedbeds and therefore emerged more quickly. Weed control from these “contact” herbicides was effective for most treatments, but was best when any used within seven days of seedbed preparation. Roundup, Gramoxone, and Rely provided better weed control than ET or flame when averaged across seedbeds. Residual products provided 85 to 89% weed control, better than the 81% resulting when no residual product was used. These data indicate that stale seedbeds may offer pea producers another option to enhance weed control, and flame offers an option for organic producers to improve weed control and pea productivity.

New herbicide trial. Green pea was seeded at WSU Mount Vernon NWREC May 21 and herbicides were applied preemergence (PRE) May 23 and POST June 12. Green pea injury and weed control was estimated June 26. Pea plants within a randomly placed 1-m² quadrat in each plot were pulled from the soil July 27-30. 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. The experimental design was a randomized complete block with three replicates.

No significant pea injury was noted for any treatment (data not shown). Nine of the nineteen treatments maximized weed control (ranged from 81 to 93%) by late June (Table 2). In most cases, weed control with added Valent #1 and #2 at tested rates was not significantly better than peas treated with just the partner herbicide; addition of Valent #1 did improve Sencor performance by 15%, however. There were no significant differences between treatments for pea stand, pod production, or pea yield. Based on these data, additional testing with these products at higher rates is warranted in 2009.

Table 1. Effect of stale seedbed on weed control from several herbicides applied immediately prior to pea emergence (2009).

Treatment	Rate	Crop injury ^a	Weed rating ^a	Average pea vine fresh weight ^b	Pea vine fresh weight ^b	Weed fresh weight ^b
<u>Stale seedbed</u>	product/a	%	%	g/plant	kg/plot	g/plot
14 days	---	70 a	53 b	33.5 a	1.04 b	619
7 days	---	7 b	94 a	30.3 b	3.19 a	1248
3 days	---	6 bc	97 a	30.1 b	3.36 a	20
0 days	---	4 c	97 a	29.4 b	3.35 a	22
<u>PRE herbicide</u>						
Roundup	2 pt	31 a	95 a	33.5 a	2.47 b	33
Gramoxone	2.4 pt	19 bc	93 a	33.4 ab	2.98 a	92
Rely	4 pt	18 c	95 a	28.1 c	3.00 a	49
ET	2.5 fl.oz	21 b	78 b	28.1 c	2.61 b	317
Flame	---	20 b	79 b	30.7 bc	2.69 b	1981
None	---	21 b	74 c	31.2 ab	2.67 b	390
<u>Residual herbicide</u>						
Command	1.3 pt	21	85 b	31.3	2.78	169
Prowl H2O	3.2 pt	22	89 a	31.0	2.71	179
Sencor	8.1 oz	22	87 ab	30.9	2.76	151
None	---	22	81 c	30.3	2.70	1410

Peas planted May 21, 2009; PRE herbicides applied June 6, 2009 (PRE to crop, POST to weeds); residual herbicides applied PRE May 30, 2009.

^aCrop injury and weed control rated June 26, 2009.

^bPea vines and weeds harvested August 3-5, 2009.

Table 2. Effect of herbicide treatment on pea growth and weed control (2009).

Treatment	Rate	Timing	Weed control ^a	Plant stand ^b	Pod production ^b	Yield ^b
	product/a		%	1000 pl/a	Pods/pl.	tons/a
Command	1.3 pt	PRE	85 bcd	340	3.5	3.07
Prowl H2O	2.1 pt	PRE	90 ab	321	3.9	3.43
Sencor	5.3 oz	PRE	71 e	348	3.6	3.10
Basagran	1.5 pt	POST	94 a	328	3.6	3.20
Valent #1	8.5 oz	PRE	79 cde	326	3.9	3.33
Valent #1 + Command	8.5 oz + 1.3 pt	PRE + PRE	85 bcd	311	3.5	2.91
Valent #1 + Prowl H2O	8.5 oz + 2.1 pt	PRE + PRE	90 ab	360	3.1	2.68
Valent #1 + Sencor	8.5 oz + 5.3 oz	PRE + PRE	86 abc	281	4.0	2.85
Valent #1 + Basagran	8.5 oz + 1.5 pt	PRE + POST	93 ab	301	3.7	2.79
Valent #2	3.8 oz	PRE	79 cde	333	3.3	2.83
Valent #2 + Command	3.8 oz + 1.3 pt	PRE + PRE	78 de	319	3.3	2.85
Valent #2 + Prowl H2O	3.8 oz + 2.1 pt	PRE + PRE	86 abc	328	3.8	3.23
Valent #2 + Sencor	3.8 oz + 5.3 oz	PRE + PRE	76 e	315	3.6	2.83
Valent #2 + Basagran	3.8 oz + 1.5 pt	PRE + POST	89 ab	310	3.6	2.89
Valent #2	1.9 oz	POST	74 e	346	3.3	3.02
Command + Valent #2	1.3 pt + 1.9 oz	PRE + POST	79 cde	318	3.8	3.49
Prowl H2O + Valent #2	2.1 pt + 1.9 oz	PRE + POST	90 ab	317	3.9	3.35
Sencor + Valent #2	5.3 oz + 1.9 oz	PRE + POST	78 de	348	3.2	2.67
Valent #2 + Basagran	1.9 oz + 1.5 pt	POST + POST	94 a	353	3.7	3.51
Weedy	---	---	0 f	337	3.5	2.76

Means followed by the same letter are not significantly different ($P < 0.05$). Peas planted May 21, 2009; herbicides applied May 23 (PRE) and June 12, 2009 (POST).

^aWeed control rated June 26, 2009.

^bPeas harvested July 27-30, 2009.