

Project Number: 13K 3419 5228

Title: Weed control in green peas.

Personnel: Tim Miller and Carl Libbey, WSU NWREC

Reporting Period: 2008-09

Accomplishments: Two pea studies were conducted in 2008, 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 (cv. 'CMG-264F') was seeded at WSU Mount Vernon NWREC July 1 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 July 6 immediately prior to pea shoot emergence, but POST to many weed seedlings. Pea emergence and weed control was estimated September 2 (end of season). Pea vines and weeds from 1-m² sections in the center of each plot were separated at harvest maturity and fresh weight was determined (the fourteen-day seedbed September 4, seven-day September 5, three-day September 8, and zero-day September 11). The experimental design was a split-block, randomized complete block with four replicates.

Weed control at pea harvest from use of PRE treatment with POST herbicides was effective for several treatments, but was best when any product or flame was used with the 7-day stale seedbed, or when Roundup or Gramoxone were used on the 0-day seedbed, or when Rely or ET were used on the 3-day seedbed (Table 1). Weed control after the 14-day seedbed was unacceptably low. Despite this, pea vine and pod biomass was maximized by using any of these products or flame on a 14-day seedbed, and weed biomass was minimized by using any of the herbicides on a 14-day seedbed. 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 (cv. 'Bolero') was seeded at WSU Mount Vernon NWREC June 20 and herbicides were applied preemergence (PRE) June 24 and POST July 10. Green pea injury and weed control was estimated September 2 (end of season). Pea plants within a randomly placed 1-m² quadrat in each plot were pulled from the soil August 26-28. 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). Thirteen of the nineteen treatments maximized weed control (ranged from 81 to 93%) by early September (Table 2). Weed control from Valent #1 and #2 at tested rates were not significantly better than non-treated peas when applied either PRE or POST. Combination treatments with these products provided good weed control, although the combinations were not generally an improvement from the tankmix partners used alone. 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 (2008).

Treatment	Rate	Weed rating				Pea vine fresh weight				Weed fresh weight			
		0 d	3 d	7 d	14 d	0 d	3 d	7 d	14 d	0 d	3 d	7 d	14 d
Flame	---	88	84	86	80	100	116	100	119	52	73	27	28
Roundup	2 pt	88	81	86	81	92	107	112	127	58	57	41	20
Gramoxone	2.4 pt	83	86	86	78	106	115	104	129	39	77	29	15
Rely	4 pt	85	86	85	81	106	114	102	124	84	67	24	22
ET	2.5 fl.oz	86	80	86	75	106	111	97	118	100	60	39	52
None	---	80	76	69	64	100	100	100	100	100	100	100	100

Peas planted July 1; herbicides or flame applied July 6 (PRE to crop, POST to weeds).

Table 2. Effect of herbicide treatment on pea growth and weed control (2008).

Treatment	Rate	Timing	Weed control ^a	Plant stand	Pod production	Yield
	product/a		%	1000 pl/a	Pods/pl.	tons/a
Command	1.3 pt	PRE	80 b-e	347	3.6	3.82
Prowl H2O	2.1 pt	PRE	84 a-d	338	3.6	3.55
Sencor	5.3 oz	PRE	84 a-d	323	4.3	3.80
Basagran	1.5 pt	POST	81 a-e	306	4.2	3.56
Valent #1	8.5 oz	PRE	68 f	358	3.3	3.30
Valent #1 + Command	8.5 oz + 1.3 pt	PRE + PRE	81 a-e	301	4.3	3.66
Valent #1 + Prowl H2O	8.5 oz + 2.1 pt	PRE + PRE	73 d-f	339	3.8	3.49
Valent #1 + Sencor	8.5 oz + 5.3 oz	PRE + PRE	73 d-f	353	4.0	3.59
Valent #1 + Basagran	8.5 oz + 1.5 pt	PRE + POST	86 a-c	310	4.0	3.54
Valent #2	3.8 oz	PRE	75 c-f	278	3.8	3.04
Valent #2 + Command	3.8 oz + 1.3 pt	PRE + PRE	88 ab	285	4.1	3.48
Valent #2 + Prowl H2O	3.8 oz + 2.1 pt	PRE + PRE	83 a-d	319	3.8	3.54
Valent #2 + Sencor	3.8 oz + 5.3 oz	PRE + PRE	84 a-d	362	4.1	4.08
Valent #2 + Basagran	3.8 oz + 1.5 pt	PRE + POST	93 a	293	4.4	3.81
Valent #2	1.9 oz	POST	70 f	310	3.8	3.37
Command + Valent #2	1.3 pt + 1.9 oz	PRE + POST	85 a-c	338	4.0	3.63
Prowl H2O + Valent #2	2.1 pt + 1.9 oz	PRE + POST	85 a-c	383	3.7	4.08
Sencor + Valent #2	5.3 oz + 1.9 oz	PRE + POST	86 a-c	294	4.4	3.75
Valent #2 + Basagran	1.9 oz + 1.5 pt	POST + POST	86 a-c	316	4.2	3.93
Weedy	---	---	68 f	360	3.7	3.83

Means followed by the same letter are not significantly different ($P < 0.05$). Peas planted June 20; herbicides applied June 24 (PRE) and July 10 (POST); peas harvested August 26-28.

^aWeed control rated September 2, 2008 (end of season).