and higher purslane populations than did the three lowest compost rates (0. 0.2 and 0.4 cm). Purslane is a salt tolerant weed, so these results are consistent with soil test data showing an increase in salt accumulation in high compost treatments.

Celosia stems were longer and heavier than were statice stems (Table 6). Increasing compost rate led to increased marketable stem number, stem length, mean stem mass, bunch mass and bunch weight, ($P<0.001$). The highest compost rate resulted in 47% increase in marketable stem number, 65% increase in mean stem mass, and a 66% increase in cumulative stem length compared to the standard farm compost rate (Table 6). There was a significant Flower x Compost Rate interaction for mean stem length ($P<0.02$). Celosia mean stem length increased continuously such that the highest mean stem lengths were observed at the highest compost rate, whereas the highest mean stem lengths of statice were observed at the 0.2 cm compost rate (Table 6). Since celosia was generally more responsive to increasing compost rate, statice would be a better choice for low fertility transitional environments than celosia.

Table 3. Mehlich extractable phosphorus (P), potassium (K) and sodium (Na) during the first two years as a function of compost rate.

	P		K		Na	
Compost Rate	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
cm	mg/(kg soil)					
0	3.8	3.7	85.0	114.8	12.8	11.4
0.2	4.5	7.0	93.9	181.7	12.9	22.6
0.4	5.5	9.9	88.7	190.0	14.0	24.0
0.8	8.3	22.3	124.5	286.7	23.6	37.2
1.6	16.9	51.7	159.6	434.8	32.0	57.9

Table 4. Buckwheat and millet yields for significant main effects and two-way interactions.

Parameter	Level	Level	Yield (kg FW/plot
Main Effects			
Year	1		11.0a
	2		13.4b
Crop	Buckwheat		16.8a
	Millet		7.7b
Compost Rate		0	6.4a
		0.2	11.6b
		0.4	11.7b
		0.8	14.3c
		1.6	16.8d
Crop-by-Compost Interaction (P<0.0001)			
Compost Rate	Buckwheat	0	8.0
		0.2	16.7
		0.4	17.2
		0.8	20.3
		1.6	22.0
	Millet	0	5.0
		0.2	6.6
		0.4	6.9
		0.8	8.4
		1.6	11.6

Table 5. Green bean yield by variety & compost rate, & calculated compost rate to gain maximum yields.

Variety	Compost Rate (cm)	Mean Yield (g/m2)	Compost Rate at Maximum Yield (cm)
Dragon Tongue		1630a	1.2
Purple Queen		1450b	1.1
Xera		1380b,c	1.4
Yellow Wax		1270c	0.9
	0	1090	
	0.2	1400	
	0.4	1430	
	0.8	1620	
	1.6	1620	

Table 6. Marketable Stems

Parameter		Stem Number (/m2)		Mean Stem Mass (g/stem)		Stem Length (cm/stem)	
		Celosia	Statice	Celosia	Statice	Celosia	Statice
Flower		21.9	21.1	35.6	9.50	42.0	38.9
Compost Rate	0	7.1		17.3		33.2	
	0.2	16.8		15.8		40.5	
	0.4	23.6		19.7		41.4	
	0.8	25.3		27.3		40.8	
	1.6	34.7		32.5		46.4	
Flower x	0	5.2	9.0	29.6	5.0	33.4	33.0
Compost Rate	0.2	19.9	13.7	24.0	7.7	38.1	42.8
	0.4	25.1	22.1	28.8	10.5	43.8	39.1
	0.8	25.1	25.5	42.1	12.5	44.4	37.2
	1.6	34.3	35.1	53.4	11.6	50.3	42.6

Weed Management Alternatives:

Weed management trials in 2000 and 2001 evaluated plastic versus straw mulches in pepper production. Best yields and weed suppression were obtained with black plastic mulch (Tables 7 & 8). Hand cultivation produced higher yields than straw mulch, which tended to induce nitrogen deficiencies as the straw decomposed.

Table 7. Pepper yield, shoot and root weights as affected by mechanical weed control methods (2000).

Treatment	Pepper wt. kg/plot	Pepper number (per plot)	Shoot dry wt (g/plot)	Root dry wt. g/plant
Hand Cultivation	14.68	321	714	3.25
Plastic Mulch	23.47	655	1161	3.17
Straw Mulch (5 cm)	5.02	173	296	1.66
Straw Mulch (10 cm)	3.47	152	246	1.38
Straw Mulch (20 cm)	9.41	285	554	2.74
Control	1.21	21	62	1.65
L.S.D (P=0.05)	3.83	104	156	1.32

Trials in 2002 compared acetic acid spray versus corn gluten as a soil amendment. Neither treatment gave satisfactory, season-long weed suppression (Table 9).

There were significant effects on bean yield due to variety ($P<0.0001$), compost rate ($P<0.0001$), and a significant variety x compost rate interaction ($P=0.0068$). Except at the highest compost rate (1.6 cm), Dragon Tongue was the highest yielding variety by mass (Table 5). The yields of all varieties responded positively to compost applications, with Xera being the most responsive and Yellow Wax being the least responsive. The compost rates that produced the maximum yields (Table 5) were larger than the standard farm compost rate of 0.4 cm.

All compost treatments (0.2, 0.4, 0.8 and 1.6 cm) had significantly lower grass and higher purslane populations than did the control (0 cm compost). There was no effect of compost rate on fractional population of Other Dicots. The two highest compost rates (0.8 and 1.6 cm) had significantly lower grass and higher purslane populations than did the three lowest compost rates (0. 0.2 and 0.4 cm). Purslane is a salt tolerant weed, so these results are consistent with soil test data showing an increase in salt accumulation in high compost treatments.

Table 8. Pepper number and yield, and shoot weight in Low or High Input in 2001.

Treatment	Pepper yield	Pepper number	Shoot dry wt
	-- kg/plot --	(per plot)	(g/plot)
Low Input			
Hand Cultivation	16.68	175	692
Plastic Mulch	17.59	199	896
Straw Mulch (5 cm)	1.68	31	122
Straw Mulch (10 cm)	6.32	78	216
Straw Mulch (20 cm)	2.73	38	295
Control	0.05	10	12
High Input			
Hand Cultivation	10.36	101	658
Plastic Mulch	13.04	146	931
Straw Mulch (5 cm)	1.09	25	154
Straw Mulch (10 cm)	4.23	66	215
Straw Mulch (20 cm)	2.86	43	238
Control	3.09	48	23
L.S.D (P=0.05)	5.34	49	49

Table 9. Effect of vinegar, corn gluten, and mulches on weed control and pepper growth and yield (2002).

Treatment	Pepper yield	Pepper number	Root dry wt.	Weed count	
	-- kg/plot --	(per plot)	g/plant	Jun19	Jul 31
Hand Cultivation	13.67	209	2.02	142	252
Vinegar LOW	0.85	16	0.62	151	389
Vinegar MED	0.55	11	0.42	166	386
Vinegar HIGH	1.91	32	1.13	136	346
Corn Gluten LOW	0.62	15	0.55	143	368
Corn Gluten MED	0.48	10	0.56	102	344
Corn Gluten HIGH	0.78	15	0.67	41	323
Plastic Mulch	9.81	132	1.54	0	9
Newspaper + Straw	4.81	71	1.17	0	123
Control	0.51	12	0.47	199	478
L.S.D (P=0.05)	2.29	23	0.32	72	109

Potato Pest Management:

In 2001, Valoram and Nemastop treatments had no effect on population density of aphids, potato leafhopper, lesion, spiral, or dagger nematodes, nor on Mononchids (predatory nematodes), and no effect on yields. Yields from Valoram treated plots were slightly lower than untreated control plots but no differences were statistically significant.

Surround WP reduced populations of potato leafhoppers (P=0.07) only at the June 29 date (compared to plots without Surround WP), but had no effect on of aphids (P=0.29). Symptom severity of potato leafhopper burn on July 24 was lower (P=0.009) on Surround-treated plots than on untreated plots. Potato vine defoliation on Aug. 17 averaged 56 % on plots with Surround and 79 % on plots without