

Broadleaf weed control in 'Frontier' chickpeas

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A study was conducted at the Cook Agronomy Farm near Pullman, WA to evaluate herbicides for the control of broadleaf weeds. In addition, we evaluated if soil disturbance, after treatments were applied, affected product efficacy. The soil at this site is a Thatuna silt loam with pH of 4.8 and organic matter content of 3.0%. On May 7th, the entire trial area was sprayed with glyphosate to



kill the Italian ryegrass that germinated following ground preparation and rain that fell the beginning of April. On May 11th, 'Frontier' chickpeas were planted at a rate of 175 lb/acre at a depth of 1.5 inches using a Monosem vacuum planter with a 10-inch row spacing. The post-plant, pre-emerge application took place on May 12th and the conditions were an air temperature of 51°F, relative humidity of 82% and the wind out of the west at 4 mph. Immediately after the herbicides were applied, half of the treated area, within each block, received a roller packer treatment by driving perpendicular to the treated area. The other half of the plot remained undisturbed. The trial area was harvested with a Zurn 150 plot combine on September 4th.

On May 12th, approximately 14 hours after the application was made, rain began to fall and amounted to 0.38 inches. Between May 12th and June 2nd, the crop received the majority of its precipitation in the amount of 2.47 inches. Common lambsquarters and mayweed chamomile were the predominate weeds in the study area. Rolling in combination with the Lorox[®] + Valor[®] and Lorox + Pursuit[®] treatments reduced common lambsquarters control (Table 1). Rolling in combination with the Lorox + Pursuit treatment reduced mayweed chamomile control. Common lambsquarters control was excellent with all herbicide treatments and average plant densities on June 26th ranged between 0 and 1 plant/square meter, except in the nontreated check, which averaged 29 plants/square meter (data not shown). This was generally the case for mayweed chamomile as well, except the Lorox + Pursuit treatment that was rolled (Table 1). Rolling did not have a significant effect on yield or 100-seed-weight, thus means are composed of eight replications (Table 2). All herbicide treatments increased yield when compared to the nontreated check. The Lorox + Pursuit-treated plots had the lowest yield among the herbicides evaluated and its 100-seed-weight was comparable to the nontreated check. This is probably due to the fact that this treatment's efficacy was compromised by rolling.

Although light tillage can improve weed control with some herbicides, especially when adequate rainfall to activate the herbicides is not received, it can be detrimental for other herbicides. Growers should be aware of the impact of tillage on the performance of the herbicides they use.

Table 1. Evaluation of the combination of herbicides and soil surface disturbance and their effects on common lambsquarters and mayweed chamomile control in 'Frontier' chickpeas.

	Rate	Mechanical	Common lambsquarters control (0 to 100)	Mayweed chamomile control (0 to 100)	Mayweed chamomile plants per sq. meter
Treatment	fl oz/A	Treatment	-----6/24-----		6/26
Nontreated Check	--	Not-Rolled	--	--	30 a
Nontreated Check	--	Rolled	--	--	40 a
Sharpen [®] + Sencor [®] 75DF	2.0 + 8.0 oz	Not-Rolled	98 a ¹	100 a	0 c
Sharpen + Sencor 75DF	2.0 + 8.0 oz	Rolled	99 a	98 a	0 c
Lorox DF + Spartan [®] 4F	1.25 lb + 8.0	Not-Rolled	98 a	100 a	0 c
Lorox DF + Spartan 4F	1.25 lb + 8.0	Rolled	96 a	91 a	1 bc
Lorox DF + Valor SX	1.25 lb + 2.0 oz	Not-Rolled	95 a	100 a	0 c
Lorox DF + Valor SX	1.25 lb + 2.0 oz	Rolled	86 b	92 a	0 c
Lorox DF + Pursuit	1.25 lb + 2.0	Not-Rolled	96 a	98 a	0 c
Lorox DF + Pursuit	1.25 lb + 2.0	Rolled	87 b	69 b	6 b
Outlook [®] + Spartan 4F	21.0 + 8.0	Not-Rolled	100 a	100 a	0 c
Outlook + Spartan 4F	21.0 + 8.0	Rolled	99 a	100 a	0 c

¹ Means, based on four replicates, within a column, followed by the same letter are not significantly different at P = 0.05, which means that we are not confident that the difference is the result of treatment rather than experimental error or random variation associated with the experiment.

Table 2. The effect of herbicides on yield and 100-seed-weight in 'Frontier' chickpeas.

	Rate	Yield	100-seed-weight
Treatment	fl oz/A	lb/A	(g)
Nontreated Check	--	801 c ¹	38.0 c
Sharpen + Sencor 75DF	2.0 + 8.0 oz	2030 a	40.3 a
Lorox DF + Spartan 4F	1.25 lb + 8.0	2040 a	39.6 ab
Lorox DF + Valor SX	1.25 lb + 2.0 oz	1880 ab	39.6 ab
Lorox DF + Pursuit	1.25 lb + 2.0	1730 b	38.6 bc
Outlook + Spartan 4F	21.0 + 8.0	2050 a	39.8 ab

¹ Means, based on eight replicates, within a column, followed by the same letter are not significantly different at P = 0.05 as determined by Fisher's protected LSD test, which means that we are not confident that the difference is the result of treatment rather than experimental error or random variation associated with the experiment.