

Herbicide application timings for the control of broadleaf weeds in chickpeas

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A field study was conducted on the WSU Cook Agronomy Farm near Pullman, WA to evaluate different herbicide application timings for the control of broadleaf weeds in chickpeas. Lack of rainfall to activate herbicides after application has been problematic in recent years. Early pre-plant applications might have more opportunity to be activated by rainfall than herbicides applied post-plant, pre-emerge. It would also be extremely beneficial for growers to have a product to apply postemergence to control broadleaf weeds that may have escaped a preemergence application. This was the first year that we evaluated pyridate (proposed tradename Tough) for postemergence broadleaf weed control in crop. Pyridate is in the Mechanism of Action Group 6, which is an inhibitor of photosynthesis at photosystem II site B. Tough is not yet registered for use in chickpeas.



The soil at this site is a Palouse silt loam with pH of 5.0 and organic matter content of 2.9%. The ground was conventionally prepared by cross cultivating on April 19th. The pre-plant application took place on April 25th using a CO₂ backpack sprayer set to deliver 10 gpa at 2.3 mph and 41 psi. Conditions on April 25th were an air temperature of 53°F, relative humidity of 47% and the wind out of the west at 8 mph. 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 11th and the conditions were an air temperature of 73°F, relative humidity of 46% and the wind out of the west at 3 mph. The postemergence application took place on June 30th and the conditions were an air temperature of 78°F, relative humidity of 32% and the wind out of the south at 4 mph. Common lambsquarters and mayweed chamomile plants ranged in height from 2.5 to 7 and 3.5 to 6 inches, respectively. The trial area was harvested with a Kincaid 8XP plot combine on September 11th.

With the abundant fall, winter and early spring precipitation, we expected significant broadleaf weed competition in our chickpea planting. This was not the case. Weed competition was low to moderate in this study. This was the main reason why the postemergence treatment Tough was applied so late (June 30th) as we anticipated weeds to continue to emerge after planting. On April 25 and 26 and from May 11 through 17, the trial area received 0.69 and 0.98 inches of rainfall, respectively. This was sufficient rainfall for the preemergence and the post-plant pre-emerge herbicide treatments to be activated. There was no crop injury observed for any herbicide treatments in this trial. All herbicide treatments provided good to excellent control of common lambsquarters on the July 21st rating date except for Spartan + Lorox and Valor + Lorox applied post-plant pre-emerge, which provided fair and poor control, respectively. In previous trials, Lorox has not provided good control of common lambsquarters. All herbicide treatments provided excellent control of mayweed chamomile on the July 21st rating date except for Spartan + Outlook and Valor + Lorox applied post-plant pre-emerge, which both provided good control. The addition of Tough to some of the soil applied treatments did not significantly improve weed control in this study. This was likely due to timely rains that resulted in good activation of soil

applied herbicides and the lack of late emerging weeds. All herbicide treatments increased chickpea yield when compared to the nontreated check.

Treatment #	Treatment	Rate fl oz/A	Application Timing ¹	-----7/21-----		Yield lb/A
				Common lambsquarters control	Mayweed chamomile control	
				-----0-100%-----		
1	Nontreated Check	--		--	--	280 d
2	Spartan	8	preemergence	94 a ²	98 ab	780 a-c
2	Sencor + Sharpen	8 oz + 2	post-plant pre-emerge			
3	Spartan	8	preemergence	99 a	100 a	840 a
3	Sencor + Sharpen	8 oz + 2	post-plant pre-emerge			
3	Tough + NIS	48 + 0.25% v/v	postemergence			
4	Spartan	8	preemergence	99 a	98 ab	620 bc
4	Tough + NIS	48 + 0.25% v/v	postemergence			
5	Sencor + Sharpen	8 oz + 2	post-plant pre-emerge	84 ab	88 b	620 bc
6	Sencor + Sharpen + Lorox	8 oz + 2 + 20 oz	post-plant pre-emerge	81 ab	99 ab	690 bc
7	Valor + Lorox	2 oz + 20 oz	post-plant pre-emerge	22 c	74 c	650 a-c
8	Valor + Outlook	2 oz + 21	post-plant pre-emerge	85 ab	90 ab	580 c
9	Spartan	8	preemergence	86 ab	94 ab	660 a-c
9	Lorox	20 oz	post-plant pre-emerge			
10	Spartan + Lorox	8 + 20 oz	post-plant pre-emerge	64 b	90 ab	710 a-c
11	Spartan	8	preemergence	100 a	96 ab	590 c
11	Outlook	21	post-plant pre-emerge			
12	Spartan + Outlook	8 + 21	post-plant pre-emerge	81 ab	75 c	730 a-c
13	Sencor + Sharpen	8 oz + 2	post-plant pre-emerge	94 a	91 ab	820 ab
13	Tough + NIS	48 + 0.25% v/v	postemergence			

¹Dates of application: preemergence (4/25), post-plant pre-emerge (5/11), postemergence (6/30)

²Means, based on four 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.

Disclaimer

Some of the pesticides discussed in this presentation were tested under an experimental use permit granted by WSDA. Application of a pesticide to a crop or site that is not on the label is a violation of pesticide law and may subject the applicator to civil penalties up to \$7,500. In addition, such an application may also result in illegal residues that could subject the crop to seizure or embargo action by WSDA and/or the U.S. Food and Drug Administration. It is your responsibility to check the label before using the product to ensure lawful use and obtain all necessary permits in advance.