

Postharvest control of Russian-thistle with herbicides

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A study was conducted at the Lind Dryland Research Station near Lind, WA to evaluate herbicides for the control of Russian-thistle following the harvest of spring wheat. The objective was to evaluate three herbicide application timings, one, two and three weeks after harvest to determine when would be the best time to apply herbicides to get the best control of Russian-thistle, postharvest.



Postemergence herbicides were applied on 8/4, 8/11 and 8/18/2020, which corresponded to one, two and three weeks after harvest. RT 3[®] (glyphosate) plus ammonium sulfate (64 fl oz/A + 17 lb/100 gal) were applied at 10 GPA, whereas Maestro[®] 4EC + TriCor[®] 75DF (16 fl oz + 10.67 oz/A) and Gramoxone[®] SL 2.0 + NIS (48 fl oz/A + 0.25% v/v) were applied at 20 GPA. Environmental conditions for the 8/4 application were an air temperature of 86°F, relative humidity 26% and the wind was out of the west at 6 mph. There was an average of 2.5 Russian-thistle plants per square yard in the nontreated check plots. Plants were 13.5-in-diameter and 12-in-height. The wheat stubble height (10.5 in) was uniform across the trial area. As noted in the height of the Russian-thistle, the plants were beginning to grow above the height of the wheat stubble. Environmental conditions for the 8/11 application were an air temperature of 74°F, relative humidity 28% and the wind was out of the southwest at 6 mph. Environmental conditions for the 8/18 application were an air temperature of 87°F, relative humidity 36% and the wind was out of the southwest at 4 mph.

The last time it rained prior to the trial initiation (8/4) was July 1st when the trial area received 0.36 inches of rain. It did not rain again until September 19th, when the trial area received 0.05 inches of rainfall. This was 2 days after the final rating was taken. During this time period, the lack of rainfall is not uncommon in this area of eastern WA. Air temperatures were average to below average during the trial period.

When RT 3 was applied one-week (8/4) after harvest, plants did not exhibit injury symptoms until 14 days after treatment (DAT) (Table). However, by 21 DAT, plants were almost completely killed with RT 3. Plants treated with either Maestro 4EC + TriCor 75DF or Gramoxone SL 2.0, exhibited injury symptoms 7 DAT (Table). By the last rating date, Gramoxone SL 2.0 provided better Russian-thistle control than Maestro 4EC + TriCor 75DF, but neither of these treatments provided the level of control that RT 3 did.

The Maestro 4EC + TriCor 75DF and Gramoxone SL 2.0 provided quick activity on Russian-thistle when they were applied 14 or 21 days after harvest (Table), which was similar to what they did when applied 7 days after harvest (Table). RT 3 applied two or three weeks after harvest acted more slowly than when it was applied one week after harvest, and by the last rating date, control with RT 3 was not greater than with the other herbicide treatments (Table). These results

suggest that glyphosate should be applied within a week after harvest, before plant growth slows as a result of drought stress. However, contact herbicides such as Gramoxone SL 2.0 and Maestro 4EC + TriCor 75DF worked better when applied two and three weeks after harvest, when drought stress likely limited regrowth. We plan to repeat this trial in 2021.

		Treatments were applied 1 week after harvest (8/4)					
		8/11	8/18	8/25	8/31	9/9	9/17
Treatment	Rate	-----Russian-thistle control-----					
		-----%					
Maestro [®] 4EC + TriCor [®] 75DF	16 + 10.67 oz	85 b ¹	86 a	89 b	79 c	75 c	74 c
RT 3 [®] + AMS	64 + 17 lb/100 gal	0 c	75 a	99 a	100 a	100 a	100 a
Gramoxone [®] SL 2.0	48 + 0.125% v/v	91 a	85 a	91 b	86 b	94 b	91 b
		Treatments were applied 2 weeks after harvest (8/11)					
Maestro 4EC + TriCor 75DF	16 + 10.67 oz	--	76 b	91 a	84 b	83 a	80 a
RT 3 + AMS	64 + 17 lb/100 gal	--	0 c	15 b	45 c	90 a	95 a
Gramoxone SL 2.0	48 + 0.125% v/v	--	94 a	98 a	95 a	95 a	95 a
		Treatments were applied 3 weeks after harvest (8/18)					
Maestro 4EC + TriCor 75DF	16 + 10.67 oz	--	--	91 a	84 b	83 a	80 a
RT 3 + AMS	64 + 17 lb/100 gal	--	--	15 b	45 c	90 a	95 a
Gramoxone SL 2.0	48 + 0.125% v/v	--	--	98 a	95 a	95 a	95 a

¹ Means, 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.