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 (two, nine and sixteen days 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 7/16, 7/23 and 7/30/2021, which corresponded to two, nine and sixteen days after harvest. RT 3® (glyphosate) plus ammonium sulfate (AMS) (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 7/16 application were an air temperature of 88°F, relative humidity 22% and the wind was out of the southwest at 8 mph. There was an average of 2.75 Russian-thistle plants per square yard in the nontreated check plots. Plants were 14-in-diameter and 8-in-height. The wheat stubble height (10 in) was uniform across the trial area. As noted in the height of the Russian-thistle, the plants had not grown above the height of the wheat stubble as it had only been two days since the trial area was harvested. Environmental conditions for the 7/23 application were an air temperature of 79°F, relative humidity 22% and the wind was out of the southwest at 8 mph. Environmental conditions for the 7/30 application were an air temperature of 93°F, relative humidity 22% and the wind was out of the east at 6 mph.

Very dry conditions occurred at the trial site from March 1st through the final rating date of August 20th. During that entire time, the trial site received only 0.55 inches of rainfall, with 0.35 inches falling between August 1st and the 18th. During the time that the trial occurred, the lack of rainfall is not uncommon in this area of eastern WA. However, the lack of precipitation prior to the initiation of the trial is very uncommon. Air temperatures were above average in June, July and August.

Maestro 4EC + TriCor 75DF provided a moderate level of control when applied 2 days after harvest (DAH) (7/16) (Table). Twenty-eight days after treatment (DAT) (8/13), it was noted that regrowth was occurring in some of these treated plants. Regrowth may have been supported by the 0.19 inches of rain that fell on August 1st. By 35 DAT, this treatment was not providing acceptable control of Russian-thistle (Table). Maestro 4EC + TriCor 75DF applied 9 DAH (7/23) or 16 DAH (7/30) provided better control than when applied 2 DAH (Table).

Gramoxone SL 2.0 + NIS applied 2 DAH or 16 DAH exhibited quick activity on Russian-thistle and provided very effective control (Table). It is unknown why control with this treatment

applied at 9 DAH was not as good (Table), especially when the environmental conditions at the time of application were not much different among the three application timings.

The activity of RT 3 + AMS was very slow, taking 3 weeks to see a respectable level of control when applied 2 or 9 DAH (Table). When the final rating was taken, 8/20 (37 DAH), both of these application timings of RT 3 + AMS provided very good control of Russian-thistle (Table). The activity of RT 3 + AMS was even slower when applied 16 DAH. A treatment affect may have been noted if ratings continued for another 7 to 14 days. Rainfall events of 0.19, 0.13 and 0.03 inches that came 1, 17 & 18 DAT did not seem to influence the efficacy of RT 3 + AMS applied on 7/30 (16 DAH).

On the last rating date (8/20), the greatest control of Russian-thistle was provided by Gramoxone SL 2.0 + NIS applied 2 or 16 DAH, RT3 + AMS applied 2 or 9 DAH, and Maestro 4EC + TriCor 75DF 16 DAH. There appears to have been a trend for the RT3 (a translocated herbicide) + AMS to work better at the earlier application times, when plants may have been less drought-stressed, and for the two contact herbicide treatments, Gramoxone SL 2.0 + NIS and Maestro 4EC + TriCor 75 DF, to work better at the later application times, when plants were likely experiencing greater drought stress.

		Treatments were applied 2 days after harvest (7/16)				
		7/23	7/30	8/9	8/13	8/20
Treatment	Rate	----------Russian-thistle control----------				
	fl oz/A	----------%----------				
Maestro® 4EC + TriCor® 75DF	16 + 10.67 oz	63 b[1]	74 a	70 b	72 b	33 b
RT 3® + AMS	64 + 17 lb/100 gal	0 c	25 b	74 b	70 b	83 a
Gramoxone® SL 2.0 + NIS	48 + 0.125% v/v	96 a	91 a	89 b	91 a	88 a
		Treatments were applied 9 days after harvest (7/23)				
Maestro 4EC + TriCor 75DF	16 + 10.67 oz	--	83 a	89 a	83 a	74 b
RT 3 + AMS	64 + 17 lb/100 gal	--	0 b	63 b	71 a	90 a
Gramoxone SL 2.0 + NIS	48 + 0.125% v/v	--	75 a	83 a	86 a	78 b
		Treatments were applied 16 days after harvest (7/30)				
Maestro 4EC + TriCor 75DF	16 + 10.67 oz	--	--	90 a	89 a	89 a
RT 3 + AMS	64 + 17 lb/100 gal	--	--	21 b	33 b	48 b
Gramoxone SL 2.0 + NIS	48 + 0.125% v/v	--	--	94 a	96 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

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