Evaluation of glyphosate plus adjuvants at two timings for the control of rattail fescue in fallow, 2017

Henry Wetzel and Drew Lyon

A field study was conducted at Wolf Farms near Uniontown, WA to evaluate the efficacy of glyphosate plus adjuvants for the control of rattail fescue in fallow ground. A second objective was to determine if the size of the plants had an effect on the efficacy of the herbicide/adjuvant combinations.

The soil at this site is an Athena silt loam with 4.8% organic matter and a pH of 4.4. The ground was previously in winter wheat. Spring wheat was planted around our trial area on April 21st. The initial treatments were applied on May 8th with a CO_2-powered backpack sprayer set to deliver 10 gpa at 36 psi at 2 mph. We chose to use TeeJet Turbo TwinJet® 11002 nozzles as they are best suited for broadcast spraying where superior leaf coverage and canopy penetration is important. The applications were made under winds out of the north at 1 mph with an air temperature of 52°F and relative humidity of 57%. At the time of application, the majority of rattail fescue was fully tillered and was 3 inches tall. A second set of treatments were applied on June 2nd with a CO_2-powered backpack sprayer set to deliver 10 gpa at 45 psi at 2.3 mph. The applications were made under winds out of the northwest at 3 mph with an air temperature of 66°F and relative humidity of 56%. At the time of application, the majority of rattail fescue was 12 inches tall. Some plants showed seedheads in the boot stage. A third set of treatments involved two applications that were applied on May 8th and June 2nd. Rattail fescue was uniformly distributed across the trial area.

Gly Star® Original was the glyphosate formulation chosen for this study as it does not contain an adjuvant package. The results of this study show the importance of adding adjuvants to glyphosate to control rattail fescue. However, all of the adjuvants provided a similar level of improved rattail fescue control when compared to glyphosate alone. Treatments that were applied on May 8th provided good control of rattail fescue when Gly Star Original was tank mixed with either of the three adjuvants. Treatments that were applied on June 2nd provided excellent control of rattail fescue when Gly Star Original was tank mixed with either of the three adjuvants. In treatments that were sequentially applied on May 8th and June 2nd, the second application appeared to control escaped plants from the initial treatment and hence provided quicker control, when compared to the treatments that were just applied on June 2nd. In the end, the sequential treatments and the June 2nd treatments provided the best and similar level of control of rattail fescue. It seemed that the size of the plant was important in improving the efficacy of glyphosate on rattail fescue control. The larger plants (12 inches in height) at the June 2nd application date provided more surface area for the herbicide to come in contact with.

			5/19	6/1	6/20	7/5
Treatment	Rate	Application date	Rattail fescue control			
	fl oz/A	2017	----------0-100%----------			
Nontreated Check	--	--	--	--	--	--
Gly Star Original[1]	24	5/8	38 c[2]	55 c	50 e	47 c
Gly Star Original + MVO	24 + 1% v/v	5/8	60 a	75 ab	70 d	57 bc
Gly Star Original + Wetcit	24 + 0.5% v/v	5/8	57 a	80 ab	72 cd	60 bc
Gly Star Original + Silwet L-77	24 + 0.5% v/v	5/8	60 a	75 ab	71 d	65 b
Gly Star Original	24	6/2	--	--	57 e	91 a
Gly Star Original + MVO	24 + 1% v/v	6/2	--	--	79 b-d	99 a
Gly Star Original + Wetcit	24 + 0.5% v/v	6/2	--	--	88 ab	100 a
Gly Star Original + Silwet L-77	24 + 0.5% v/v	6/2	--	--	75 cd	99 a
Gly Star Original	24	5/8 + 6/2	45 bc	58 c	81 bc	90 a
Gly Star Original + MVO	24 + 1% v/v	5/8 + 6/2	52 ab	79 ab	94 a	98 a
Gly Star Original + Wetcit	24 + 0.5% v/v	5/8 + 6/2	55 ab	83 a	96 a	99 a
Gly Star Original + Silwet L-77	24 + 0.5% v/v	5/8 + 6/2	58 a	70 b	93 a	95 a

[1] All treatments were tank mixed with ammonium sulfate at 8.5 lbs per 100 gallons of finished spray solution.
[2] 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.