

2014 Kudzu Control Trial - Initial Results

Introduction

Kudzu (*Pueraria montana*) is an invasive deciduous twining, trailing, mat-forming, woody leguminous vine that forms dense infestations along forest edges, rights-of-way, old homesteads, and stream banks. It colonizes by vines rooting at nodes and spreads by seed dispersal. The plants have extensive root systems with large tuberous roots which can be 3 to 10 feet deep. Kudzu can dominate a site to the exclusion of other vegetation. Repeated herbicide applications along with other management measures are required to reduce the infestation. Picloram is used for kudzu control in many states but has not been used extensively in KY in recent years. This trial evaluated the efficacy of some potential alternate herbicide control options to picloram for kudzu control.

Materials and Methods

This study was initiated on June 24, 2014 by mowing a kudzu infested field near Beattyville KY. The abandoned tobacco field had been burned in March, 2014 and the dominant vegetation was a mix of kudzu and giant ragweed at the time of mowing. Plots that were 30 feet by 30 feet with 10 foot alleys separating them and were arranged in a 10 treatment randomized complete block design with three replications. On July 25, 2014, after kudzu regrowth, 9 herbicide treatments were applied in 30 gallons per acre carrier. The average kudzu canopy height was 14 inches with a range of 9 to 18 inches. Two of the treatments (Garlon 1.5 gal/A and Rodeo 4 qt/A) were reapplied on September 25, 2014. These same treatments will be reapplied in 2015 and final assessments taken in 2016.

Table 1 lists the treatments, active ingredients and application rates. All the treatments were applied at the maximum annual amount specified on the herbicide product label. Garlon 3A and Rodeo can be applied more than once per year so one treatment of each (Treatments 4 and 6) received half the maximum rate in July and again in September. Most treatments included a non-ionic surfactant (Activator 90) at 0.5% v/v except for the Streamline treatment which included methylated seed oil (MSO) at 1% v/v. Visual assessments of percent kudzu control and green vegetative cover (0-100%) were done 32 (8/26/2014), and 62 (9/25/2014) days after initial treatment (DAT). Data were analyzed using ARM software and treatment means were compared using Fisher's LSD at $p = 0.05$.

Results and Discussion

All the treatments, with the exceptions of Transline and Patron 170, controlled kudzu 98% or better 32 DAT (Table 2). Control with Transline and Patron 170 was still good 32 DAT, but only 92%. However by 62 DAT, control with Patron 170 declined to 72% while control with Transline was 96% (Table 2). Streamline, Garlon 3A (either as a single or split application), and Opensight all resulted in better control 99-100% than Transline or Patron 170 62 DAT. Control with Rodeo (either as a single or split application, 99 and 98%, respectively) and BK 800 (98%) 62 DAT was higher than Patron 170 but not significantly different than the other treatments.

Transline and Patron 170 allowed for more regrowth of vegetation than the other treatments, 83 and 70% green vegetation cover, respectively, 32 DAT (Table 2). However, by 62 DAT, these treatments as well as the split Garlon treatment, both Rodeo treatments, and BK 800 had green vegetation cover equal to that of the untreated plots (Table 2). Streamline was the most injurious to other vegetation (13% green cover) followed by Opensight (63% green cover) and the single application (1.5 gal/A) of Garlon (80% green cover).

In summary, all the tested herbicides, Transline, Streamline, Garlon 3A, Rodeo, Opensight, BK 800, and Patron 170 provided excellent kudzu control two months after initial applications. With the exceptions of Streamline and, possibly, Opensight, the herbicides had minimal effect on other vegetation at the site 62 DAT. The treatments will be repeated in 2015 and final assessments will be made in 2016.

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Table 1. Treatments and Active Ingredients for Kudzu Control Trial

Treatment	Product Names	Rate	Rate Unit	2014 Application Date	Active Ingredient(s)	ai Rate (per acre)
1	Transline Activator 90	21 0.5	FL OZ/A % V/V	7/25	clopyralid	7.9 oz ae
2	Sreamline COC	11.5 1	OZ/A % V/V	7/25	aminocyclopyrachlor + metsulfuron	4.5 oz + 1.4 oz
3	Garlon 3A Activator 90	3 0.5	GAL/A % V/V	7/25	triclopyr	9 lb ae
4	Garlon 3A Activator 90	1.5 0.5	GAL/A % V/V	7/25	triclopyr	4.5 lb ae
	Garlon 3A Activator 90	1.5 0.5	GAL/A % V/V	9/25	triclopyr	4.5 lb ae
5	Rodeo Activator 90	8 0.5	QT/A % V/V	7/25	glyphosate	8 lb ae
6	Rodeo Activator 90	4 0.5	QT/A % V/V	7/25	glyphosate	4 lb ae
	Rodeo Activator 90	4 0.5	QT/A % V/V	9/25	glyphosate	4 lb ae
7	Opensight Activator 90	3.3 0.5	OZ/A % V/V	7/25	aminopyralid + metsulfuron	1.7 oz ae + 0.3 oz
8	BK 800 Activator 90	2 0.5	GAL/A % V/V	7/25	2,4-D + 2,4-DP + dicamba	3.78 lb ae + 1.88 lb ae + 0.94 lb ae
9	Patron 170 Activator 90	6.9 0.5	PT/A % V/V	7/25	2,4-D + 2,4-DP	1.47 lb ae + 0.75 lb ae
10	Untreated Check					

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Table 2: Results for Kudzu Control Trial

Treatment	Product Names	Rate	Rate Unit	2014 Application Date	% Kudzu Control		% Green Vegetation Cover	
					32 DAT ¹	62 DAT	32 DAT	62 DAT
1	Transline Activator 90	21 0.5	FL OZ/A % V/V	7/25	92 <i>b</i> ²	96 <i>b</i>	83 <i>ab</i>	100 <i>a</i>
2	Sreamline COC	11.5 1	OZ/A % V/V	7/25	100 <i>a</i>	100 <i>a</i>	2 <i>e</i>	13 <i>d</i>
3	Garlon 3A Activator 90	3 0.5	GAL/A % V/V	7/25	100 <i>a</i>	100 <i>a</i>	10 <i>de</i>	80 <i>b</i>
4	Garlon 3A Activator 90 Garlon 3A Activator 90	1.5 0.5 1.5 0.5	GAL/A % V/V GAL/A % V/V	7/25 9/25	98 <i>a</i>	100 <i>a</i>	38 <i>c</i>	97 <i>a</i>
5	Rodeo Activator 90	8 0.5	QT/A % V/V	7/25	100 <i>a</i>	99 <i>ab</i>	25 <i>cde</i>	97 <i>a</i>
6	Rodeo Activator 90 Rodeo Activator 90	4 0.5 4 0.5	QT/A % V/V QT/A % V/V	7/25 9/25	98 <i>a</i>	98 <i>ab</i>	30 <i>cd</i>	96 <i>a</i>
7	Opensight Activator 90	3.3 0.5	OZ/A % V/V	7/25	98 <i>a</i>	99 <i>a</i>	18 <i>cde</i>	63 <i>c</i>
8	BK 800 Activator 90	2 0.5	GAL/A % V/V	7/25	99 <i>a</i>	98 <i>ab</i>	28 <i>cd</i>	98 <i>a</i>
9	Patron 170 Activator 90	6.9 0.5	PT/A % V/V	7/25	92 <i>b</i>	72 <i>c</i>	70 <i>b</i>	100 <i>a</i>
10	Untreated Check				0 <i>c</i>	0 <i>d</i>	100 <i>a</i>	100 <i>a</i>

¹ DAT = Days after treatment

² Means within a column followed by the same letter are not different according to Fisher's Protected LSD at $P < 0.05$.