

Control of Individual Honey Locust Trees in Grazed Pasture

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Introduction

Honey locust (*Gleditsia triacanthos*) is a deciduous tree that produces large brown seed pods and thorny appendages, and is present throughout most of the US. The pods are highly nutritious for livestock and wildlife, and are easily spread by animals in dung pats. Honey locust is typically found in greatest concentrations in the central U.S. in the same general range as historical tallgrass prairie. Fire suppression and introduction of honey locust into shelter belts has allowed honey locust to increase into more arid regions associated with mixed grass prairie. When cut, honey locust is capable of producing abundant new sprouts from buds around the trunk and along the root system. Because of this, herbicides are usually required to effectively control trees when cut. Several herbicides have been labeled for honey locust control through various application techniques, including basal bark, thin line basal bark, cut stump, frill or girdle, and foliar applications. However, picloram, one of the most effective herbicides on honey locust, is not labeled for individual basal bark or cut stump treatment in grazed pasture. Aminopyralid recently received a new label addition for individual tree treatment of honey locust in grazed pasture.

Experimental Procedures

A study was arranged in a randomized complete block design to test different techniques and herbicides to control honey locust on grazed pasture. Each year, for two years, 3- to 8-inch diameter trees were treated with one of five combinations of herbicides and application methods. Treatment combinations, on a volume:volume basis, included 1) triclopyr 25% + diesel 75%; 2) aminopyralid 5% + bark oil 95%, both applied on standing live trees to the lower 15 inches of basal bark including the root collar area before reaching the point of runoff; 3) triclopyr 25% + diesel 75%; 4) aminopyralid 10% + water 90%; and 5) dicamba 33% + 2,4-D 2% + water 65%, all applied immediately to wet the outer cambium layer of cut stump surfaces before reaching the point of runoff. Additionally, the triclopyr + diesel cut stump treatment wetted the entire cut trunk and root collar area before reaching the point of runoff, as per label instructions. Five replications were treated in 2012 and four replications were treated in 2013, so 10 trees/treatment/replication were used each year for a total of 450 treated trees. Basal bark treated trees were evaluated for signs of green leaves the following year, and basal bark and cut stump trees were evaluated the following year for the presence of new sprouts within 6 feet of the tree. In addition, 10 trees were cut down but were not treated with herbicide to observe sprouting potential.

Results and Discussion

Only one tree from basal bark treatments had any green leaves present one year after treatment, almost all trees not controlled in the study had new sprouts present within 6 feet of the tree. One year after treatment, aminopyralid applied as a basal bark or as a cut stump treatment had the best control and averaged over 97% dead trees that had no green leaves or new sprouts (Table 1). The dicamba + 2,4-D cut stump treatment also had good control with 84% dead trees. Triclopyr + diesel applied on the basal bark controlled nearly 76% of the trees. Fewer dead trees (just over 50%) were present in the triclopyr + diesel cut stump treatment than in any other treatment and produced the most new sprouts, nearly 5 sprouts/tree for each tree not controlled. The trees that were cut but not treated with herbicide produced just over 12 sprouts/tree.

Implications

If cutting honey locust trees on grazed pasture, treating cut tree surfaces with aminopyralid mixed with water is an excellent option, while treating live standing trees with a basal bark application of aminopyralid and oil is another excellent option. If using triclopyr and diesel, it is best to apply that mixture on live standing honey locust trees with a basal bark treatment. Aminopyralid is a water-based herbicide and should not be mixed with diesel. For basal bark application, oil carriers used with aminopyralid should include emulsifiers to keep the herbicide in solution, and the herbicide and oil carrier should be mixed and tested in a jar for compatibility before use.

Table 1. Characteristics of honey locust trees treated with different herbicide combinations or application methods in a grazed pasture near Hays, KS

Herbicide Mixture (volume:volume)	Application method	Dead trees	Partial leaf	Sprouted trees	Sprouts per tree
Aminopyralid 5% + bark oil 95%	Basal bark	97 ^a	0	3 ^c	2.0
Triclopyr 25% + diesel 75%	Basal bark	76 ^b	1	23 ^b	3.6
Aminopyralid 10% + water 90%	Cut stump	99 ^a	.	1 ^c	1.0
Triclopyr 25% + diesel 75%	Cut stump	54 ^c	.	46 ^a	4.9
Dicamba 33% + 2,4-D 2% + water 65%	Cut stump	84 ^{ab}	.	16 ^{bc}	4.2

^{a,b,c} Trees were evaluated 12 months after treatment in 2013 and 2014. Values in columns are statistically different at P < 0.05 if followed by different letters.