



# Controlling American Holly with Basal Sprays of Triclopyr

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## The Bottom Line...

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Triclopyr mixed with a mineral oil carrier effectively controlled American holly when applied as a basal spray at rates as low as 5% in February or 20% in March.

## Abstract

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Study plots were installed in Caroline and King George counties on February 5 and March 16, 2015, to evaluate two rates of triclopyr ester herbicide applied as a basal spray for the control of American holly. The objectives of this research were to 1) determine whether the herbicide triclopyr ester (as the active ingredient in Garlon 4 Ultra Specialty Herbicide, made by Dow AgroSciences) can selectively control individual stems of American holly (*Ilex opaca* Ait.) and 2) if so, determine whether a treatment with a lower herbicide rate can be as effective as a higher labeled rate. Results indicate that triclopyr effectively controls American holly when applied as a basal spray. Location (perhaps as influenced by application date) and herbicide rate both significantly affected holly defoliation and survival. Garlon 4 Ultra applied at rates as low as 5% in February or 20% in March resulted in 100% defoliation and stem kill.

## Methods

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The protocol involved using a backpack sprayer to apply a “low-pressure basal bark treatment” – a low-volume dose of a solution of the triclopyr mixed with a commercial mineral oil carrier (JLB Oil Plus, made by Brewer International). The solution was applied to the trunks of the trees at a height of 12 to 15 inches from the ground; care was taken to ensure the entire stem circumference was covered by the solution without allowing any to run off onto the ground. This treatment is labeled for woody plants with stems less than six inches in basal diameter with a mixture of 20%-30% Garlon 4 Ultra.

Three treatments were compared: 1) a 20% mix of Garlon 4 Ultra in JLB Oil Plus; 2) a 5% mix of Garlon 4 Ultra in JLB Oil Plus; and 3) an untreated control. Sets of three American hollies of similar size (as determined by diameter breast height (dbh) in inches) were chosen and individuals were randomly selected to receive one of the three treatments. Average initial dbh ranged from 1 to 8 inches.

Fifteen sets (replications) of this treatment comparison were installed on the Burke Woodlands property in Caroline County on February 5, 2015, and at Caledon State Park in King George County on March 16, 2015. Study trees were selected to represent the range of stem sizes found at the park.

In addition to pre-treatment dbh, stem condition (healthy, damaged or dead) and percent of crown defoliation on damaged trees were recorded on June 11 and August 25, 2015, and again on August 22, 2016. Treatment differences were tested using a two-way analysis of variance.

## Results

The defoliation and survival data are summarized in Table 1. Two trends are apparent – both are supported by statistically-significant results in the analysis of variance (Table 2). First, there was an effect of herbicide rate; both treatments worked, but defoliation was more rapid and more complete with the 20% rate than the 5% rate. Survival followed the same pattern: the higher rate led to more rapid stem kill. Second, results varied by location. The Caroline County site (treated in early February) showed higher defoliation and lower survival than the King George location (treated in mid-March). Although this experiment was not designed to test the effects of treatment data, these results do agree with past experience, which has shown that triclopyr basal bark treatments tend to be less effective if applied during the period of early leaf expansion in the spring (which is what occurred at the King George site).

If one accepts the premise that treatment date was a key factor in the site differences, then it would appear that the low rate treatment can provide the same results (100% defoliation and zero survival) as the higher rate.

**Table 1. Defoliation and survival of American holly stems with and without basal spray treatments of Garlon 4 Ultra.**

Garlon Rate (%)	Location	Date Treated	Defoliation			Survival		
			6/11/15	8/25/15	8/23/16	6/11/15	8/25/15	8/23/16
0	Caroline	Feb. 2	0	0	0	100	100	100
0	King George	Mar. 15	0	0	0	100	100	100
0	Combined Average		0	0	0	100	100	100
5	Caroline	Feb. 2	87	94	100	40	20	0
5	King George	Mar. 15	57	76	86	93	67	40
5	Combined Average		72	85	93	67	44	20
20	Caroline	Feb. 2	99	100	100	13	0	0
20	King George	Mar. 15	78	93	99	73	27	7
20	Combined Average		89	97	100	43	14	4

**Table 2. Analysis of variance results from the test of American holly control using Garlon 4 Ultra basal sprays. Statistically significant results are denoted by an asterisk.**

Assessment Date	Dependent Variable	Probability of Greater F Statistic		
		Location	Treatment	Replication
June 2015	Survival	<0.001*	<0.001*	0.703
	Defoliation	<0.001*	<0.001*	0.551
August 2015	Survival	<0.001*	<0.001*	0.407
	Defoliation	0.003*	<0.001*	0.525
August 2016	Survival	0.003*	<0.001*	0.331
	Defoliation	0.008*	<0.001*	0.545