

### **A Herbicide Trial to Control Pear (*Pyrus* sp.) Trees in Bulloch County, Georgia**

E. David Dickens, Ph.D. - Professor of Forest Productivity, David J. Moorhead, Ph.D. – Professor of Silviculture, Wes Harris – Bulloch County Ag Extension Agent and Coordinator, Carol Knight – Bulloch County Ag and Livestock Agent, Chip Bates – GFC Forest Health Coordinator The University of Georgia Warnell School of Forestry & Natural Resources (WSF&NR), College of Agriculture and Environmental Sciences (CAES), and Georgia Forestry Commission (GFC)  
Email: [ddickens@uga.edu](mailto:ddickens@uga.edu)

#### **Abstract**

There are a number of Bulloch County, Georgia landowners who have pear (*Pyrus* sp.) trees encroaching in large numbers into edges of their farmland and forestland. These pear trees range in size from ½ inch groundline diameter, single stems, to clusters of 5 to 10 small diameter stems (usually < 1 inches), to larger trees with groundline diameters of 4 to over 5 inches and 15 to 30 feet tall. The pear tree spread on farm and forestland edges has increased in the last few years. A number of landowners asked the UGA Cooperative Extension Service Agents, GFC foresters, and UGA Warnell School of Forestry & Natural Resources (WSF&NR) faculty what herbicide control measures could be used efficiently. These landowners had tried various herbicides to control these invading pear trees but had little to no success. In the spring of 2011 the UGA WFS&NR faculty, Bulloch County Agents, and GFC foresters visited a number of the invaded pear tree sites and started a replicated study to determine: (1) what herbicides, (2) the best timing, and (3) the dosages that would effectively eradicate the invasive pear trees of various sizes. All herbicides were applied with a 4 gallon backpack sprayer. One and two years after all the herbicide treatments were applied the best treatments for trees from ½ inch groundline diameter and 2 to 3 feet tall up to trees that were 3 to 4 inch groundline diameter and 10 to 12 feet tall were an early October foliar application (100% foliage coverage, especially the tops of the canopy) of 5% Razor Pro (41% glyphosate with a 14% surfactant built in) or (2) an early October foliar application (100% foliage coverage, especially the tops of the canopy) of 2% Polaris AC (53% imazapyr) + 5% crop oil. Cut stump treatments for larger pear trees (groundline diameters of 2 to 5+ inches 15 to 30 feet tall) in dormant season (December to early February) using 50% Razor Pro + 50% water sprayed immediately after the trees were cut gave excellent (100%) control with zero re-sprouting after two years. The dormant season (December to early February) basal bark treatment of 25% Garlon 4 (triclopyr) and 75% basal bark penetrant oil applied to the first 12 to 18 inches 360 degrees around each pear stem gave good but sometimes variable control. The spring (April) application of Velpar L @ 2 and 4 ml per inch groundline diameter or per 3 feet diameter cluster of stems gave poor control and cannot be recommended based on this study.

#### **Methods**

The study areas where the pear infestation were located in various parts of Bulloch County, Georgia on field edges, roadside banks, and in forested edges (all loblolly pine stands). All treatments are listed in Table 1. The Velpar L (75% hexazinone; a soil active herbicide) was applied April to two areas that had numerous pear saplings and trees; a roadside ditch of approximately ¼ mile of pear trees and a thinned loblolly pine stand with young clusters on pear saplings ( ½ inch groundline diameters and 2 to 3 feet tall). Velpar L was applied undiluted using a backpack sprayer undiluted with a Meter Jet spot gun

delivering 2 milliliters (ml; blue flagging) or 4 ml (yellow flagging) per inch groundline diameter to the soil within 12 inches of each stem for trees or a 3 feet diameter of a cluster of pear saplings in the center of the cluster. Garlon 4 Ultra (60% triclopyr ester) @ 25% + 75% basal bark oil solution was applied with a backpack sprayer to the first 12 to 18 inches 360 degrees around each stem in October 2011 and marked with orange wire flags in a thinned loblolly pine stand. Polaris AC (54% imazapyr) @ 2% + 4% crop oil was backpack applied to pear trees that were 1 to 4 inches in diameter and 6 to 15 feet tall covering all the foliage, especially the tops of the canopy in October 2011 taking care not to get much solution on the ground. Polaris AC trees were flagged with pink wire flags. Razor Pro (41% glyphosate with a 14% surfactant built in) @ 5% solution in water was backpack applied to all foliage of pear trees that were 1 to 4 inches in diameter and 6 to 15 feet tall in October 2011. The Razor Pro foliar treated trees were flagged with yellow X wire flags. A cut stump treatment of 50% Razor Pro and 50% water was backpack applied to each stump immediately after each tree was cut on 2 and 7 February 2012. The cut stump treated trees were generally the tallest trees treated (15 to 25 feet tall), too tall to foliar apply a herbicide and were marked with red wire flags.

UGA Extension agents, WSF&NR faculty, and GFC foresters came back to the study areas on October 2012 to take ocular estimates of control of pear saplings and trees in each area. Branches and stems were broken at various distances from the base of plants to determine if the cambium was brown, brittle and dead or if some of the cambium was still living to verify "control". Pear control ratings were as follows: Poor < 50% control, Fair with 50-70% control, Good 70-90% control, and Excellent > 90% control.

## Results

One and two years after all the herbicide treatments were applied the best treatments for trees from ½ inch groundline diameter and 2 to 3 feet tall up to trees that were 3 to 4 inch groundline diameter and 10 to 12 feet tall were an early October foliar application (100% foliage coverage, especially the tops of the canopy) (1) of 5% Razor Pro (41% glyphosate with a 14% surfactant built in) or (2) an early October foliar application (100% foliage coverage, especially the tops of the canopy) of 2% Polaris AC (53% imazapyr) + 5% crop oil. Cut stump treatments for larger pear trees (groundline diameters of 2 to 5+ inches) in dormant season (December to early February) using 50% Razor Pro + 50% water sprayed immediately after the trees were cut gave excellent (100%) control with zero re-sprouting after two years. The late October basal bark treatment of 25% Garlon 4 (triclopyr ester) and 75% basal bark penetrant oil applied to the first 12 to 18 inches 360 degrees around each pear stem gave good but sometimes variable control. The spring (April) application of Velpar L @ 2 and 4 ml per inch groundline diameter or per 3 feet diameter cluster of stems gave poor pear sapling and tree control.

## Recommendations

Based on this study the following summarizes our findings: (1) Velpar L backpack applied undiluted @ 2 or 4 milliliters (ml) per inch groundline diameter or per 3 feet circular cluster of saplings applied in April, gave poor control after two growing seasons and cannot be recommended. (2) Garlon 4 ultra @ 25% + 75% basal bark oil backpack applied to the first 12 to 18 inches 360 degrees around each stem gave good results but the results were variable most likely due to inconsistent stem bark application. Garlon 4 ultra @ 25% solution in basal bark oil is recommended to open grown individual pear stems as long as bark coverage is complete; applied from late October to early February. (3) Razor Pro @ 5% solution in water backpack foliar applied to pear trees up to 12 to 15 feet tall in October gave excellent control and is highly recommended as long as the application gets on all the foliage, especially the top of the crown. (4) Polaris AC @ 2% + 4% crop oil in water backpack applied to pear trees up to 12 to 15 feet tall in October gave excellent control and is recommended as long as the application gets on all the foliage, especially the top of the crown. The applicator needs to be careful not to get much product on the ground as the soil activity may damage neighboring plants. (5) The dormant season (December to early February) cut stump treatment of 50% razor Pro plus water applied to entire cut surface of freshly cut large trees gave excellent control and is highly recommended.

Table 1. Herbicide treatments applied in the spring of 2011 to early 2012 to areas infested with pear (*Pyrus* sp.) trees in Bulloch County, Georgia. All treatments applied with a backpack sprayer.

Land type	Treatment	Rate on pear saplings or trees	Timing	Herbicide rating 1 and 2 years after treatment
roadside ditch bank	Velpar L (75% hexazinone <sup>†</sup> )	2 or 4 <i>ml</i> undiluted per inch groundline diameter applied to soil within 1 ft of tree	April	Poor
thinned loblolly pine stand	Velpar L (75% hexazinone)	2 or 4 <i>ml</i> per 3 feet circular cluster of saplings	April	Poor
thinned loblolly pine stand	Garlon 4 ultra (60% triclopyr <sup>††</sup> ester)	25% Garlon 4 ultra + 75% basal oil - basal bark treatment first 12-18 inches of the stem	October	Good but variable control (consistent coverage issue)
thinned loblolly pine stand	Polaris AC (54% imazapyr <sup>†††</sup> )	2% + 4% crop oil in water – foliar applied to entire crown, especially the top	October	Excellent
thinned loblolly pine stand	Razor Pro (41% glyphosate <sup>††††</sup> with 14% surfactant)	5% with water – foliar applied to entire crown, especially the top	October	Excellent
field edge	Razor Pro	50% + 50% water –fresh cut stump treatment immediately after each tree is cut	Early February	Excellent

Velpar L<sup>†</sup> is soil active only

Triclopyr<sup>††</sup> is foliar active and basal bark active when applied with penetrating oil (no soil activity)

Imazapyr<sup>†††</sup> is both soil and foliar active

Glyphosate<sup>††††</sup> is foliar active or cut stump active (no soil activity)

Control ratings: Poor < 50% control, Fair = 50-70% control, Good = 70-90% control, Excellent > 90% control



Photo 1 (left photo) and 2 (right photo). Hexazinone as Velpar L undiluted @ 2 ml per inch groundline diameter (Photo 1; left photo) applied in April 2011; evaluated 10 October 2012 and Velpar L @ 4 ml per inch groundline diameter (Photo 2; right photo); photos taken (evaluated) 10 October 2012. Velpar L gave poor control in this study.





Photo 3 (left photo) and 4 (right photo). Triclopyr as Garlon 4 Ultra @ 25% + 75% crop oil (Photo 3; left photo) basal bark treated (first 12 to 18 inches, 360 degrees around stem) applied October 2011 and evaluated October 2012 (good but variable control) and Imazapyr as Polaris AC @ 2% solution (Photo 4; right photo) with water foliar applied October 2011 and evaluated October 2012 (excellent control). Photos were taken October 2012, one growing season after treatment. Care needs to be taken when using Imazapyr as it is soil and foliar active and can harm neighboring plants if the product gets applied on the soil.



Photo 5 (left photo) and 6 (right photo). The Razor Pro 5% solution in water (Photo 5; left photo) backpack foliar applied in October 2011 and Razor Pro @ 50% + 50% water backpack cut stump treated (Photo 6; right photo) immediately after each tree was cut; applied in early February 2012. Both treatments provided excellent pear control. Photos were taken October 2012 one growing season after treatment.

**Keywords:** pear (*Pyrus* sp.) control, herbicides, backpack applications, Velpar, Razor Pro, Polaris AC, Garlon 4 ultra

Athens, Georgia 30602-2152

Phone: 706.542.6819 • fax: 706.542.5073

An Equal Opportunity/Affirmative Action Institution

In compliance with federal law, including the provisions of Title IX of the Education Amendments of 1972, Title VI of the Civil Rights Act of 1964, Sections 503 and 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990, the University of Georgia does not discriminate on the basis of race, sex, religion, color, national or ethnic origin, age, disability, or military service in its administration of educational policies, programs, or activities; its admissions policies; scholarship and loan programs; athletic or other University-administered programs; or employment. In addition, the University does not discriminate on the basis of sexual orientation consistent with the University non-discrimination policy. Inquiries or complaints should be directed to the director of the Equal Opportunity Office, Peabody Hall, 290 South Jackson Street, University of Georgia, Athens, GA 30602  
Telephone 706-542-7912 (V/TDD). Fax 706-542-2822.