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The Introduction, Spread, and Control of Non-Native, Invasive Species in Tennessee Forests: Callery Pear

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CALLERY PEAR *(PYRUS CALLERYANA)*

Callery pear was introduced to the United States in the early 1900s for hybridization to develop disease resistance from fire blight that was infecting native pears in the commercial pear industry. Beginning in the 1950s, the "Bradford" cultivar of callery pear was widely planted as an ornamental due to its desirable uniformity and consistency in flowering and form. Individual cultivars are considered self-sterile and do not produce fruit or seed, but different cultivars that are planted near to each other can cross-pollinate and produce fruit. The popularity of planting Bradford pear over-compensated for the possibility of pollination from other pear cultivars. However, Bradford pear is a short-lived tree, prone to breakage. Other cultivars were developed to improve the poor properties of Bradford pear that increased the probability of cross-pollination and the production of fruit. Cultivars are often grafted on rootstocks with varying genetic dispositions.

Callery pear trees in an abandoned field. Some of the trees are flowering while others are green and have complete flowering. Photo Credit: Wayne K. Clatterbuck

Leaves and fruits of callery pear. Photo Credit: David Stephens, Bugwood.org

Rootstocks also sprout generously adding to greater genetic variability and thus fruiting ability. The shoots and the graft can even pollinate each other. The plants that spread are not cultivars, but sexually reproducing populations consisting of multiple genotypes that recombine every generation.

Cross-pollinated trees are loaded with fruit that is consumed by birds and transported great distances. Trees also reproduce vegetatively by sprouts often forming dense thickets within several years. The wide dispersal of callery pear seed is evident in the spring when trees flower in unmanaged areas such as abandoned fields and pastures, disturbed areas, and right of ways.

Callery pears are shade intolerant, grow to 40 feet tall and 25 feet wide, and have a vaselike shape. Wild trees often have sharp spines or thorns that can puncture tires when areas are mowed or bush hogged and injure workers who are applying management practices. Even though prescribed burning may top-kill some trees less than two inches in diameter, the copious sprouting of callery pear encourages vegetative spread. Larger diameter trees usually withstand burning.

Herbicides are required to kill the roots and control the spread of callery pear. Hand-pulling usually does not remove the entire root and remaining roots will sprout. Foliar, systemic herbicides such as glyphosate and triclopyr (amine) can be applied to leaves of actively growing, smaller trees (less than six feet tall) after full leaf out. Both herbicides are non-selective with little soil movement but will impact other vegetation if contact occurs. Reapplication annually may be necessary until the root system is depleted and does not resprout.

Basal spray with triclopyr (ester) is effective on stems less than four inches at ground-line. The application should encircle the entire stem or each individual sprout and be conducted any time of year except April and May when the tree sap is moving upward. Follow-up applications may be necessary if re-sprouting occurs.

For trees greater than four inches in diameter, hack and squirt treatments can be conducted. Downward hacks with a hatchet are made one inch apart on the stem and herbicide is applied with a squirt bottle to each hack. Follow herbicide label instructions. Either glyphosate or triclopyr (amine) is applied to a targeted stem such that there is little to no impact to the environment.

Cut stump treatments with triclopyr (amine) or glyphosate control resprouting from stumps and roots. The application should be conducted as soon as possible after the cut. An alternative, if application to cut stumps is not possible, is foliar herbicide coverage of resprouts at the end of the current growing season or during the next growing season.

Vigilant surveillance of callery pear is required because the seed is constantly being spread from adjacent areas. Control is most effective and less costly when trees are small, roots are diminutive, and sprouting is minimal. Removing isolated individuals or small patches of callery pear should be done before populations continue to multiply and become a nuisance. Since callery pear is very persistent with the ability to invade freely, a regular maintenance and control program of callery pear is recommended.

Thorns on branches of callery pear.
Photo Credit: Nancy Loewenstein, Auburn University, Bugwood.org

Flowers of callery pear.
Photo Credit: Nancy Lowenstein, Auburn University, Bugwood.org

FURTHER REFERENCE WEBLINK

Missouri Dept. of Conservation
https://mdc.mo.gov/trees-plants/invasive-plants/callery-pear-control#:~:text=Medium%20to%20large%20trees%20should,basal%20bark%20treatment%20and%20girdling.

Alabama Cooperative Extension System
https://www.aces.edu/wp-content/uploads/2020/08/FOR-2078_Callery-Pear081120L-A.pdf

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