

Invasive Callery Pear Identification and Control

For many years, callery pear (*Pyrus calleryana*) and its cultivars (e.g., ‘Bradford’, ‘Cleveland Select’, ‘Aristocrat’, and more) have been widely planted in Kansas. While this tree is valued for its adaptability, consistent spring flowers, fall color, and relative pest resistance, it is not without weaknesses (Figure 1). The narrow crotch angles and susceptibility to storm damage of early cultivars led to the release of cultivars with improved branch angles. Pears require cross-pollination to produce viable seed, and monocultures of a single cultivar such as ‘Bradford’ did not produce viable seed. Planting different cultivars resulted in genetic variability in the landscape and ample opportunity for cross-pollination and production of viable seed.

Spread by birds, these seeds have become well-established in landscapes across Kansas, from Kansas City to southeastern Kansas, and along the I-70 corridor through Wichita and portions of the Flint Hills. As of



Figure 1. Invasive callery pears (white flowers) in an undermanaged area near Topeka, KS.
(Photo: Ryan Armbrust, Kansas Forest Service)

2025, callery pear infestations have been documented in 60 of Kansas’ 105 counties, mainly in the eastern half of the state. For many of the same reasons callery pear was valued in the landscape as a tough tree, it is now proving difficult to eradicate as it spreads into areas where it is an unwanted disrupter and displacer of native and/or desirable vegetation.

Callery Pear Identification

Flowers

Perhaps the easiest season to identify callery pear is in early spring, when a proliferation of white flowers make these invasive trees stand out (Figure 2). While some native woody species, such as sandhill plum and American plum, bear white flowers at the same time, plum thickets are often more dense, localized, and shorter than a callery pear infestation. In addition,



Figure 2. Close-up of white flowers on callery pear. (Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org)



Figure 3. Upright, white-flowered saplings overtaking an open space. (Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org)

callery pears can often be spotted as a lone tree at the margin of a woodland, field, or right-of-way, in areas where plums do not typically persist (Figure 3).

Leaves

Leaves are often dark green, somewhat shiny to waxy, and exhibit good reddish-orange fall color, emerging after flowers have faded. (Figure 4). Margins are sometimes wavy, but leaves on these trees can exhibit diversity of forms (Figure 5).



Figure 4. Callery pear often shows red-bronze fall color. (Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org)



Figure 5. Leaves may be dark green and somewhat glossy, sometimes with a wavy margin. (Photo: Chuck Barger, University of Georgia, Bugwood.org)

Fruit

Callery pear fruit is borne in clusters of small, marble-sized, about ½ inch diameter, tan-colored pears (Figures 6 and 7). This fruit is somewhat persistent in fall and early winter (Figure 8).

Form, Branching, Bark

Callery pears have diverse growth habits, but seedlings often show a strongly pyramidal (upright) growth habit (Figures 9, 10, and 11). Branches occasionally bear thorns, especially in wild seedlings (Figure 12). Bark is dark brown and furrowed on larger trees, smooth on seedlings and saplings (Figure 13).



Figure 8. Fall color and fruit on callery pear. (Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org)



Figure 6. Clusters of tan, marble-size fruit. (Photo: David Stephens, Bugwood.org)



Figure 7. Tan, marble-size fruit with speckles is common. (Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org)



Figure 9. Upright growth and red fall color. (Photo: James H. Miller, USDA Forest Service, Bugwood.org)



Figure 10. Upright growth form and early white flowering makes callery pear stand out in the spring. (Photo: Richard Gardner, Bugwood.org)

Control Options

As with all weed control, the basic tenets of integrated pest management should be considered to achieve the desired outcomes. It is unlikely that any one control measure will be successful as a stand-alone treatment in the long term.

There are options for control of callery pear with a combination of cultural, mechanical, and chemical treatments. Ongoing assessment is needed to refine these recommendations. With the recently emerging invasiveness of callery pear, it is reasonable to expect that control recommendations will be updated.

Cultural Control

While callery pear continues to be a reliable and aesthetic performer in the landscape, the threat of invasiveness outweighs the benefits of continued planting of this species – especially where other landscape options can be expected to succeed. While it is true that individual cultivars of callery pear are themselves self-sterile, the existence of other cultivars of

pear and wild seedlings provides a sufficient diversity of pollen that viable seed production can be expected even in single-cultivar landscape plantings.

In rangelands where prescribed fire is used to manage undesirable woody species, callery pear seedlings may persist and even thrive due to their robust root system and ability to sucker and regrow (Warrix et al 2018). While prescribed fire may be a useful stressor, especially with growing season burns, a dormant season burn alone should not be expected to result in acceptable control of callery pear seedlings (Figure 14). Following up a prescribed fire with herbicide application on callery pear regrowth may be more successful than using either fire or herbicide alone.

Mechanical Control

Repeated annual mowing may be effective in controlling young seedlings to keep them from maturing into seed-bearing trees. Mowing will not eradicate callery pear on its own. The use of a mulching head on a skid steer, a brush mower, or other mechanical removal can be effective as an initial intervention on more



Figure 11. Callery pear can quickly overtake open, undermanaged areas. (Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org)



Figure 12. Some callery pear saplings can develop large thorns. (Photo: Nancy Loewenstein, Auburn University, Bugwood.org)



Figure 13. Callery pear saplings grow quickly and often have a strong single trunk. (Photo: James H. Miller, USDA Forest Service, Bugwood.org)

mature infestations. This equipment should only be used to create access for other control methods, or to create an opportunity for “cut-stump” herbicide treatment immediately following the mechanical disturbance (Figures 15 and 16). Field assessments in Kansas show that even with immediate and thorough chemical treatment following mechanical removal, a large number of resprouting callery pears and new seedlings should be expected. Follow-up chemical control will be required.

Chemical Control

At the time of publication, few herbicides specifically include callery pear on the label; however, some herbicides labeled for control of woody plants in rangeland, or for control of invasive plants, or for clearing rights-of-way, may be used according to their labels for control of callery pear. Pesticide applicators should always read, understand, and follow all label directions. When in doubt, contact the Kansas Department of Agriculture Pesticide Division for further guidance.



Figure 14. Callery pear may not be well-controlled by prescribed fire, but may be stressed for follow-up chemical treatment. (Photo: Ryan Armbrust, Kansas Forest Service)



Figure 15. Mechanical treatment can create access, but will not control callery pear by itself. (Photo: Ryan Armbrust, Kansas Forest Service)

Chemical control of callery pear can be applied in one (or more) of four treatments: foliar, cut stump, hack and squirt, and basal bark.

Foliar

A foliar treatment is applied to the leaves and upper parts of the seedling during the growing season. Callery pear has a glossy, somewhat waxy leaf, so the use of an adjuvant such as methylated seed oil appears to be beneficial and is highly recommended.

Cut Stump

Cut-stump treatment of callery pear can be accomplished by treating the cut stem surface of the tree immediately after cutting by a saw, a mower, a brush masticator (forestry head) or other such means. This method can be done any time of year. Cut-stump treatment may be less effective in spring and more effective in fall. In many cases, cut-stump treatment may be less effective after mowing/masticating (as opposed to a clean cut with a saw) due to reduced herbicide uptake on the crushed stems. It is important to treat the surface soon after cutting to maximize uptake of the herbicide by the tree. The use of a dye to ensure all stumps are treated, and none are double treated, is recommended.

Basal Bark

A basal bark spray is applied to the circumference of the tree near the ground, and it is taken up through the bark of the tree instead of through a cut surface. This method is less labor-intensive than a cut-stump treatment in many cases, but in particularly dense infestations, access may be difficult. Basal bark spray is most effective on younger, thin-barked trees that can effectively absorb the herbicide. Basal bark spray can be effective year-round, but application in the dormant season makes spray coverage on the trunk much easier.



Figure 16. Aftermath of mechanical and chemical treatment, which will require additional follow-up. (Photo: Ryan Armbrust, Kansas Forest Service)

Hack and Squirt

This method requires a sharp cutting tool (commonly a hatchet or machete) and a small applicator like a handheld squirt bottle. A cut or hack is made at an angle on the stem, penetrating just into the layer below the bark. Then a small, calibrated volume of herbicide is squirted into the flap held open by the cutting tool. Typically several hacks are made around the circumference of the stem with larger-diameters requiring more hacks than smaller-diameter stems(Figure 17).

Soil

In some cases, concentrated herbicide placed at the base of the tree is effective. Adequate soil moisture is required, or the chemical may be ineffective.

Important information about selecting and applying herbicides can be found in the annual K-State Research and Extension publication *Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland* available at bookstore.ksre.ksu.edu/pubs/chemweedguide.pdf

Recommendations

A recent study (Poole et al.) showed that cut-stump treatments with triclopyr, glyphosate, or imazapyr were all similarly effective with control approaching 100%, and no regrowth or resprouting was measured one year after treatment. Hack and squirt with triclopyr



Figure 17. Hack and squirt treatment on a callery pear stem. (Photo: Ryan Armbrust, Kansas Forest Service)

or glyphosate were both effective (control of 67% to 77%), while imazapyr was much less effective and is not recommended. Soil treatment with hexazinone showed limited effectiveness and is not recommended.

Specific information about efficacy (mortality) of each treatment can be found in the references at the end of this publication. No treatments should be considered completely effective after one application; effective control of callery pear will require follow-up treatments in subsequent years.

Based on trials completed in Kansas and other states, the following treatments in Table 1 appear to be generally effective against callery pear, resulting in acceptable mortality.

Table 1 Callery Pear Control Methods

Method	Trade Name	Chemical	Rate	Adjuvants
Foliar	Surmount	picloram + fluroxypyr	4 pints/acre	MSO ¹ 1% v/v
Foliar	Garlon 3A	triclopyr amine	0.5% v/v ²	MSO 1% v/v
Foliar	Pasturegard HL	triclopyr + fluroxypyr	0.5% v/v	MSO 1% v/v
Foliar	Method + Garlon 3A	aminocyclopyrachlor + triclopyr amine	0.25% v/v + 0.5% v/v	MSO 1% v/v
Foliar	Arsenal AC	imazapyr	0.25% v/v	MSO 1% v/v
Foliar	Arsenal PowerLine	imazapyr	0.5% v/v	MSO 1% v/v
Foliar	Capstone	aminopyralid + triclopyr amine	9 pints/acre	MSO 1% v/v
Foliar	Opensight	aminopyralid + metsulfuron	3.3 oz/acre	MSO 1% v/v
Foliar (spot)	Opensight	aminopyralid + metsulfuron	6.6 oz/acre	MSO 1% v/v
Foliar (spot)	Roundup + AMS	glyphosate + ammonium sulfate	2% v/v + 1-2% by weight	MSO 1% v/v
Basal Bark	Garlon 4	triclopyr ester	25% v/v	basal oil 75% v/v
Basal Bark	Pathfinder II	triclopyr ester	100% (RTU) ³	--
Cut Stump	Garlon 3A	triclopyr amine	25-50% v/v	spray dye
Cut Stump	Roundup + AMS	glyphosate + ammonium sulfate	25-50% v/v + 1-2% by weight	spray dye
Cut Stump	Brush-B-Gon	triclopyr amine	100% (RTU)	spray dye
Hack and Squirt	Accord XRT II	glyphosate (50.2%)	100% 0.5 mL cut	spray dye
Hack and Squirt	Trycera	triclopyr (29.4%)	100% 0.5 mL cut	spray dye

Trade names are provided for reference only – no endorsement of these products should be inferred. Persons using such products assume responsibility for their use in accordance with current label directions of the manufacturer.

1 Methylated seed oil
2 Volume to volume
3 Ready to use

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