College of Agriculture, Food and Environment
Cooperative Extension Service

Plant Pathology Fact Sheet **PPFS-OR-W-32**

—WARNING—
Topping is Hazardous to Tree Health

Cheryl Kaiser
Plant Pathology
Extension Support

Paul Vincelli
Plant Pathology
Extension Specialist

Topping is the drastic removal or cutting back of large branches in mature trees. The tree is pruned much as a hedge is sheared, and large branches are left as stubs (FIGURE 1). Topping is also referred to as heading, stubbing, and dehorning. This fact sheet discusses the reasons trees may be topped, how topping is detrimental to tree health, and the alternatives to topping.

REASONS TREES ARE TOPPED

Trees may be topped by homeowners or commercial tree service companies for a variety of reasons.

To reduce tree size

Very large trees may be considered a safety hazard when growing near buildings or parked vehicles, so they are topped to avoid possible storm damage in the future. Large or over-sized trees may also be topped when they:

- Grow into overhead utility wires
- Block views
- Interfere with buildings
- Hinder the growth of other trees
- Provide too much shade for solar collectors, lawns, or gardens.

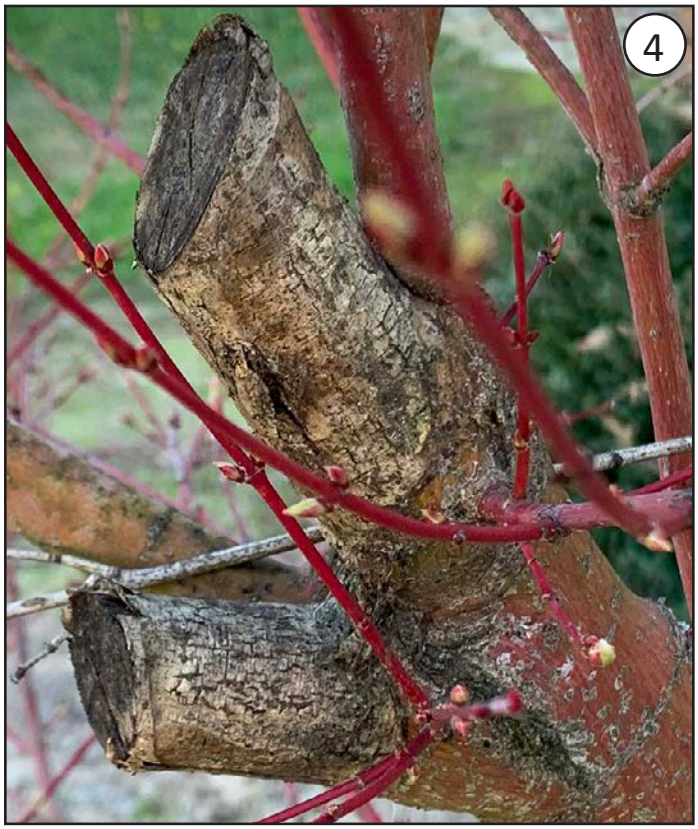
To remove hazardous branches

Trees may a be topped to remove potentially hazardous dead and diseased branches before they break during ice storms or windstorms.

To stimulate new branch growth

Topping stimulates regrowth of dense, upright branches just below pruning cuts.

FIGURE 1. TOPPING RESULTS IN A SEVERELY PRUNED TREE WITH UNSIGHTLY BRANCH STUBS, AND IT DESTROYS THE TREE'S NATURAL SHAPE AND FORM. IN ADDITION, TOPPED TREES BECOME VULNERABLE TO INSECT DAMAGE AND DECAY.



How Topping Damages Trees

Topping damages trees in many of the following ways:

Creates wounds

All pruning cuts create wounds; however, when branches are cut back to the main trunk, a lateral branch, or lateral bud, healthy trees are able to close over these wounds with woundwood and callus tissue (Figure 2). In contrast, branch stubs left from topping result in wounds that the tree is unable to close (Figure 3). These stubs become vulnerable to insect invasion and fungal decay pathogens. Once fungal decay organisms enter via a branch stub (Figure 4), they may spread into the main trunk, ultimately resulting in tree death. Fruiting bodies of decay fungi may be visible on affected trees (Figure 5). Refer to the UK Extension fact sheet *Tree Wounds—Invitations to Wood Decay Fungi* (PPFS-OR-W-01) for more information.

Figure 2 Trees are able to close properly made pruning cuts with woundwood and callus tissue. Rapid closure of wounds can often prevent the introduction of wood decay pathogens.

Figure 3 Trees are unable to close over pruning stubs. Instead, the stub dies and becomes an entry point for the invasion of insects and wood decay fungi. Note that while woundwood/callus has begun to form at the base of this branch stub, it will be unable to close the wound due to the stub.

Figure 4 Pruning stubs left on this dwarf maple are showing evidence of wood decay, which can eventually spread throughout the tree.

Figure 5 The presence of fungal structures (such as this *Fomes rimosa* conk) on trunks and/or branches is an indicator of wood decay. However, their absence does not mean the tree is free of decay; fruiting bodies of some decay fungi do not appear until disease is well-advanced.

Figure 6. Topping stimulates an abundance of rapidly growing branches known as "watersprouts." Topped trees can grow back to their original height quickly, often within a few years.

Stimulates undesirable regrowth

Topping stimulates the growth of multiple succulent shoots referred to as "watersprouts," which grow from lateral, adventitious, or latent buds. Although trees may appear rejuvenated with new foliage and branches, the new shoots are weak and susceptible to infection by plant pathogens, insect attack, and breakage. Because watersprouts generally grow rapidly, a topped tree will often grow back to its original height within a year or two (Figure 6). This makes topping, at best, only a temporary solution to reducing oversized trees.

Creates a hazard

Strong winds usually do not blow over a large, healthy tree. In reality, the extensive, well-established root system of a healthy tree will provide adequate support for its trunk and branches. However, topping actually creates a hazard because the resulting deteriorating branch stubs and numerous watersprouts are much more likely to be damaged by wind and ice.

Removes healthy branches & buds

Topping removes healthy branches along with any unhealthy limbs. By removing healthy branches, all existing buds on these branches, which would ordinarily produce normal sturdy branches and new foliage, also are removed.

Disfigures trees

From an aesthetic perspective, topping seriously disfigures trees (Figure 7). Unsightly branch stubs, conspicuous pruning cuts, and broom-like shoot growth (Figure 6) replace the tree's natural beauty and form.

Results in sunscald

Removing significant portions of the tree canopy suddenly exposes previously shaded bark to direct sunlight, which can result in sunscald and the death of newly exposed outer bark.

Figure 7. The natural beauty associated with eastern redbud trees (**A**) was completely destroyed when the redbud in (**B**) was topped in a home landscape.

Reduces tree's food supply

A healthy tree produces the amount of foliage necessary for the growth and maintenance of its branches, trunk, and roots. Topping removes significant amounts of foliage, thus reducing the tree's food-making (photosynthetic) potential. In addition, topping severely depletes the tree's stored energy reserves. Thus weakened, the tree becomes more vulnerable to disease pathogens and insect damage.

Some tree species (e.g., sugar maple, oak, and beech) do not readily produce watersprouts. Without this flush of new foliage, a bare trunk results, so food is not produced, and the tree eventually dies.

Alternatives to Topping

Selective pruning

There are situations in which reducing the tree canopy and/or removing hazardous limbs are desirable and necessary. A less damaging alternative for accomplishing this is "thinning," a process that involves removing selected branches by pruning them back to lower lateral branches.

Using proper pruning practices, cuts are made close to the trunk or a major branch, leaving only the collar of the removed branch, instead of stubs. These pruning cuts are less conspicuous than those left from topping, and the tree is able to form callus and woundwood over the wounds (Figure 2). Because thinning only involves the removal of portions of the canopy, the possibility of sunscald damage is reduced.

Thinning can be used to reduce height and spread while retaining the tree's natural shape, even under utility lines when necessary (Figure 8). Although selective pruning requires greater skill and more time than topping, this method of branch removal is healthier for the tree.

Train trees early

Careful and judicious pruning while trees are young can eliminate the need for major pruning later. This can effectively control tree growth and preserve the natural form of the tree without adversely affecting tree health. Pruning should be a recurring annual task that requires foresight, but it is also a good investment in time and money.

Figure 8. Consider the size of a tree at maturity before planting under utility lines or other obstacles. However, if a tree does start to interfere with overhead lines, it should be selectively pruned instead of topped.

Tree removal & replacement

In many circumstances, it may be better to remove a large tree rather than topping it. For example, trees with root damage from construction or other digging operations, as well as those in advanced stages of stress or decline, may create a hazard and should be removed. Trees that are too large for the space or in an undesirable location could be removed and replaced with more suitable ones.

Before replanting after a tree is removed, consider the potential height and spread of the replacement tree species at full maturity. Avoid planting trees where they will eventually interfere with utility lines or other obstacles. Careful planning before planting a tree can often eliminate the necessity of drastic pruning in the future.

Conclusion

Topping damages numerous large, beautiful trees each year in Kentucky. Topped trees are unnatural substitutes for shade trees meant to offer several lifetimes of beauty and enjoyment. In addition, topping can result in weakened trees due to wood decay diseases.

Homeowners often look to commercial tree service companies to provide sound advice on the care of their trees. Unfortunately, many of these companies erroneously promote topping as a suitable or proper method of pruning, which it is not. Therefore, avoid patronizing companies that advocate tree topping.

Additional Resources

Decline & decay

- Stress and Decline in Woody Plants (ID-50)
http://www2.ca.uky.edu/agcomm/pubs/id/id50/id50.pdf
- Tree Wounds—Invitations to Wood Decay Fungi (PPFS-OR-W-01)
https://plantpathology.ca.uky.edu/files/ppfs-or-w-01.pdf

Pruning trees

- Care of Woody Plants (HO-101, Kentucky Master Gardener Manual)
http://www2.ca.uky.edu/agcomm/pubs/ho/ho101/ho101.pdf
- How to Prune trees (USDA-Forest Service NA-FR-01-95)
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev7_016046.pdf
- Pruning Landscape Trees (HO-45)
https://forestry.ca.uky.edu/files/pruning_landscape_trees.pdf
- Pruning Landscape Trees: How-To (UK video)
https://www.youtube.com/watch?v=C_6vKc8mt_A

Replacing trees

- After Your Ash Has Died (ID-241)
http://www2.ca.uky.edu/agcomm/pubs/ID/ID241/ID241.pdf
- Trees with Minimal Insect and Disease Problems for Kentucky Landscapes (HO-94)
http://www2.ca.uky.edu/agcomm/pubs/ho/ho94/ho94.pdf

April 2023

Acknowledgment

The authors thank Steven Jeffers, Professor of Plant Pathology and Extension Specialist at Clemson University, for his input and review of this publication.

Photos: University of Kentucky—Sara Long (1, 6), Cheryl Kaiser (2), John Hartman (5); The Gardening Guy—Henry Homeyer http://www.gardening-guy.com (3); Clemson University—Steven Jeffers (4, 7B); Bugwood.org—Tim Stancec, Plantscape (7A), and Stephen Ausmus, USDA-ARS (8)

Revised from *WARNING Topping is Hazardous to Your Tree's Health* (ID-55), by C.A. Kaiser, M.L. Witt, J.R. Hartman, R.E. McNiel, and W.C. Dunwell