

Save Trees: Preserving Trees During and After Lawn Removal

Miles Becker and Shital Poudyal

03/26/2025



Introduction to Lawn Removal



Photo 1. A tree that died after removing the surrounding turf and irrigation.

Photo: Zac Roberts

Utah is one of the driest states in the United States. Outdoor irrigation accounts for approximately 65% of its municipal and industrial water use. As the state grapples with water scarcity, lawn or turf removal to reduce irrigation has become a prominent strategy to promote more water-efficient landscaping practices. State and local governments have implemented various rebate programs in accordance with Utah Senate Bill 118, Water Efficiency Amendments, offering up to \$3 per square foot for turf removal. These initiatives have led to millions of square feet of turf removal each year across Utah.

While the primary goal of turf removal is to conserve water where it is not needed, the resulting landscape changes can have unintended consequences. The nonfunctional turf targeted for removal often surrounds trees and shrubs. Improper or careless lawn removal can damage tree roots

and lead to tree decline or death (Figure 1). Additionally, abruptly turning off irrigation after turf removal can stress trees and further contribute to their decline. Minimizing these potential consequences is crucial to ensure that turf removal programs conserve water while protecting existing trees and shrubs.

Tree Benefits

Trees are planted next to streets, sidewalks, and homes for a good reason. They offer shade, improve air quality, harbor nesting birds, and create a welcoming and attractive neighborhood. Many cities and towns own and invest in living, green infrastructure as a public good, like transportation, roadways, sewer lines, and other services. Losing trees unintentionally from turf removal wastes many years of effort and reduces the benefits everyone receives from their urban forest.

Physical Tree Damage From Turf Removal



Figure 2. Tree roots in urban soil are often shallow, where air and water are available.

Physical removal of turf can damage trees in several ways. Digging under the turf can cut or break shallow tree roots just underneath the mat of turf roots. Trees growing in compacted urban soils generally have active roots less than 20 inches deep (Figure 2). Similarly, trees accustomed to short and frequent watering, typical for turf, usually have shallow roots just below the turf itself. Heavy machinery used to remove turf can accidentally injure the tree trunk or branches. The newly exposed ground is also

vulnerable to compaction from being walked or driven over. Compacted soil holds less air and water and will slow root growth.

Irrigation Changes and Tree Impacts

Perhaps more of a concern than physical damage are the changes in watering that a tree experiences after the turf is removed. Turf removal and rapid changes in watering routines effectively create drought conditions for trees. Many existing roots will dry and die. New root growth will be slow or inhibited. Larger trees acclimated to regular watering in limited soil volume may no longer be able to meet their minimum water budget (Figure 1). Drought-stressed trees can show initial symptoms of reduced vigor and yellowing foliage in the first growing season after the change. Within two to three years, you may see significant dieback in the upper crown of drought-stressed trees.

Turf removal also exposes the topsoil to more wind and sun. Covering the ground with rocks can increase soil temperatures. Water stored in soil pores may evaporate faster when the ground is bare or covered in rocks. Higher temperatures and soil compaction slow root growth, making recovery more difficult for the tree. Plastic sheeting placed aboveground around a tree may prevent weeds from growing, but it also reduces water and air available to tree roots.

Some tree species tolerate root loss and drought better than others. Cooler summers and wetter springs may offset the rapid loss of irrigated water for some trees. However, in general, trees are more likely to eventually die without an effective management plan.

How to Care for a Tree During Turf Removal

A few very simple actions can go a long way to keeping a valuable tree alive:

1. Evaluate the tree before turf removal.

Before removing turf around existing trees, assess tree health by checking for signs of decline, such as discolored leaves, dead branches, or an unusual growth pattern. Trees in poor condition may be more sensitive to changes from turf removal. Trees already in significant decline may need to be removed and replaced as part of the landscape transformation. When deciding to retain or remove a tree, consider its benefits now and the time it would take for a newly planted tree to reach a similar size for comparable

benefits. Consult an experienced, certified arborist if you are unsure about the tree's health or longevity. Many cities require permission to remove trees in the public right-of-way planting strips.

2. Protect the tree during turf removal.



Figure 3. Turf can be killed and left in place by using a clear plastic sheet to cover the target area. This works best in direct sunlight during warmer months.

Source: see Hoidal, 2021

The greatest risk during turf removal is damaging tree roots and trunks. Protect shallow roots and trunks by removing turf with alternatives to heavy machinery. Some removal techniques include applying herbicide to turf and waiting seven days before mowing it as short as possible and reapplying herbicide again. When applying herbicide, follow precautions to avoid nontarget damage. Another option is using hand tools, such as a shovel, sod cutter, or grub hoe. When digging by hand, aim to keep the depth as minimal as possible, removing only turf and not fine tree roots. Another easy method is solarizing with clear plastic or occultation with black plastic. Plastic sheeting traps sunlight and heat to bake the turf; however, it might take a few months, and you must remove the plastic when the process is complete (Figure 3). Smothering turf by covering it with cardboard and degradable materials can also be effective before placing a layer of mulch over the turf area. Avoid using waxed or glossy cardboard as it may hinder air and water access to tree roots. For additional information, see the Iowa State University Extension fact sheet "[How to Kill Grass to Create a New Garden Bed](#)" (Steil, 2024).

3. Install drip irrigation for the tree.

Removing turf in late fall through early spring allows trees an adjustment period.

After removing the turf, install a new water-efficient irrigation system for the established trees. Trees need little or no water in winter when they are dormant. Therefore, late fall through early spring is a great time to remove turf, giving the tree an adjustment period.

Design the new irrigation to meet the water needs of the tree(s) and the soil type. Water demand differs with soil type, tree species, and tree size. A rough estimate is 5 gallons of water for every 1 inch of trunk diameter every two weeks in summer. You can measure trunk diameter

by dividing the circumference of the trunk by 3.14. For example, a deciduous tree with a 32-inch circumference would need about 50 gallons once every two weeks (32 inches \div 3.14 \times 5 gallons = 50 gallons). The Utah State University (USU) Extension fact sheet "[How Much Water Do Landscape Trees Require in Utah? An Irrigation Calculator](#)" provides additional detail on water needs for trees.

Tips for Installing a Successful Irrigation System for Your Tree

- Lay out ½-inch pressure compensating in-line drip tubing in a rectangular or circular grid centered around the tree. Make sure to keep the trunk dry. In-line tubing is effective at deep watering for trees, easy to install, and low maintenance. Choose the tubing with emitters 12 to 18 inches apart. Bubblers are another good option for smaller spaces like park strips or sidewalks.
- Avoid trenching for the drip tubing, as it will cut through tree roots. In-line tubing will not function properly when buried under the soil. However, it will function when covered with a layer of mulch.
- Place the tubing or bubblers as close as possible to the tree canopy coverage (the dotted line on Figure 4) or even outside the canopy coverage, if possible (Figure 4). This will encourage healthy root development that stabilizes the tree and helps it resist drought.
- Determine the length of tubing and watering time based on the engineered flow rate and the gallons required by the tree. The online [USU Extension tree irrigation calculator](#) can estimate these values for you.
- Check or feel the ground for moisture 12 to 24 hours after running your new irrigation system. Increase the watering time if the ground is hard and difficult to insert a metal rod to an 18-inch depth. Decrease the water if the ground is squishy or soft.
- Inspect the tubing for clogged or broken parts at the start of each season. Like every other tool, irrigation works best when it is maintained.



Figure 4. Roots of a tree growing in a backyard will typically go beyond the edge of the tree canopy (left) and street trees often have most of their roots inside the tree canopy (right).

4. Mulch existing trees



Figure 5. There are many options for water-wise landscaping plants.

Mulching existing trees provides numerous benefits, including moisture retention, temperature regulation, and weed suppression. Biodegradable materials like wood chips, bark, or compost work well because they break down over time, enriching the soil with nutrients. Coarse wood chips have been shown to contribute the most to improved soil structure and benefit tree roots. Rock or gravel ground cover captures and stores heat, which may degrade soil health and restrict root growth. Always place a 2- to 4-inch layer of mulch in the area under the tree. Keep the mulch 6 to 8 inches from the tree trunk and avoid mounding it in a volcano shape. Replace the mulch over time as needed to maintain a consistent layer.

5. Plant water-wise materials.

Plants requiring low water levels can be part of the landscape transformation. Water-wise plants can make a yard more beautiful (Figure 5) and support butterflies, honeybees, and other pollinators while conserving water. If planting smaller shrubs and perennials near a tree, make sure they have the same watering requirements as the tree. Dozens of plants in all textures, colors, and sizes will successfully grow in your new landscape. Choose the right plant for your site with help from several Utah organizations that are listed in the Resources section of this fact sheet.

6. Monitor tree condition.



Figure 6.A *A thinning tree canopy may be early symptoms of stress.*

Photo: Zac Roberts

After removing turf around your trees, monitor the tree condition for at least two years to observe its response to the new landscape. Make sure your tree has healthy tree characteristics, such as vibrant green leaves, vigorous new growth, and few, if any, pests or diseases. Be patient as the tree may need one to two years to adjust to the new conditions. If you see symptoms of drought stress, such as leaf scorch, thinner canopy (Figure 6), stunted shoot growth, or branch dieback, pay particular attention to the soil moisture regime. Overwatering can also harm trees by suffocating roots and fostering diseases, such as phytophthora. Encourage deeper root growth by applying water slowly and for longer duration at each irrigation but less frequently, allowing water to infiltrate deeper into the soil where roots will be more likely to follow. This helps the tree develop a strong, deep root system.

Resources

Landscape Transformation Programs

- Landscape incentive program: [Utah Water Savers](#).

Arborists and Tree Workers

- Find an arborist: [Trees are Good](#).
- Arborists for hire: [Utah Community Forest Council](#).

Irrigation Systems

- Video: [Drip Irrigation 101](#) (Rice, 2019).

- USU Extension fact sheets and information:
 - “The Do-It-Yourself Guide to Backyard Drip Irrigation” (Gunnell et al., 2025).
 - “Efficient Irrigation of Trees and Shrubs” (Cerny et al., 2002).
 - “Irrigation, Water Use & Drought”(Center for Water-Efficient Landscaping, n.d.).

Selecting Water-Wise Plants

- Find water-wise plants: .
- Landscaping designs just for Utah: [Localscapes](#).
- Water-wise plant lists:
 - [Red Butte Garden](#) and [water-wise gardening](#).
 - [The Utah House, USU Botanical Center](#).
 - “[Water-Wise Plants for Utah Landscapes](#)” (Cerny et al., 2003).
 - [Center for Water-Efficient Landscaping \(CWEL\)](#).

Photo Credit

The authors provided all photos unless otherwise noted.

References

- Center for Water-Efficient Landscaping (CWEL). (n.d.). *Irrigation, water use & drought*. Utah State University Extension. <https://extension.usu.edu/cwel/irrigation>
- Cerny, T. A., Heflebower, R., Sagers, L., & Bitner, W. (2003). *Water-wise plants for Utah Landscapes* [Fact sheet]. Utah State University Extension.
- Cerny, T. A., Kuhns, M., Kopp, K. L., & Johnson, M. (2002). *Efficient irrigation of trees and shrubs* [Fact sheet]. Utah State University Extension. <https://extension.usu.edu/cwel/research/efficient-irrigation-of-trees-and-shrubs>
- Hoidal, N. (2021). *Using the sun to kill weeds and prepare garden plots* [Fact sheet]. University of Minnesota Extension. extension.umn.edu/planting-and-growing-guides/solarization-occultation.
- Poudyal, S. (2022). *How much water do landscape trees require in Utah? An irrigation calculator* [Fact sheet]. Utah State University Extension. <https://extension.usu.edu/yardandgarden/research/how-much-water-do-landscape-trees-require>
- Rice, D. (2019). *Drip irrigation 101* [Video]. Weber Basin Water Conservancy District and Utah State University Extension Center for Water Efficient Landscaping. YouTube. <https://www.youtube.com/watch?v=uh0oGK1vFXY>

- Scharenbroch, B. C., & Watson, G.W. (2014). Wood chips and compost improve soil quality and increase growth of *Acer rubrum* and *Betula nigra* in compacted urban soil. *Arboriculture & Urban Forestry*, 40(6), 319–331.
- Steil, A. (2024). *How to kill grass to create a new garden bed* [Fact sheet]. Iowa State University Extension.
- Tree Care Industry Association. (2023). *ANSI A300 tree care standards, part 6: Soil management standards*. <https://treecareindustryassociation.org/business-support/ansi-a300-standards/>
- Ulmer, J. M., Wolf, K. L., Backman, D. R., Tretheway, R. L., Blain, C. J. A., O’Neil-Dunne, J. P. M., & Frank, L. D. (2016). Multiple health benefits of urban tree canopy: the mounting evidence for a green prescription. *Health & Place*, 42, 54–62.
- Watson, G. W., Hewitt, A. M., Custic, M., & Lo, M. (2014). The management of tree root systems in urban and suburban settings: a review of soil influence on root growth. *Arboriculture & Urban Forestry*, 40(4), 193–217.



March 2025
Utah State University Extension
Peer-reviewed fact sheet

[Download PDF](#)

Authors

Miles Becker and Shital Poudyal