

Sustainable Landscaping Planning and Plant Selection

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“Our ability to perceive quality in nature begins, as in art, with the pretty. It expands through successive stages of the beautiful to values as yet uncaptured by language.”

Aldo Leopold (1887-1948)

Tennessee is a beautiful state with a variety of landscapes to call home. The natural beauty and unique landscapes of our state can be preserved with every home and landowner’s assistance. Each property does not exist in a bubble. Instead, it is a part of a larger ecosystem where unique combinations of soil, water flows, climate and living things combine differently to create distinct ecoregions. The unique natural elements in your region of Tennessee need to be incorporated into landscape decisions to offer a sustainable balance that meets your needs and also makes sense for your climate, soil and other environmental conditions. This is where concepts of sustainable landscaping may provide long-term solutions to benefit your landscape and the entire community. This publication presents questions and makes suggestions as to how home and landowners might create a more sustainable and appealing landscape, a “Tennessee-smart” yard, so they can better steward Tennessee’s natural environment to benefit all who live in and visit this state.

A sustainable landscape is one that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Question: What is sustainable landscaping?

Answer: It’s landscaping in balance with nature, your budget, your community and your lifestyle.

Like farmers who rotate crops in fields to maintain good soil, like foresters who manage a stand of timber to ensure healthy tree growth, and like each of us who manages our finances and strive for a balanced budget, we all practice sustainability in our everyday lives. Sustainability means maintaining change in a balanced manner, where the consumption of resources is in line with both current and future needs. This concept is easily adopted in gardening and landscaping practices. Sustainable landscaping can be cost-effective over time by adhering to “cues to care,” which frame care and intention that provides benefits for both property owners and the environment (Nassauer, 1995).

Question: What does sustainable landscaping entail?

Answer: It's individualized actions that make sense for you and your outdoor space.

Sustainable landscaping will look different for every Tennessean. There are many common best management practices that keep resource consumption and impacts low. The combination of unique landscape conditions and landowner needs makes each sustainable landscaping plan one of a kind. Landscape architects and garden designers may be able to assist homeowners and landowners with sustainable plans and designs.

Knowing what you want from your outdoor space should be tempered with realistic expectations of maintenance activities. All landscapes require some level of effort to maintain them. Making informed decisions about space utilization and plant selection will help keep a balance between wants and maintenance that is sustainable in the long term. If the upkeep of your yard becomes too time consuming or expensive, then consider a scenario that works better. Also, keep in mind that as plants grow and change over time, upkeep activities will ebb and flow.

Expectations for an outdoor space must align with practical constraints of time, budget and resources.

Some questions to keep in mind when considering maintenance:

How much time do you have to give to maintenance and upkeep?

Will that change over time?

What gardening/upkeep activities do you enjoy?

Which do you not enjoy?

Are there changes that might reduce the need for activities you don't enjoy?

Will you hire a landscaping contractor to provide any services?

If so, which services and does that fit in your budget?

What maintenance and upkeep activities are needed and at what interval?

Will the plants you choose still fit the space in 5 years, 10 years?



Figure 1, Irises. A combination of moist soils and part shade along with a desire for long bloom time and a consistent texture make one of Tennessee's official state symbols a perfect selection. Native Blue Flag Iris grows under a sprawling Indigo Bush below a gutter downspout.

Question: What are the goals and benefits of sustainable landscaping?

Answer: The goal is to promote good soil health, protect downstream waterways, and provide wildlife habitat while minimizing intensive landscaping practices that consume high amounts of time and resources without providing matching benefits.

Key elements to sustainable landscaping include:

1. Knowing your environmental conditions so the design interventions and plant species reflect the local environment,
2. Understanding personal or family desires for your landscape,
3. Minimizing the need for inputs such as permanent irrigation, fertilizers, chemical herbicides and insecticides, mowing, and other practices to reduce energy consumption.

These three key elements will effectively guide decisions toward selecting the right plant for the right place in an enduring landscape to promote long-term success and enjoyment.

Components of a sustainably landscaped yard include:

1. **Healthy Soil** — Send soil samples to a testing center so you can know your soil pH, organic matter, nutrient content, texture and soil depth, then amend based on recommendations. Check for signs of erosion and aerate if compaction is an issue.
2. **Water and Energy Consciousness** — Everything is connected by water. Tennessee is a water-rich state, so look for opportunities where rainwater runoff, streams and wetlands offer site-specific plant options.
3. **A Sense of Place** — Create consistency through themes that enhance natural elements and showcase native Tennessee plants. Wildlife and pollinators thrive when they have access to native plants. This will create unique and satisfying experiences in outdoor spaces that benefit you and the environment.
4. **Diversity** — Planning a diversity of plants creates visual appeal and maximizes wildlife benefits, while minimizing vulnerability to large-scale loss of a single plant species from disease or pests. Some examples of creating diversity include a variety of textures, bark, bloom time and patterns.

Question: How can I practice sustainable landscaping?

Answer: Evaluate your space, make an adjustable plan, and have patience.

Starting a sustainable landscaping plan can begin with something as simple as starting a compost pile or planting native bunch grasses in place of turf in challenging spots in the lawn. Whether you are beginning with a new property or a mature space, the following steps can help you establish or transition an existing landscape into a more sustainable landscape:

1. Make a base map of your outdoor space to include conditions like soil type, sunlight, drainage paths and use areas.
2. Consult this base map in all future plant selections.
3. Make a plan of practical actions that work for you and your family.
4. Keep in mind that plans can and will change, so be flexible and have patience.

One of the first steps in sustainable landscaping is to identify and remove invasive exotic plants and incorporate more native plants or noninvasive

alternatives. It is estimated that invasive plant management costs Tennessee taxpayers \$2.6 million dollars a year (TNIPC, 2012). Some of this expense may be avoided if the seed sources in residential landscapes are removed so they cannot be unintentionally spread into other areas. Consult the Tennessee Invasive Plant Council's Invasive Species list and consider replacing any of these species in your landscape with a native or noninvasive alternative.

An easy first step may be to identify and remove invasive exotic plants in your current landscape.

Native plantings take time to develop, but the natural resilience and adaptations of native plants may provide benefits to you and the environment. You can find more than 2,400 species of native or naturalized plants in Tennessee, and many are available in the nursery trade. That diversity ranks 17th among the 50 states (Natureserve, 2002). By using plants adapted to local conditions, you may be able to reduce water and energy demands. Minimizing chemical applications can reduce releasing harmful constituents into the environment. Using native plants also provides food and shelter for a variety of wildlife. Not only are there benefits to the environment, but our homes and outdoor spaces should be a refuge from the stresses of everyday life. There is growing evidence that our health and happiness can be linked to interactions with green space and nature. Mimicking efficient and self-sustaining natural flows and process could save us time, effort and resources.

Question: Why does sustainable landscaping matter?

Answer: Personal advantages, but also for the benefit of our local, regional, and global environment.

Tennessee is rich in natural resources and unique habitats and ranks 13th among the states in species diversity, providing habitat for 3,772 species. We rank fourth in amphibian diversity and second in freshwater fish diversity (NatureServe, 2002). Tennessee also ranks ninth in the country for total extinct species (22 documented). Habitat destruction and degradation are the leading threats to biodiversity in the United States, followed by spread of harmful non-native species. There are more than 2 million acres of developed land added in the United States every year. Between 1982 and 2007, there was an 85 percent increase



Figure 2. Plant Diversity. Use a diversity of plants to create unique visual appeal, ward off large scale loss from disease or pests, and provide a variety of benefits for wildlife. Here, native oakleaf hydrangea, needle-leaved bluestar amsonia and false indigo are paired with an Eastern Redbud variety selected for contrasting foliage colors.

in developed land in Tennessee. Currently, over 3 million acres are dappled with buildings, roads and parking lots (TACIR 2011). With Tennessee population expected to reach nearly 7.4 million by 2030 (CBER), land development will certainly continue at a fast pace into the future decade.

Land use change, like development, leads to an increase in impervious surfaces, such as rooftops and pavement, in the landscape. Depending on how it is planned and constructed, infrastructure that conveys untreated runoff has long-term impacts on water quality and aquatic habitats. Untreated runoff impacts municipal infrastructure and private property. Impervious surfaces in a watershed, which is a term for all the land that drains to a point along a stream or river, is linked to biological degradation and instability in stream channels when impervious surfaces covered more than 10 percent of the watershed (Booth et al., 2002). In areas with pollution-sensitive species, this level may be even lower. The US Environmental Protection Agency projects that by 2020, the watersheds of 3,610 miles of Tennessee streams will be at or above this 10 percent coverage threshold (USEPA 2005). As property owners, we all have the power to minimize runoff from impervious surfaces on our personal property. Of course, structures, roads and pavement are all necessary for our way of life. To make up for these harmful effects of construction and development, sustainable landscaping strategies use runoff from rooftops and driveways to nourish

healthy soils and plants, which will act as a buffer for streams and aquatic habitats all while creating new opportunities for unique plants in your outdoor space.

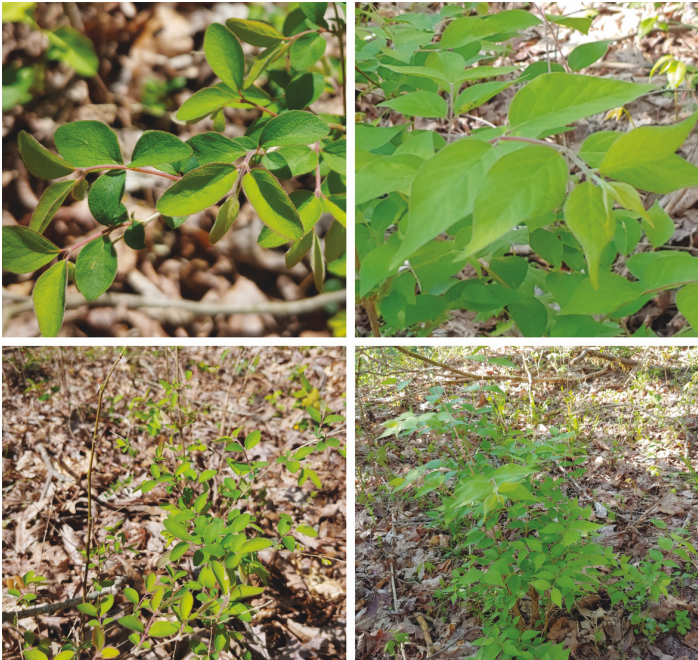


Figure 3. Removing invasive non-native species helps the native vegetation flourish, but sometimes non-native invasive plants and have native look-alikes. Coralberry (Left) is a Tennessee-native shrub that is easily identified in the winter when it has bright pink drupels of berries, but in early spring, can look like invasive, non-native bush honeysuckles (Right). Read about other look-alikes in the “Mistaken Identity” publication.

Common Practices	Examples of Sustainable Alternatives
Selecting plants for rapid growth habits, perceived ornamental qualities, unusual characteristics or otherwise not based on a functional value or site characteristics.	Selecting plants that are adapted for observed site conditions and provide function in terms of utility to wildlife, water quality, ecosystem services or mimicking of natural habitats. Avoid invasive plant species that outcompete native plants or cause other damage.
Maximizing lawn as the dominant landscape feature.	Minimizing lawn space to the size that matches the needs of your family for specific activities.
Manicuring turf areas intensively with herbicides for a weed-free lawn.	Hand weeding areas of particular interest and accepting some level of variety in the turf in other areas.
Routinely applying fertilizer and pesticides (with no basis on sampling or observations).	Reducing or eliminating the need for fertilizer or pesticides by following soil test recommendations and using plants that are naturally adapted to the local climate conditions and insect pressures. When needed to remove invasive plants, spot applying herbicides or removing by hand.
Raking, bagging and landfilling leaves and downed woody debris in the fall and winter.	Keep plant-based wastes on site for composting or shred in place. Chip branches and use for mulch. Create a backyard brush pile habitat by stacking downed limbs and branches (check with local rules and use fire-wise practices).
Dead heading or removing all dead or declining biomass from flowering plants in the fall.	Allow dead biomass to stay throughout the winter (until early March) to provide cover for dormant insects and places for birds to feed and find cover from harsh weather.
Mowing creekside vegetation to the edge of water.	Maintain at least 35 feet of no-mow buffer of plants (preferably trees and shrubs) along all waterways to help provide shade over streams and food for organisms in the stream. Buffers may help minimize excessive stream bank erosion, filter harmful constituents, and protect aquatic habitats.

Table 1. A comparison between common practices in landscape maintenance and management contrasted with and example of a sustainable alternative that supports environmental stewardship.



Figure 4, Riparianbuffer. A walkway through lush vegetation along a creekside (called a riparian buffer) allows for easy viewing of the creek and these white turtlehead and orange jewelweed. These plants, along with the canopy maples, provide shade to the stream and help reduce the risk of stream bank erosion.



Figure 5, Mowpath. Choosing narrow mown paths to connect spaces allows for more lush vegetation in the surrounding untrafficked areas and less time devoted to mowing.

Question: What are the next steps?

Answer: Now it's time to take action.

Now you are empowered with a foundation of information that will help you adopt the role of steward, emphasize natural Tennessee elements in your outdoor spaces, and use concepts of sustainable landscaping to guide your gardening and management actions. Consider your individual needs and seek professional advice as needed. Prioritize actions that align with your unique landscaping goals and land ethic and acknowledge small steps towards the larger goal.

There's not a best season to begin allowing nature work in your favor. So, start making plans today for healthier and more functional landscapes for you, your community and our environment. No two properties will have the same sustainable landscape plan, but finding the unique set of strategies that fit you and your family's needs and gives back the benefits you seek will be the best strategy of all.

“Conservation is a state of harmony between men and land.”

Aldo Leopold (1887-1948)

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