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UT Extension
W 219

THE TENNESSEE YARDSTICK WORKBOOK





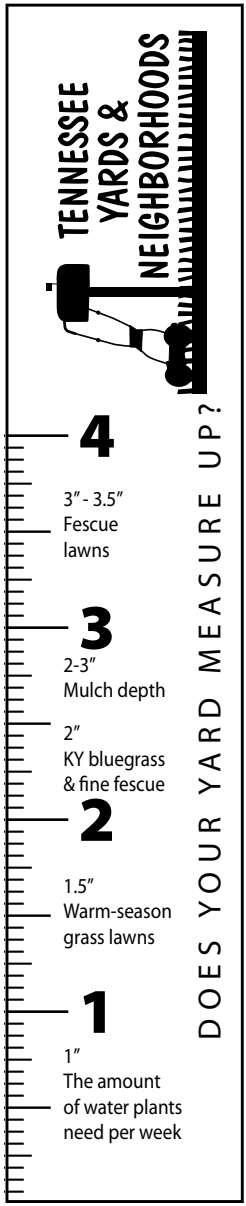
Does your yard measure up?

By following the simple steps inside, you can save time and money, make your yard the best it can be, and protect Tennessee's water resources.



THE UNIVERSITY of TENNESSEE
INSTITUTE of AGRICULTURE

THE TENNESSEE YARDSTICK WORKBOOK



Every inch makes a difference. Whether it's mulching, mowing your lawn or calibrating your irrigation system, a simple ruler can help you do it right.

Table of Contents

Introduction 1
A Tennessee Yard Done Right 2
Right Plant, Right Place 4
Manage Soils and Mulch 8
Appropriate Turfgrass Management 10
Water Efficiently 14
Use Fertilizer Appropriately 16
Manage Yard Pests 18
Reduce Stormwater Runoff and its Pollutants 20
Provide for Wildlife 24
Protect Water's Edge 25

Acknowledgments

Tennessee Yards and Neighborhoods was adapted from North Carolina Yards and Neighborhoods, a program of North Carolina Cooperative Extension Service and the Piedmont Triad Water Quality Partnership, and Florida Yards and Neighborhoods, a program of the University of Florida Institute of Food and Agricultural Sciences.

The Tennessee Valley Authority, University of Tennessee Extension and Tennessee Water Resources Research Center worked together to bring this program to Tennessee.

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INTRODUCTION



here's no doubt about it. Successful garden and lawn care in Tennessee requires special knowledge and skills. The Tennessee Yardstick Workbook shows you how to create attractive and healthy yards by working with Tennessee's environment rather than against it.

This workbook guides you through an evaluation of your yard and yard care practices. Each action you take (or have already taken) earns you "inches" on the Tennessee Yardstick. **A yard that measures up to at least 36 inches is a Tennessee Yard Done Right!** What is the payoff? A yard that meets your needs, enhances your neighborhood and helps protect Tennessee's beauty and natural resources.

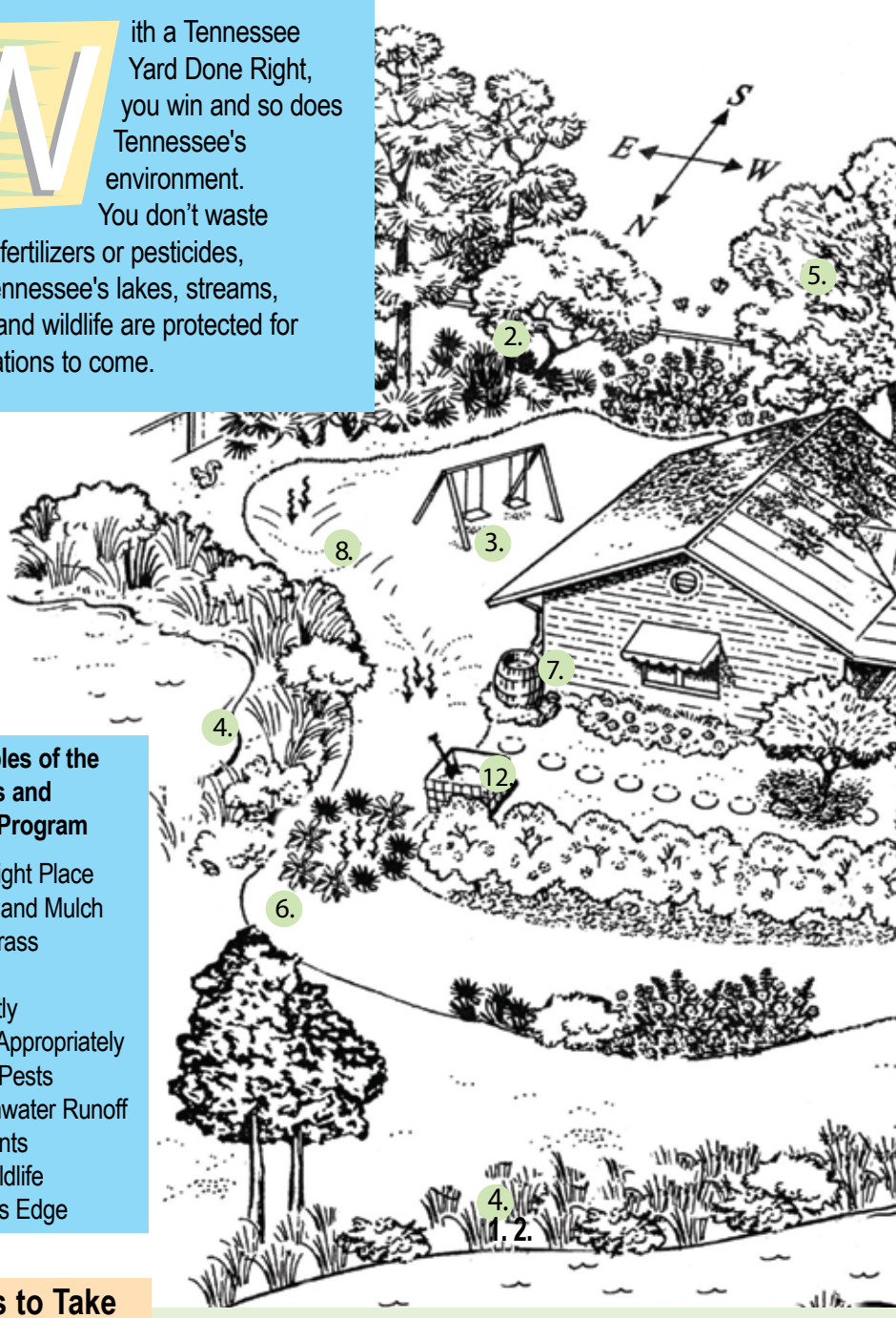
The Extension staff and Tennessee Master Gardeners at your county's Extension office can provide you with more information and answer questions. They can also tell you about additional services they may provide such as diagnostic tests, workshops and on-site resources.

Remember, Rome wasn't built in a day and neither is a Tennessee Yard Done Right. Take this adventure a step at a time and have fun!

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product. The author(s), the University of Tennessee Institute of Agriculture and University of Tennessee Extension assume no liability resulting from the use of these recommendations.

With a Tennessee Yard Done Right, you win and so does Tennessee's environment. You don't waste water, fertilizers or pesticides, and Tennessee's lakes, streams, rivers and wildlife are protected for generations to come.



The Nine Principles of the Tennessee Yards and Neighborhoods Program

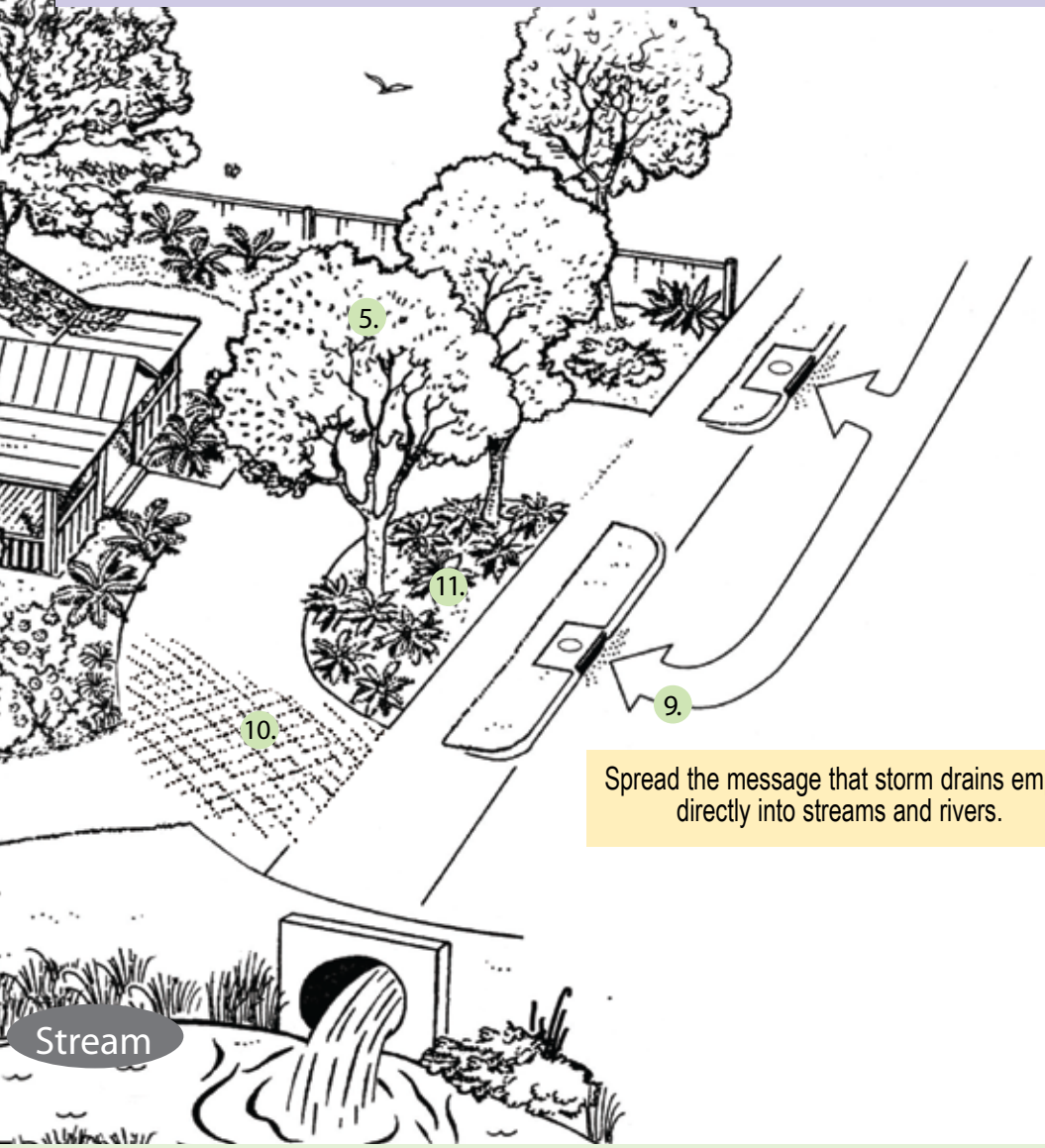
- Right Plant, Right Place
- Manage Soils and Mulch
- Manage Turfgrass Appropriately
- Water Efficiently
- Use Fertilizer Appropriately
- Manage Yard Pests
- Reduce Stormwater Runoff and its Pollutants
- Provide for Wildlife
- Protect Water's Edge

Actions to Take

1. Test your soil and plant properly.
2. Create wildlife habitat.
3. Make lawn area practical.
4. Protect/enhance vegetated buffers along creeks and streambanks.
5. Plant deciduous trees to shade southern and western sides of home.
6. Divert stormwater runoff to a rain garden.
7. Recycle rainwater by installing rain barrels.

What does a Tennessee Yard Done Right Look Like?

A Tennessee Yard Done Right can take any form—unique or traditional. In fact, you can create a Tennessee Yard Done Right simply by changing the way you take care of your yard.



Spread the message that storm drains empty directly into streams and rivers.

8. Maintain grass-lined swales and detention basins so they function correctly.
9. Keep street gutters and storm drains clear of dirt, leaves, grass clippings and other debris.
10. Use porous surfaces, such as graveled driveways and mulched paths, to allow rain water to soak into the ground.
11. Mulch plant beds.
12. Compost yard waste.

Right Plant, Right Place

Good landscape design hinges on one basic concept—the right plant planted in the right place. Careful planning and site evaluation are the first steps in applying this concept. The following checklists will guide you through some important considerations and decisions you should make when designing a landscaped area.

Resist (for now) the temptation to rush out and purchase plants. That will come later! First you will need to analyze the site. If you have an in-ground sprinkler system or are planning to put one in, make sure the designs for the landscape and sprinkler system match each other. Better yet, select plants based on their ability to survive and thrive on rainfall alone.

Tennessee is a diverse state which includes different climatic zones. Soil types, temperature ranges and rainfall patterns are dramatically different from region to region. A plant that thrives in a friend's yard in the mountains may struggle in your yard in the valley. Different conditions often exist in the same yard, creating microclimates. The front yard may be high and dry, while the backyard may be poorly drained and soggy.

Once you know your site conditions and have decided how you will use your yard, you are ready to begin the design process. Consider your time, skills and resources– you may need to hire a landscape design professional at this point. Prioritize your landscape projects, and then work on them one at a time in order to make the best possible use of resources.

1. Determine your needs for a particular area. Here are a few suggestions:

- Play area for children.
- Vegetable/Herb/Fruit garden.
- Screening.
- Wildlife habitat/Butterfly garden.
- Water garden/Aquascape.
- Entertaining area.
- Pet area.
- Storage area.
- Pool, spa, hot tub.
- Outdoor barbecue area.

Right plant, right place: Plant selection is determined by individual site characteristics.

2. Determine how much maintenance you want to put into your yard. (Time needed for mowing, pruning and weeding; requirements for water, fertilizer and pesticides)

___ High
___ Medium
___ Low

3. Determine the site conditions in your yard.

___ Full shade
___ Partly shaded
___ Sunny

___ Sandy soil
___ Loam soil
___ Clay soil

___ Well-drained soil
___ Poorly drained soil
___ Compacted soil

___ Alkaline soil
___ Acidic soil
___ Neutral soil

Your county's Extension office can give you information on how to collect a soil sample for pH, nutrient levels, organic matter and fertilizer recommendations.

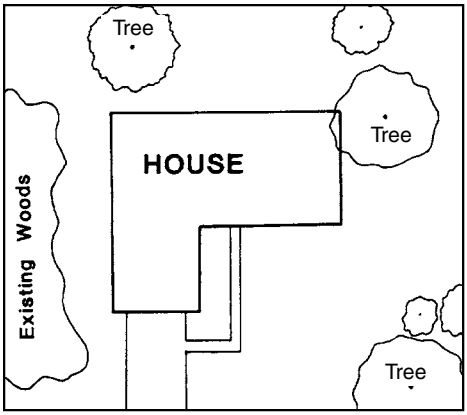
TENNESSEE YARD DONE RIGHT ACTIONS:

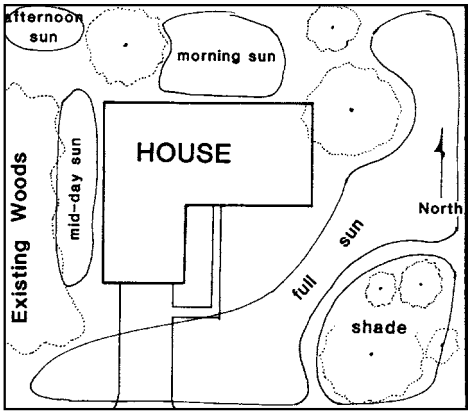
- ☐ Determine your family's needs for your yard including how much lawn you desire for children, recreation, pets and other. Value: 2 inches
- ☐ Assess your yard's site conditions to determine the types of plants most suited. Value: 2 inches
- ☐ Group plants according to their maintenance needs. Value: 2 inches
- ☐ Save energy by using trees and shrubs to shade the air conditioner compressor; leave room for adequate air circulation and maintenance. Value: 1 inch
- ☐ Use deciduous trees or shrubs on southern exposures to allow sun to passively heat your home in the winter and provide shade in the summer. Value: 1 inch
- ☐ Help stop the spread of invasive exotic plants by removing them or not introducing them to your yard. Value: 1 inch
- ☐ Preserve existing vegetation, especially trees, when building on a new site or renovating by maintaining a "do not disturb" barrier under the dripline of trees. Value: 1 inch

___ Total Inches

4. Create your landscape design plan.

Draw your landscape design to scale. Use graph paper to help with spacing. Be sure to indicate where activities will take place, future plans for additions to your home, and space for children and pets. Don't forget to add irrigation zones if you have an in-ground system.





Indicate existing plants you want to keep, then note site conditions, including number of hours of sun in each area, wet or dry areas, steep slopes and drainage patterns. Add overhead and underground utilities and pipes, views you would like to screen and sounds you would like to soften.

5. Choose plants with characteristics that meet your yard's needs, consider:

moisture tolerance	light exposure	plant type
native or not	hardiness	mature height and width

6. Choose plants to meet your family's needs, consider:

bloom time	wildlife food source	flower color
growth rate	maintenance	bark characteristics
edible fruit	evergreen/deciduous	fragrance
leaf color		

The Top Five Common Mistakes in Landscape Plantings

Mistake #1: Over-planting.

Trees and shrubs are often planted too close together to get a "full" look. The result several years later is a crowded landscape that stresses plants. Plants must be removed or drastically pruned to reduce competition and increase air circulation.

Solution #1: Resist the temptation to have an "instant landscape." Know the mature size of plants and give them room, and time, to grow into their proper mature size.

Mistake #2: Plants around the home are too tall.

When plants grow too tall they cover windows and no longer enhance the home's appearance. We usually try to compensate for this "mis-planting" by shearing to control the plant size. This constant shearing weakens and disfigures plants. It also creates extra work and yard waste.

Solution #2: Select plants with a mature size that fits their location. To keep the plant neat and healthy, follow proper pruning recommendations.

Mistake #3: Drought tolerant and water-loving plants are planted in the same bed.

Water-loving plants can die if kept too dry and drought tolerant plants can die if kept too wet.

Solution #3: Group plants according to the amount of water they need. Over-watered plants wilt and die just like under-watered plants. Over-watering can lead to root rot diseases that are not easily cured.

Mistake #4: Plants are planted too close to the house.

Plants too close to the house have more pest and disease problems because of wet foliage and lack of air circulation. They also create a maintenance nightmare when it's time to repair or paint the house.

Solution #4: Foundation plants should be planted half their mature width plus 1 foot away from the house. Therefore, a shrub that will grow to be 5 feet wide should be planted 3 1/2 feet away from the house.

Mistake #5: Soil is not properly prepared before planting and proper planting techniques are not followed.

Plants can not be expected to thrive when planted in poor soil or incorrectly.

Solution #5: Not many plants grow in soils with a high clay content and low amounts of organic matter. Soil amendments should be incorporated into the existing soil. Follow UT Extension guidelines when planting.

Manage Soils and Mulches

Soil is not Simply Idle Dirt!
Soil has many important functions. It acts like

A sponge, soaking up rainwater and slowly releasing it–replenishing ground and surface water sources.

A supermarket, providing valuable nutrients, air and water to plants and animals.

Your body's liver, trapping, filtering and degrading contaminants from stormwater runoff and from direct land applications of pesticides and other toxic compounds.

Soil Paved Over
Soil paved over or built upon loses many of its critical functions–those that affect flooding in our backyards, water quality in our creeks and the ability to retain a community rich in trees that shade us and cleanse our air.

Consider what you can do to compensate for these losses by increasing water infiltration in your own yard (Build a rain garden!) or by becoming involved in the local land planning process to promote Smart Growth concepts (see **www.epa.gov/livability/**).

Soils are naturally made up of air, water, organic matter and minerals. Unfortunately, our urban soils often have very few of the characteristics of the native soil before development. Newly constructed home sites typically have had most of their top soil removed, while older homes have often developed biological and nutrient imbalances from years of misguided fertilizer and pesticide applications. Both new and old homesteads often have highly compacted soils, resulting in the loss of a critical structure needed to maintain plant growth. Planting without addressing these soil issues is a sure recipe for failure!

The goal of good soil management is to create a better environment for plant roots. Soil amendments and mulches are often needed to meet this challenge.

Soil amendments are any materials that are added to a soil to improve its physical, biological and chemical properties. Lime or sulphur, for example, may be needed to adjust the soil pH to maximize nutrient availability for plants; compost may be needed to increase organic matter that then feeds fungi, bacteria and other living creatures that are required to maintain a biologically active soil community.

Mulches are materials that are typically applied over the surface of the soil to reduce moisture loss, moderate soil temperatures, reduce erosion and suppress weeds. Not all mulches are created equal. Some are organic while others are not. Inorganic mulches include materials like gravel, stone, brick chips and textile products. Organic ones can include bark materials, pine needles, compost, paper and ground covers. The added benefit of using organic mulch is that as it breaks down it can enrich the soil with organic matter.

Steps to Making a Healthy Soil
Creating healthy soils so that your plants and lawn may flourish requires planning one step at a time. Here are three steps to start you on your way.

Step One: Test It
Before fertilizing or making any other amendments to your soil, first check its current condition. Soil can be tested by the University of Tennessee Soil, Plant and Pest Center. From your end, you will be asked to collect a composite sample. Here is how it is done.

Collect small portions of soil at a depth of 6 inches from approximately 10 random locations that represent the average soil conditions for your planting areas (typically one for your yard and one for your gardens if soil is fairly uniform).

The Basic Test
Consider having a basic test conducted that includes your soil's pH.

Did you know? Healthy lawns typically require a pH of 6.0 to 6.5.

Mix the portions together in a clean plastic bucket to create the composite sample. If the soil is wet, allow it to dry before mixing. From this mixture, remove 1 cup of soil for your sample analysis. You can obtain a soil box to send your sample from the local Extension office or you can use a padded envelope.

For more information on where to send your soil samples, costs and how to make specific analysis requests, go to **soilplantandpest.utk.edu.**

Step Two: Plan for It
A soil management plan can be kept simple. Writing it on a home family calendar will also serve as an important reminder of tasks to be done. Here are a few tips:

- Call your local Extension office for assistance in helping you interpret your soil analysis results and how the results translate into a scheduled list of specific tasks to be done over the course of a year.

- Keep reminders of ways you can continually enrich your soil by creating and adding homemade compost.

Step Three: Mulch It
Don't forget to mulch and the benefits of using the organic types. Just how much mulch do you need to have the recommended depth of three inches?

By the bag:
One bag containing 2 cubic feet covers 8 square feet (2 ft. x 4 ft.)

By the bale:
One pine straw bale covers 18 to 20 square feet (5 ft. x 4 ft. or 10 ft. x 2 ft.)



By the yard:
1 cubic yard covers 108 square feet (9 ft. x 12 ft.)

By the truckload:
1 mini pickup holds 1 1/2 yards & covers 162 square feet (9 ft. x 18 ft.)
1 full-sized pickup holds 2 1/2 yards & covers 270 square feet (9 ft. x 30 ft.)

TENNESSEE YARD DONE RIGHT ACTIONS

- ☐ Soil test using composite samples. Value: 2 inches
- ☐ Soil test for each planting situation (lawns, flower beds). Value: 2 inches
- ☐ Amend soil according to soil test results. Value: 2 inches
- ☐ Keep a 2- to 3-inch layer of organic mulch over the roots of trees and shrubs, as well as in plant beds. Leave at least 2 inches of space between the mulch and the plant's trunk or stem. Value: 1 inch
- ☐ Create self-mulching areas under trees where leaves can stay where they fall. Value: 1 inch
- ☐ Use organic mulches such as pine straw, pine bark, leaves, hardwood or municipal recycled green yard wastes. Value: 1 inch
- ☐ Use kitchen scraps and yard wastes to create compost that can be used to amend soils or use as mulch. Value: 1 inch

Appropriate Turfgrass Management

Take time to consider the extent of turfgrass you want for your home landscape. There is nothing like a soft green carpet of grass to set off your gardens or for your children to play on; however, it is also typically one of the most intensively managed parts of a yard. Moreover, if not managed with care, it can also be one of the greatest potential sources of pollutants to our waterways.

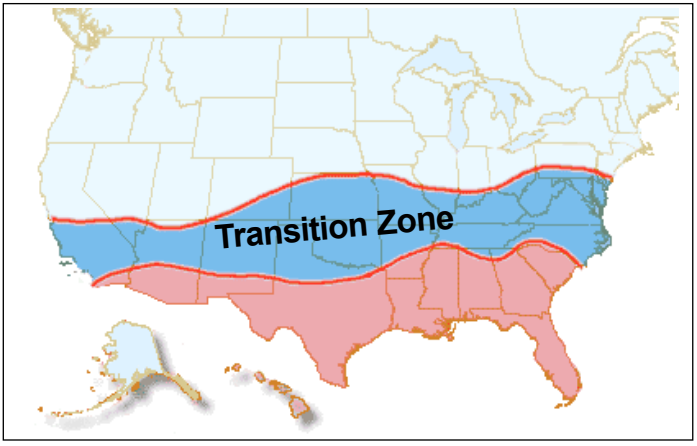
So, as a part of your initial needs assessment for your yard (see “Right Plant, Right Place”), determine:

- the areas in which you want to use turfgrass and how you want to use it. Doing so will help you identify how much wear and tear it will receive, whether you prefer it to be green throughout the winter or summer months and to what extent you really need it or want to mow it.

- the site conditions. Are the areas you are considering for turfgrass highly shaded or are they in full sun? Are they well drained or do they tend to hold water?

Grass Selections

There are multiple options for selecting the type of turfgrass for your lawn. Tennessee is in the northern turfgrass transition zone, meaning you can grow both cool- and warm-season grasses, but with each comes challenges.



Cool-Season Versus Warm-Season Turfgrasses

Their names reflect their growing habits.

- Cool-season turfgrasses remain green during most of the winter and perform at their peak in the fall and spring. They are typically established from seed planted in the fall. When temperatures reach 85 F, their growth slows and they go into dormancy.

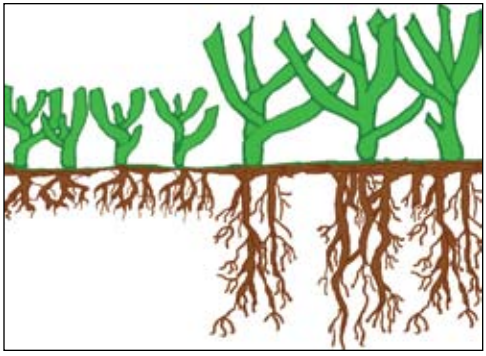
- Warm-season turfgrasses are at their peak and will tolerate heavy traffic in the heat of the summer, but go dormant and turn brown after a heavy frost. These grasses green back up slowly the following spring.

Cool-Season Turfgrasses				
	Mowing Height (in)	**Sunlight Exposure**	**Drought Tolerance**	**Wear Tolerance**
Tall Fescue	2.0 – 3.5	Full sun – Moderate shade	Good	Good
KY Bluegrass	1.5 – 2.5	Full sun	Poor	Good
Fine Fescue	1.5 – 2.5	Full sun – moderate shade	Good	Poor
Warm-Season Turfgrasses				
Bermuda grass	.75 – 2.5	Full sun	Excellent	Excellent
Zoysia	.75 – 2.0	Full sun – light shade	Excellent	Excellent
Centipedegrass	1.0 – 2.0	Full sun	Moderate	Poor – Moderate

With the results of your needs assessment, you can use the following chart to help guide you in making your preliminary preferred grass selection. You may want to talk with your local Extension agent to ensure this is the best choice.

Factors to Consider in Creating a Healthy Lawn

Mowing height: The higher the turf cutting height, the more extensive the root system. Deep root systems help to hold soil in place, prevent erosion and need less watering. Use your Tennessee Yards Done Right ruler to check mowing heights.



Mowing frequency and timing: To reduce the amount of stress on your lawn, mow less during times of drought. Avoid mowing in the heat of the day to protect air quality.

Check for pests: Have you had small brown spots in your yard that quickly spread out a couple of feet? It may be "brown patch," a fungal disease. If you suspect you have it, examine the affected area early in the morning while dew is present, looking for grey web-like threads that are produced by the fungus.

Treating for pests: Use iron to improve turf-type tall fescue color in late spring/summer and avoid nitrogen fertilizers to reduce brown patch. Also, water in the morning rather than at night since brown patch needs 14 to 16 hours of wet leaf surface to reproduce itself.

Fertilizing: Grass clippings are high in nitrogen. By leaving grass clippings on your lawn, you can fertilize one fewer time per year! (See "Use Fertilizer Appropriately" for more guidance on fertilizing practices.)

Shaded areas: Neither cool- nor warm-season grasses do well in shaded areas. Consider alternative covers like a simple mulched shade garden.

TENNESSEE YARD DONE RIGHT ACTIONS

- ☐ Design your yard to create a practical turfgrass area. Consider maintenance requirements and your family's recreational and other needs. Value: 2 inches
- ☐ Mow lawns high to encourage a deeper, more drought resistant and pest-tolerant system. Value: 2 inches
- ☐ Reduce mowing frequency during drought conditions. Value: 1 inch
- ☐ Identify pest problems. Value: 1 inch
- ☐ Spot treat for lawn pests. Avoid blanket applications and consider using the least toxic pest control products. Value: 1 inch
- ☐ Recycle grass clippings by leaving them on the lawn. Value: 1 inch

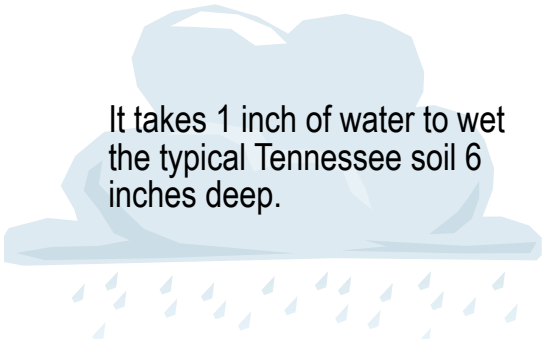
Water Efficiently

A truly efficient way to use water in a yard is to design the yard so that it thrives predominantly on rainfall. Even if your yard has lawn and specialty gardens, it is possible to design it as a Tennessee Yard Done Right, which requires minimal supplemental watering.

When planning your landscape, classify low, moderate and high water-use zones and select plants accordingly. Incorporate as many of the natural elements of the site into the design as possible. Undisturbed native plants do not require the additional water that new plants need for establishment. Shade is also another great way to make the landscape more water efficient. When it comes to irrigation, it is extremely important that water be applied to meet the needs of plants in each of your zones.

For example, a lawn in full sun will demand more frequent irrigation than an established plant bed of shrubs and groundcover. One exception to the water-use zone rule is new plantings. These plants require regular water during the establishment period, regardless of their intended water-use zones. Plan to water landscapes during the morning, as less evaporation and wind drift occur at this time and the plants can make more efficient use of the water. Even an ideal landscape can be overwatered.

Give your lawn a break during the summer!
Avoid the temptation to keep your lawn green and growing year-round. Cool-season lawns go semi-dormant in Tennessee from June through August. During this time, the lawn will only need watering during drought periods. Be aware of any watering restrictions in your area.



It takes 1 inch of water to wet the typical Tennessee soil 6 inches deep.

Let your plants tell you when they <u>need</u> water:

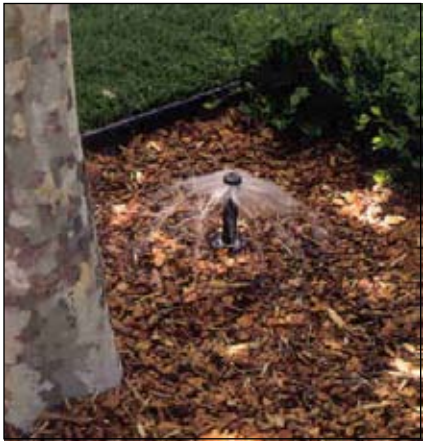
- Grass has a bluish-gray tint and rolled leaf blades.
- Annuals droop and don't recover by the next morning.
- Most plants thrive on 1 inch of water per week, including rainfall.
- Most established trees and shrubs need watering only during times of drought.

Plants can die from too much water just as easily as from too little water; in both cases, symptoms include wilting.

TENNESSEE YARD DONE RIGHT ACTIONS

- ☐ Place a rain guage in your yard to track rainfall; this guage helps to avoid unnecessary watering. Value: 2 inches
- ☐ Water your lawn and plant beds according to their water needs. Design your sprinkler system accordingly. Comply with any watering restrictions in your community. Value: 2 inches
- ☐ Calibrate sprinkler(s) to apply 3/4 to 1 inch of water per application to reduce runoff. Connect timer to automatic rain shut-off to override system at a 3/4 inch rainfall. Value: 2 inches

___ Total Inches



Effective Irrigation



Ineffective Irrigation

Use Fertilizer Appropriately

Most trees and landscape plants need little or no fertilizer once they are established. In fact, excess fertilizers can weaken plants and make them more vulnerable to insects and disease problems. Rainfall can also carry fertilizers from yards and paved areas, causing pollution in our streams, rivers and lakes.

How much fertilizer should you apply?

Fertilizer labels always display three numbers in the same order (i.e. 10-6-4). They represent the percent by weight of three important nutrients:

- Nitrogen (N)—for green, leafy growth
- Phosphorus (P)—for root and bud growth
- Potassium (K)—promotes disease tolerance and drought tolerance

Example: A 40-pound bag of 10-6-4 fertilizer has 10 percent nitrogen (4 pounds.), 6 percent phosphate (2.4 pounds) and 4 percent potassium, also called potash (1.6 pounds).

Calculating the Amount of Fertilizer You Need

A typical lawn needs 1 pound of nitrogen per 1,000 square feet. Here are some common lawn fertilizer formulations and the amount of each needed for 1 pound of nitrogen:

For other formulations, follow this example using a fertilizer labeled 24-6-6:

- The first number is the percent of nitrogen—24 percent.
- To find out how much total product it takes to apply 1 pound of nitrogen, divide the 1 pound by 0.24.
- 1 ÷ 0.24 = 4.17. This is equal to a little more than 4 pounds of product.

If your lawn is 5,000 square feet, multiply 4 pounds by 5, since fertilizer rates are always calculated as 1,000 square feet. The result is 20. You would need a 20-pound bag of 24-6-6 to cover your lawn.

Fertilizer Bag Reads	Amount needed for 1lb. of nitrogen
6-2-0	17 lbs.
10-10-10	10 lbs.
14-3-6	7 lbs.
20-5-5	5 lbs.
26-3-4	4 lbs.
35-3-5	3 lbs.
24-6-6	4 lbs.

How many nutrients should you apply?

- First, test your soil. Soil test information is available from your local Extension office or online at **soilplantandpest.utk.edu.**
- Use your soil test results to determine how much phosphorus and potassium you need to apply.
- Nitrogen amounts should be based on grass type. Almost all lawns in Tennessee are tall fescue. Fescue needs no more than about 2 1/2 pounds of nitrogen per year. Apply 1/2 pound in February, 1 pound in September, and the final 1 pound in October. Or, if you leave your grass clippings on the lawn, you can reduce the amount of fertilizer to 1/2 pound in September and 1/2 pound in October.
- Try to match fertilizer to the nutrients needed. Consider using a slow release lawn fertilizer, appropriate for the season or stage of growth.
- If using organic fertilizers, the nutrient content should be matched to the lawn's need. Organic nutrients are released more slowly and cause as much pollution as synthetic fertilizers. Do not overapply!

TENNESSEE YARD DONE RIGHT ACTIONS

- ☐ Follow fertilizer application recommendations based on square footage of lawn and plant bed areas. Value: 2 inches
- ☐ Fertilize only as needed to maintain the health of lawns and landscape plants. Do not exceed the rate of 1 pound of nitrogen per 1,000 square feet per application. Value: 2 inches
- ☐ Maintain soil pH in the recommended range. Value: 2 inches
- ☐ Use a slow release fertilizer. Value: 1 inch
- ☐ Fertilize during the correct season using soil test results and grass type. Value: 1 inch
- ☐ Keep fertilizer off pavement or sweep back onto grass. Value: 1 inch

___ Total Inches

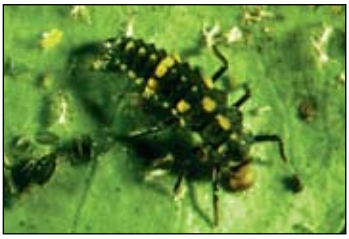
Keep fertilizers out of our streams!

- Keep fertilizer off paved surfaces! If fertilizer lands on hard surfaces, be sure to sweep it off immediately.
- Fill spreaders on a hard surface; sweep up any spilled fertilizer and apply to lawn.
- Do not apply fertilizer to frozen ground or dormant turf.
- Do not use fertilizer as a de-icer.
- Do not blow or sweep soil and other materials into storm drains.

Manage Yard Pests

It is unrealistic, and even unwise, to strive for an insect-, disease- and weed-free yard. Many insects are beneficial, helping to keep pests under natural control. Many other insects simply coexist with humans causing us no harm. In fact, only about 1 percent of all insects are harmful.

Meet some of the "good guys." Help protect these beneficial insects so they can naturally keep pests under control.



Lady Bug (larva)



Lady Bug



Assassin Bug



Green Lacewing (larva)



Green Lacewing



Big-eyed Bug



Praying Mantis



Syrphid Fly (larva)



Syrphid Fly

Integrated Pest Management (IPM)

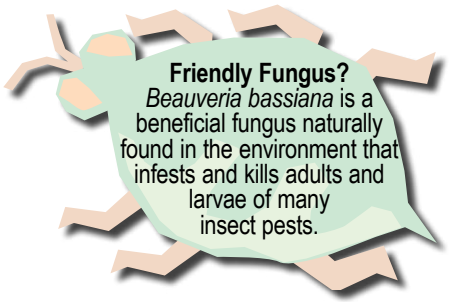
Communities and individuals are successfully managing pests by protecting beneficial insects and reducing the use of pesticides. By definition, pests include insects, diseases and weeds. With a little bit of knowledge and the right tools, it is easy to practice IPM in your yard.

- Check your lawn and plant beds regularly for pest problems.
- Identify the problem. Know the good from the bad. It makes a difference. Good bugs eat bad bugs.
- When appropriate, first try non-chemical approaches (like cultural methods), then use the safest pesticides possible, such as insecticidal soaps, horticultural oils and biological products.
- Spot treat. If insects or weeds are a problem, don't treat the entire lawn–only the affected area. If one out of ten shrubs have scale, treat only the infested plant.
- Be tolerant! Low levels of pests will do minimal damage to plants and many are a source of food for beneficial insects.
- **The label is the law!** Read pesticide labels carefully for information on using pesticides and disposing of leftover chemicals and containers.

TENNESSEE YARD DONE RIGHT ACTIONS

- ☐ Check plants regularly by walking around your yard and looking for signs of problems. Value: 2 inches
- ☐ Whenever possible use non-chemical approaches to pest control, such as pruning affected areas, hand-removing insects, etc. Value: 1 inch
- ☐ Learn about the beneficial insects that will provide natural control needed for the harmful pests identified in your yard. Value: 1 inch
- ☐ Avoid routine applications of pesticides. Treat only affected areas rather than your entire lawn or yard. Require that your maintenance company follow these strategies. Value: 1 inch
- ☐ Use environmentally-friendly pesticides such as horticultural oils, *Bacillus thuringiensis* (Bt) and insecticidal soaps. These effective and safe materials can control most plant pests. Value: 1 inch

___ Total Inches



Reduce Stormwater Runoff and its Pollutants

The next time you are home while it is raining, put on a rain jacket and go outside and watch where the water flows. Is the rainwater

- Soaking into your lawn and gardens?
- Pooling in some areas and not in others?
- Flowing directly off your rooftop and driveway into your lawn or into a ditch leading off your property?

If it has rained only 1 inch and you live in a home that is 2,000 square feet, almost 1,250 gallons of stormwater will flow off your roof alone. The water not absorbed into your lawn and gardens will flow off your property into your neighborhood's stormwater system.



A stormwater system is the collection of ditches, pipes, detention basins and other conveyances that carry excess stormwater out of areas like your neighborhood and empties into our local creeks and rivers. In almost all communities across the state this water does not go to a treatment plant before it is released into these bodies of water.

Keeping in mind the observations you made of the stormwater flow on your property and your neighbors', consider all of the pollutants that could be picked up as it makes it way to the local creek. First, there is the rainwater that flows from rooftops, driveways and walkways. These are commonly called "impervious surfaces" because water cannot penetrate them so anything on these surfaces like oils, household cleansers and trash can easily be picked up by the flowing rain water.

Secondly, consider the rainwater you observed flowing over the surfaces of the lawns, particularly if it was a hard rain or on those yards with compacted soils or steep slopes. In these situations, the stormwater does not have the opportunity to be absorbed into the soil and as it flows across the lawns, it picks up fertilizers, pesticides and soil particles from bare spots or unmulched gardens.

In the end, pollutants from both paved surfaces and our lawns and gardens can pollute our waterways.

As the number of subdivisions expands across the state, so does the amount of pollution flowing out of them. Did you know that sediment is the No.1 pollutant in the state? Not only does it smother the aquatic life, it also fills channels and causes flooding. A recent watershed study in East Tennessee indicated about one-quarter of the sediment entering a local stream was coming from neighborhoods!

The good news is that we can all help protect our community's waterways through our landscaping and lawn and household maintenance practices, and in the process reduce flooding in our yards and neighborhoods! Here are a few ways you can help.

Increase Porous/Pervious Surfaces

Consider replacing hard surfaces like driveways and walkways with permeable ones that allow rainwater to soak into the ground. Soil is a natural pollutant remover and by allowing stormwater to percolate through the ground, most pollutants can be filtered out before reaching our waterways. Also, increased infiltration translates into less ponding and flooding.

- Install a "Hollywood Driveway" with a dividing strip of grass or one where the asphalt has been removed and replaced with decorative pea gravel. (see photo)

- Use porous pavers for your walkways and patios or a paver design with a spac- pattern that allows for water infiltration.



Each year, Americans use 136 million pounds of pesticides on our lawns and gardens, amounting to three times more per acre than the average farmer.

Rain Gardens

Build a rain garden! These are simply gardens that are designed in pocket-like depressions to capture rainwater from your rooftop, driveway and upland areas and then allow it to slowly soak into the ground over a period of a day.

Among their many benefits, rain gardens:

- Filter pollutants and reduce and slow down stormwater runoff.
- Can be designed to create stunning landscape features.
- Can include a variety of plants to attract birds, butterflies and other wildlife.



Rain gardens can be built by homeowners or professionally designed. They are placed in low-lying areas in your lawn and should be at least 10 feet from your home's foundation. Their size depends on the area that will be draining to it.

Rain Barrels

Consider installing rain barrels to collect roof-top runoff. They are a great way to recycle water for use on your lawns and gardens. The water will also be free of chemicals and reduce your utility bill.

Most manufactured rain barrels for homes:

- Range in cost from around $150 to $500.
- Range in size from 55 to 100 gallons.
- Are designed to keep mosquitoes from breeding in them.
- Typically tie into the guttering system.



Rain barrels can be easily made. Use a food-grade container and securely cover it as a safety precaution for children and pets.

Grass-lined Swale

Ditches are often overlooked features in yards and neighborhoods, only being noticed during rain storms as they carry excess water out of areas. However, they do deserve attention, as they offer opportunities to reduce localized flooding, improve water quality of local creeks and enhance a landscape's attractiveness. Consider converting rock- or concrete-lined or eroding ditches in your yard into ones that are broad-bottomed and grass-lined. These ditches are often referred to as "swales."

A grass-lined swale allows stormwater flowing through it to be partially absorbed and helps filter out pollutants. Lined ditches do not.



With a broadened bottom and more gentle slopes, a swale is easier to mow and more visually appealing. Its potential for erosion is also decreased, first because its shape allows for a greater volume of stormwater to flow through it, and second, because the grass and/or other vegetation in it holds the soil in place. An eroding ditch line is also unsightly and a source of sediment pollution into our waterways.



Before tackling the problem, consider contacting a stormwater engineer for assistance. Size, slope, soils and runoff volumes need to be caculated in the design or redesign.

TENNESSEE YARD DONE RIGHT ACTIONS

- ☐ Direct downspouts to drain onto your lawn, grass-lined swales or containment areas where the stormwater can be absorbed into the ground. Value: 2 inches
- ☐ Create rain gardens to catch, filter and hold stormwater. Value: 1 inch
- ☐ Use porous surfaces or permeable pavers for driveways and/or walkways. Value: 1 inch
- ☐ Collect roof-top runoff in rain barrels for future use. Value: 1 inch
- ☐ Decrease soil erosion by maintaining vegetative groundcovers. Where turf-grass doesn't thrive as under trees or on steep slopes, plant alternatives. Value: 1 inch
- ☐ Sweep grass clippings, fertilizers and soil from driveways and streets back into the lawn. Value: 1 inch
- ☐ Take your car to a car wash or wash it on your lawn. Value: 1 inch
- ☐ Clean up oil spills and leaks on the driveway by using cat litter. Value: 1 inch
- ☐ Pick up after pets to reduce bacterial and nutrient pollution entering the stormwater system. Value: 1 inch

____ Total inches

Provide for Wildlife

With approx. 1,500 species of animals, Tennessee has tremendous wildlife diversity.

Providing adequate food, water and shelter can increase the number and variety of species that live in your yard.



Butterflies add beauty to our yards and pollinate plants.



Adult dragonflies are beneficial because they capture mosquitoes.



Frogs help keep mosquitoes and other unwanted insects under control. They also serenade us at night, especially after a good rain.

TENNESSEE YARD DONE RIGHT ACTIONS

- ☐ Identify the wildlife critters (insects, reptiles, animals, birds, etc.) in your yard that you would like to protect and those you would like to attract. Value: 2 inches
- ☐ Plant vines, shrubs and trees that provide cover, nesting areas or food for the type of wildlife you desire. Value: 2 inches
- ☐ Provide a water source, such as a bird bath or a small pond, for wildlife. Value: 2 inches
- ☐ Provide a wildlife shelter such as a bat house, bird house, brush pile or a snag. Value: 1 inch

___ Total Inches

Aquascaping for You and Wildlife

Backyard ponds not only provide an attractive landscape feature but can also benefit wildlife. A balanced system including fish and plants won't need a pump or filter (as long as you don't feed the fish).

- Flexible PVC or rubber liners allow you to create the pond shape you want. Create a 9-inch-wide shelf, about 9 to 12 inches below the water line, for potted aquatic plants. Walls should have a 20 degree slope.
- Pre-formed ponds are usually rugged, made of fiberglass or PVC. They can be placed above or below the ground.
- Many aquatic plants used in backyard ponds can be invasive and should not be put into the area's streams, rivers or lakes.

Protect Water's Edge

Waterfront property owners realize the special contribution water makes to their quality of life. The biologically distinctive area that borders waterbodies is called a riparian zone. Planting this area with a mixture of trees and shrubs not only stabilizes the soil but creates wildlife corridors, improves water quality, reduces maintenance time, provides privacy and can even increase property values.

Many homeowners, upon acquiring property with a creek, stream or lake, immediately want to remove all the vegetation along the waterbody and plant turfgrass. Turfgrass is a good filter for pollutants contained in stormwater runoff, but because of its shallow root system, it is very poor at holding the soil in place. As a result, property is lost due to erosion.

The wider and more diverse the stand of waterfront vegetation, the more beneficial it is to water quality, wildlife habitat and erosion control.



TENNESSEE YARD DONE RIGHT ACTIONS

- ☐ Preserve and/or plant trees, shrubs and other vegetation along waterbodies in your yard or neighborhood to absorb nutrients and other pollutants. Value: 2 inches
- ☐ Find out more about waterbodies in your neighborhood and the programs that are available to help protect them. Value: 1 inch
- ☐ Create a "no mow, no fertilizer, no pesticide" zone along waterbodies in your yard and neighborhood. Value: 1 inch
- ☐ Seek out guidance on how you can help to reduce exotic and invasive plants like privet that tend to dominate the water's edge. Value: 1 inch
- ☐ Plant native species along the water's edge. Value: 1 inch

___ Total Inches

Does your yard measure up?

As a Tennessee resident you need to be aware of the impact you have on Tennessee's environment. The Tennessee Yardstick Workbook provides valuable information to help you make wise decisions regarding your landscape. By following the nine simple principles described in this workbook, you can keep your yard healthy and reduce surface and groundwater pollution. Track your total inches below.

Total Inches for Your Tennessee Yard Done Right Actions:_____



Tennessee Yards & Neighborhoods

is a program of the University of Tennessee Extension.
Contact Brian Leib, Associate Professor, Biosystems Engineering & Soil Science, at bleib@utk.edu.

For additional lawn and gardening information, visit the following Web site:
tnyardsandneighborhoods.tennessee.edu

Tennessee Water Resources Research Center

UT Extension

TVA

W219-03/09 09-0060

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