

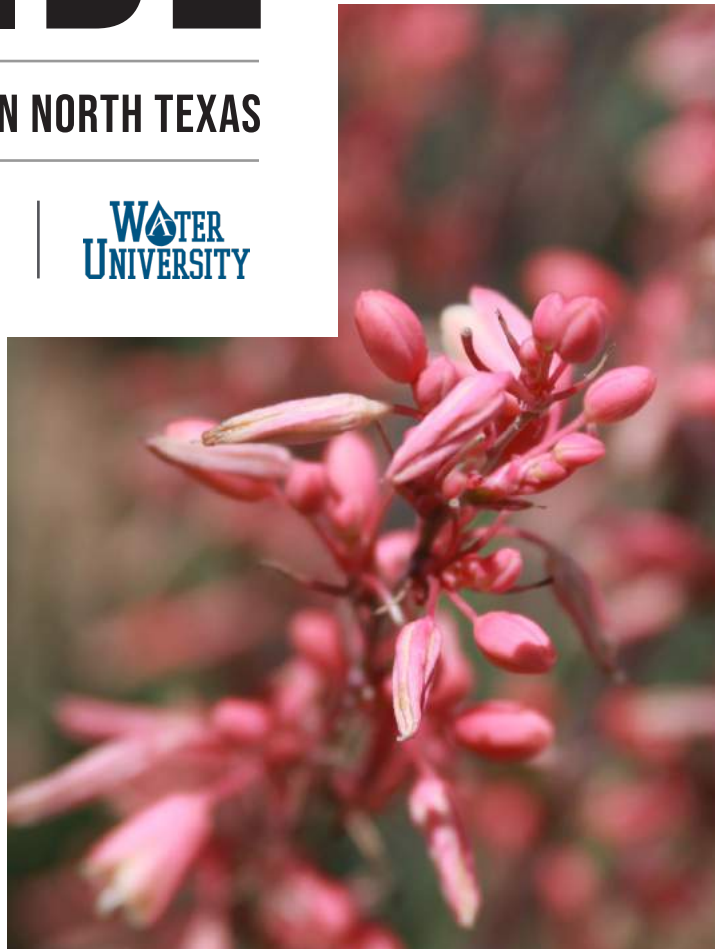


# NEWCOMERS GUIDE

TO GARDENING IN NORTH TEXAS

TEXAS A&M  
**AGRI**LIFE  
RESEARCH | EXTENSION

**WATER**  
UNIVERSITY



# GARDENING IN THE LONE STAR STATE

Whether you are new to the region, new to gardening in The Lone Star State, or new to growing plants altogether, the Newcomers Guide to Gardening in North Texas gives you a strong foundation for growing lush lawns, healthy landscapes, and prolific vegetable gardens sustainably. This guide will set you along the garden path to your best landscape by addressing challenges unique to the climate and soils of North Central Texas.

The thriving landscapes you can achieve by following the information in this guide will bring a range of benefits to your home. They add aesthetic value, help control temperatures indoors and out, provide erosion protection, and serve as outdoor recreational spaces for relaxing and entertaining.

In these pages, you will learn how excess inputs can be harmful to

your plants and how your most vibrant North Texas landscape can only thrive on properly regulated amounts of water, fertilizer, and pesticide. You will discover that properly selected plant material will naturally help you conserve water and other resources, saving time and money in the household.

The U.S. Environmental Protection Agency estimates that as much as 60 percent of a household's total water budget goes to landscape irrigation during summer in drier climates, like those of North Texas. However, by incorporating the practices in this guide, you will build an enviable lawn, landscape, and/or vegetable garden specifically designed to grow its best in the natural environment of North Texas, boosting your home's curb appeal and lightening the load on your time, your wallet, and our natural resources.



## OUR CLIMATE

A basic understanding of your climate and weather patterns will help you choose plants that are already adapted to your region's extreme heat and cold trends. Native or well-adapted plants will also be resilient to conditions associated with your region's seasonal drought and flooding patterns. In North Texas especially, a lack of climate knowledge can pose big challenges to newcomers and experienced gardeners alike.

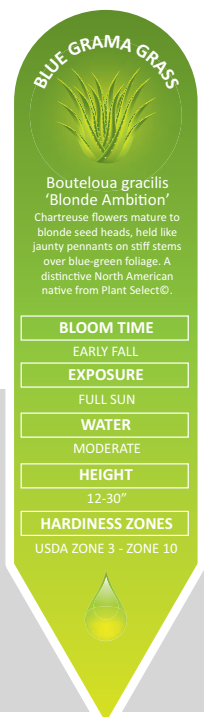
## HARDINESS ZONES

Hardiness zones are geographical regions mapped out by the U.S. Department of Agriculture according to average low temperature. The averages of each region are calculated based on temperature readings from the last 30 years. Zone boundaries change alongside cold trends. National hardiness zone maps are readily available online but the map to the right shows Texas' hardiness zones. North Texas and surrounding areas lie in hardiness zone 8a, with average low winter temperatures between 10-15 °F.

Plants that are cold hardy to your zone or a colder one (lower number) will be perennial, meaning they will come back after winter dormancy most years. Meanwhile, short lived perennials are plants considered to be "borderline cold hardy" to the zone where they're planted, meaning they are better adapted to a warmer zone. Plants growing in a borderline zone are at risk of dying over colder winters, but hardy perennial flowers, shrubs, and trees can thrive in your landscape for years.

Conversely, annual flowers, herbs, and vegetables are not cold hardy and need replacing every year, costing money and using more natural resources for their production, transportation and excessive care needs compared to hardy perennials. Select plants that help conserve money and resources as the foundation of your landscape. Consider using annual plants sparingly, potted as ornamental accents or planted for produce as with annual vegetables and herbs.

An online search for the average date of your zone's first winter freeze can provide guidelines for when to plant and harvest fall vegetable gardens. These estimated dates can also help you to determine irrigation times and seasonal maintenance needs in your landscape. Meanwhile, a search for the average date of your zone's last freeze can help you determine when to plant spring vegetables, when it might be time to plant other spring annuals, and whether it's time to plan your lawn and landscape maintenance for spring.

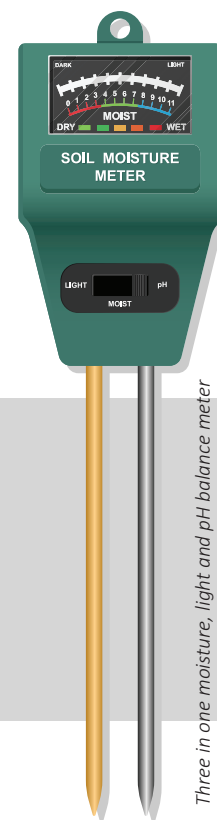


## PLANT TAGS

Look for the USDA Hardiness zone on your plant tag as well as the words “perennial” or “annual” when selecting the right plants for your landscape. Exposure is a good indication of the light requirements needed for your plant to thrive. Water requirements are also a good indicator of the best plants for our region. Try focusing on low or medium water users to save money and time. Pay special attention to the plant’s mature height and width to ensure it will grow successfully in the space where you intend to plant it. Selecting the right plant for the right place will help you avoid excessive pruning and other problems associated with overcrowding your plants.

## “THE DIRT” ON NORTH TEXAS SOIL

Healthy soil is one of the most important factors in a successful North Central Texas garden. Plant material above ground is a direct reflection of the soil conditions beneath. Soil not only provides anchoring for plants, but plays an important role in making moisture and nutrients available to them. By nurturing your soil, you will find greater ease growing turf and bedding plants or vegetables.

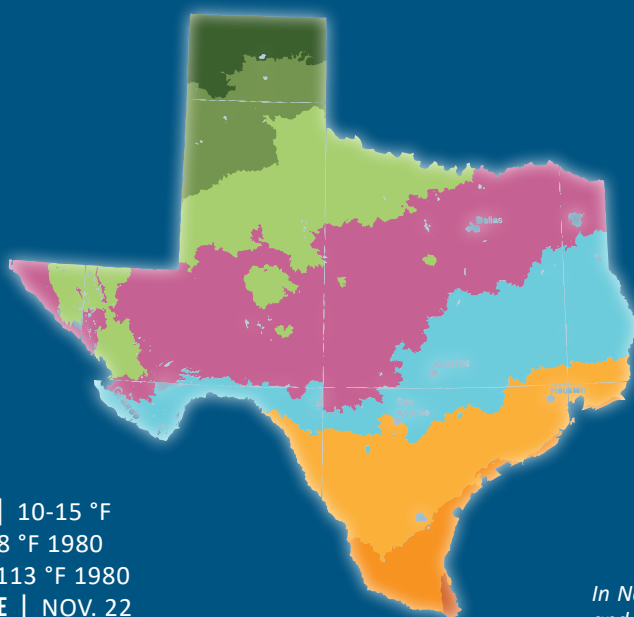


Three in one moisture, light and pH balance meter

## PH LEVELS

A soil’s pH level determines how basic or acidic it is on a scale of zero to 14. Something with a pH level above 7 is alkaline (basic); below 7 is acidic. Soil pH levels help determine the nutrients available to a plant as well as how effectively the plant can take them in. North Central Texas soils are mostly alkaline (basic) with a pH level commonly between 7.5 and 7.8. For that reason, using plants that are adapted to

alkaline soils will reduce the need for soil amendments – a decision that can also increase the overall health and aesthetic value of your plant material. Only use plants that are not adapted to your soil conditions as accents in containers or raised beds, where pH levels are more easily regulated.



AVG. LOW TEMP. | 10-15 °F  
 RECORD LOW | -8 °F 1980  
 RECORD HIGH | 113 °F 1980  
 AVG. FIRST FREEZE | NOV. 22  
 AVG. LAST FREEZE | MARCH 13  
 AVG. YEARLY RAINFALL FOR DFW | 37.54" (CAN RANGE FROM 20"-50")

### AVERAGE LOW TEMP.

6B -5 to 0 °F

7A 0 to 5 °F

7B 5 to 10 °F

8A **NORTH TEXAS ZONE**  
10 to 15 °F

8B 15 to 20 °F

9A 20 to 25 °F

9B 25 to 30 °F

10A 30 to 35 °F

*In North Texas, with its hot and cold records of 113 degrees Fahrenheit and -8 degrees Fahrenheit respectively, weather can be difficult to predict, even with an understanding of the environments in our hardiness zone, 8a. Keep an eye on yearly weather patterns and adjust accordingly.*

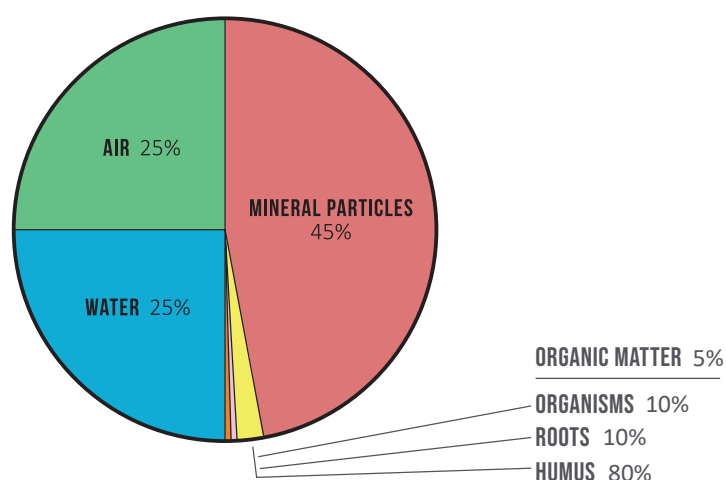
# SOIL

One of three mineral components makes up about 45% of just about any soil: sand, silt, or clay. Soil types vary somewhat throughout North Central Texas, but poor-draining clays and clay loams make up the majority.

**Sand** soils have larger and coarser particles than clay and silt. They allow water and nutrients to leach and pass through rapidly.

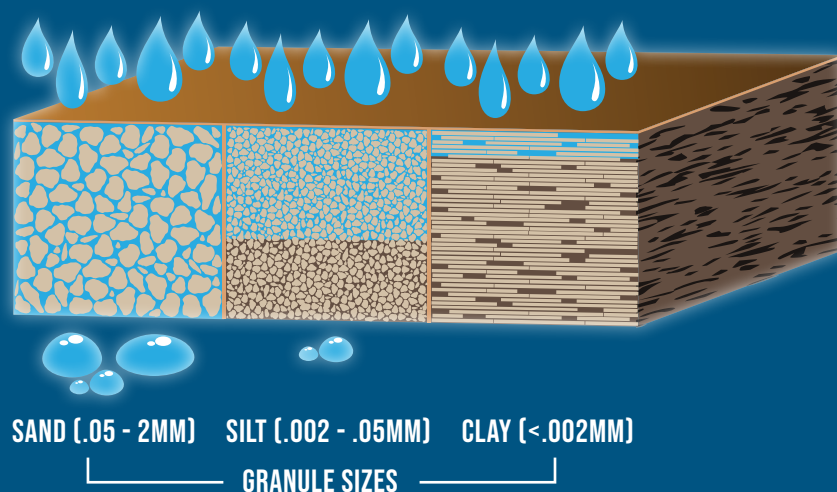
**Silt** soils are comprised of larger particles than those of clay but smaller than sand. The way silt soils manage water and nutrient movement also lies somewhere between sand and clay.

**Clay** soils have very fine particles, which can stick together, prohibiting water and nutrient movement.



## INFILTRATION VARIATIONS BY SOIL TEXTURE

**Air and Water** each make up about 25% of an ideal soil. About 5% should be **Organic Matter**, which includes living or once-living soil organisms, soil bacteria and fungi, as well as plant roots and humus (broken down organic matter). **Mineral Particles** like sand, silt, and clay make up the non-living portion of an ideal soil sample, about 45%. These particles come from weathered geological material.



## IMPROVING YOUR SOIL

Healthy soils are the foundation of a water efficient landscape that is resilient to the drought and flood trends in North Texas. Amendments can boost soil fertility, balance out pH levels, and improve the soil's natural ability to absorb water, cycle nutrients, reduce runoff and absorb excess nutrients and pollutants. Two of the most common and helpful amendments for improving North Texas soils are compost and expanded shale.

**Compost** is a nutrient rich soil conditioner consisting of broken down organic material. Incorporate up to 2" of compost in ornamen-

tal and vegetable beds. Use it in pre-sodded turfgrass areas to improve drainage and increase nutrient availability in the soil. Consider topdressing or raking in 1/4" of finely screened compost in the poor draining areas of your lawn. This technique works well, after aeration, to offset compaction in high-traffic areas. Spread compost around newly planted trees, shrubs, and perennials before applying mulch. In sandier soils, compost can improve water-holding capacity and prevent excess nutrient leaching.

High quality finished compost is easy to find

locally, but making it at home is a great way to put your organic material that you would normally throw-away to good use. Visit [wateruniversity.tamu.edu/about/diypubs](http://wateruniversity.tamu.edu/about/diypubs) for more info on the right composting method for you.

**Expanded Shale** is a porous, lightweight aggregate that can improve drainage in clay soils and hold moisture at the same time. Expanded shale is most effective as incorporated into soil when establishing a new planting bed. Add up to 3", then till or mix in thoroughly to a depth of 6" with a shovel or spade.



## DON'T GUESS, SOIL TEST!

**SOILTESTING.TAMU.EDU**

SOILTESTING.TAMU.EDU IS YOUR ONE-STOP SHOP FOR EVERYTHING YOU NEED TO GET YOUR SOIL SAMPLE SUBMITTED TO TEXAS A&M AGRILIFE SCIENTISTS FOR TESTING.

One of the best methods for evaluating your soil is to collect and mail a soil sample to the Texas A&M Soil Testing Laboratory. Step-by-step instructions for submitting your sample are available at <http://soiltesting.tamu.edu>. For as little as \$12 per sample, you will receive a detailed analysis of your soil and recommendations on how you can improve soil fertility.



# FERTILIZERS

A varying array of organic and inorganic options can make choosing seem daunting when deciding on the right nutrients for your soil. The ones you pick will depend on the soil conditions on your property and what you intend to grow in that space. Whether you decide to plant a lawn, flowers, vegetables, or trees, a soil sample test is the most accurate approach to figuring out the composition of your soil, which amendments are needed, and which are already present. Simple instructions for submitting a soil sample are available online at [soiltesting.tamu.edu](http://soiltesting.tamu.edu). Testing your soil every one to three years will help you avoid using excess fertilizer, saving money, and help to control pollution from excess fertilizer in stormwater runoff. Always apply fertilizers per label instructions. Contrary to popular belief, over application can result in weak, unhealthy plant material.

The packaging of organic and inorganic fertilizers alike will include a

number value for each of three letter symbols, which represents an important macronutrient:

**N: NITROGEN** — a key ingredient for photosynthesis and plant growth

**P: PHOSPHOROUS** — important for establishment and forming roots, flowers, and fruit

**K: POTASSIUM** — crucial to many of the chemical processes that can increase stress tolerance in plants

The number assigned to each letter symbol is the percentage of its respective nutrient present inside the bag. In North Texas, soil tests typically show sufficient and excess P and K levels. Too much of these nutrients cannot be used by plants and will actually weaken them by reducing their ability to take up important micronutrients. Over applied fertilizer, and the money spent on it, runs into storm drains when it rains, polluting the environment and our drinking water systems.

## FERTILIZERS FOR PLANTED BEDS

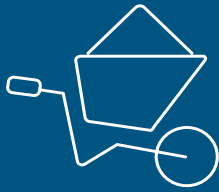


Native and adapted perennials generally do not require much fertilizer. In fact, many react negatively to routine over-fertilization. Over-fertilization can also produce excess foliage at the expense of blooms. When planted in healthy garden soil amended with compost and mulch, many plants only need a light application (no more than 1 pound of nitrogen per 1000 sq. ft.) of slow release fertilizer at the time that new spring growth is pushing up, or as recommended by a soil test. A balanced fertilizer like 20-5-10 (or if phosphorus is not needed, a 20-0-10) may be recommended. This will likely be differ-

ent than what you would apply to your lawn during the course of a growing season.

**COMPOST AND MULCH INSURANCE** - Routinely applying compost and maintaining 2"-4" mulch in your garden can **significantly reduce the need for fertilizers**. An understanding of each plant's needs, leaf color, and growth habits will help you avoid excess fertility.

Avoid fertilizing perennials in summer or fall. This may cause the plants to flush out additional growth that will require excess water and can contribute to damage in early freezes.



## FERTILIZING VEGETABLE GARDENS

Do not use lawn fertilizers on gardens. Oftentimes, they contain too much nitrogen and some contain chemicals for lawn weed control that can injure or kill vegetables. For spring gardens, a soil test may recommend up to 2 to 3 pounds of your favorite organic or inorganic fertilizer (such as 10-20-10) for every 100 square feet of garden area. Fertilize fall gardens in the same way as spring gardens. If a fall garden follows a well fertilized spring garden, you should only need about half the spring fertilizer rate at planting. Apply 1 to 2 pounds per 100 square feet.

## FERTILIZERS FOR LAWNS

A lush and healthy lawn needs adequate supplies of essential nutrients. Turf can take nutrients from organic matter already in the soil and from inorganic or organic fertilizers added later. If a soil test shows that your lawn does not need phosphorus and/or potassium, choose a fertilizer that provides only nitrogen. In North Texas, only apply phosphorus with the aid of a soil test to avoid complications from over-application. Avoid fertilizers that contain herbicides, or those claiming to “weed” as they “feed.” Fertilizers and herbicides are most effective when applied separately, aiding in proper application timing, and avoiding over-application of each.

Most warm-season turf species thrive with low to moderate amounts of added nitrogen. Time and frequency of fertilization will depend on the type of turfgrass in your landscape.

Visit [wateruniversity.tamu.edu/turfgrass](http://wateruniversity.tamu.edu/turfgrass) for information on turfgrass care and selection.

### SPRING FERTILIZER: MAY 1ST

The first nitrogen fertilizer application should be made after grass has “greened up” in spring and has required mowing two or three times. Growing grass indicates fertilizer can be taken up. Fertilizers applied before green-up cannot be used by the plant; they contribute to water pollution.

### FALL FERTILIZER: OCTOBER 1ST

Another nitrogen application might be necessary in fall to increase turfgrass density, helping your turf to resist winter weeds. A second application can also help improve fall color and can aid in spring recovery for a stronger “green-up.” For this application, incorporate readily available soluble or “fast-release” nitrogen sources. Apply modest nitrogen rates of 1 pound or less per 1,000 square feet. This will benefit the lawn by reducing weak growth and nutrient leaching potential.

**Annual nitrogen recommendations for Texas warm-season lawns based on management level and grass type.**

	LAWN MANAGEMENT LEVEL	
	LOW	MODERATE
WARM-SEASON GRASS	LB NITROGEN APPLIED PER 1000 SQ FT PER YEAR	
BERMUDAGRASS (COMMON)	2	2-3
BERMUDAGRASS (HYBRID)	2	3-4
BUFFALOGRASS	0-1	2
ST. AUGUSTINEGRASS (SUN)	2	2-3
ST. AUGUSTINEGRASS (SHADE)	1	1-2
ZOYSIAGRASS	1-2	2-3

**Timing and number of nitrogen applications for various lawn management levels.**

MANAGEMENT LEVEL	TIMING & NUMBER OF NITROGEN APPLICATIONS
LOW	Apply nitrogen during the spring and/or late growing season. This program works where 1 or 2 applications are adequate.
MODERATE	In addition to the low-level program applications, make 1 additional supplemental summer application to enhance turf density and overall quality.

## SELECTION: THE “RIGHT” PLANT FOR THE “RIGHT” PLACE

Regionally native and adapted plants are the ideal choice for an aesthetically pleasing lawn, landscape or vegetable garden. Native and adapted plants offer a virtually limitless variation of color, texture, and even flavor from which to choose. Use them to inhabit highly manicured and naturalistic-style landscape designs alike. A native and adapted plant palette is one of the easiest avenues to a vibrant landscape, but proper planting and placement in your design are key to reducing maintenance needs, resource use, and cost. Read your

plant’s tag carefully. Plant it in the landscape according to the tag’s recommendations for hardiness zone, light requirement, sizing, and spacing to accommodate the specimen’s expected adult size.

### NATIVE AND ADAPTED PLANTS ARE:

Drought Tolerant | Heat Tolerant

### AND THEY TYPICALLY REQUIRE:

Less Water | Less Fertilizer | Fewer Pesticides

## WHAT DO YOU MEAN BY NATIVE & ADAPTED?

**Native plants** are hardy, having evolved in our (sometimes) harsh and unpredictable climate. They thrive on the soils that occur here and on the specific nutrients those soils provide. Native plants also tend to be more resistant to pest pressures of insects and diseases common to North Texas.

**Adapted plants** are also hardy but have been introduced to Texas landscapes through the horticulture industry. Most often, they originate from areas with similar soil types, climates and/or hardiness zones.

**WATERUNIVERSITY.TAMU.EDU**

Visit our searchable “Plants of North Texas” database for information on the care and characteristics of more than 200 North Texas plants, including Texas A&M AgriLife Water University’s top 100 list.

# LIGHT

Once you’ve selected native or adapted plants for your landscape, the amount of light they receive each day will be a determining factor in their success. An attractive native and/or adapted plant likely exists that will grow under any lighting scenario on your property. Whether your intended space receives direct sunlight throughout the day in the heat of summer, or whether it remains shrouded in shade from morning until night, there is a native and adapted plant suited specifically to your light condition.

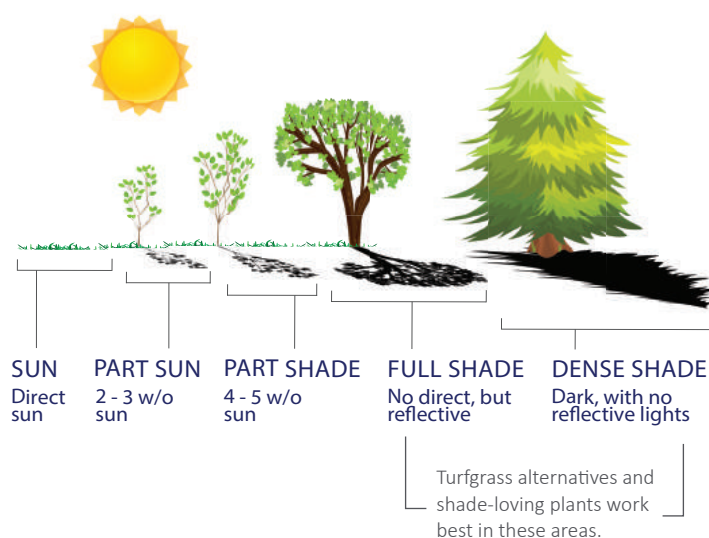
Knowing how to classify light conditions is the first step in determining the best orientation for your plants: **full sun, part sun, part shade, full shade, or dense shade**. Use the illustration below to determine the light conditions present in your landscape. Pay special attention to the placement of buildings, fences, and other shade-casting objects in relation to the sun and your plants. In most cases, the west side of the home receives blistering afternoon sun during the hottest part of day; the east side receives less intense morning sunlight. The southern orientation receives more sunlight for the greater part of the year, with north facing landscapes typically receiving more shade as buildings, fences, and trees block out the sun.

The amount and quality of light on your property can change over time, especially in landscapes with growing trees and shrubs, new

buildings, and fences. While established turfgrass and other sun-loving plants might grow in shady areas for a time, they typically decline, becoming thinner and less dense as light diminishes. Flowering plants might stop blooming as shade encroaches on high-sunlight areas. Avoid over-watering and over-fertilizing recently shaded areas that experience decline. These common poor-management responses can harm your landscape and create pollution as unused inputs wash away, entering storm drains and potable water supplies during rain events. Instead, determine how much shade will eventually exist in the area and grow plants that are better adapted.

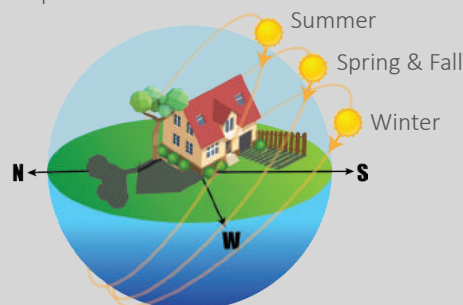
Landscape areas receiving fewer than 5 hours of sunlight are not viable for turfgrass and other sun-loving plants.

Go to **WATERUNIVERSITY.TAMU.EDU** for a range of free resources to help you choose the best plant material for the shaded areas of your landscape.



## SEASONAL SUN POSITIONING

Earth’s path around the sun is not a perfect circle. Our varying distance from the sun at different times of the year causes the sun to hold different positions in the sky as seasons change. These positions will cause trees and other structures to cast shade at varying angles throughout the year. Keep this in mind while selecting the most viable plants for the shaded areas of your landscape.



*The sun’s position in the sky at noon during each season.*

## PROPER TREE PLACEMENT



Shorter ornamental trees are good choices for avoiding electrical hazards and preserving tree health under powerlines. Large deciduous trees on the southern and western faces of the home will block the summer heat while allowing warmth to enter the home in winter. An evergreen tree screen on the northernmost area of the property will shield against harsh winter winds.

## IMPROPER TREE PLACEMENT



Planting large trees under power lines creates electrical hazards and is detrimental to tree health due to heavy mutilation requirements. Meanwhile, large evergreen trees placed on the southern face of the home can block warming sunlight in the winter months, contributing to inefficient energy use.



## PROPER PLANTING

Whether you're planting a native or adapted tree, shrub, or herbaceous perennial, it is key to make the transition from the nursery to your landscape as easy as possible by employing best planting practices to ensure a long, healthy life for your plant.

Planting width should be 2 to 3 times as wide as root mass.  
Planting depth should be no deeper than root mass.

Don't break the root ball! Unwrap circling or girdling roots.

## KNOW YOUR PLANT

Knowing the types of plant material available to you will help you determine which group contains the perfect specimen for your intended use. Plants come in a variety of shapes, sizes, colors, textures, and forms to meet just about every aesthetic and environmental scenario. The searchable database of North Texas native and adapted plants is available at [wateruniversity.tamu.edu](http://wateruniversity.tamu.edu). It includes our most highly recommended plants in each group:

**SHADE TREES** provide shade during hot Texas summers. Many produce vibrant fall color and offer countless ecosystem services.

**ORNAMENTAL TREES** are shorter trees that can boost curb appeal with their ornate flowers, colorful leaves, or interesting fruits.

**SHRUBS** are woody plants, smaller than most trees and typically serving as visual backdrops and sound, wind, and sight screens in the landscape.

**PERENNIAL PLANTS** are those expected to live three years or longer. This term is typically used to describe flowers and shrubs, but also includes trees.

**ANNUAL PLANTS** are typically flowers sold as "seasonal color" due to their one-season lifespans. They can be resource intensive and do not return after winter. Consider using them sparingly or in pots for mobility, moving them as necessary out of winter conditions.

**YUCCAS AND CACTI** can add aesthetic structure to a landscape with sharp textures and color that contrasts nicely against the broad, lush foliage of other native and adapted plants. Most yuccas and cacti are extremely water efficient.

**PALMS** add a tropical look to landscapes and most are evergreen. Only choose those suited to the cold of North Texas. Consult the plant tag for hardiness zone recommendations.

**FERNS** provide lush foliage in shaded areas where extra moisture typically exists.

**ORNAMENTAL GRASSES** are perennial plants whose long foliage and seed heads add eye-catching movement to the landscape.

Warm season **TURFGRASS** can be resource-efficient, creating functional and ornamental outdoor spaces. Allow turfgrass to occupy full-sun areas in the landscape. Limit turfgrass to consuming 1/3 of the total landscape to reduce maintenance in the overall design.

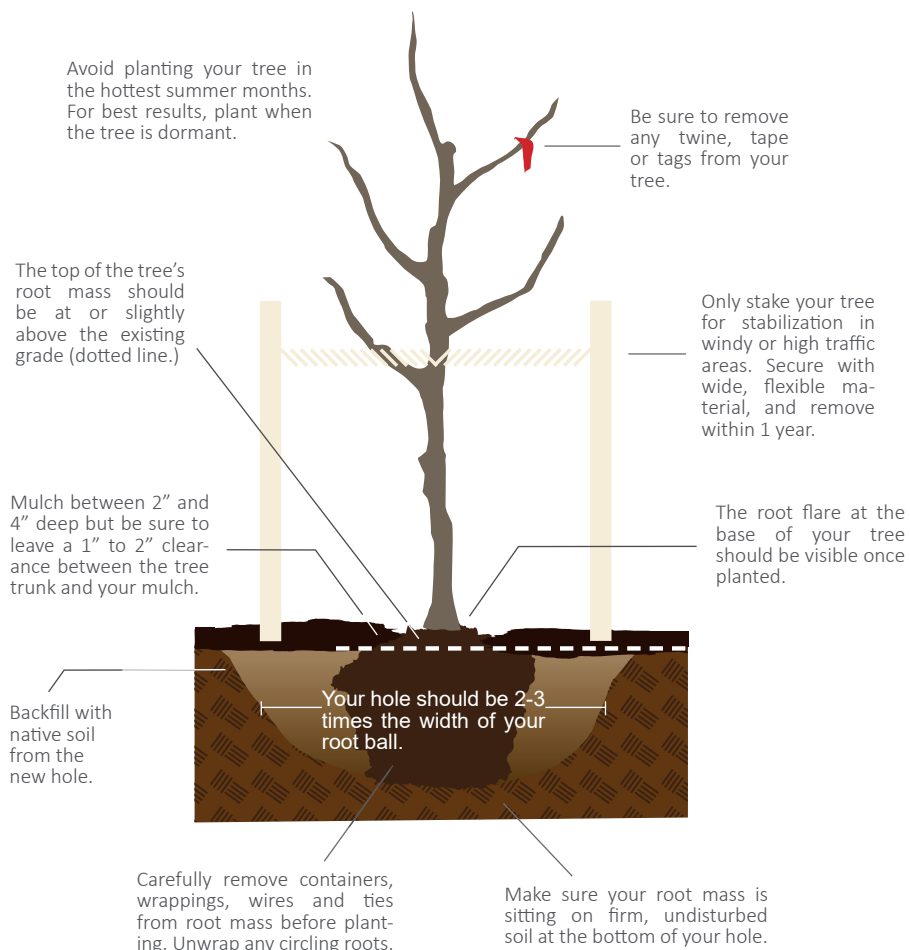
# THE “RIGHT” TREES FOR THE “RIGHT” SPACE

Proper spacing is especially critical for the health of medium to large tree selection. Trees with adequate space will bring innumerable benefits to your landscape, while poorly spaced specimens will decline over time and will create excess maintenance work each season. Follow the illustration below for tips on placing trees in a landscape.

Consider the following when selecting the right tree for your property:

- Growth potential
- Shape
- Function
- Water requirements (some use even less than others)
- Pest resistance
- Longevity (How long do they typically live?)
- Growth rate
- Is it deciduous or evergreen?
- Do you want an ornamental tree or a shade tree?

Visit [WATERUNIVERSITY.TAMU.EDU](http://WATERUNIVERSITY.TAMU.EDU) for a listing of the top performing native and adapted trees for North Texas!



Trees that maintain their green leaves all year round are called **EVERGREEN TREES**.



**DECIDUOUS TREES** normally shed their leaves in winter.



## GARDENING WITH TREES

Mature trees are some of the most valuable components of a landscape, whether for their aesthetic beauty or their numerous economic and environmental benefits:

- Providing oxygen and cleaning the air
- Cooling surrounding areas (including your home)
- Helping to prevent soil erosion and water pollution
- Providing food and habitat for wildlife
- Increasing property values

Light pruning by a certified arborist can bolster the long-term health of a tree, but over-pruning specifically to increase light infiltration will harm trees, especially techniques that affect mature branches:

**Limbing up or “crown-raising”** is the removal of lower branches to greatly increase the distance of branches from the ground.

**Pollarding** is the removal of upper tree branches.

Mature trees, especially evergreens, thrive when healthy lower branches remain intact. Removing large limbs increases risks of decay. Over-pruning removes much of a tree's energy-absorbing needles and leaves. It can cause stress, diminishing the health and vigor of a tree.

# GARDENING UNDER EXISTING MATURE TREES

A popular misconception is that nothing grows in the shade. On the contrary, a myriad of native and adapted plant species grow and thrive in the shade! They vary tremendously in shape, growth habits, foliage, and bloom color. They combine under tree canopies and other shade sources to suit virtually any aesthetic sensibility.



## SAVE WATER!

Shadier areas typically offset evaporation from the soil and transpiration from plants, leaving more water available in the plant's environment.



## CURB APPEAL

A properly selected and placed mature tree is an asset to any landscape. Trees serve as visual backdrops or structural focal points that can compliment and enhance other plantings.



## TEMPERATURE MODERATION

A shade garden makes for the perfect place to sit, relax, and entertain guests, especially during the summer months of North Texas!

## PATIOS & SITTING AREAS

A shaded seating area under a mature tree offers a space for relaxing and entertaining guests outdoors – a reprieve from the North Texas summer heat. A number of pervious paving materials can beautify a shaded seating area while allowing precious rainwater to infiltrate, reentering our water supply and nourishing the tree. Paving bricks, flagstones, and products like decomposed granite also allow water and oxygen exchange in the root zone, where paved or impervious surfaces, like concrete, can harm the tree.

## MULCHING

Applying mulch around your planted areas is crucial to a successful garden. A number of natural materials work well as mulch. Hardwood, cedar, cypress, and pine straw mulches are all strong options. Water University recommends between 2" and 4" of mulch for most applications. Be sure to taper off near plant bases to avoid fungal problems and other pest issues.

The benefits of mulching are many. They include:

- Increased water absorbing capacity
- Increased water holding capacity
- Reduced water evaporation
- Reduced erosion
- Weed control
- Soil temperature moderation
- Increased soil nutrition as mulch breaks down



## TURF SELECTION

Many turfgrass types thrive in North Texas, each possessing its own advantages and disadvantages. Personal preference, property characteristics, and plans for utilizing your lawn space are all important factors in determining the best turfgrass for you. The amount and quality of sunlight your landscape receives, your city's watering guidelines, and your personal management capabilities also play an important role in what turfgrass best suits your needs. Turfgrass types vary in color vibrancy, blade texture, and growth rate. Bermuda, Buffalo, St. Augustine, and Zoysia-grasses are some of our favorite warm-season varieties and are best adapted to the climate and available natural resources of North Texas. Turfgrass works best in areas that receive full sun, part sun, and in some cases, part shade conditions. Although turfgrass might once have grown well in a certain area, light quantity and quality can change over time, especially in landscapes with maturing trees, shrubs, new buildings, or even new fences. Established turfgrass might grow successfully in these areas for a while but can begin to decline, becoming thinner and

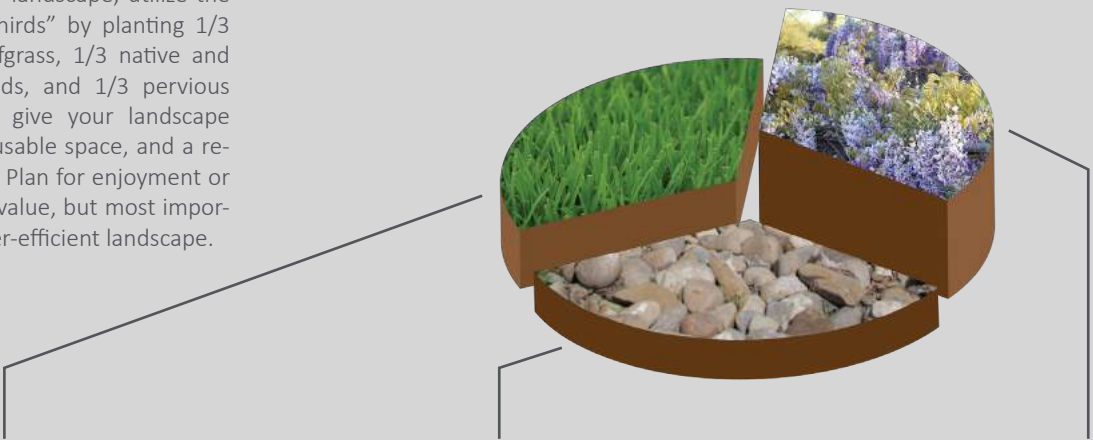
less dense as shade encroaches.

Attempting to establish turfgrass in low-light areas is problematic. Over-watering and over-fertilizing are common responses to lower light situations but are typically unsuccessful in regaining turfgrass quality. These practices can also be detrimental to landscapes and the environment in the long run. Consider planting turfgrass alternatives in full shade and dense shade conditions.

Remember, maintenance requirements increase along with the amount of turfgrass in a landscape. Incorporating more native and adapted planting areas will help reduce maintenance over the long run. Native and adapted plants will also reduce water and chemical demands on your property. Any style you wish to achieve in your design can be accomplished with native and adapted plants. Design your landscape with equal parts turfgrass, planted beds, and pervious hardscape. A good rule of thumb is the "Landscape Rule of Thirds," as described in the graphics on the following page.

# LANDSCAPE RULE OF THIRDS

When designing your landscape, utilize the “landscape rule of thirds” by planting 1/3 drought tolerant turfgrass, 1/3 native and adapted planting beds, and 1/3 pervious hardscape. This will give your landscape more visual appeal, usable space, and a reduction in water use. Plan for enjoyment or to improve property value, but most importantly, plan for a water-efficient landscape.



### TURFGRASS





There are many turfgrass options on the market; choose the right grass for your needs. Some turfgrasses, like Bermuda and Zoysia, handle high-traffic areas while others, like Buffalo, do not. Remember, turfgrass needs at least 5 hours of sunlight, so concentrate turfgrass in the areas where it will perform best. See our turfgrass selection chart below for information.

### HARDSCAPE

Your hardscape consists of structures like sidewalks, patios, stonework, rocks, and landscape art. Hardscape helps diversify texture for visual appeal. It creates surfaces for multiple uses and can be used to border landscape areas. A dry river rock bed, for example, could partition two areas for different use while a piece of garden art serves as a focal point in an otherwise mundane corner.

### BEDDING

Landscape bedding is where style and creativity can really show. Use contrasting, bold colors and contrasting textures of large leaves against plant material and smaller foliage. Organize your plant material for a more contemporary or formal look, depending on design preference.

	BERMUDAGRASS	BUFFALOGRASS	ST. AUGUSTINEGRASS	ZOYSIAGRASS
				
MINIMUM LIGHT REQUIREMENT	6 - 8 HOURS	7 - 8 HOURS	5 - 6 HOURS	5 - 8 HOURS
SHADE TOLERANCE	LOW TO VERY LOW	VERY LOW	HIGH	HIGH TO MODERATE
WATER REQUIREMENT	MODERATE TO LOW	VERY LOW	MODERATE	MODERATE
WEARABILITY (FOOT TRAFFIC, PETS, ETC.)	HIGH	LOW	LOW	HIGH TO MODERATE
DISEASE POTENTIAL	MODERATE TO LOW	LOW	HIGH (IN SHADE)	MODERATE TO LOW
MOWING FREQUENCY	3 - 7 DAYS	INFREQUENT	5 - 7 DAYS	5 - 10 DAYS
MOWING HEIGHT	1 - 2.5 INCHES	3 - 8 INCHES	2.5 - 3.5 INCHES	1 - 3 INCHES

# IRRIGATION

## WATERING YOUR PLANTS

Irrigation systems exist only as a supplement to abnormally low rainfall levels. A properly selected plant palette should thrive in its natural environment. Your “irrigation system” might consist of nothing more than a hose-end sprinkler or soaker hose, and it might include an automated controller with permanent irrigation heads. In either case, to transition toward a more sustainable lawn, landscape, or vegetable garden, irrigate less often but deeply, as opposed to more often and in shorter intervals. More frequent irrigation is usually only required by newly planted specimens, which need moisture closer to the ground surface. But, once established, properly selected plants will begin to thrive as irrigation frequency tapers off. Most native and adapted perennial beds, turfgrass areas, and even well mulched vegetable gardens only require **one inch of water per week**. Excessive irrigation can cause a range of problems.

### IRRIGATION TIPS

**Check your irrigation systems monthly for problems.** Mark problem areas for easily locating them when it’s time to make repairs.

**Water when needed, not just because it’s your day to water.** A soil moisture probe is an inexpensive tool that can be used to gauge soil moisture at a depth of 6”-8”. A long screwdriver can also be helpful. Like a toothpick into a cake, if the screwdriver easily penetrates the soil and has damp soil on it, irrigation is not required. If it is unable to penetrate the dry clay soil, supplemental irrigation could be necessary.

**Water without creating runoff.** See “Cycle and Soak Irrigation Method” in the section below.

**Water after 6:00 p.m. and before 10:00 a.m.** to minimize water loss due to evaporation during the active growing season, usually March-October. Watering in winter is not necessary unless unusually dry conditions exist.

**Only water more frequently while establishing new plants**, depending on the specific needs of each plant species. After this period, adjust irrigation methods accordingly, tapering off to less frequent watering to help develop a deeper, less dependent root system.

## IRRIGATION COMPONENTS

### MULTI-STREAM ROTORS

These pop up heads use multiple water streams to apply larger droplets of water slowly and evenly for greater efficiency and increased water savings. They are perfect for landscapes with slopes or clay soils. Many have an adjustable pattern from 45 to 270 degrees in addition to radius adjustment. Other multi-stream nozzles can be purchased to mimic the specific pattern of your existing sprinkler nozzle.

### DRIP IRRIGATION

This practice offers the most efficient irrigation delivery system by slowly applying water through emitters or bubblers to the

root zone, reducing water loss from evaporation. Understanding proper design and management is key for drip irrigation to work effectively. A properly designed and installed drip system gives you the ability to be precise when dividing precipitation rates for hydro-zoning. It reduces or eliminates runoff.

### RAIN & FREEZE SENSORS

These tools aid the homeowner by preventing the irrigation system from running during rain events or when temperatures fall below freezing. Freeze sensors can also aid in preventing damage to irrigation systems and safety hazards. It is important to

note that rain and freeze sensors are required in many areas and applications.

### CYCLE & SOAK IRRIGATION METHOD - THE BEST WAY TO WATER!

Some irrigation systems apply water faster than the ground can absorb. This is especially true in lawn areas with compacted clay soil. To avoid water running off the landscape into the street, irrigate these areas in several short intervals instead of one long time. Use the cycle and soak method:

1. Determine how long to run each zone.
2. Water each station in 2 or 3 short cycles instead of 1 long cycle by setting several

## LANDSCAPE MAINTENANCE TIPS

Proper maintenance is one of the most important components to sustaining a beautiful and healthy water efficient landscape. It is also important to remember to not only create, but manage, a landscape that is within your maintenance capabilities.

**Design for water efficiency** using the landscape rule of thirds and remember, the larger the lawn, the more mowing will be needed.

**Employ efficient irrigation technologies** to save water, time, and money.

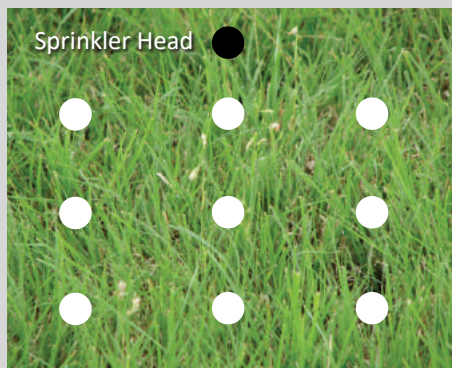
**“Don’t bag it! Mulch it!”** Use your lawn clippings as mulch for increased water efficiency.

**Raise your mower height** during the summer months. Avoid cutting more than 1/3 of the leaf blade at one time to conserve water and reduce plant stress.

**Mulch properly** to save water and control weeds.

**Prune** (remove dead plant material) and maintain the shapes of trees and shrubs as needed. For most deciduous trees, shrubs, and grasses, prune back from February to March to encourage new growth.

# HOW MUCH ARE YOU REALLY WATERING?!



*This grid shows placement of catch cans in relation to a sprinkler head.*

## CATCH CAN TEST

A catch can test is used to determine how long to run an irrigation system or hose-end sprinkler and how well the water is distributed over the landscape. The root zone (where water and nutrient absorbing roots grow) is typically 6 inches deep in clay soil. Usually about 1 inch of water will fill this root zone, but in many cases, irrigation systems apply water faster than the ground can absorb. During a summer drought with high temperatures, the water requirement may be higher. Each type of sprinkler (spray, rotors, multi-stream rotor, drip) applies water at different rates; therefore, a catch can test is essential to determine the run time and efficiency of the system.



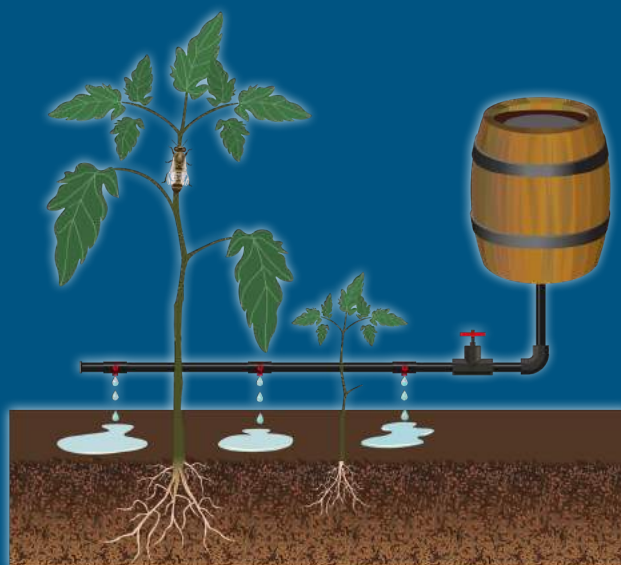
**WATCH OUR CATCH CAN TEST INSTRUCTIONAL ON YOUTUBE**  
[www.tinyurl.com/agrican](http://www.tinyurl.com/agrican)

start times.

3. Set multiple start times, 30 to 60 minutes apart, to allow water to soak into soil between cycles.

Most irrigation controllers have a way to set different start times. If you have trouble programming your controller, visit the irrigation controller company's web site or contact their customer service for instructions for cycle and soak. Some newer controllers have a cycle and soak setting, which might warrant upgrading your irrigation controller.

DRIP IRRIGATION



## AUTOMATED IRRIGATION SYSTEMS



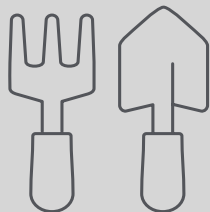
Automated irrigation systems are designed to maintain soil moisture, ultimately protecting the overall health of a landscape. Switch off irrigation systems in times of sufficient or excessive rainfall. When supplemental water is needed, the delivery systems should precisely deliver the water without waste. Accurately calculating plant water needs and taking into consideration soil type, as well as slopes in the terrain (which might influence water flow) will help determine the best delivery system to avoid water waste. Adjust sprinkler heads to

avoid misting or over-spraying sidewalks, driveways, and streets.

Turf areas may require water more frequently than beds with native and adapted perennial plants or shrubs. Areas with mature trees may require watering deeper and more infrequently than the rest of your landscape. By hydro-zoning or designing your system to water these areas separately, you will avoid both over-watering and/or under-watering your plant material.

# VEGETABLE GARDENING

While often overlooked as an aesthetic element, the beautiful foliage, ornate flowers, and whimsical shapes of some vegetables make them perfect for incorporation into ornamental landscapes. Of course, the innumerable benefits of a dedicated vegetable garden make them prime for boosting access to seasonal produce. There is a style of vegetable gardening to meet your needs, suit your tastes, and capture your imagination. Vegetable gardening also opens the door to newcomers for learning best practices for effective stewardship of precious natural resources.



## CHALLENGES TO VEGETABLE GARDENING IN TEXAS:

- Extreme temperatures
- Sunlight quantity and quality
- Weed pressure
- Pest insects and diseases
- Water constraints

There are many ways to overcome the gardening challenges of Texas' climate and soil. Planning ahead and designing your landscape with sustainability in mind will give you the best chance for a successful and productive vegetable garden.

## CHOOSE A PRIME LOCATION

Vegetable gardens are often allocated to out-of-the way or out-of-sight areas in the landscape - hidden because they are considered unsightly, which can create problems:

### TOO LITTLE LIGHT

Most fruiting vegetables do best with 8 or more hours of sunlight. Tucking them in a corner of the yard that receives less light can reduce or eliminate fruit production altogether.

### "THE BEST FERTILIZER IS THE GARDENER'S SHADOW"

A prime spot in the landscape will ensure

you tend to your vegetables regularly. The more time you spend in your garden, the greater the chance you will notice a nutrient deficiency, pest, disease issue, or a watering issue before it gets out of control and becomes a problem.

### THE "RIGHT" SPOT

The farther away your garden is from your kitchen, the less likely you are to harvest what you grow. You might even miss harvesting some of your favorite veggies at their peaks. It's convenient to walk right outside to grab the ingredients for a meal or to cut fresh herbs to spruce up a dish.

Build your vegetable garden in an area that has well-draining soil. For Texas areas with poor-draining clay soils, consider amending with compost, expanded shale, or a combination of soil amendments. Raised bed gardens with amended native soil or pre-made garden soil mixes can help improve drainage, making weeding and harvesting easier.

## MORE TIPS FOR SUCCESSFUL VEGETABLE GARDENING

Vegetable gardening is not hard, but a few simple practices can significantly boost success. Each person is different, and each landscape has unique characteristics, which is why your garden should be designed to meet your needs, as well as the needs of the vegetables you want to grow. Design for beauty as well as function to make your vegetable garden more inviting for you, your family, and your guests.

Do not be intimidated to start your garden, and do not be afraid to keep your garden space small until you get the hang of it. The size of your planting space should be based on the number of vegetables you plan to plant and the spacing requirements of each type. Consult your seed label or plant tag for this information.

**DOUBLE REACH BEDS** are built to ensure that the gardener can reach any area inside the planting area without having to step into the bed. This allows for easy harvest and weed removal while helping to reduce compaction in clay soils. The size of your planting areas

should also be designed to meet the specific needs of the vegetables. Pay close attention to your plant tag or seed packets, and follow the planting guidelines so your vegetables have adequate spacing. Vegetables planted too close together can experience increased competition for light, nutrients, water, and air, leading to decreased or lower quality production!

### GROWING VERTICALLY

In urban environments and other areas where space constraints can provide obstacles to vegetable gardening, consider vertical growing options, like a trellis for vining vegetables like beans, squash, and even tomatoes.

### PLANT THE WATER FIRST

This might be the most important thing to remember: plants need water, but not too much, and some need more than others. Vegetables can get much of the water they need from rainfall in parts of Texas



## PLANTING YOUR VEGETABLES

What are you going to grow in your vegetable garden? A number of factors determine the success of a new vegetable gardener. Planting and harvesting your vegetables is the fun part!



### WHEN TO PLANT

Many people focus on spring and fall gardening, but in Texas there are also ways to “stretch the season,” growing almost year-round using cold frames, shade cloth, low tunnels, or floating row covers. Search “AgriLife spring and fall planting guide” online or consult local gardening calendars in Texas for advice on when to plant.



### WHAT TO PLANT

Grow what you eat! By focusing on what you and your family like to eat, you can make sure to make the best use of your time, money, and space in the garden. You might even save a little money at the grocery store! Don't be afraid to try new things as well.

There are quite a few vegetables well adapted to Texas that are delicious, but underutilized on our plates! Try growing herbs and even edible flowers. Vegetables known to thrive in hot, dry climates tend to see more success during summer months. Other species have shown to be productive in Texas in cooler months. One of the best ways to achieve a bountiful harvest and to increase production is to select adapted varieties and plant them at the right time. To get



started, check out AgriLife's vegetable variety selector online, [tinyurl.com/aggievegselector](http://tinyurl.com/aggievegselector).

### PLANTING SEEDS

In spring, start warm-season vegetable seeds in a south facing window or greenhouse 4-8 weeks before the threat of frost has passed. For fall gardening dates, start seeds indoors 4-8 weeks before transplanting outside to avoid the Texas heat. Use well-drained, premixed, soilless potting media and maintain moist, but not saturated moisture levels. Plant the seeds 2-3 times deeper than their respective thickness. This rule of thumb tends to produce strong germination results. Discard or “thin” sprouting plants, as needed, to avoid overcrowding.



### PROPER SPACING

Refer to the plant tag or seed packet for proper spacing. Avoid the urge to plant close together. This will result in healthier, more productive plants, reducing pest and disease issues, but also reduce competition for sunlight, nutrients, and water.



### PLAN AHEAD

Buy seeds early or before the planting season to ensure seed availability, especially when your favorite veggies are in high demand. This is typical among varieties with disease or pest resistance and with those considered especially tasty.

**TINYURL.COM/AGGIEPLANTINGGUIDE:** A complete planting schedule for Texas.

**TINYURL.COM/AGGIEVEGSELECTOR:** Help you figure out which vegetables work best in your garden.

**VEGETABLEIPM.TAMU.EDU:** Tips on how to identify and control pest insects

**PLANTCLINIC.TAMU.EDU:** Help with unedifying and controlling vegetable diseases

(depending on the area, year, and season). Irrigation should only be applied to supplement a lack of rainfall. Minimize water waste and reduce fungal diseases by avoiding vegetable watering when there is already sufficient soil moisture.

Conversely, it is important BEFORE planting or sowing seeds to plan for supplementing rainfall with irrigation during dry times. This might be as simple as locating your outside faucet and hooking up a water hose and hose-end sprinkler that will reach. Soaker hoses work well, too, but have their limitations when it comes to durability.

There are also simple and effective ways to convert your outdoor faucet or existing sprinkler system to drip irrigation for your vegetable garden. **Drip irrigation is the most effective irrigation method as it applies water directly to the root zone, minimizing water loss.**

FAUCET DRIP CONVERSION  
WITH TIMER





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