TEXAS MASTER GARDENER
TEXAS A&M AGRILIFE EXTENSION
Big Country

Selecting and Establishing the Right Turfgrass for Abilene & Surrounding Areas

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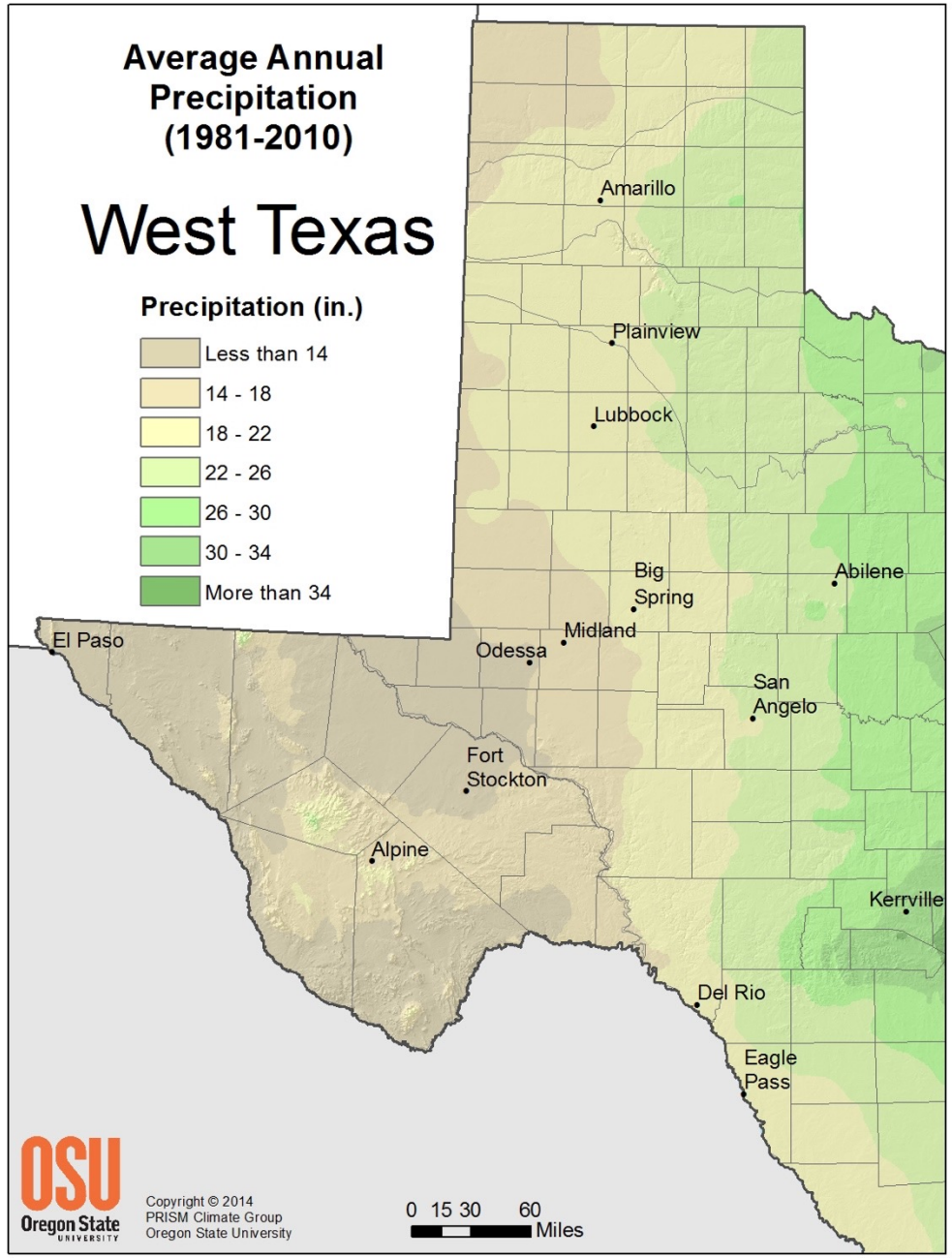
Low Rainfall (chronic Water Deficit)

- Average annual precipitation: 24 – 25 inches (long-term average ~25.24 inches at Abilene regional Airport).
- That's barely enough for native Prairie - and far below what most common lawn grasses need without help.
- Distribution is uneven: Wettest months are May (~3.1 inches) and September; January is driest (~0.8 inches). Rainfall is often in heavy bursts followed by long dry spells.
- Result: Lawns are almost always in a moisture deficit. Without drought-tolerant species and deep-rooted establishment, you'll be watering constantly - or watching your grass go dormant/stress out.


Average Annual Precipitation (1981-2010)
West Texas
Precipitation (in.)
Less than 14
14 - 18
18 - 22
22 - 26
26 - 30
30 - 34
More than 34
Amarillo
Plainview
Lubbock
Big Spring
Abilene
Midland
Odessa
El Paso
San Angelo
Fort Stockton
Alpine
Kerrville
Del Rio
Eagle Pass
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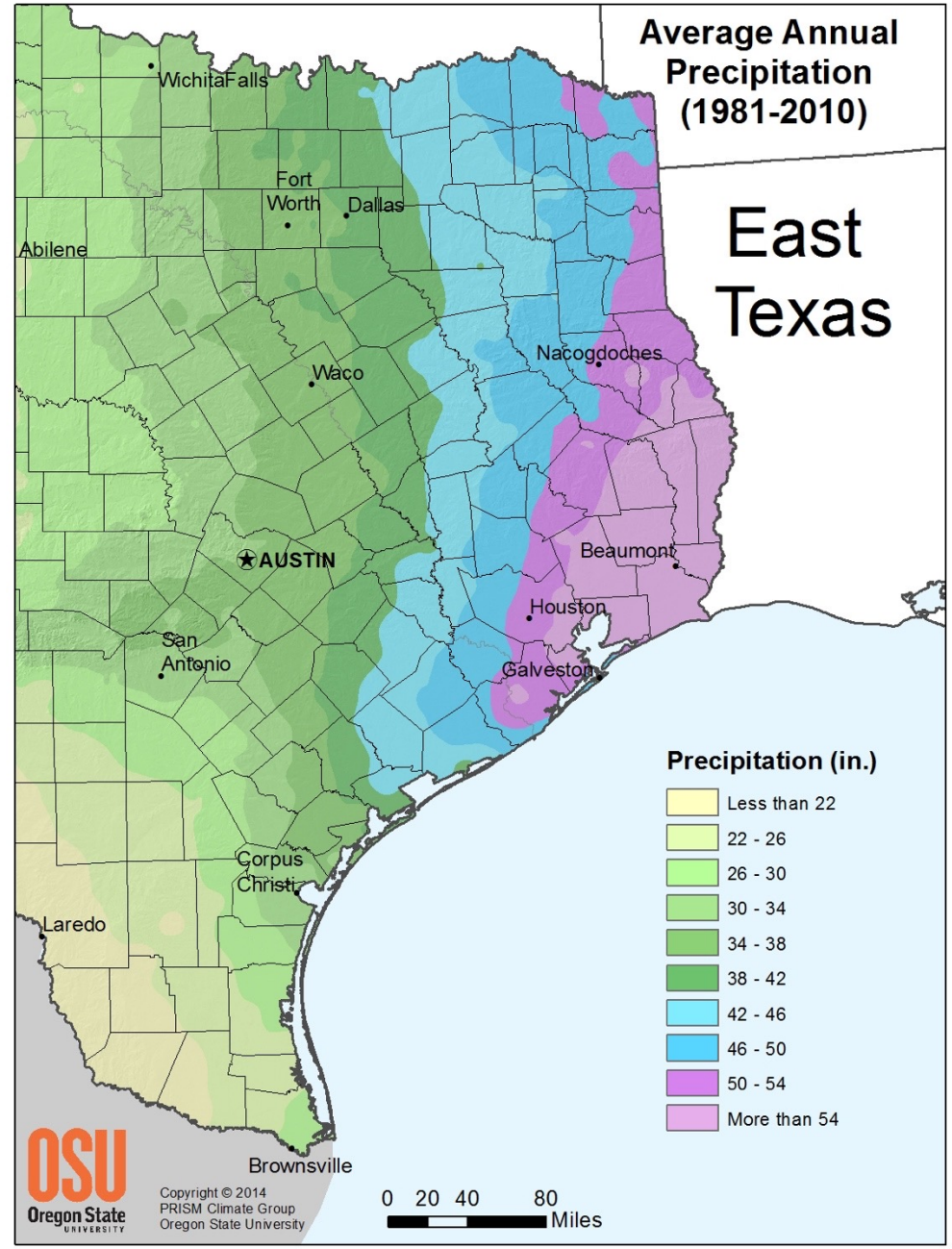
Oregon State University
0 15 30 60
Miles


Average Annual Precipitation (1981-2010)
East Texas
Precipitation (in.)
Less than 22
22 - 26
26 - 30
30 - 34
34 - 38
38 - 42
42 - 46
46 - 50
50 - 54
More than 54
WichitaFalls
Fort Worth
Dallas
Abilene
Waco
Nacogdoches
AUSTIN
Beaumont
Houston
San Antonio
Galveston
Corpus Christi
Laredo
Brownsville
OSU
Oregon State University
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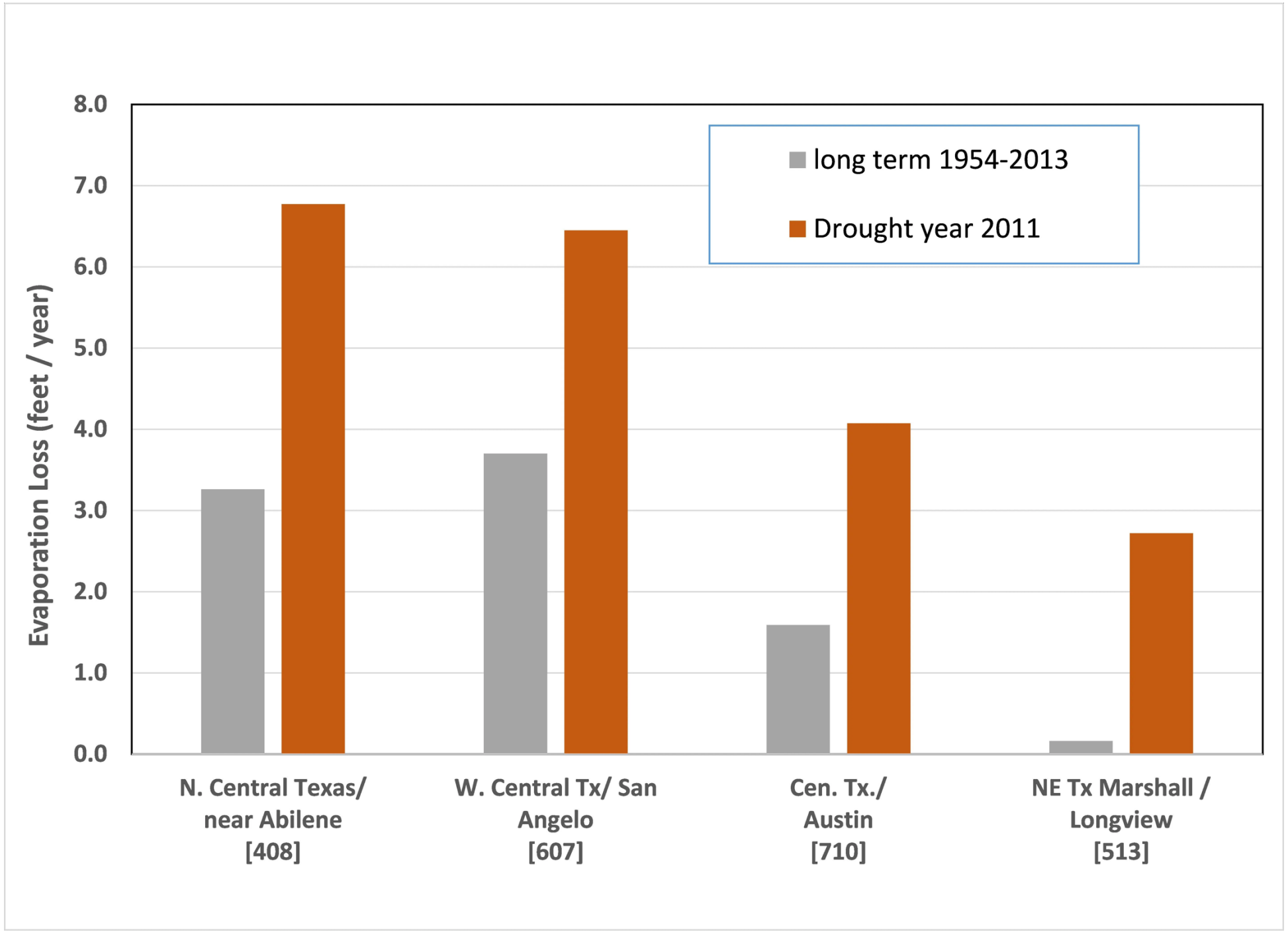
PRISM Climate Group
Oregon State University
0 20 40 80
Miles

High Evaporation (Rapid Water Loss)

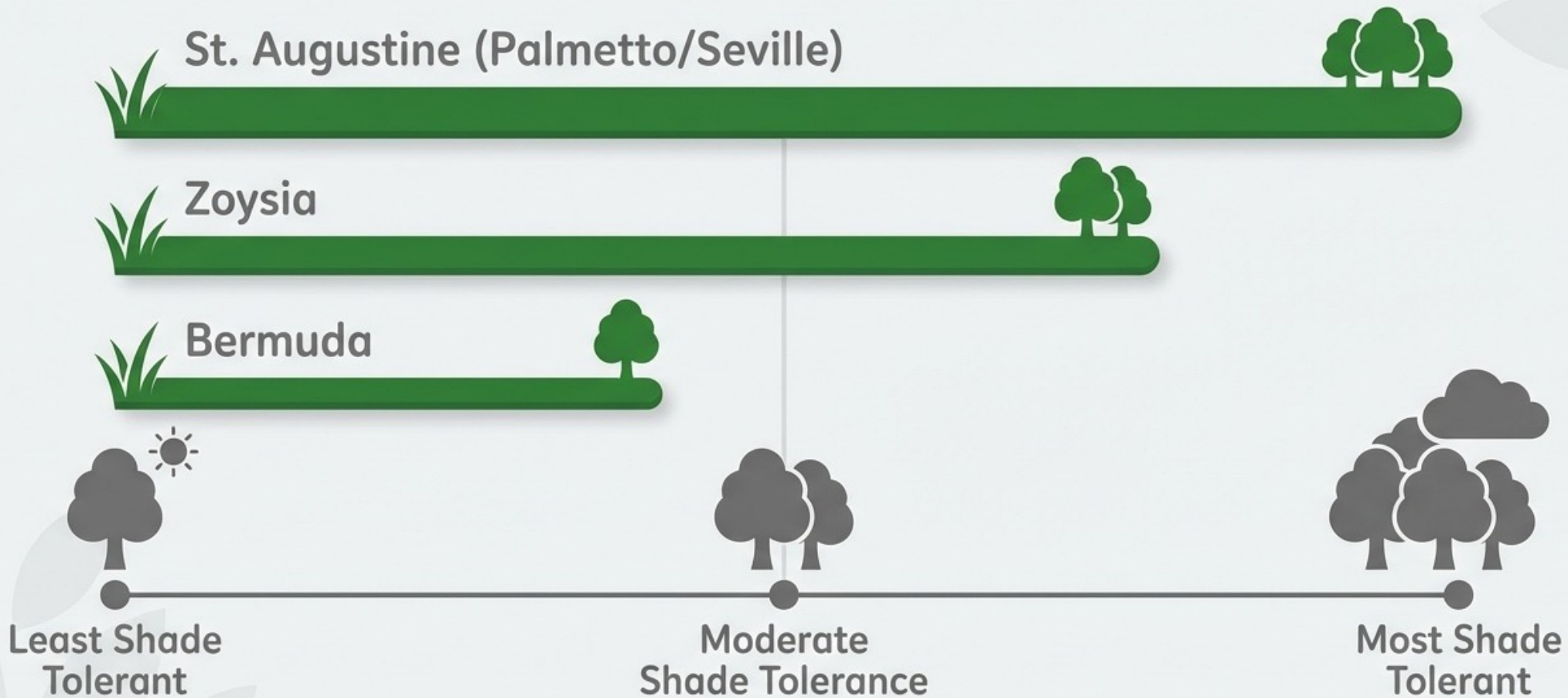
- Abilene sits in a semi-arid zone where potential evapotranspiration (reference ET) routinely exceeds rainfall – often by 2-3 times. Regional long-term grass-reference ET is typically 60-70+ inches per year (TexasET and TWDB data show daily summer peaks of 0.4+ inches even on moderate days).
- Hot summers (average highs 95°F+, with frequent 100-101°F days), low humidity, constant wind, and intense sunshine drive massive water loss from soil and plants.
- Consequence: Even after a rain, the ground dries out fast. Shallow-rooted or water-loving grasses (like St. Augustine) fail here. You need species that can survive on infrequent deep watering.


8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Evaporation Loss (feet / year)
long term 1954-2013
Drought year 2011
N. Central Texas/ near Abilene [408]
W. Central Tx/ San Angelo [607]
Cen. Tx./ Austin [710]
NE Tx Marshall / Longview [513]

Full-Sun Dominance + Intense Solar Radiation

- Abilene's rolling plains and urban landscape mean **most lawns are in full sun** (77% artificial surfaces + open grassland within 10 miles; high solar radiation ~24-25 MJ/m^2 daily in summer).
- Very little natural shade compared to East Texas.
- This favors warm-season grasses that thrive in 8+ hours of direct sun - but it also magnifies heat and evaporation stress. Partial-shade options are limited.

Shade Tolerance of Common USA Sod Grasses



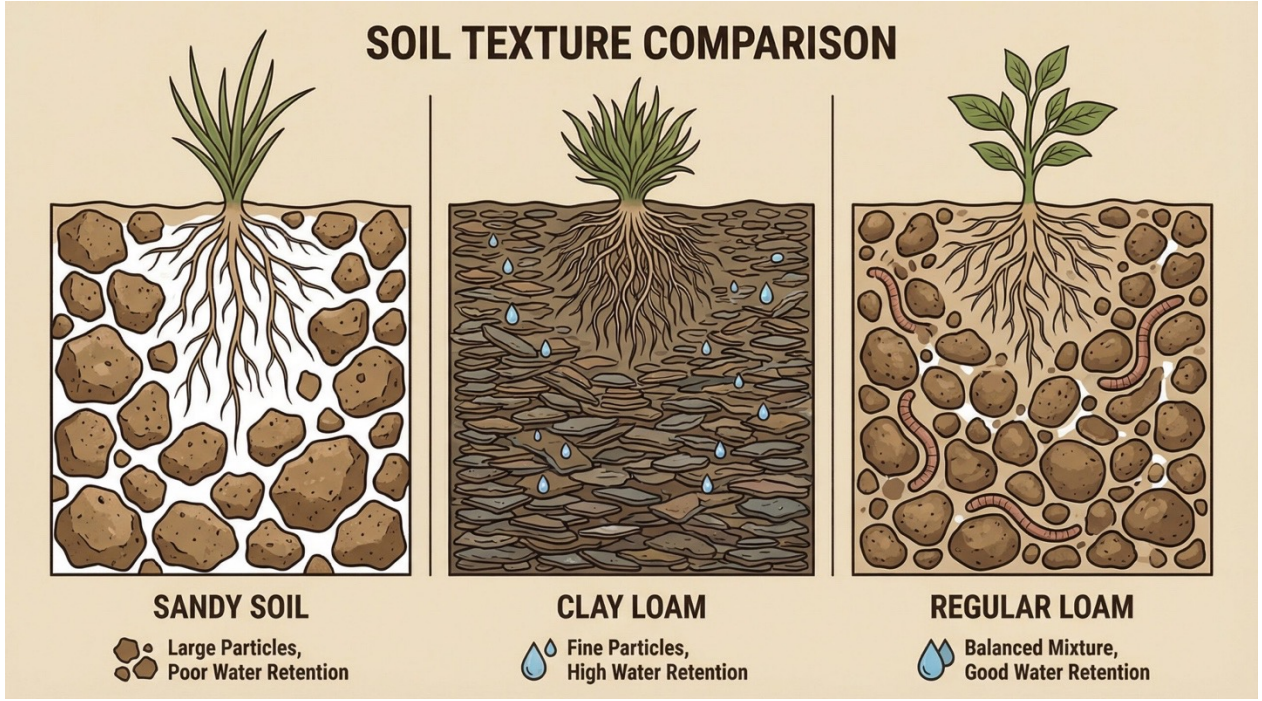
https://usasod.com/resources/st-augustine-grass/?srsltid=AfmBOoq0PXa8921tFnyL5Mi6EvKVCW3U-Z_Hleg9N_92mh6n1UELEQ_v

Occasional Freezes (winter Stress)

- USDA Hardiness Zone 8A (average annual minimum 10-15°F; updated 2023 map).
- Winters are short but can dip to 22°F or lower. First fall frost around November 5; occasional hard freezes occur.
- Light snowfall average only 4 inches per year.
- Warm-season grasses go dormant anyway, but tender varieties or poorly established lawns suffer crown damage. This rules out many subtropical grasses.

Local Soils – Often the Hidden Problem

- Dominant soil series: Abilene clay loam (and similar: Sagerton, Vernon, Weymouth, Raton, Tillman series).
- Characteristics: Deep but moderately slow-draining, calcareous (high calcium), alkaline pH (typically 7.5-8.5+), low organic matter.
- Common issues: Nutrient lock-up (especially iron, phosphorus), poor water filtration in heavy clay, and compaction.



https://hellogravel.com

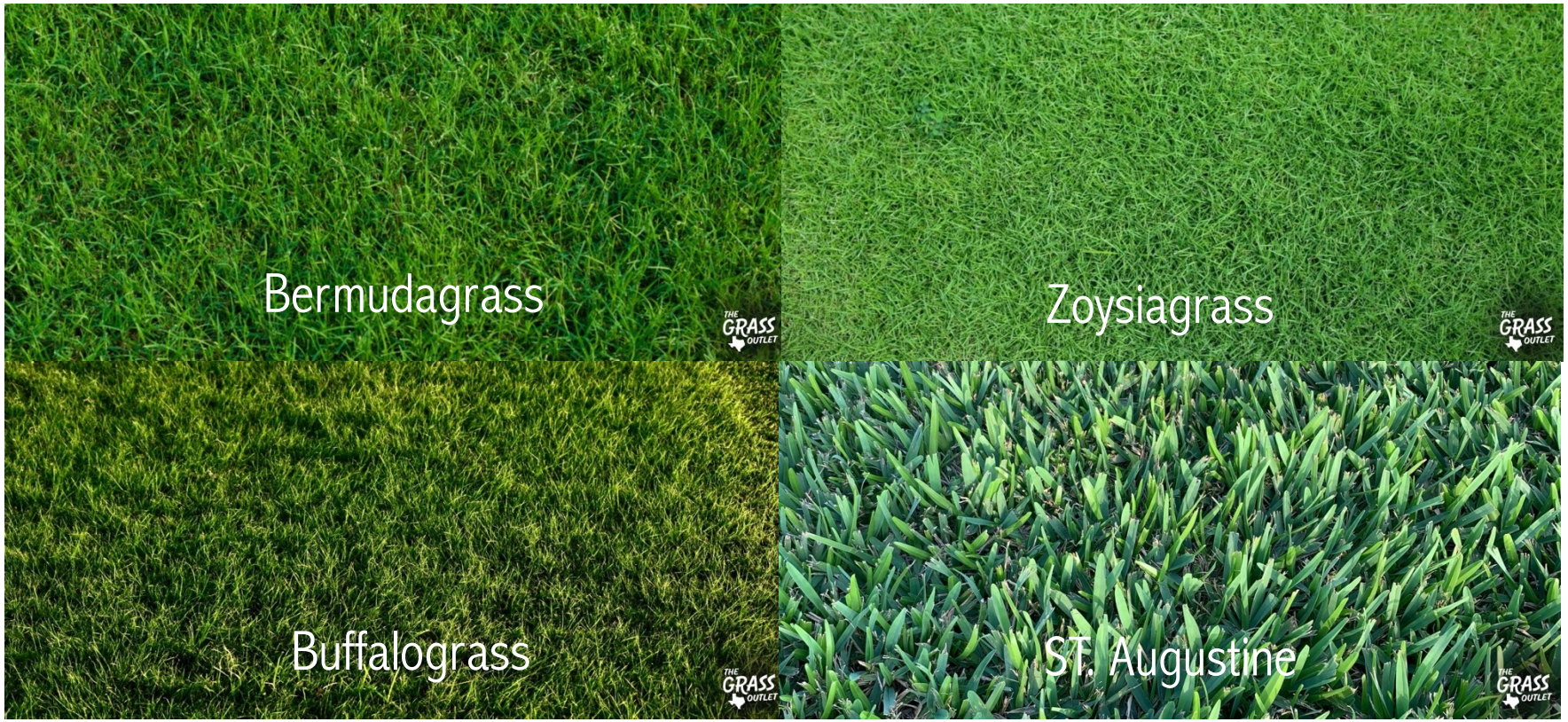
Soil Testing (non-negotiable?)

- Exact nutrient levels (N, P, K, etc.), so you don't over apply and waste money or pollute groundwater
- Soil pH - high pH in Abilene, lock up iron and causes chlorosis (yellowing) in many grasses.
- Any salinity or other constraints.
- Without a test, you're guessing - and in our low rainfall, high-ET environment, wrong amendments make drought stress worse. A $12-$47 soil test can save hundreds in water, fertilizer, and replacement sod.

soiltesting.tamu.edu

Proven Winners

Here are the top recommendations ranked for Abilene conditions with why they work (or don't):



1. Bermudagrass (Cynodon dactylon)

– Top Choice for Most Abilene Sites

- Why it's #1 here: Excellent to outstanding drought tolerance (very good to excellent per AgriLife tables), superior heat tolerance, high traffic recovery (quickly fills in wear from kids/pets/vehicles), and thrives in full sun (requires it - very low shade tolerance). It's widely adapted across all of Texas, including West Texas semi-aired areas, with strong performance under low to moderate irrigation.
- Key traits for Abilene: Deep rooting helps it access soil moisture during dry spells; recovers from dormancy fast after freezes; handles our alkaline soils well with proper fertility (soil test first!).
- Maintenance notes: Mow to 1-2 inches (frequent mowing every 3-7 days during peak growth); seeded types (e.g., Princess 77, Riviera, Yukon) are common and affordable; hybrid/vegetative types (e.g., Tifway, Celebration, Tiftuf) offer finer texture, darker green, but need more care.
- Best for: High-traffic lawns, full-sun yards, golf/sports fields. If your site gets any shade, look at hybrids with improved shade tolerance.
- Pro tip: Many local sod producers carry improved varieties proven in Texas trials.

Tifway 419

Celebration

TifTuf

Princess 77

Riviera

Yukon

2. Buffalograss (Bouteloua Dactyloides)

– Best Low-Maintenance/Native Option

- Why it's excellent for Abilene: Native prairie grass with outstanding drought tolerance - thrives on <25 inches annual rain (perfect match for our ~24-25 inches), very low water/irrigation needs (can go dormant without dying), low fertilizer requirements (0-2 lbs N/1000 ft.²/year), and low mowing needs (every 7-14 days if mowed at all).
- Key traits for Abilene: Best in full sun only (little to no shade tolerance); high cold tolerance helps with our occasional freezes; low disease potential; excellent for water conservation in semi-arid West/Central Texas.
- Maintenance notes: Mow to 2-3 inches (or leave taller for natural look); very low input overall - ideal if you want "set it and forget it" after establishment.
- Best for: Low-traffic residential lawns, xeriscape-style yards, echo-conscious homeowners. Popular sodded varieties: Density, Prairie, Prestige, 609.
- Caveat: Can be invaded by weeds/other grasses if overwater or in higher-rainfall spots - but in Abilene's dry climate, it shines as a low-maintenance winner.

Density

Prairie

Prestige

609

3. Zoysiagrass (Zoysia spp.)

– Solid Secondary Option

- Why it's viable here: Good drought tolerance (very good overall), moderate shade tolerance (better than Bermuda or buffalograss - handles filtered/light shade), good traffic tolerance in some varieties, and moderate cold tolerance for our winters. Newer varieties can tolerate a minimum of 3 hours of sunlight.
- Key traits for Abilene: Adapted to similar areas as Bermuda (most of Texas, including West/Central); slower growth means less frequent mowing; dense turf crowds out weeds once established.
- Maintenance notes: Mow to about 1-2 inches; slower establishment (takes longer to fill in); moderate fertilizer needs (1-3 lbs N/year).
- Best for: Yards with partial shade, moderate traffic, where you want a finer-texture, lush look without ultra-high inputs. Varieties like Palisades, Empire, Zeon, or Meyer perform well in Texas.
- Drawback: Slower to establish than Bermuda, so patience required; not as drought-hardy as buffalograss in extreme dry spells.

Palisades

Empire

Zeon

Empire

St. Augustinegrass (Stenotaphrum secundatum) – Avoid

- Why not in Abilene: High water requirement (moderate to high; needs consistent moisture), poor drought/heat tolerance in our semi-arid conditions (stresses easily, turns brown fast), low traffic tolerance, and prone to pests/diseases under stress (e.g., chinch bugs, fungal issues in humid spells or poor drainage). AgriLife maps show its best in higher-rainfall, humid East/South Texas or Gulf Coast - not West Texas It may survive with heavy irrigation/expert care, but other species are far better recommendations.

Palmetto

Raleigh

Quick Comparison Table

Trait	Bermudagrass	Buffalograss	Zoysiagrass	St. Augustine.
Drought tolerance	Excellent	Excellent	Very good	Moderate
Heat tolerance	Excellent	Excellent	Very good	Moderate
She tolerance	Very low	Low	Moderate	High
Traffic tolerance	High	Low	Moderate - high	Low
Water requirement	Moderate - low	Very low	Moderate	Moderate - high
Mowing height	1-2 inches	2-3 inches (or taller)	1-2 inches	2-4 inches
Best Abilene fit	Top (full son, traffic)	Low maintenance native	Partial shade	Avoid




Asian Jasmine
Groundcover
for Shady Spots


Establishment Steps

– Soil Prep/Amendment, Timing, Methods, Initial Watering/Weeding

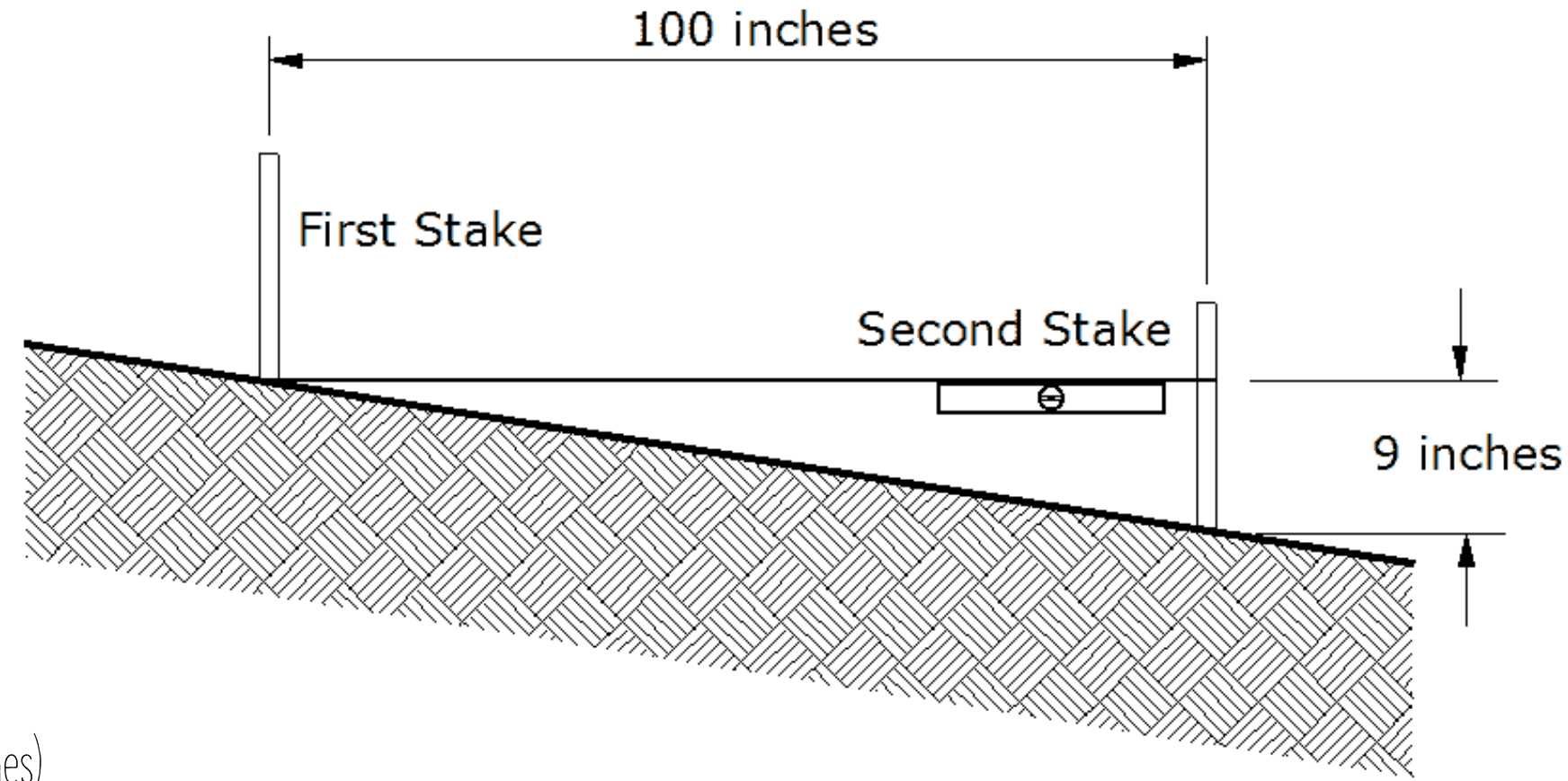
We've picked the right grass for Abilene. Now let's make sure it gets off to the strongest possible start – because poor establishment is the #1 reason lawns fail here. A solid root system in well-prepared soil is what makes your bermudagrass, buffalograss or zoysiagrass survive our dry spells and need less water and fertilizer later.

https://centralsodil.com/preparing-to-install-sod/

1. Soil Preparation & Amendments

- Soil test first (you already know this is critical in our area). Send a sample to soiltesting.tamu.edu or pick up a kit here at the Taylor County Extension office. Our calcareous clays often lock up iron and phosphorus - the test tells you exactly what to add so you don't guess and waste money
- Remove all existing vegetation and perennial weeds (especially khaki weed or old bermudagrass patches common around Abilene). Use glyphosate (non-selective) 7-14 days before tilling - two applications if needed.
- Till or loosen the soil to at least 4-6 inches (ideally 10-12 inches for best drought tolerance). Grade for drainage: 6 inches of drop every 40-50 feet so water runs away from the house but doesn't puddle.

Formula: grade % = $\frac{\text{Rise}}{\text{Run}}$ X 100



Example:

Run = 10 feet

Rise = 0.5 feet (6 inches)

→ Grade = (0.5 ÷ 10) × 100 = 5% slope

- Amendments for Abilene clay loams:
  - Incorporate 2–4 inches of compost or well-decomposed organic matter into the top 4–6 inches to improve structure and water infiltration without raising pH too much.
  - If the soil test shows compaction or high sodium, add gypsum (3–4 lbs per 100 sq ft) - it helps clay particles flocculate, so roots and water move better
  - Work in starter fertilizer (high in phosphorus) based on the soil test - till it in before final grading.
- Roll or firm the soil lightly so it's smooth but not rock-hard. Let it settle with a couple of light watering and re-grade any low spots.

Do this prep 2–4 weeks ahead of planting so the soil has time to settle.

2. Timing
– Late Spring to Early Summer for Warm-Season Grasses

- Plant when soil temperatures are consistently 70-95°F and night lows are above 55°F. In Abilene this is typically mid April through early June (after our average last frost around mid-April and before the worst summer heat and drought set in).
- Why this window? It gives the grass 3-4 months of active growth to develop deep roots before winter dormancy and our dry fall/winter. Seeding or sprigging outside this window risks poor germination or weak establishment.
- Sod can go in almost any time the ground isn't frozen (best in spring or early fall), but still aim for the growing season so it roots fast

3. Planting Methods
– Sod for Speed, Seed for Savings

- Sod (quickest results - instant lawn):
  - Best for all three species (especially hybrids or buffalograss varieties).
  - Lay in a staggered "brick" pattern, butting pieces tightly. Roll immediately for good soil contact.
  - Install within 24–36 hours of delivery (keep it moist and shaded).
  - Perfect if you want a finished look in one day and high traffic tolerance right away.

- Seed (most cost-effective):
  - Broadcast uniformly (use a spreader, go two directions at right angles) and lightly roll for seed-to-soil contact.
  - Rates per 1000 ft.² (use certified seed with high pure live seed %):
    - Bermudagrass: ½-1 lb
    - Buffalograss: 2-3 lbs (native and very forgiving here)
    - Zoysiagrass: 1 lb (slowest to fill in - be patient)
  - Great for large areas or budget projects.

(Pro tip: Buffalograss and common bermudagrass seed extremely well in Abilene's dry climate once established.)

4. Initial Watering & Weeding
(the First 2–4 Weeks Are Critical)

- Watering:
  - Sod: Water immediately to soak 3–4 inches deep. Then keep the soil moist (not soggy) for 2–3 weeks – light daily watering in our hot, windy Abilene weather until roots grab hold. After that, switch to deep/infrequent (0.5–1 inch per week total).
  - Seed: Keep the surface moist for the first 10–14 days. (may need 3–5 light waterings per day during hot spells). Once seedlings are up and rooted, reduce frequency.
  - Rule: Never let new turf dry out completely, but avoid puddles – overwatering causes shallow roots and disease.
- Weeding:
  - Pre-plant control is your best defense
  - After planting: Hand-pull any weeds that pop up. Mow frequently (once grass reaches 1.5–2 inches) to shade out weed seedlings. Wait until the new turf is mowed 2–3 times before using any post-emergent herbicides (and only ones labeled for your grass species).
  - Consider a pre-emergent (like those safe for new bermudagrass.) after the second mowing it crabgrass is a problem.

Bottom Line for Abilene Success:

- Know the challenge: Low rainfall, high heat, evaporation, freezes, and alkaline clay soils limit what will survive.
- Choose the right grass:
  - Bermudagrass: durable, fast coverage
  - Buffalograss: low water, low maintenance
  - Zoysiagrass: better for shade
  - Avoid high-water grasses like St. Augustine
- Get the foundation right: Proper soil prep + timely planting = deep roots, fewer weeds, less water use.
- Why it matters: Right choices now make maintenance easy. Wrong choices = constant struggle with weeds, drought, & high costs.

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TexasET Network	https://texaset.tamu.edu
Texas Water Development Board	https://www.twdb.texas.gov/mapping/
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Taylor County Extension	https://taylor.agrilife.org