



Advanced

Integrated Pest Management, Disease & Weed Control, and Long-Term Sustainability

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Recap

In Session 1, we examined Abilene's unique challenges: only about 24-25 inches of average annual rainfall, high evaporation rates driven by heat, wind, and full sun, occasional winter freezes (USDA zone 8a), and our dominant alkaline clay loam soils. We then selected the right warm-seasoned grasses proven for our semi-arid Rolling Plains conditions according to Texas A&M AgriLife Extension data:

- Bermudagrass - Top choice for durability, traffic, and full sun sites.
- Buffalograss - Best low-maintenance native option that thrives on minimal water and inputs.
- Zoysiagrass - solid secondary choice when moderate shade is present.

We strongly recommend avoiding new plantings of **St. Augustinegrass** because it demands more water and stresses easily here. However, we acknowledge that many older Abilene neighborhoods still have established St. Augustine lawns, and today's practices apply to those as well.

We also covered proper establishment - soil testing, and amendments, timing in late spring/early summer, planting methods (sod for speed or seed for savings), an initial watering/weeding - so roots developed deeply, and the turf can better handle our drought - prone climate.

In **Session 2**, we moved into ongoing cultural practices tailored to Abilene's water limitations (year-round 2-days-per-week restrictions: odd addresses on Thursday & Sunday, even on Tuesday & Saturday, with specific time windows). We discussed:

- **Mowing** at the correct height and frequency for each species (never removing more than 1/3 of the blade) to reduce stress and conserve moisture.
- **Irrigation** using a deep and infrequent schedule (0.5-1 inch total per week max, adjusted via TexasET for local evapotranspiration rates and rainfall), plus rain sensors and conservation techniques.
- **Fertilization and soil health**, driven by annual soil tests, with low-nitrogen programs especially for Buffalograss, timed to the active May-August growing season, and including aeration/thatch management to improve our clay soils.

A healthy lawn from correct species selection + sound cultural practices is your best defense against almost all problems we face in Abilene

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- When you plant the right grass for our low rainfall and high evaporation, establish it properly with deep roots, mow at the recommended heights, water deeply but infrequently within city rules, and fertilize based on soil tests at the right times, the turf stays dense and vigorous. Healthy turf naturally crowds out many weeds, resists insect and disease pressure, and recovers faster from stress.
 - Most pest, disease, and weed issues in our area are symptoms of underlying stress - drought, overwatering, poor mowing, nutrient imbalances, or compacted soil. By following the practices from the first two sessions, you prevent the majority of problems before they start. That's the core of Integrated Pest Management (IPM): cultural controls first, then biological and chemical options only when needed and at the lowest effective rate.
 - Today in Session 3, we'll build on that strong foundation. We'll learn how to diagnose common Abilene-specific issues (diseases like large patch or take-all root rot, insects such as chinch bugs or grubs, and persistent local weeds like khaki weed), apply prevention strategies, and use targeted, eco-friendly solutions when problems do appear. The goal is resilient, sustainable turf that requires minimal intervention while conserving water and protecting our environment.

Common Problems & Diagnosis

Diseases, Pest, and Weeds in Abilene Turf

Today we apply Integrated Pest Management (IPM): Start with prevention through the cultural practices you already know, monitor regularly, accurately diagnose, then use biological or targeted chemical controls only when thresholds are exceeded. Always emphasize eco-friendly methods and minimal chemical use to protect our water and environment.

Here are the most common Abilene-area issues, with diagnosis tips (based on Texas A&M AgriLife Extension resources from AggieTurf.tamu.edu and related publications).

Diseases

Diseases often appear during transition periods (cooler, wetter spring/fall) or when turf is stressed by drought, overwatering, poor drainage, or nutrient imbalance.

- Brown Patch / Large Patch (*Rhizoctonia solani*):

Common on St. Augustine (and sometimes Zoysia or Bermuda). Shows as circular or irregular patches of light brown, thinned, or blighted turf. Leaf blades may pull away easily with a slimy/wet rot at the base of the sheath. Favored by cool, wet periods (night temps below ~70°F), high humidity, and excessive leaf wetness or nitrogen.

Diagnosis tip: Patches often appear in fall or spring; roots usually remain healthy/white (unlike root rots). **Prevention:** Avoid overwatering and late-evening irrigation; mow when dry; maintain proper nitrogen levels.

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- Take-All Root Rot (*Gaeumannomyces graminis* var. *graminis*, also called bermudagrass decline on Bermuda):

A serious soil-borne fungal disease, especially problematic on St. Augustine (and sometimes Bermuda). Causes yellowish (chlorotic) foliage that turns brown/wilts, leading to thinning and irregular brown/dead patches (1-20+ feet). Roots become short, dark, brittle, or blackened; stolons pull up easily. Active in cooler soil temps (60-65°F) during fall/spring transitions, with symptoms worsening in summer heat.

Diagnosis tip: Check roots – they are rotted/attached but withered (vs. cleanly cut by grubs). Often mistaken for chinch bugs, large patch, or drought. **Prevention:** Improve drainage, avoid excessive nitrogen (especially urea), aerate, and maintain balanced fertility via soil tests. Topdressing with sphagnum peat moss or compost can help suppress it in some cases.

General disease prevention: Follow Session 2 practices strictly – deep/infrequent watering, proper mowing heights, and aeration reduce leaf wetness and improve soil health. Many fungal issues decline when cultural stress is removed.

Pests

Insects usually target stressed turf. Scout by parting the grass or using a soapy water flush (1-2 oz dish soap per gallon of water poured over 1 sq yd) to bring hidden pests to the surface.

- White Grubs (larvae of June beetles or masked chafers):

C-shaped, white/cream larvae with brown heads that feed on roots. Causes spongy turf, wilting, or brown patches that roll up like carpet (birds/skunks may dig for them). Affects all warm-season grasses, including Buffalograss and St. Augustine.

Diagnosis tip: Dig in affected areas – look for grubs in the top 2-4 inches of soil. Roots appear chewed off. Prevention:

Healthy, deep-rooted turf from good culture tolerates low populations; avoid overwatering/fertilizing.

- Chinch Bugs (especially Southern chinch bug):

Small (1/8-1/4 inch) black insects with white wings/crossed backs; nymphs are bright red/orange. They suck sap from crowns/stolons, injecting toxins that cause yellowing then dead patches (often starting in sunny, dry areas). Primary pest on St. Augustine; occasional on Bermuda or Zoysia.

Diagnosis tip: Look for bugs at the edge of yellow-to-brown patches or use soapy flush. Damage mimics drought or disease but grass doesn't green up with water. **Prevention:** Proper irrigation and mowing reduce stress; encourage natural predators like big-eyed bugs.

- Fire Ants (Red Imported Fire Ants):

Build visible mounds; sting people/pets and damage turf indirectly by tunneling. Present in all Texas turf.

Diagnosis tip: Distinct loose dirt mounds with no central hole. **Prevention:** Spot-treat mounds with baits (eco-friendly option) rather than broadcast insecticides.

- **General pest prevention:** Vigorous turf from Sessions 1-2 tolerates minor infestations. Monitor thresholds (e.g., 5-10 grubs per sq ft or visible chinch bug damage) before treating. Use targeted products labeled for your grass species.

Weeds

- Weeds thrive in thin or stressed turf. A dense, healthy lawn from proper selection/culture is the best prevention.
- Khakiweed (*Alternanthera pungens*):

A tough, prostrate perennial broadleaf weed and local Abilene/Taylor County issue. Forms mats with obovate leaves; spreads by seed and roots. Interferes with turf quality in our region.

Diagnosis tip: Low-growing, spiny/rough texture; persists in dry, compacted spots. **Prevention:** Maintain dense turf; use pre-emergents where labeled. **Post-emergent control** often requires specific herbicides (e.g., those with sulfentrazone or quinclorac – check labels for your grass and follow Extension guidelines).

- Crabgrass (*Digitaria* spp.):

Annual grassy weed with finger-like seedheads; germinates in warm soil and invades thin areas.

Diagnosis tip: Light green, coarse texture; spreads quickly in summer. **Prevention:** Proper pre-emergent timing (early spring before soil temps reach ~55-60°F) plus dense turf from correct mowing/fertilization.

- Sticker Burrs / Sandburs (*Cenchrus* spp.) in Buffalograss:

Painful, spiny annual grassy weeds that produce burs/stickers. Particularly problematic in Buffalograss if overwatered or in thin spots (Buffalograss is naturally competitive but can be invaded).

Diagnosis tip: Low-growing with sharp burs in seedheads. **Prevention:** Avoid excessive water/fertilizer on Buffalograss; use pre-emergents labeled for grassy weeds.

General weed prevention: Pre-emergents (applied at correct timing) + cultural practices keep most weeds out. Hand-pull or spot-treat when possible; choose herbicides safe for your species (e.g., avoid those that harm Buffalograss or St. Augustine).

Key IPM Message: Accurate diagnosis is critical - many issues look similar (e.g., take-all root rot vs. large patch vs. chinch bugs vs. drought). When in doubt, submit samples to the Taylor County AgriLife Extension office. Prioritize prevention: 80-90% of problems disappear with the foundation from Sessions 1-2. Use cultural > biological > chemical controls, and always follow label rates for eco-friendly, water-protecting results.

IPM Strategies

**Cultural Controls First, Monitoring Thresholds, Targeted Treatments,
and Organic Options Where Possible**

We've diagnosed the common problems in Abilene. Now we apply Integrated Pest Management (IPM), the research-based approach promoted by Texas A&M AgriLife Extension. IPM prioritizes prevention and non-chemical methods, using pesticides only as a last resort, at the lowest effective rate, and with minimal environmental impact.

IPM Hierarchy

- Always Start Here

- Cultural Controls
- Monitoring & Action Thresholds
- Targeted Treatments
- Organic & Eco-Friendly Options Where Possible

1. Cultural Controls First (Your Best and Cheapest Defense)

Revisit and strictly follow the practices from Session 2 - they directly reduce pest pressure in our semi-arid climate with high evaporation and alkaline clay soils:

- **Proper Mowing:** Maintain recommended heights (Bermudagrass 1-2", Buffalograss 2.5-3.5", Zoysiagrass 1-2", St. Augustine 2.5-4") and never remove more than 1/3 of the blade. This keeps turf dense, shades the soil (reducing weed germination and evaporation), and minimizes stress that invites chinch bugs or fungal diseases.
- **Deep and Infrequent Irrigation:** Stick to 0.5-1 inch total per week max (including rain), adjusted using the free TexasET Network (texaset.tamu.edu) for Abilene-specific ET rates. Water early morning on your allowed days only (odd addresses: Thu/Sun; even: Tue/Sat, midnight-10 a.m. or 6 p.m.-midnight). Avoid evening watering, which promotes brown/large patch and large patch by keeping foliage wet. Proper watering encourages deep roots that tolerate drought and resist grubs or take-all root rot.
- **Soil Health & Fertility:** Continue annual soil testing and low-to-moderate nitrogen timed to May-August growth. Over-fertilizing (especially on St. Augustine or stressed turf) fuels diseases like brown patch and encourages weeds. Aeration improves drainage and reduces compaction that favors root rots. These cultural steps alone solve 80-90% of problems by creating vigorous turf that naturally crowds out weeds and tolerates low-level pest pressure.

2. Monitoring & Action Thresholds

Scout your lawn weekly during growing season – walk the yard, part the grass, and check edges of any yellow/brown spots.

- Use the **soapy water flush** test (1-2 oz dish soap per gallon of water over 1 sq yd) to reveal hidden chinch bugs or other insects.
 - Dig small samples for grubs (threshold: typically 5-10 grubs per sq ft before treatment is warranted).
 - For weeds like khakiweed or crabgrass, note if they are spreading or just isolated.
 - For diseases, confirm symptoms (e.g., rotted roots for take-all vs. healthy roots but blighted leaves for large patch).
- Only act when the pest exceeds an economic or aesthetic threshold – not every insect or weed needs immediate control.
Healthy turf can tolerate some pressure.

3. Targeted Treatments (When Needed)

Choose the least toxic, most specific option labeled for your grass species and the pest. Spot-treat rather than broadcast whenever possible to protect beneficial insects and reduce runoff into our limited water supply.

- **Diseases** (brown/large patch, take-all root rot): Improve culture first. For persistent cases, apply labeled fungicides during favorable conditions (cool/wet for Rhizoctonia). Cultural fixes like better drainage and avoiding excess N often outperform chemicals long-term.
- **Insects** (chinch bugs, grubs, fire ants): Targeted insecticides (e.g., for chinch bugs on St. Augustine) or baits for fire ants. For grubs, products with beneficial nematodes (organic option) or specific insecticides applied when larvae are small and actively feeding.
- **Weeds** (khakiweed, crabgrass, sandburs): Pre-emergents timed correctly (early spring for crabgrass/sandburs) prevent germination. For existing khakiweed (a tough local perennial), use post-emergent herbicides containing combinations like metsulfuron (sequential applications ~4 weeks apart for best control) or products with 2,4-D, dicamba, etc. – always check labels for your grass (e.g., some harm Buffalograss). Hand-pulling or spot glyphosate on isolated plants works for small areas.
Calibrate your sprayer/spreader and follow all label directions, including waiting periods and water restrictions.

4. Organic & Eco-Friendly Options Where Possible

- **Biological controls:** Beneficial nematodes for grubs; encourage natural predators (big-eyed bugs for chinch bugs, birds for grubs).
- **Cultural/mechanical:** Hand-weeding, mulching bare spots, topdressing with compost or sphagnum peat moss (helps suppress take-all root rot).
- **Less-toxic products:** Horticultural oils, insecticidal soaps, or microbial insecticides when available and effective.
- **Grasscycling and proper soil amendments** build long-term resilience without chemicals.

In Abilene's dry climate, these methods align perfectly with water conservation – healthy turf needs fewer interventions overall.

Bottom line: IPM is not "no pesticides ever" – it's smart, prioritized management that starts with the strong cultural foundation from Sessions 1-2. By monitoring, using thresholds, and choosing targeted/organic options first, you maintain resilient turf, save money, protect our groundwater, and reduce environmental impact while staying compliant with Abilene's watering rules.

"With these IPM strategies in hand, let's wrap up with long-term sustainability practices, including xeriscape integration and resources to keep your lawn thriving for years."

Sustainability Wrap-Up

Let's look ahead to long-term sustainability - keeping your turf resilient for years while conserving water, reducing inputs, and fitting our semi-arid climate (low rainfall, high evaporation, alkaline clay loams). The goal is a beautiful, functional landscape that works *with* Abilene's conditions rather than fighting them.

Xeriscape Integration, Native Alternatives (Sideoats Grama for Low-Traffic Areas), and Long-Term Monitoring

Xeriscape Integration

- Practical Turf Reduction

Xeriscape (water-wise landscaping) does **not** mean "no grass." It means using turf only where it provides real value – play areas, high-traffic zones, or erosion control – and replacing the rest with lower-water plants, hardscapes, and mulches.

- **Principles for Abilene** (from Texas A&M AgriLife Extension xeriscape guides): Plan carefully, prepare soil, use practical turf areas only, choose appropriate drought-tolerant plants, irrigate efficiently (deep/infrequent + rain sensors), apply mulch, and maintain properly.
- **How to integrate:** Reduce lawn size by adding patios, walkways, shrub beds, or groundcovers. Keep turf in functional rectangles or zones that are easy to water uniformly. Transition edges gradually – for example, replace outer lawn areas with native perennials or ornamental grasses.
- **Water savings:** Many Abilene homeowners see 30-50%+ reductions in water use by shrinking high-maintenance turf and using efficient systems. This aligns perfectly with city restrictions and helps protect our limited water resources.

Start small: Pick one problem area (e.g., a hard-to-water corner or thin Buffalograss spot) and convert it this year.

Native Alternatives

- Sideoats Grama for Low-Traffic Areas

For areas with little to no foot traffic (slopes, medians, backyards, or ornamental zones), consider replacing or mixing in native grasses that need even less water and maintenance than Buffalograss.

- Sideoats Grama (*Bouteloua curtipendula*) – Texas' official State Grass – is an excellent native warm-season perennial for Abilene and the Rolling Plains. It grows 2-3 feet tall (shorter in spring), forms bunches or colonies, and features attractive purplish "oat-like" spikelets along one side of the stem that bleach tan in fall/winter.
 - **Why it fits Abilene:** Outstanding drought tolerance, adapts to our calcareous/alkaline clay loams, handles full sun and occasional freezes, and requires very low water/fertilizer once established. It provides good erosion control and supports wildlife (seeds for birds, forage for some animals).
 - **Best uses:** Low-traffic ornamental areas, xeriscape borders, or mixed with wildflowers. It mixes well in prairie-style plantings and stays relatively short early in the season.
 - **Establishment note:** Plant in late spring/early summer like other warm-season grasses; it's available as seed or plugs from native plant suppliers.
 - **Maintenance:** Mow occasionally (or leave unmowed for natural look); minimal inputs needed.

Other native options include blue grama or curly mesquite in very low-water designs, but sideoats grama is one of the most versatile and attractive for our region.

Combining turf with natives creates a layered, resilient landscape that looks good year-round and dramatically cuts water use.

Long-Term Monitoring and Adaptive Management

Sustainability requires ongoing observation – Abilene's weather varies widely (some years very dry, others with more rain), so your lawn needs occasional adjustments.

- What to monitor:
 - Turf density and color (early signs of thinning or stress).
 - Soil moisture and compaction (dig test or probe).
 - Pest/weed pressure (weekly scouting during growing season).
 - Irrigation system performance (check for leaks, adjust for ET via TexasET).
 - Overall water use and response to cultural practices.

- Annual checklist:

- Soil test every 1-2 years.
- Aerate as needed (late spring/early summer).
- Re-evaluate xeriscape plan - expand low-water zones over time.
- Adjust mowing/fertilization based on rainfall and grass performance.
- Document what works (e.g., "Buffalograss needed no irrigation this summer").

If problems persist despite good culture, consult the Taylor County AgriLife Extension office (taylor-tx@tamu.edu or 325-672-6048) for free diagnosis. They have local expertise on khakiweed and other Abilene-specific issues.

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Final Takeaway: By integrating xeriscape principles, incorporating natives like sideoats grama in low-traffic spots, and committing to simple long-term monitoring, your lawn becomes a sustainable, low-maintenance asset that conserves water, supports local ecology, and thrives in Abilene's challenging climate for decades. The foundation from Sessions 1-2 plus smart IPM gives you the tools - now it's about consistent, adaptive care.



Texas A&M Agrilife

<https://agrilife.tamu.edu>

TexasET Network

<https://texaset.tamu.edu>

EPA United States Environmental Protection Agency

<https://www.epa.gov/safepestcontrol/integrated-pest-management-ipm-principles>

Big Country Master Gardener

<https://bcmgtx.org>

Taylor County Extension

<https://taylor.agrilife.org>