



THE ACRES OF GREEN SUMMER LAWN DIAGNOSIS SYSTEM



Why a Beautiful Lawn Can Suddenly Struggle When the Heat Arrives

A Guide for Diagnosing & Eliminating the Causes of Summer Turf Stress

Cincinnati, Ohio • loveyourlawncincy.com

By Brian Calkins



Why a Pretty Lawn Can Suddenly Struggle When the Heat Arrives

When a lawn stops looking lush, green and crisp during the hottest part of summer, there usually is not one single cause.

Heat and drought act like a stress test. Weaknesses that were difficult to see during the cooler, rainy spring suddenly become obvious. The lawn may lose its deep-green color, turn bluish-gray, yellow or brown, feel crunchy, thin out or stop growing.

The goal is not to guess—or immediately assume your lawn needs more fertilizer or weed control. We need to work through the following diagnostic steps and identify what is limiting the lawn.

1

Determine Whether the Grass Is Dormant, Stressed or Dead

Before trying to correct anything, look closely at the symptoms.

Early drought and heat stress

The lawn may:

- Lose its bright-green color.
- Develop a bluish-gray or dull appearance.
- Stop springing back after being walked on.
- Show footprints or mower tracks for several minutes.
- Begin curling or folding its grass blades.
- Stop growing even though it is still upright.

This grass is usually alive, but it needs relief.

Advanced stress or dormancy

The grass may:

- Turn straw-colored or light brown.
- Feel dry or crunchy.
- Stop growing completely.
- Brown first along driveways, sidewalks, slopes and exposed areas.

Some cool-season grass can become dormant as a survival response. Brown does not always mean dead.

Possible dead turf

Look more closely when:



- The grass pulls away from the soil easily.
- Roots are missing, blackened or badly deteriorated.
- The crowns at the base of the plants are dry and brittle.
- The area remains brown several weeks after cooler weather and adequate moisture return.

Do not begin seeding immediately. First determine why the grass failed, or the replacement grass may fail for the same reason.



The stress spectrum: early stress, dormancy, and possible death each call for a different response.

2

Measure the Water—Do Not Measure the Minutes

In my experience, most homeowners do not know how much water their lawn receives through their irrigation system.

Asking, “How long do you water?” does not tell us how much water reaches the grass, soil and root zone.

Different sprinklers deliver dramatically different amounts in the same amount of time. Water pressure, sprinkler type, nozzle size, spacing, wind and overlap all affect the result.

The information we need

- How many inches of water does the lawn receive each week?
- How many days per week is it watered?
- Does every part of the lawn receive approximately the same amount?
- Is rainfall being included in the weekly total?
- Is the water soaking into the soil or running into the street?

A good starting target

During hot, dry weather, an established cool-season lawn commonly needs approximately 1 inch of total water per week, including rainfall.

A practical schedule is:



- Approximately ½ inch per watering
- About twice per week
- Watered deeply rather than lightly every day

Weekly Watering Target: ~1 Inch Total



Watering 1



Watering 2

Rainfall counts toward the weekly total • Water deeply, not daily

Actual needs will vary with temperature, wind, shade, soil type, grass species and rooting depth. Deep, less-frequent watering encourages roots to follow moisture farther into the soil. Frequent shallow watering keeps most of the moisture near the surface and can encourage shallow, vulnerable roots.

Perform a catch-cup irrigation test

Place several straight-sided containers throughout each sprinkler zone. Tuna cans or commercial [irrigation cups](https://tinyurl.com/Rain-Cups) work well. I like these from Amazon: <https://tinyurl.com/Rain-Cups>

Run the irrigation system for a measured period and then:

- Measure the water in every container.
- Add the measurements together.
- Divide by the number of containers.
- Calculate how long that zone needs to deliver approximately ½ inch.
- Compare the cups to identify dry or overly wet areas.

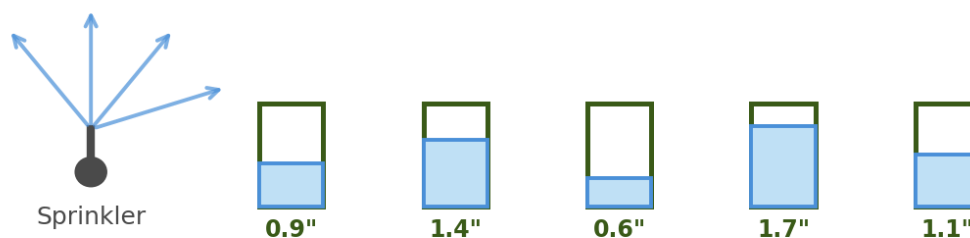
For example, if a zone delivers ¼ inch in 30 minutes, it will require approximately 60 minutes to apply ½ inch.

However, do not automatically run it for 60 uninterrupted minutes.



Catch-Cup Irrigation Test

Place cups across each zone → measure → average → identify dry spots



Use “cycle and soak” when necessary

This is a game changer for our clay soils in Cincinnati.

Slopes and compacted clay may not absorb water quickly enough. Instead of applying one long irrigation cycle, divide it into shorter cycles.

Example:

- Water for 20 minutes.
- Allow the water to soak in for 30–60 minutes.
- Repeat until the desired total has been applied.

This helps place water into the soil instead of down the driveway.

“Cycle and Soak” for Clay Soil



Short cycles let water absorb instead of running off slopes and compacted clay

Here's how I have my current “Cycle & Soak” set up.

Rather than watering each zone once for a long period, I divide the total watering time into **several shorter watering cycles**, giving the soil time to absorb the water between each cycle.



Monday Morning

- **4:00 AM** – First watering cycle begins
- **6:15 AM** – Second watering cycle begins
- **7:30 AM** – Third watering cycle begins
- **8:30 AM** – Final watering cycle begins

I irrigate approximately **20,000 square feet** using **12 separate sprinkler zones**. One complete pass through all 12 zones takes about **70 minutes**.

By the time each zone waters again, it has had **well over an hour to absorb the previous watering**, allowing moisture to move deeper into the soil instead of running down the driveway or sidewalk.

Every Zone Is Different

One of the biggest mistakes homeowners make is assuming every sprinkler zone should run for the same amount of time.

That's almost never true.

Each of my zones has been calibrated using the **Catch Cup Irrigation Test**, which measures **how many inches of water** each zone actually delivers—not simply how many minutes it runs.

Some zones apply more water than others because of differences in sprinkler type, nozzle size, pressure, or coverage.

I also adjust watering times based on the conditions in each part of the lawn.

For example:

- **South-facing slopes** receive more sun, dry out faster, and typically need more water.
- **Shady areas** lose moisture more slowly and often require less irrigation.
- Areas with **heavier clay soils** benefit from shorter watering cycles with more soaking time between cycles.

The goal isn't to water every zone equally.

The goal is to give every part of the lawn the amount of water it actually needs.

Best watering time

Water early in the morning whenever possible (4am – 9am). Morning irrigation generally reduces evaporation while allowing the grass blades to dry as the day progresses. Repeated light irrigation or unnecessary evening watering may leave foliage wet longer and contribute to disease pressure.



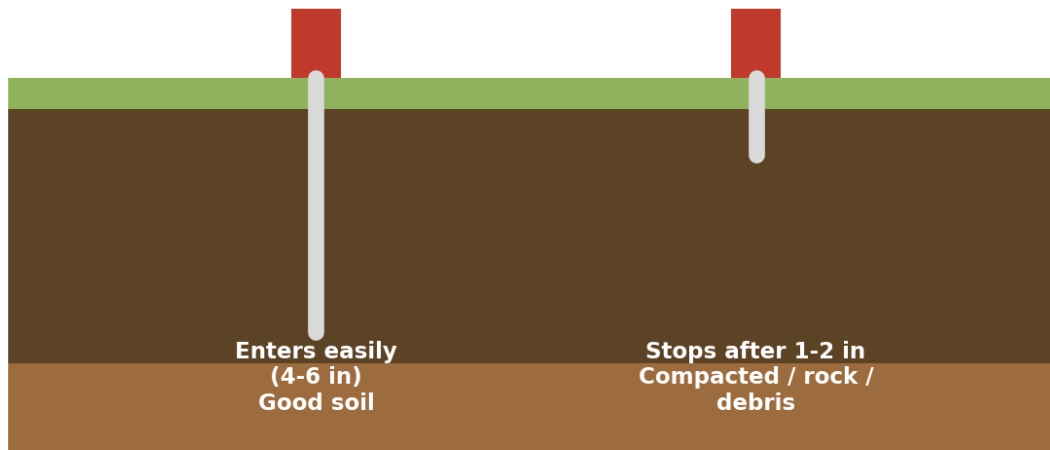
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Check the Soil Moisture With the Screwdriver Test

Push a long screwdriver into several locations on your lawn:

- A healthy-looking area
- A struggling area
- A slope
- Near pavement
- Under trees
- A low area

The Screwdriver Test



What the test tells us

If the screwdriver enters the soil easily to a depth of 4–6 inches, moisture is probably reaching the root zone and the soil is not severely compacted at that location.

If it stops after an inch or two, possible causes include:

- Dry soil
- Compacted clay
- Gravel or construction debris
- Shallow topsoil
- Rock
- Dense tree roots
- Buried building material

The screwdriver test is a very useful screening tool, yet it does not replace looking beneath the surface.

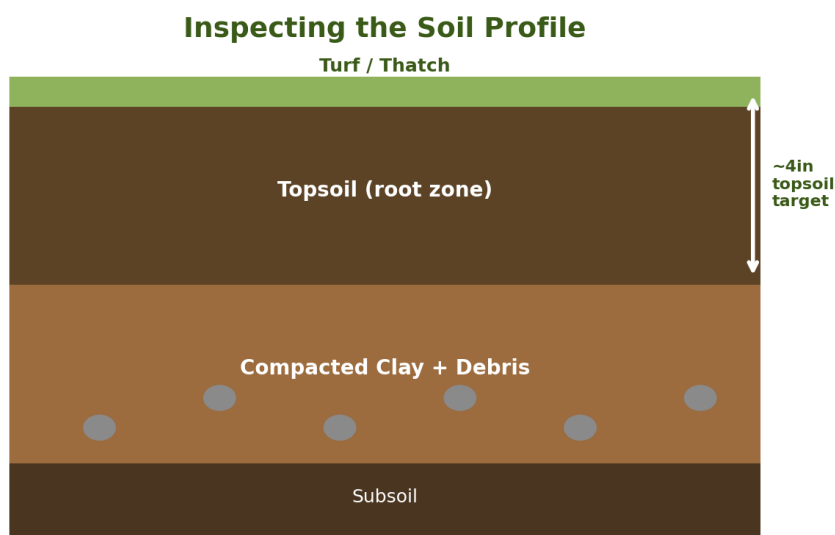


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Inspect the Actual Soil Profile

Cut and lift a small wedge of turf approximately 4–6 inches deep. Keep the roots and soil intact so the section can be replaced afterward.

We want to see approximately four inches or more of useful, root-supporting soil, with as few impediments as possible.



Evaluate:

- Depth of quality topsoil
- Rooting depth
- Soil moisture
- Clay layers
- Rock and gravel
- Buried debris
- Compaction
- Thatch
- Root color and density
- Evidence of insects
- Odor or black soil associated with poor drainage

Why new-build lawns often struggle

Many new homes have:

- Topsoil removed during construction
- Heavy subsoil compacted by equipment



- Thin topsoil spread over clay
- Buried stone, concrete, wood or other construction debris
- Drainage changes
- Turf installed before the soil is properly prepared

Grass may look acceptable in spring when rainfall is plentiful. During summer, the shallow soil profile cannot store enough moisture or support a sufficiently deep root system.

Fertilizer can improve nutrient availability, but fertilizer cannot replace missing soil.

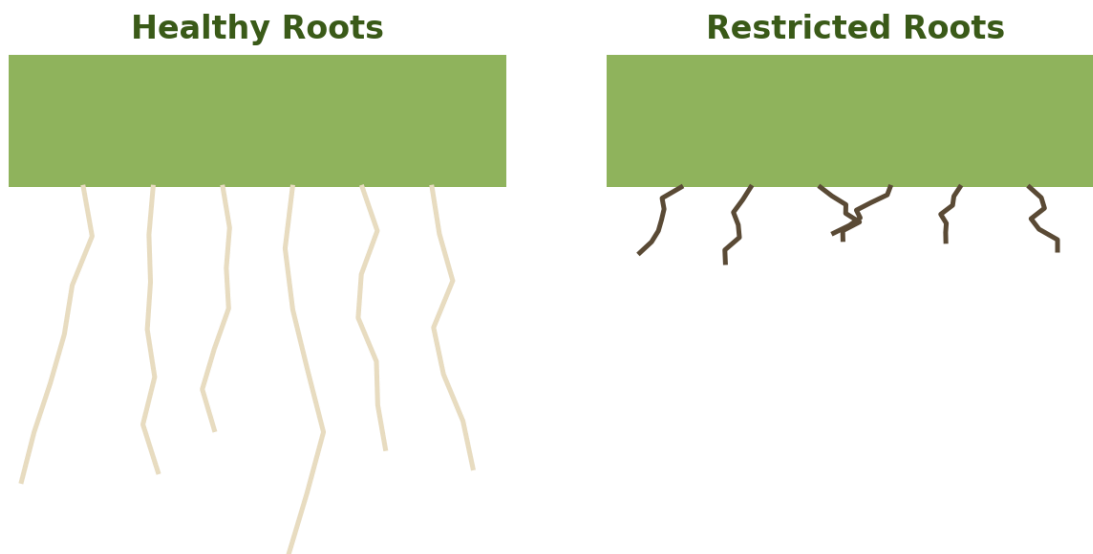
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Examine the Roots

Healthy grass needs a functioning root system—not simply green leaves.

Look for:

- Numerous light tan or white roots
- Roots extending several inches into the soil
- Soil that remains attached to the roots
- Firmly anchored turf



Warning signs include:

- Very shallow roots
- Sparse roots
- Dark, rotted or damaged roots
- Turf that lifts like loose carpet



- Roots stopping abruptly at a compacted layer
- Roots concentrated only in the upper inch of soil

Restricted roots may result from compaction, shallow soil, excessive thatch, poor drainage, disease, insects or repeated shallow watering.

6

Evaluate Mowing Practices

Mowing is one of the most common causes of avoidable summer injury.

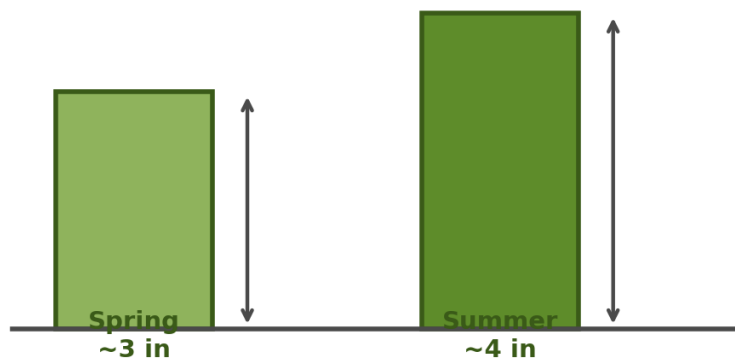
During regular summer heat

When daytime temperatures regularly rise above approximately 80–85°F:

- Raise the mower one or two settings.
- Maintain most Cincinnati-area cool-season lawns at approximately 4 inches.
- Never remove more than one-third of the grass blade in one mowing.
- Use sharp blades.
- Avoid mowing during the hottest part of the day.
- Use the lightest practical equipment for the lawn.
- Change mowing directions regularly.
- Avoid repeatedly turning heavy equipment in the same places (to avoid rutting).

Raise Mowing Height in Summer Heat

Taller grass = deeper roots + more drought tolerance



Raising the mowing height during summer helps the lawn tolerate heat and drying conditions. Cutting too low reduces leaf area, restricts root development and makes turf more vulnerable to drought, insects, disease and traffic.

Never mow heat- or drought-stressed grass

If the lawn is bluish-gray, holding footprints, curled, crunchy or no longer growing, do not mow it merely because mowing day has arrived.



Mower weight, tires, turning and cutting can injure dehydrated grass. Even visible mower tracks can become permanent damage under severe conditions. University turf guidance recommends postponing mowing and minimizing traffic on drought-stressed lawns until moisture returns.

The rule is simple:

If the lawn is not growing, it probably does not need to be cut.

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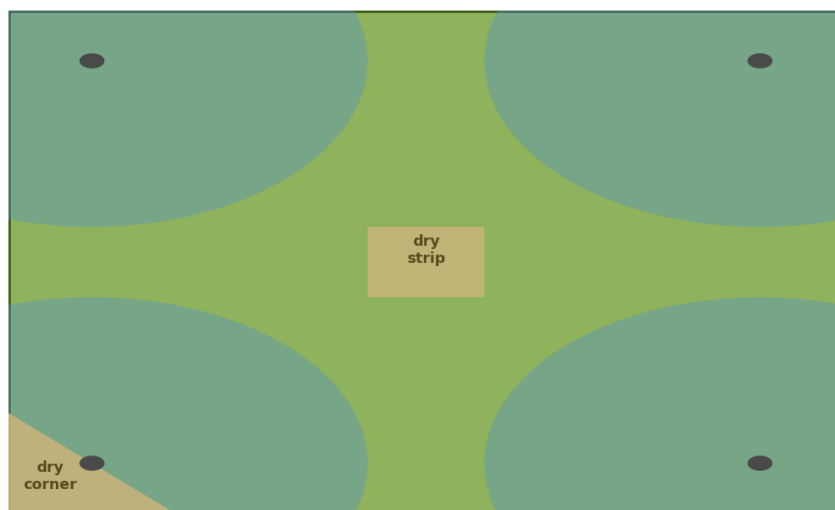
Look for Uneven Irrigation Coverage

A lawn may receive enough total water on paper while individual areas remain dry.

Common trouble spots include:

- Areas between sprinkler heads
- Corners
- Narrow strips
- Slopes
- Lawn beside pavement
- Areas blocked by shrubs or landscape plants
- Misaligned or sunken sprinkler heads
- Clogged nozzles
- Zones with poor water pressure
- Areas exposed to wind

Uneven Irrigation Coverage



The pattern provides clues. A repeating arc, straight line or geometric dry area often points toward irrigation coverage rather than disease.



8

Evaluate Compaction, Thatch and Drainage

Compaction

Compacted soil contains less pore space for water, oxygen and roots. Common causes include:

- Construction equipment
- Repeated mower traffic
- Children or pets
- Vehicles
- Regular turning in the same locations
- Working on wet soil
- Heavy clay

Core aeration can help with moderate surface compaction, but severe construction-related compaction or buried debris may require more extensive soil correction.

Thatch & Compaction Layers



Thatch

Thatch is the layer of undecomposed stems, roots and organic material between the green grass and soil.

A thin layer is normal. A thick layer can:

- Restrict water movement
- Keep roots near the surface
- Harbor insects
- Interfere with treatment movement
- Make turf feel spongy
- Increase scalping risk



Drainage

Too much water can resemble drought stress because saturated soil lacks adequate oxygen.

Look for:

- Water remaining long after rainfall
- Soft or muddy soil
- Algae or moss
- Blackened roots
- Sour odors
- Yellow grass in low areas
- Downspouts emptying onto the lawn
- Irrigation running despite recent rain

The goal is consistently moist, oxygenated soil—not soil that is constantly wet.

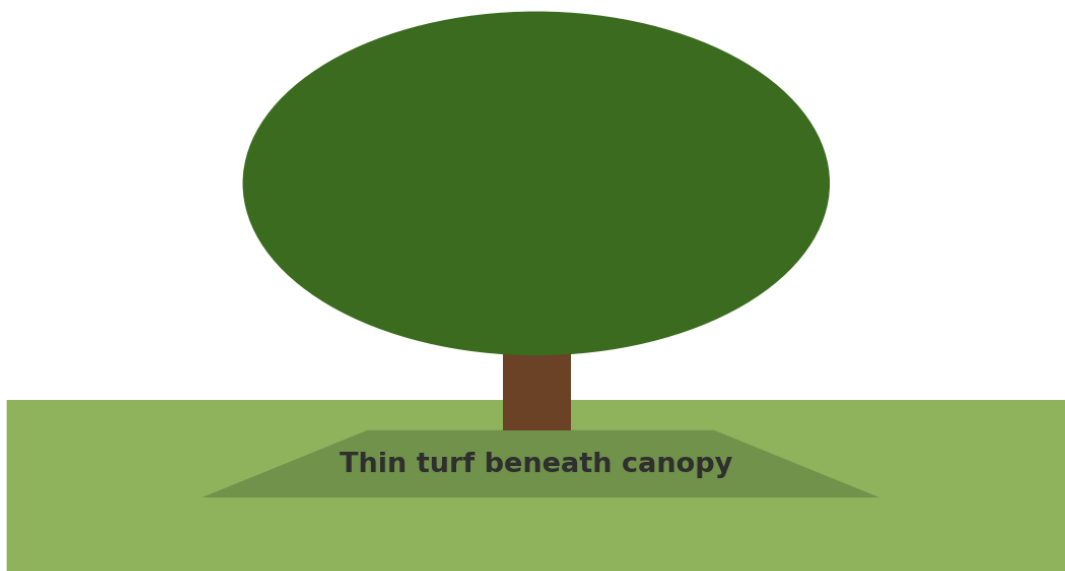
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Consider Shade and Tree-Root Competition

A lawn beneath mature trees competes with the trees for:

- Water
- Nutrients
- Rooting space
- Sunlight

Shade & Tree Root Competition



Shade also reduces photosynthesis and slows evaporation, creating a difficult combination: the surface can remain damp enough to favor disease while tree roots remove moisture deeper in the soil.

Check:

- How many hours of direct or filtered sunlight the area receives
- Whether the tree canopy has become denser over time
- Whether large surface roots are present
- Whether grass is thinning directly beneath the canopy
- Whether the grass species is appropriate for the light level

Some locations simply do not receive enough light to maintain dense turf. In those areas, selective pruning, shade-tolerant grass, reduced traffic or a different groundcover may be more realistic than repeatedly seeding the same failing grass.

Increasing shade and competition from growing trees are recognized causes of lawn decline and may eventually make renovation necessary.

10 Identify the Grass Species

Not every grass in the lawn responds to summer in the same way.

A lawn may contain:

- Turf-type tall fescue
- Kentucky bluegrass
- Perennial ryegrass
- Fine fescue
- Annual bluegrass
- Coarse pasture-type grasses
- Warm-season invasive grasses
- Several species mixed together

Tall fescue generally tolerates drought better because of its deeper root system. Kentucky bluegrass may become dormant sooner but can recover from underground rhizomes. Fine fescue may tolerate shade but can be damaged by summer traffic. Perennial ryegrass usually will decline quickly under severe stress.

A lawn with several grass species can develop an uneven patchwork appearance as each species reacts differently to heat.



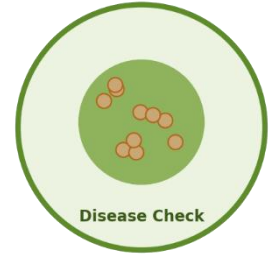
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Check for Disease

Heat alone does not always cause the damage. Warm temperatures, humidity, prolonged leaf wetness, weak roots, excessive nitrogen and certain irrigation practices can create disease-favorable conditions.

Look for:

- Circular or irregular patches
- Tan lesions on individual blades
- Dark borders around leaf lesions
- Web-like fungal growth early in the morning
- Orange dust on shoes or mower wheels
- Areas that continue spreading despite adequate soil moisture
- Grass that is wet for long periods overnight



Common summer problems may include brown patch, dollar spot, leaf spot and rust. Brown patch commonly affects tall fescue, while dollar spot often appears in Kentucky bluegrass and other cool-season turf.

Do not diagnose disease from color alone. Heat stress, drought, roots, insects, mower injury and chemical injury can look similar.

12

Check for Insects and Animal Damage

Inspect the boundary between healthy and damaged turf.

Look for:

- Turf that lifts easily
- Missing or chewed roots
- White grubs in the soil
- Small insects around the crowns
- Birds, raccoons or skunks digging for food
- Irregular straw-colored patches
- Small round dark-green areas surrounding dead centers from dog urine

Not every brown patch is an insect problem. An insect treatment should only be applied when the pest, timing and damage pattern support the diagnosis.



13

Review Recent Applications and Possible Chemical Injury

Ask what has been applied during the previous several weeks:

- Fertilizer
- Weed control
- Insect control
- Fungicide
- Ice-melt residue
- Cleaning chemicals
- Pool water
- Fuel or hydraulic fluid
- Pet products
- DIY mixtures

Possible warning patterns include:

- Straight application lines
- Overlap stripes
- Spills
- Injury beside driveways or patios
- Damage occurring shortly after treatment
- Injury concentrated where the lawn was already drought-stressed

Heavy nitrogen, herbicides and some other treatments can increase injury risk when turf is severely heat- or drought-stressed. Extension guidance advises avoiding some fertilizer and many weed-control applications on dormant or severely drought-stressed turf.

14

Evaluate Traffic and Mechanical Damage

Heat-stressed grass is less capable of recovering from physical pressure.

Consider:

- Repeated mower paths
- Zero-turn mower pivots
- Delivery vehicles
- Children's play areas
- Dog running paths



- Lawn equipment (especially the heavy commercial mowers)
- Portable pools
- Landscaping materials
- Furniture
- Construction work

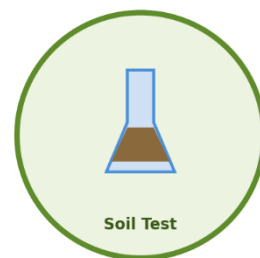
Damage caused by tires or foot traffic often follows a recognizable pattern. Minimize traffic until the grass is hydrated and actively growing again.

15 Order a Comprehensive Soil Test

A soil test should evaluate the soil—not merely suggest how to make the grass greener.

Important measurements include:

- Soil pH
- Buffer pH or lime requirement
- Phosphorus
- Potassium
- Calcium
- Magnesium
- Organic matter, when available
- Cation exchange capacity, when available
- Soluble salts when a salt issue is suspected



A laboratory soil test helps determine whether nutrient availability or pH is limiting performance. However, it will not reveal every physical problem. That is why the soil test must be combined with the screwdriver test and an examination of the soil profile.

A lawn may have adequate nutrients and still struggle because it has only two inches of soil over compacted clay and rock.

16 Decide What Can Be Corrected Now—and What Must Wait

Immediate summer corrections

Depending on the diagnosis:

- Provide adequate deep irrigation.
- Correct broken or poorly aligned sprinklers.
- Stop mowing stressed turf.



- Raise mowing height.
- Sharpen mower blades.
- Minimize people & pet traffic.
- Correct water runoff with cycle-and-soak irrigation.
- Pause unnecessary fertilizer or herbicide applications.
- Address confirmed insects or disease only when treatment is justified.

Corrections best performed in late summer or fall (August 15 – early October)

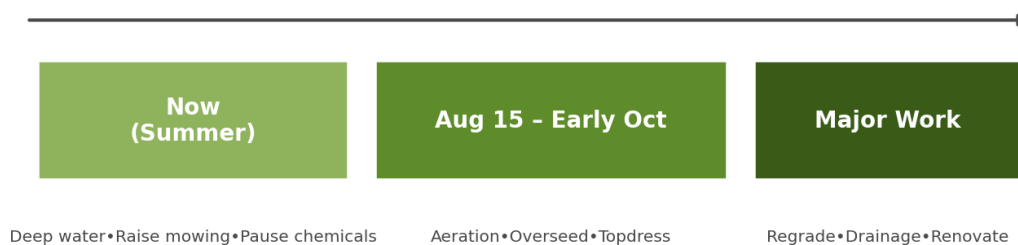
- Core aeration
- Overseeding
- Improving weak grass varieties
- Topdressing
- Adding organic matter
- Soil amendments based on testing
- Correcting moderate compaction
- Repairing thin or dead areas
- Improving drainage
- Removing shallow buried debris where practical

Major corrective work

Some lawns need more than an application or overseeding:

- Importing additional quality soil
- Removing construction debris
- Regrading
- Installing or repairing drainage
- Rebuilding highly compacted areas
- Renovating areas with unsuitable grass
- Converting areas with insufficient sunlight to beds or groundcover

Correction Timeline



The Summer Lawn Diagnostic Checklist

Before blaming the weather or reaching for another product, answer these questions:

Water

- ☐ How many inches of water is the lawn receiving each week?
- ☐ Has it been measured with catch cups?
- ☐ Is rainfall included?
- ☐ Is it watered deeply approximately twice per week?
- ☐ Is the coverage uniform?
- ☐ Is water soaking in or running off?

Mowing

- ☐ Is the grass being maintained near 4 inches during summer?
- ☐ Are the blades sharp?
- ☐ Is more than one-third of the blade being removed?
- ☐ Is the lawn being mowed while heat- or drought-stressed?
- ☐ Is heavy equipment repeatedly traveling over the same areas?

Soil and roots

- ☐ Can a screwdriver enter 4–6 inches?
- ☐ Is there at least approximately four inches of useful soil?
- ☐ Are clay, rocks or construction debris restricting roots?
- ☐ Are the roots deep, dense and healthy?
- ☐ Is the soil compacted?
- ☐ Is excessive thatch present?
- ☐ Is drainage adequate?

Environment

- ☐ Has shade increased?
- ☐ Are tree roots competing with the grass?
- ☐ Is the grass species suitable for the site?
- ☐ Are pavement, slopes or reflected heat increasing stress?

Damage



- ☐ Is there evidence of disease?
- ☐ Are insects present?
- ☐ Is there dog urine or animal activity?
- ☐ Has there been chemical, fertilizer or mower injury?
- ☐ Is traffic contributing to the problem?

Testing

- ☐ Has a recent laboratory soil test been completed?
- ☐ Are soil pH and nutrient levels appropriate?
- ☐ Are physical soil limitations also being evaluated?

The Bottom Line

A treatment program can provide excellent nutrition, weed prevention and pest protection, but it cannot completely overcome:

- Insufficient water
- Improper mowing
- Shallow or compacted soil
- Buried construction debris
- Poor drainage
- Severe shade
- Weak roots
- Inappropriate grass varieties
- Excessive traffic

Summer brings these limitations to the surface.

When we correctly identify and improve the underlying conditions, we give the lawn the soil, water, roots and growing environment it needs to remain healthier, greener and more resilient.

The objective is not simply to make a struggling lawn green for a few weeks.

The objective is to build a lawn that is capable of handling the next period of heat and drought more successfully. Let me know how I can help...

Your friend in lawn care,



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