

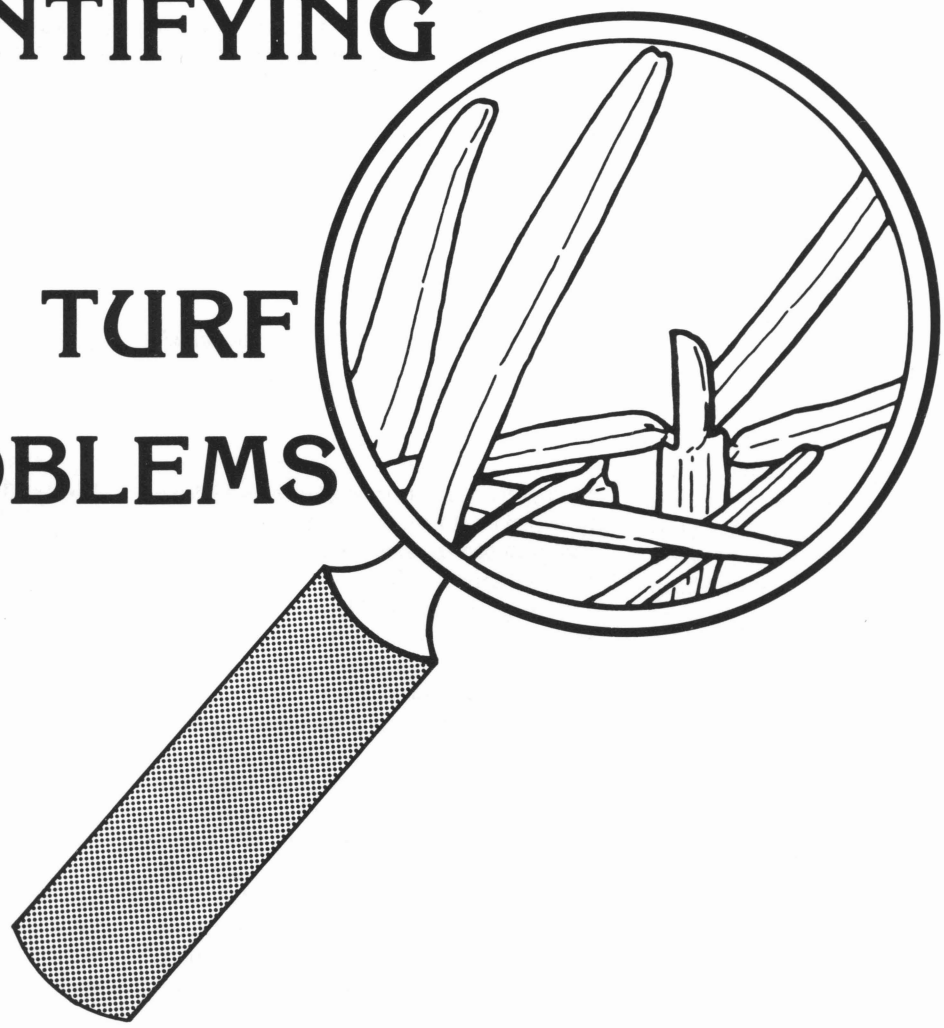
# Texas Agricultural Extension Service

*People Helping People*

## IDENTIFYING

## TURF

## PROBLEMS



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# Identifying Turf Problems

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Identifying turf problems requires expertise, experience and, sometimes, good detective work. An experienced turf manager might correctly identify a turf problem 60% of the time. The expert might correctly identify a problem 70 or 80% of the time. But neither will be correct 100% of the time. The problems and their interactions are often too numerous and complex to correctly identify.

Recognizing that a turf problem exists does not require much expertise, but correctly identifying the problem does. Often a turf manager inherits problems. At least, that is the rationale we use. Other problems result from environmental stresses such as shade, drought or extreme temperatures. Some problems are the result of turf pests. The most common problems, however, those we are least likely to identify, are the ones we create by intensive management.

Early recognition and identification of a problem is essential to the maintenance of fine turfs. Early symptoms of a turf problem rarely attract the attention of a non-professional. A subtle change in color or growth rate, wilting or foot-printing earlier in the day than normal, cottony growth on the grass in the early morning, birds or other animals actively feeding in the turf or a combination of these symptoms may be the tipoff to a serious turf problem. After the turf thins out or brown patches appear in the turf the opportunities for effective control are greatly reduced.

## Routine Observations

The turf manager must make regular inspections of his turf to establish a reference by which abnormalities can be readily recognized. For example, differences in soil conditions may cause the grass in one area to wilt sooner than in another area. Also, changes in the color or growth rate of a turf require frequent observation to detect. The height of the grass before mowing, the number of

baskets of clippings removed from a golf green or the frequency of mowing required all provide a reference to detect changes in growth rate. Color changes require even closer observations, but they can be an early warning to a serious turf problem. A subtle change in color may signal a nutrient deficiency, a disease occurrence or an insect infestation. A turf manager that is familiar with the normal color and growth rate of a particular turf is most likely to recognize these early symptoms of a problem.

## Accurate, Detailed Records

Keep a daily log in enough detail to show what, when, why and how with respect to management practices performed. Fertilization records can help explain changes in turf color or growth rate. Cultural practices such as mowing, watering, aeration, vertical mowing and topdressing should also be included in the daily records. Insect, disease and weed control treatments must be recorded along with the response obtained. The turf manager trying to identify a problem without these records is at a serious disadvantage. Often, by reviewing well kept records, some potential causes of the problem can be eliminated. For example, a recent application of nitrogen to a turf that appears chlorotic and stunted along with a soil test report that shows adequate levels of other nutrients suggests that nutrition is not the problem.

## Other Resource Information

In addition to the daily operations, keep soil test, water and plant analyses for several years for reference problems. In critical situations these analyses could provide helpful information.

Extension publications, conference proceedings, trade journal articles and turfgrass newsletters can provide valuable reference information. This printed information should be categorized and filed for reference purposes.

## Classifying Problems As To Origin

Turf problems should first be identified as to their nature—cultural (man-made), environmental or pest. Often two or more of these factors contribute to the problem. For example, a grass that has limited shade tolerance (environmental) should not be mowed too close (cultural). Likewise, a nitrogen deficiency (cultural) can be a contributing factor to an outbreak of dollar spot (pest), or shade (environmental) and over fertilization (cultural) can contribute to an occurrence of leaf spot (pest). When two or more factors contribute to the problem, all factors must be identified before the problem can be effectively corrected. The following descriptions and identification keys are separated into cultural, environmental and pest problems since more than one factor may contribute to the problem. Also, these keys should only be considered as guidelines to some common turf problems. You may want to add to these descriptions as your experience and knowledge grows in a particular area.

## Cultural Problems

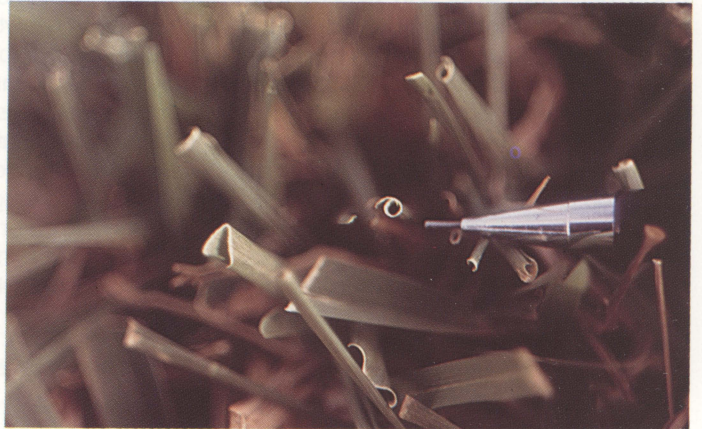
Problems that we create are often the most difficult to identify since we prefer to place the blame on other factors. However, when identifying a turf problem, cultural factors should be examined first. The following diagnostic key outlines one approach to identifying or ruling out cultural factors (mowing, watering, fertilizing or cultivating) that might contribute to a problem. Where environmental factors are not involved or where pests cannot be found, evaluate these factors carefully. To use the key, begin with Group I. If the description does not agree with the symptoms you observe, then move to Group II. Within each group, begin with A. If A does not fit, move to AA. If A fits, move to B, etc. until you identify a possible cause for the symptoms you observe.

Group I Grass affected in large irregular areas

- A Grass appears chlorotic, seedstalks abundant, growth rate noticeably slower than normal, no distinct boundaries or patterns to the affected area (except possible fertilizer distribution pattern), root system appears normal.....Nitrogen or Iron Deficiency (check soil analysis for other possible nutrient deficiencies)
- AA Grass *not* generally chlorotic
  - B Leaf tips frayed, grass not wilted, turf has a brown appearance several days after mowing, mowing patterns noticeable . . . **Mower Blade Dull or Not Properly Adjusted**
  - BB Leaf tips not frayed
  - C Grass wilted in localized spots, turf has a gray cast in wilted areas and turns brown where condition persists, leaves rolled.....
    - D Soil dry or compacted (site sloping) . . **Drought Stress, Soil Compaction or Hydrophobic Soil** (Common on sandy soils)
    - DD Soil moist.....
      - E Water stands in places after rainfall or irrigation, weak root system . . . **Wet Wilt, Poor Drainage**
      - EE Grass appears burned in spots or streaks, leaf blades are first to turn brown, occurs shortly after application of soluble fertilizer . . **Fertilizer Burn**
- CC Grass not wilted
  - D Turf has a brown appearance shortly after mowing, grass stems or crown exposed..... . . . **Grass Scalped, Excessive Thatch Accumulation**
  - DD Turf has healthy color, but appears to be thinning out, grass grows rapidly after mowing, grass is shallow-rooted . . **Too Much Nitrogen**



Dull mower blade.



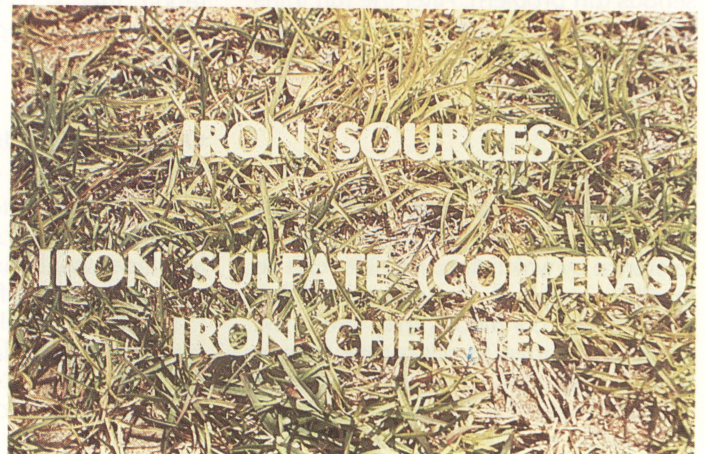
Rolled leaf blades indicate drought stress.



Leaf tip burn from excess nitrogen.

Group II Grass affected in distinct circular patches or streaks

- A Alternate streaks or patches of yellow and green grass **Poor Distribution of Fertilizer**
- AA Grass brown or dead in streaks or patches
- B Grass scalped, grass stems or crowns exposed . . . . . **Improper Mowing**
- BB Grass burned, or dead in areas
- C Tips of leaves burned . **Improper Application of Chemicals or Fertilizer Burn**
- CC Grass leaves rolled, bleached or brown grass in spots or streaks . . . **Gas, Oil, Hydraulic Fluid or Fertilizer Spill**



Iron chlorosis in centipede grass.

## Environmental Problems

Soil conditions (acidity, alkalinity, salinity, poor physical conditions, dry spots) drought, shade, winterkill, heat stress and combinations of these conditions can cause serious problems for turfgrasses. Characteristics such as stand deterioration, localized dry spots, chlorosis, desiccation, foot printing and scald may occur where environmental conditions are not favorable. Quite often the conditions that cause the problem are not apparent when the symptoms are observed and the turf manager must depend on records to accurately identify the problem. Drought stress, winterkill and scald are all caused by temporary environmental conditions that may not exist when the damage is most apparent. Experience, accurate records and careful observation of the symptoms are important to the proper identification of environmental problems. The following criteria may be used to classify problems caused by environmental conditions.



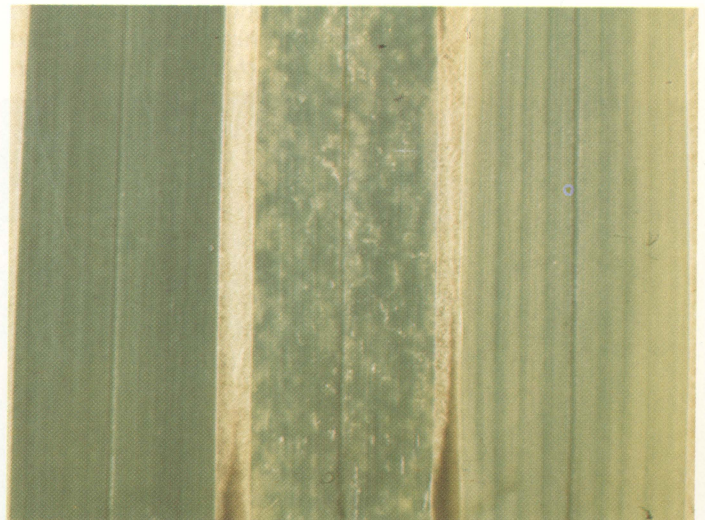
Thin, spindly shoots; weak root system suggest too much shade.

- Group I Grass affected (dead grass, wilt, chlorosis, thin turf) in widespread areas or over entire area
- A Area moderately to heavily shaded, grass leaves elongated, thin turf, weak root system. . . . . **Too Much Shade**
  - AA Area in full sunlight
    - B Grass wilted ("foot printing" apparent), leaves rolled, leaves have a gray or blue-green coloration; soil dry . . . . . **Drought**
    - BB Grass brown, desiccated, did not recover from winter . . . . . **Winterkill**
    - BBB Grass chlorotic, leaf tips and margins may have tan spots or bands, smog or industrial pollution apparent . . . . **Air Pollution**



Winter injury to closely mowed putting green turf.

- Group II Grass affected in localized areas
- A Grass has a gray or blue-green coloration; grass turns brown where condition persists
    - B Grass leaves rolled and wilted, soil dry... **Buried Debris or Poor Soil Physical Conditions**
    - BB Grass leaved burned or scorched, high temperatures, water standing . **Scald**
  - AA Grass chlorotic, stunted
    - B Young leaves yellow between veins, old leaves green, alkaline soil . . . . . **Iron Chlorosis**
    - BB Grass leaves wilted, white crust on soil surface, soil moist . . . . **Salt Accumulation**
    - BBB Grass appears scuffed or bruised, traffic pattern apparent . . . . . **Turfgrass Wear**



Healthy St. Augustine leaf on left, St. Augustine Decline infected leaf in center, iron chlorosis on right.

## Pest Problems

Too often we identify only one factor contributing to a turfgrass problem, when, in fact, several factors contribute to the problem. For example, many pest problems are a result of environmental conditions and cultural practices. In fact, pest related problems such as annual bluegrass, dollar spot and, perhaps, chinch bugs, may be controlled most effectively by changing the cultural practices that contributed to the problem. Pest management programs must consist of more than the shotgun application of pesticides to turf. Accurate

identification of factors contributing to the problem and timely applications of pesticides is a better alternative.

Identification of weeds as to their scientific name is not required, but the turf manager must have the ability to classify a weed as to its nature. For example, he must distinguish between broadleaf and grassy weeds, between cool season and warm season weeds and between annual and perennial weeds. These broad classifications for weeds allow the turf manager to select a class of herbicides that will provide effective control.

On the other hand, insect and disease

problems require accurate identification to obtain effective and safe control. In addition to the symptoms expressed by the grass, environmental conditions, grass species and previous cultural practices should be considered when identifying pest-related problems. Turfgrass diseases are particularly difficult to identify. Often environmental conditions modify the visual symptoms so that it is difficult to identify the disease. Also, after the grass has been killed it becomes increasingly difficult to identify the cause. In many cases, microscopic examination by experts is required to accurately diagnose a turfgrass disease problem.

### A Key to the Identification of Common Turfgrass Diseases

#### Group 1 Grass affected in distinct patches

- A Individual patches 2 to 3 inches in diameter
  - B Diseased spots are light tan or straw colored, light tan lesions may be found near the tip of the grass blade; fine, cobwebby, mycelial growth can be seen covering the spots in the early morning when dew is present. **Dollar Spot**

- BB Diseased grass blades are usually covered with copper-colored fungal, a white cloth rubbed over these areas will show a characteristic copper color . . . . . **Copper Spot**

- AA Individual patches usually larger than 2 to 3 inches in diameter. Leaf lesions not present
  - B Dark green "halo" of half-moon shaped ring, mushrooms present in circular pattern outside of dark green ring . . . **Fairy Ring**

- BB Dark green "halo" or mushrooms not present in circular pattern.

1. Grass blades matted together in affected area; greasy, water-soaked appearance, fading to a light tan as grass blades dry and shrivel; cottony appearance in early morning hours; blighted areas may merge to form large irregular areas or long streaks . . **Pythium Blight**

2. Outer edge of circular patch is yellowish brown in color giving it a "smoke-ring" appearance, grass blades in this "smoke-ring" can be easily pulled from the stem or crown . . **Brown Patch**

3. Circular, doughnut-shaped patches of chlorotic, tan or straw colored grass; patches no more than 3 feet in diameter with green grass in the center producing the "frog eye" pattern; chiefly on cool season grasses . . **Fusarium Blight**

4. Circular patches of grass appear brown in early spring, grass does not recover from winter dorman-



Dollarspot in bermudagrass turf.



Brownpatch in St. Augustinegrass.



Spring dead spot in Bermudagrass turf.

cy (bermudagrass only) . . . . .  
**Spring Dead Spot**

Group II

Grass not affected in distinct patches

A Spots distinct on leaf blades

1. Orange or red bumps on leaf surface, rust-colored spores readily rub off the leaf surface.....

**Rust**

2. Leaf blades show chlorotic mottling (St. Augustinegrass only)....

**St. Augustine Decline**

3. Oval-shaped spots with tan or gray colored center and brown margin surrounded by chlorotic tissue, spots apparent on leaves and stems . . . **Gray Leaf Spots**

4. Small elongated spots with dark brown or purple margins, spots increase in size and the centers fade to a brown or straw color, where leaf spots are numerous leaves may be completely killed, spots apparent on leaves and stem . . . . . **Helminthosporium Leaf Spot**

5. Small superficial patches of white to light gray dusty fungus growth on leaves, lower leaves often completely covered, leaf tissue under the mildew becomes yellow and fades to brown, heavily infected leaves gradually dry up and die . . . **Powdery mildew**

AA Spots not distinct on leaf blades

1. Affected areas appear yellow, thin and generally unhealthy; grass roots appear normal . . . .

**Fading Out, Summer Brown-patch (on Centipedegrass . . . . Centipede Decline)**

2. Affected areas appear yellow, thin, not responsive to treatment, grass roots stunted, swollen, or blackened . . . . . **Nematodes**

3. Affected areas covered with gray or black powdery mass of spores . . . . . **Slime Mold**



St. Augustine Decline symptoms.



Helminthosporium leaf spot on Bermudagrass.

Group III Turf areas with green crust or mat . . . . .  
**Moss or Algae**

A Key to the Identification of Common Turf Insect Problems

Group I Insects that feed on foliage

A Grass appears cut off or chewed

B Damage appears in small circular spots about the size of a quarter, foliage is cut off at the soil level, worms not apparent

1. Cobweb-like growth can be seen covering the spot in early morning, dew, small tunnel or burrow in the center of the damaged spot . . . . . **Sod Webworms**



White grubs in Bluegrass turf.

- 2. Cobweb-like growth not apparent  
..... **Cutworms**
- BB Damage appears in large patches,  
grass blades have a white, skeletonized  
appearance, worms apparent on foliage  
..... **Armyworms**
- AA Grass appears chlorotic and wilted as though  
suffering drought or nutrient deficiency
  - 1. Chlorotic areas rapidly turn into  
brown, dead areas, close obser-  
vation of the turf at the soil level  
shows small, black insects (a-  
bout 1/6 inch long) with white  
patches on their wings which  
fold over the back .....  
**Chinch Bugs**
  - 2. Small yellow spots turn brown  
and die rapidly, the grass stem  
is partially or completely severed  
near the soil level, primarily a  
problem on annual bluegrass ..  
**Hyperodes Weevil**
  - 3. Grass declines slowly, close  
observation of the turf shows  
small round insects with a white,  
cottony covering found at the  
base of the leaf between the leaf  
sheath and the stem .. **Rhodes-  
grass Scale**
  - 4. Grass declines slowly, turf thins  
out, damaged turf shows a stunt-  
ed growth pattern—very short  
internodes and short leaves  
giving the grass a tufted appear-  
ance .... **Bermudagrass Mites**

Group II Insects that feed on grass roots

- A Turf appears wilted and chlorotic in irregular  
patches
- BB Patches of grass can be easily lifted by  
hand
  - 1. Fleshy, white grub about 1 to 2  
inches long usually in a curled  
position can be found in the top 2  
inches of soil ..... **White Grub**
  - 2. Mature grub are less than 1 inch  
in length and do not have legs,  
grass is easily pulled up and stem  
bases are hollowed, bluegrass is  
mainly affected ..... **Billbug**
- BB The grass cannot be easily lifted, small  
globular insects about 1/8 inch in  
diameter that resemble a pearl are  
attached to the roots . **Ground Pearl**
- AA Turf is uprooted by small tunnels or burrows  
along the soil surface, causing the soil to dry  
and the grass to wilt ..... **Mole Crickets**

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