

How to Diagnose Turfgrass Problems

PART ONE

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LAWN PROBLEMS, resulting from insect damage, fungus disease, and drought, are a common occurrence in the South. These problems are due largely to the long growing season, the ideal climate for disease and insect reproduction, the uneven rainfall distribution, and the poor moisture retention of most soils. Many lawns have built-in problems caused by poor soil structure, buried debris, grass of poor quality, or variety of grass not suited to the area. Improper maintenance practices are also one of the largest contributors to lawn troubles.

Solving lawn problems is one of the most important phases of lawn management. Early and accurate diagnosis is essential if the problem is to be corrected before it becomes too serious. Common lawn problems, such as drought, improper mowing, and insect damage are relatively easy to diagnose and correct. The more difficult problems, which usually involve a combination of factors, normally require analysis by someone with a good technical background and much

practical experience. The commercial applicator can do a good job of diagnosing and solving lawn problems, provided he considers all the facts before making his conclusion. The following factors are essential for proper diagnosis:

1. Complete maintenance records and history of lawn.
2. Awareness of periods when insects and diseases are prevalent.
3. Frequent, careful observations.
4. Knowledge of common symptoms.
5. Conclusion through process of elimination.

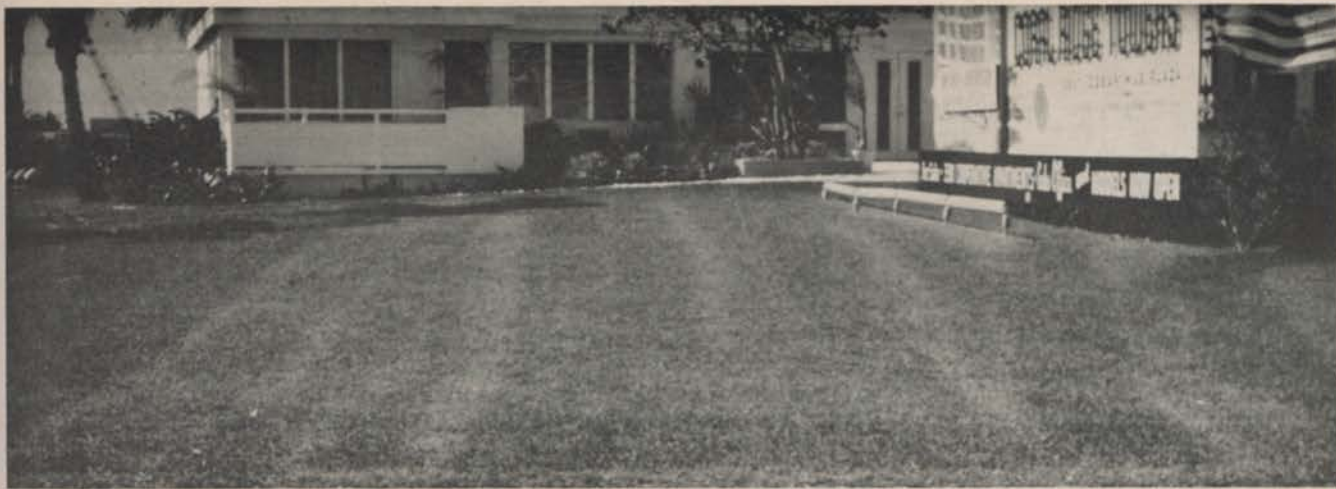
Complete Maintenance Records and History of Lawn

Maintenance records should include the date, rate, and kind of fertilizer applied; the mowing frequency and height of cut; the

irrigation frequency and amount of water applied during each watering; and the kind and rate of different pesticides that were applied. A record sheet on which to jot down this information keeps these important facts from slipping from the memory.

History of the lawn should give information about when and how it was established, including any special preparation that was done. If certain areas of the lawn have been known to be trouble spots, year in and year out, it is well to note these locations, also. Such information as when, where, and how spots occurred is important as it often relates to insect and disease pests. Disease is known to occur in the same area of the lawn, year after year, and usually has the same type of pattern. Insects, on the other hand, often occur in different locations from one year to the next.

While author White has used his native Florida as the basis for most of his observations in this article, the techniques he enumerates for diagnosing turfgrass ailments will be invaluable to turf managers from Maine to California. Photographs are by the author, from slides he uses to illustrate his frequent lectures before turfgrass enthusiasts and professionals. This is a two-part article; conclusion will appear next month. Ed.



Skilled detection of turf ailments takes training. Above are streaks caused by improper fertilizing of st. augustinegrass. Below, improper mowing (scalping) of bermudagrass. These symptoms, Mr. White says, are caused by not mowing often enough and by using a rotary-type mower.

Quick diagnosis is possible when certain insects or diseases are known to be prevalent. For example, in south Florida, worm infestations usually begin about the middle of May and last throughout November. On the other hand, chinch bugs are more prevalent from February until October. Brown patch fungus is worse during the late fall and early spring. Therefore, if brown spots occur in the lawn in early January, there is a good possibility that it would be fungus and not chinch bugs or worms, even though the symptoms may look similar.

Frequent, Careful Observations

Frequent, careful observations of the entire lawn will reveal many problems in the early stages, thus allowing for prompt corrective measures. Make mental notes about the color of the grass, the amount of shade and wear, the overall condition of the grass, the presence of any species of weeds, or signs of mismanagement practice, such as improper mowing. Note whether there are brown spots present and if so, if they form any type of pattern or streak, or if there is a general thinning of the grass, because each pattern can usually be related to a cause.

Knowledge of Common Symptoms

Any type of *patch* may indicate the presence of insects or

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disease. *Streaks* can be caused by careless application of chemicals, a dripping gas tank on the mower, or improper mowing. A *general decline* of the grass may be due to a shade condition, rhodesgrass scale, an excess of traffic, children's play, or a soil problem. Closely examine any unusual spots to determine if the grass is chewed, dead, wilted, or a yellowish-brown color. The best place to inspect is at the edge of a brown spot. If insects are present, they usually can be found in this area and a fungus disease is generally most active on the circumference of a patch. If nothing is found at the edge of a patch, try pulling up some of the grass that is left in the circle. If it is easy to pull out, with roots attached, there may be pests working on the roots. If nothing is found above ground, then use a shovel or a soil tube to look beneath the soil, sampling both good and bad areas for comparison.

Conclusion Through Process of Elimination

Consider all factors and arrive at the conclusion through the process of elimination. It should be pointed out that the symptom does not always indicate the cause. For example, the symptom may be a dry spot. Although water would correct this condition, the cause may be due to



Chemical burns on this zoysia lawn in south Florida was caused by faulty equipment.

subsurface insects, compaction, layering, nematodes or numerous other conditions that affect root growth. A lawn may become subject to two or three problems at the same time. As an example, a lawn may have chinch bugs, weeds, and need fertilizing. Should this be the case, first control the chinch bugs to keep the damage from becoming too severe. Next, fertilize the lawn to bring the grass into a healthy condition, and then apply a weedkiller.

Mismanagement Symptoms

Improper mowing. Mowing with dull blades, at the improper height, or too fast, causes serious lawn damage. A dull reel or rotary mower chews off the leaf

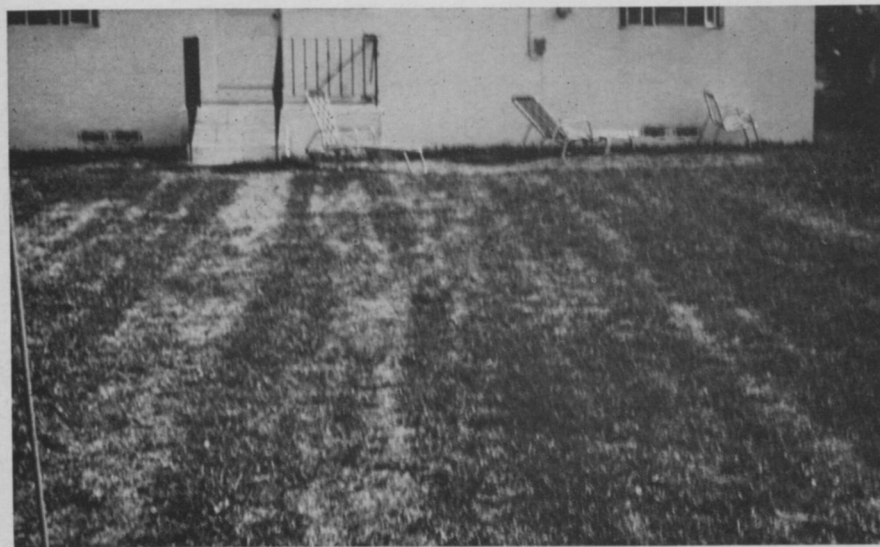
blades, leaving the tips split and giving the lawn a grayish-brown cast. A mower set too low scalps the lawn. Mowing too fast gives the lawn a ripple effect. Mower damage is increased if the grass is in a wilted condition at the time of mowing.

Improper watering. Frequent application of too much water usually results in a soggy soil under thin, yellowish grass. This condition does not allow the soil to drain properly and can result also in increased fungus activity, a shallow root system, and loss of grass by scalding. Light, frequent waterings induce a shallow root system and often cause weeds such as pennywort, dichondra, and watersedge to appear. Wilted grass, or localized dry spots, indicate insufficient watering caused by not applying water often enough to replenish the soil reservoir or by insufficient distribution of the sprinklers.

Improper fertilizing. When fertilizer is applied by hand or with a faulty, dirty, or improperly calibrated spreader, grass injury can result. Careless application results in misses and overlaps. Injury can show up as dead spots, streaks, or general damage throughout the lawn. Areas that have been missed become apparent within a few days following the application. Footprints and wheel marks often show up if the grass was wet when the fertilizer was applied.

Thatch and mat accumulation. A spongy lawn, especially if it's only one or two years old, indicates improper watering, fertilizing, and mowing procedures. Thatched or matted lawns are ideal habitats for insects and diseases and make control of these pests difficult. A spongy lawn is more susceptible to cold damage. Also, dry spots develop in thatched lawns because the water has difficulty moving into the soil.

Presence of weeds. Any management practice that reduces the vigor of the grass can pave the way for weed infestation. The presence of certain weeds often indicates corresponding problems. For example, ground



Irregular striations in this st. augustinegrass lawn were caused by 2,4-D improperly applied.

ivy (creeping charlie) or sandspurs frequently denote a need for fertilizer. Pennywort, dichondra, and watersedge show improper watering and poor drainage. Presence of spurge often suggests a nematode or compaction problem.

Improper chemical application. Chemical burns may be generally in a streaked or spotted pattern, and affect the soil as well as the grass. These burns usually are the result of improper calibration, careless application, or poor maintenance of equipment. Almost all pesticides used for the control of insects, diseases, and weeds can cause damage if directions for application are not followed. Careless application results in skips, misses, or overlapping. Burns also result from clogged nozzles and dirty or faulty equipment.

Common causes of chemical burns are: *gasoline* (filling a mower on the grass, or a leaking carburetor or gas line); *oil* (overfilled air-cleaner or adding oil while the mower is sitting on the lawn); and *grease* (excessive grease on fittings).

Common weed chemical damage. High rates of 2,4-D cause grass runners to become looped, the tips curl upwards, and the leaves become brittle. In severe cases there is a brown ring at each joint and the roots are usually dead. Improper rates of Simazine or Atrazine cause the grass to become yellowish with some leaves and stems dead. On st. augustinegrass, the healthy grass usually becomes susceptible to gray leaf-spot fungus.

Incompatibility. Some insecticides, fungicides, weed chemicals, and liquid fertilizers are not compatible when applied together. As an example, fungicide containing mercury when applied with liquid fertilizer often will burn the grass. Carefully read the entire label before applying any chemical.

Miscellaneous Symptoms

Excessive traffic. Uneven distribution of traffic in children's play areas, around clothes lines, dog runs, or automobile parking areas causes the grass to become damaged in patterns asso-

ciated with the cause. The symptom of excessive traffic is worn or ragged grass with loss of color. As the condition becomes worse, most of the grass is killed.

Grass not adapted to area. A general thinning of the grass, weak plants, or worn areas may result when the grass selected was not adapted to the area, or when the maintenance level is not adequate for optimum growth.

Dog damage. Brown spots which resemble disease damage are often caused by dog urine or feces. The grass in these spots often has a speckled appearance,



This drought damage to zoysiagrass was caused by nematode and mole cricket damage to roots. Areas protected from sun survived.

but also may be brown, bleached, or dead.

Salt damage. Usually occurs on grass where salt spray or water washes onto the lawn, such as on the ocean, gulf, or waterways. If the lawns are not watered with fresh water, the salt tends to accumulate, causing tip burns on the leaves of grasses that are more tolerant. On grasses not tolerant of salt, the grass declines and eventually dies. This same condition may occur when fertilizer is applied and a small amount of water added following the application. The tip burn usually shows up in two to three days. Water from swimming pools can cause grass to have a purplish-brown, streaked appearance if allowed to drain on lawns.

Shade. All lawngrasses in Florida need some sunlight. Heavy shade from buildings or trees cause the grass to become weak and thin and the stems and leaves tend to elongate.

Plant roots. Roots of many trees and bushes compete with grasses for water and fertilizer. The grass in areas where there is root competition usually is thin and does not hold its color or may wilt before other areas of the lawn.

Cold damage. When grass has been maintained under a low fertility level, the blades and stems turn a reddish purple with slight cold damage.

Frost damage. First symptom of frost damage is greasy-looking grass. Later the leaves turn a bleached brown. Frost damage is most likely to occur in areas of the lawn that are exposed, with dry soil, or thatched lawn.

Drought damage. Almost all lawns are subject to drought conditions at some time or other. This results from high temperatures and uneven rainfall distribution. Poor moisture retention is a cause in most Florida soils. Many times the same area of the lawn will wilt first. At first, the leaves roll up. If the condition continues, the grass turns brown or a straw color, and may die.

This is the first of two articles. Next month, author White will take up soil problems, nutritional symptoms, insects and diseases.—Ed.

Kansans Should Order Trees Now for Spring Planting

Orders for trees, shrubs, and stratified nuts to be planted this spring are being taken at county extension and soil conservation district offices throughout the state, Harold Gallaher, Extension Forester at Kansas State University, Manhattan, announced recently.

Interest in the Kansas tree distribution program has grown with each succeeding year. In the last 8 years, 8½ million trees, shrubs, and stratified nuts have been distributed in this program.