INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES
UNIVERSITY OF FLORIDA

FLORIDA COOPERATIVE EXTENSION SERVICE

GOLF TURF NEWS

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THE IMPORTANCE OF TURF AERIFICATION

A number of mechanical, cultural practices are commonly used in turfgrass management to help develop and sustain quality turf. These practices physically alter the plant's environment by removing and/or relocating soil and organic materials. Coring, slicing, spiking, and vertical mowing are different methods that are used and they vary in the degree of cultivation.

Coring or aerifying is the most intensive form of cultivation. Coring uses hollow tines that remove turf, thatch, and soil in cores of 0.25 to 0.75 inches in diameter and up to 3 inches long. There are a number of commercially available coring machines.

The main function of aerifying is to open up the soil and thatch layers and allow oxygen in and carbon dioxide out of the root zone. Roots and soil micro-organisms use oxygen for respiration and other metabolic processes, and release carbon dioxide. Water and nutrient uptake depend on the soil haivng adequate amounts of oxygen so that roots can function properly. If the oxygen is used up in the soil, absorption by roots ceases.

Aerification provides many benefits to turf: root and shoot growth are stimulated around the holes, and poor root systems can be quicky improved if diseases and nematodes are not a problem. Dense roots are often observed in aerifier holes.

Cultivation by coring helps alleviate many physical problems that cause poor aeration, such as soil compaction, layering, and thatch. Wetting of dry soils can also be improved by coring.

Aerifying can be accomplished at any time the grass is actively growing. This is normally April through September in Florida. A time should be chosen when the grass is not under stresses from the environment or pests. If a nematode infestation exists, it should be corrected before aerifying. This will help promote rapid and extensive root growth after coring.

Frequency for aerification depends on the quality and use of turf. Normally coring is done in spring and fall in Florida, but if problems such as compaction, layering, excesive dry spots exist, coring may be done once per month during the growing season. No one has ever had problems with over-aerification, except budgetary.

Size of the tines used depends on the reason for aerifying, the area being aerified, and the piece of equipment being used. Large tractor drawn units which take large cores (0.75 inches in diameter) are used on tees and fairways. On greens, several sizes of cores can be taken. Small (0.25 inch diameter) tines are used for routine aerification. Large).625 inch diameter) tines are used to correct major compaction and layering problems.

The cores should be removed from greens if there is any contamination problem. However, cores can be matted back into the green if no problems exist. This will provide a light top-dressing. Cores are best disposed by matting on fairways and other playing surfaces.

The importance of aerification in Florida is often underestimated because people think our sandy soils are sufficiently porous, but many cultural problems occur that stem from the lack of oxygen in the root zone. Thatch and heavy rainfall can seal the soil and prevent oxygen movement into it. Root degeneration usually then will occur in water-logged soils making it difficult to get fungicides into the root zone to prevent this from happening.

Aerification is an important turf management tool that can help correct existing problems and prevent other problems from occurring. High quality turf often depends on aerification.

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WINTER TURF PROBLEMS

Florida's subtropical climate should provide ideal conditions for plant growth. This past winter has proved that growing grass under wet, warm conditions can be a challenge and problem.

Overseeding is never easy since competition between grasses is keen. Bermudagrass is tough and aggressive. Successful overseeding depends on timing the seeding of ryegrass at a period when temperatures favor germination and growth. Normally this is mid-November to December. This year overseedings did not establish early because soil temperatures during November and December *never* fell below 50°F, the cut off point for Bermudagrass growth. Temperatures were still in the mid 60° range at the end of December. Bermudagrass out-competed the ryegrass and management could not correct this. Cool days and nights in January and February allowed overseeding to become strong. While there were warmer temperatures in November and December than usual (averaging 5° higher) January, February and March were cooler (averaging 2-6° lower). This has favored the ryegrass later into spring and delayed active growth of Bermudagrass. Night temperatures at Gainesville were still in the low 40° range in early April.

At this time of year ryegrass is in good condition at the time overseeding grass should be going out to effect a smooth transition back to Bermudagrass. The transition period is thus more critical and detailed management for transition should be practiced.

Temperature problems were not the only climatic influences on turf growth this winter. Decreased sunshine (down 12% in November, 16% in December, and 15% in January from 1981) affected turf growth and pest problems. Bermudagrass does not grow well under cloudy weather and an early cool snap set the Tifdwarf into semi-dormant state from which it has not recovered. Many greens which were not overseeded were severely damaged by wear since Bermudagrass requires sunshine for optimum growth.

Through December, 1982 there was 25 more inches of rain than in 1981 and 6 inches above the 70 year average. This has been more severe in south Florida, with averages in certain areas considerably more than 60 inches of rainfall for the past 12 months. Decreased sunshine, warm temperatures, and high humidity increased the incidence of *Rhizoctonia* brown patch, *Holminthosporium* leaf spot, and *Pythium* through last December.

Wetter weather also may have increased nematode populations. Several people noted nematode problems during January. Wet conditions favor sedge growth, therefore selective control for sedges might be considered in certain areas.

Rain reduces irrigation requirements, but excessive rainfall leaches nutrients from sandy soils. Fertilizer applications often were delayed where fertigation was utilized, thus soil nutrient levels of certain elements may be low.

Summary and Prognostication

Climatic factors have favored a strong overseeding into April, meaning a slower transition. This means more detail to transition management must be practiced. Soil testing for fertility and possible nematode problems should be done as early as possible so cultural practices can include corrective measures. No one controls the weather, and even the best superintendents can have unpredicable problems which relate directly to climate. As temperatures warm and turf growth is fully active, take a long hard look at problems this unusual weather has created. Plan to adjust management where necessary to bring the turf into a healthy, vigorous condition. ■