Ten Sports Turf Management Myths

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Sports turfs always seem to be on display. Whatever the level of competition or maintenance budget, sports turf managers constantly look for new and better ways to provide safe and durable turfs. Wear injury and soil compaction often weaken the best turfgrass species and varieties. In the turfgrass "transition zone," bermudagrass growth is slow during cool spring and fall months. Bermudagrass plants are dormant in the winter. Kentucky bluegrass, perennial ryegrass and tall fescue suffer high temperature stress and are prone to disease in the summer. Stand density and resiliency of sports turfs often improve when cultural (e.g. frequent mowing at an appropriate cutting height, timely fertilization, proper watering, core aerification and sand topdressing) and pest management practices are performed on an as-needed basis.

Through the years, several sports turf management myths have emerged.

Myth 1) A reel mower is the most important sports turf maintenance tool. Although mower selection is very important, and a properly adjusted and sharpened reel mower most often provides the highest possible mowing quality, the reel mower may be no more important than a rotary-motion core aerifier, fertilizer spreader, sprayer or topdresser. If sports turf is presently being maintained with a relatively new and effective rotary mower, yet a core aerifier, fertilizer spreader, sprayer or topdresser does not exist in the equipment inventory, these implements also deserve consideration and may be a very high priority.

Myth 2) A persistent, high quality sports turf can be maintained without an irrigation system. As much as 60 gallons of water are required to produce one pound of plant dry matter. More than 75 percent of the fresh weight of turfgrasses may be water. Irrigation has been practiced as early as 5000 B.C. Sports turf is watered to supplement precipitation, insuring that water is available for photosynthesis and plant growth. Water also can be applied to wash fertilizer from turfgrass leaves, to "activate" pre-emergence herbicides and to promote the germination of seeds of inter-seeded (or over-seeded) turfgrasses. Water use, the total amount of water required for turfgrass growth plus the amounts lost by transpiration through turfgrasses and by evaporation from plant and soil surfaces, is often 1/10 to 3/10 inch per day. Turfgrasses maintained under a water deficit are usually short, have fewer leaves and tillers, smaller leaves and less protein compared to those grown in moist soils. The amount and distribution of rainfall does not consistently meet the needs of a heavily trafficked, actively growing sports turf.

Myth 3) Nitrogen, phosphorus and potassium application will guarantee a strong, wear-resistant sports turf. Presently, sixteen nutrients are considered essential for turfgrass growth and survival. Atmospheric carbon dioxide and water supply turfgrasses with carbon, hydrogen and oxygen necessary for photosynthesis. In addition, turfgrasses obtain thirteen mineral nutrients from soil. The amounts of these nutrients in turfgrass plants varies considerably. Nitrogen, phosphorus and potassium are major (largest quantity) nutrients; calcium, magnesium and zinc, trace (smallest quantity) nutrients. Although nitrogen, phosphorus and potassium are the nutrients most often contained in fertilizers, and soils seldom furnish adequate supplies, turfgrasses grown in soils low in a specific secondary or trace nutrient usually respond favorably to an application of that nutrient. Some essential mineral nutrients (e.g. phosphorus, potassium, sulfur, calcium, magnesium, and molybdenum) become less available for uptake by the turfgrasses, and the environment for turfgrass roots becomes unfavorable, as acid levels increase in the soil. As a result, sports turfs growing in acid soils often become weak, thin and weedy. Efficient and effective fertilization and liming programs are most often based on soil test results.

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Myth 4) For best footing, bermudagrass sports turf must be deeply rooted. Coaches often emphasize footing and ball response when discussing turfgrass surfaces. Although a major objective of a sports turf management program is to maintain deeply-rooted turf, the bermudagrass root system is not totally responsible for the firmness and uniformity of the playing surface. The network of above- (stolons) and below-ground (rhizomes) stems produced by bermudagrass contributes considerably to its strength and resistance to tearing.

Myth 5) Thatch is bad. Thatch, the layer of undecomposed or partially decomposed organic residues on the soil surface, and mat, an organic layer near the soil surface mixed with soil from topdressing, provide a cushion and a certain amount of protection when athletes fall. Research indicates that the wear tolerance and resiliency of a turf is greater when controlled amounts of thatch and mat are present. Thatch and mat also help insulate the soil, serving as a buffer against high and low temperature extremes. However, too much thatch causes several problems. Thatchy turfs are often prone to scalping, drought and disease. They may also be easily damaged by high and low temperature extremes.

Myth 6) Core aerification has very little effect on the development of weed seeds from soil. Core aerification following the application of pre-emergence herbicides usually has very little effect on herbicide performance. If, however, no pre-emergence herbicide was applied, and the turf is aerified when turfgrass plants are dormant or growing slowly, core aerification may provide an opportunity for weed seed germination within aeration channels. For example, the total surface area of a turf following core aerification to a depth of 2 inches with 3/4-inch diameter hollow tines set to produce a 4-inch by 6-inch aeration grid increases by nearly 20 percent. Much of this newly exposed soil may be moist, may receive light and may contain weed seeds.

Myth 7) A roller should never be used on an athletic field. Immediately following a game, a "light" roller can be used to press uprooted turfgrasses back into contact with the soil. Minor irregularities in the sports turf surface can also be corrected by rolling. Care must be taken to avoid severe soil compaction that could occur when using an extra-heavy roller on saturated soils. Soils should be moist, not too wet or too dry. Dry soils are often very firm and resistant to compaction.

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Excessively wet soils may compress very easily and plants may be injured as the roller moves over the turf.

Myth 8) Perennial ryegrasses are easily removed from bermudagrass sports turf each spring without applying a herbicide. Bermudagrass sports turfs may be over-seeded with perennial ryegrasses to provide an actively growing turf while the bermudagrass is dormant. Ryegrass plants usually form many leaves, several tillers and a strong, fibrous root system during fall and winter, before soil temperatures warm and bermudagrass resumes growth in the spring. Sports turf managers may apply nitrogen-containing fertilizers each week after bermudagrass breaks dormancy to "push" the bermudagrass at the expense of the ryegrasses. In an effort to stress ryegrasses and release bermudagrass, ryegrass plants are often allowed to grow to an average height of two-and-one-half inches or more before the turf is mowed at a cutting height of one inch or less. Similarly, as air temperatures rise, the turf may be watered very little. Ryegrass plants weakened by drought are less competitive for available soil nutrients and light. Recently, the mowing quality and high temperature tolerance of turf-type perennial ryegrass varieties has improved. Many do not die until mid-summer, when hot, wet weather favors the development of Pythium disease. The post-emergence herbicides Kerb® (pronamide, Dow AgroSciences), Manor® (metsulfuron methyl, Riverdale Chemical Company) and TranXit™ GTA (rimsulfuron, Griffin LCC) are registered for the removal of perennial ryegrass from bermudagrass. Each can control ryegrass in bermudagrass turf when applied at recommended rates in the spring.

Myth 9) Severely low air temperatures are responsible for the bermudagrass winter-kill each year. Bermudagrass plants are often capable of withstanding several days with below-freezing air temperatures. The rate of growth of aerial shoots of bermudagrass slows as soil surface temperatures drop from 80° to 65° F. Plant hardening occurs at soil surface temperatures from 65° to 55° F. Chilling temperatures from 55° to 50° F usually damage bermudagrass leaves. Soil surface temperatures from 50° to 32° F trigger winter dormancy. Although aerial shoots of bermudagrass are killed by soil source temperatures from 32° to 20° F, nodes capable of producing new leaves and roots often survive. Total low-temperature kill of bermudagrass most often occurs at soil surface temperatures of 20° F and below. An interaction of several factors in addition to direct low temperature injury may be responsible for the loss of a stand of bermudagrass in winter and early spring. In addition to low temperature extremes during winter dormancy, consider soil fertility, moisture and pH levels, the degree of soil compaction and shade, rooting depth, plant height, exposure (e.g. north-facing slope) of the site, wear injury and disease activity (e.g. spring dead spot, pink snow mold, etc.).

Myth 10) Bermudagrass sports turf is no place to apply plant growth suppressants. Bermudagrass stabilizes soil, preventing soil erosion from wind and water. A healthy, actively growing bermudagrass sports turf is resilient, resistant to weed invasion and recovers quickly from wear injury. Once the soil surface is completely covered with bermudagrass, many sports turf managers consider the advantages of sequential applications of a growth suppressant. For example, Primo® Maxx® (trinexapac-ethyl, Syngenta) can be used to manage the growth of bermudagrass. Frequency of mowing and the amount of grass clippings are reduced following application due to a reduction in the rate of plant growth. An increase in the density and color of bermudagrass turf are often observed after applying this product. An application of Primo® Maxx® prior to overseeding bermudagrass with ryegrass, along with other management practices that ensure seed germination and seedling growth, usually results in fewer clippings and less maintenance traffic as ryegrass seedlings develop. A pre-plant application of this foliarly absorbed growth suppressant to bermudagrass does not affect ryegrass seed germination or seedling growth. It may increase carbohydrate levels in bermudagrass which could enhance cold tolerance.

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