A GENERIC FOOTBALL FIELD MAINTENANCE PROGRAM

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Football field management programs are uniquely different and are directly affected by field management practices such as, mowing, watering, fertilizing, coring, topdressing, renovation, drainage and many others. There are also many non-agronomic factors that ultimately influence the success of playing fields. The annual budget, field managers expertise, equipment and resources available, and the relationship with coaches, parents and administrators, all have a profound affect on the safety and playing quality of the facility. Listed below are some of the basic agronomic and human resources that are needed to manage a safe and attractive playing surface.

Indicates general football field maintenance
Indicates intense management on high sand rootzone fields

Mowing

Rule of thumb - "mow frequently enough so that no more than one third of the grass height is removed at each mowing". If your mower is set at two inches, clippings should only be one inch after mowing. Clippings should easily filter into the turf canopy and should not need to be removed from the field by sweeping or bagging.

Reel-type mowers produce the best cut and make an attractive stripe. Out-front rotary mowers are more versatile and also produce an adequate cut for general sports turf reel mowed at heights greater than 1.5 inches.

For the best traffic tolerance, mow cool season grasses at two to three inches.

Cutting heights of 0.5 to 1.5 inches are sometimes desired for baseball and soccer where precise ball control is important. These lower mowing heights will require intense management and mowing every one to two days. Turf density may increase with the tighter surface, but overall tolerance to traffic may be compromised.

Watering

Water only when the plant tells you. Look for the first signs of visible wilt and then water deep and infrequent. Mature turf can withstand moderate drying and this will increase root growth and prevent over watering of the field.

Over watering can increase turf disease and create anaerobic soil conditions.

When forcing growth with nitrogen fertilizer and when establishing grass from seed or sod, it may be necessary to water with lighter amounts more frequently.

A permanent, and preferably automatic, irrigation system that evenly supplies a minimum of 1/4 inch water daily is desired.

Commercial traveling gun sprinklers have also been successful when an automated system is not possible.

Small homeowner-type sprinklers are not suitable for football field irrigation.

Sand based systems will require an automated irrigation system that is capable of supplying light and frequent irrigation cycles for syringe cooling and seed establishment.

Fertilizing

Have the soil tested once a year and make adjustments for pH, phosphorous and potassium.

In addition, apply potassium during the growing season at the same time and same rate as nitrogen. At least once per year, apply a complete fertilizer containing nitrogen, phosphorous, and potassium. Apply phosphorous in combination with coring to facilitate incorporation into the soil profile.
Nitrogen Fertilization Schedule:

Cool season grasses (bluegrass, ryegrass, and fescue)

March to April	1.0 lb N/1000 sq. ft. from a soluble N source;
May	1.5 lb N/1000 sq. ft. from a slow release source;
Sept. to Nov.	1.0 lb N/1000 sq. ft. per month from a soluble N source.

High sand content rootzones have low nutrient retention and require more frequent fertilization. A combination of tissue and rootzone nutrient testing is often used to fine tune frequent application of fertilizers. Anticipate applying nitrogen (N) and potassium (K_2O) at 1/2 to 3/4 lbs/1000 sq.ft./ growing month. Three to five pounds of phosphorous (P_2O_5) per 1000 sq.ft. per year is usually sufficient on established sand based fields. Calcium and magnesium are also lacking in most sand based fields. Lime can be used to supply calcium when a soil test indicates the need to increase pH. Gypsum ($CaSO_4$), can be used to supply calcium when the pH is adequate or high and tissue analysis indicates a need for calcium. Biostimulants, growth enhancers, and micro nutrients are often used to supplement the lack of nutrient retention and microbial activity in sand rootzones. Monthly application of secondary nutrients and micronutrients in a chelated form are often beneficial when turf is actively growing.

Pest Control

Contact your State Turfgrass Extension Specialist for local pest control recommendations. Pesticides are an effective way to control weeds, diseases, and insects when pest populations are high enough to cause turfgrass decline. Your goal should be to properly identify the pest problem in the early stages; determine if the pest population would significantly alter turf function; and develop a plan to reduce the pest population. Routine pesticide application as a preventative measure of pest control is not recommended on athletic facilities. Treat the pest curatively once it has been observed; and preventively only when you have had prior outbreaks and have good reason to suspect a recurrence.

Remember you are <u>not</u> exercising sound policy when pesticides are used as insurance against turf loss and as a substitute for proper employee training in turfgrass management.

Weeds

- Herbicide applications must be carefully scheduled to account for newly emerging turfgrass that may be part of your annual renovation program for high-traffic areas. Most herbicides are not labeled for use on newly planted or seedling turf.

- Broadleaf weeds can be effectively controlled with selective post-emergent herbicides, such as, 2,4-D, dicamba, MCPP, triclopyr and clopyralid.

- When annual grassy weeds are anticipated in established turf, control with pre-emergent annual grass herbicides, such as, benefin, pendimethalin, prodiamine, dacthal, oxadiazon, and dithiopyr. Annual grassy weeds, such as crabgrass, begin to germinate when the soil temperature in the vicinity of the seed has been 55°F for five consecutive days. High traffic areas with exposed dark soil will warm faster than densely covered turf areas. Once these herbicides have been applied reseeding must be delayed from 12 to 16 weeks. Siduron is only pre-emergent crabgrass herbicide labeled for use at time of seeding. Perennial ryegrass establishes root depth quickly and is more tolerant of surface barrier pre-emergent herbicides. Once an early spring seeding of perennial ryegrass has developed, Dimension can be used post-emergent to control pre-tillered crabgrass. Subsequent germination of crabgrass will also be controlled with dimension. It is critical that the perennial ryegrass is not stressed and has sufficiently established. Roots should be at least two inches deep and treatment should not be applied until 3 to 4 weeks after perennial ryegrass germination.

- Knotweed is especially competitive in high-traffic areas. Where knotweed is a problem and overseeding is not required, a late fall application of pendimethalin will give pre-emergence control of knotweed that normally germinates in early March.

- When renovating and reseeding high-traffic areas, seed at 1.5 to 2 times the normal seeding rate to give the young turfgrass a competitive edge. High seeding rates will often make young turf more competative against weeds and make herbicide applications more effective.

Diseases

Specific turf diseases can be managed with fungicides and cultural practices such as mowing, watering, and fertilizing. If you are experiencing routine loss of turf from disease, it is time to change your management practices or select more disease-resistant grasses. Fungicide application should not be a routine practice on high school athletic fields. To prevent summer patch in sod harvested and laid in the summer, treat with propiconazol (Banner) one week prior to sod harvest. Repeat treatment 21 days after laying sod.

Kentucky bluegrass grown on high sand content rootzones is susceptible to summer patch, especially when combined with close mowing and forced growth from soluble nitrogen. Preventative DMI fungicides should be applied three weeks before the first symptoms of wilt appear that are associated with summer patch.

Insects

Subsurface feeding insects are of major concern because they feed on roots, cause turf to be easily dislodged, and result in poor footing. Know the life cycle of underground feeders such as grubs and anticipate when they may become a problem. Insecticides can give a quick kill once you know where and when a pest is present. Insecticide application should not be a routine practice on high school athletic fields. Lights from night time sporting events can attract the adult beetles of white grubs. Watch for May beetles and Masked Chafer beetles near the fourth of July. Inspect sod in late July and August for small grubs.

Cultivation

Hollow and solid tine coring, drill coring, shatter coring, water jet coring, slicing, and spiking are methods of cultivation that are routinely used on football fields to reduce soil compaction. Vertidrain and Floyd McKay drill can provide deep coring from 6 to 18 inches.

Cultivation equipment physically penetrates the surface to improve air, water, and nutrient movement into the soil.

Hollow-tine coring equipment is absolutely necessary in the management of athletic turf. Football fields should be aerated at least twice per year and high traffic areas may need to be cultivated four to six times per year.

Select cultivation based on your specific needs, i.e.

General - For thatch control and water penetration hollow core the entire field twice per year with at least ten holes per sq.ft. (one hole every 4 inches).

High Traffic - Supplement high traffic areas that become compacted with various types of cultivation. In high-traffic areas it is not uncommon to use some form of coring, slicing, or spiking six to eight times per year.

Renovation with reseeding - When combining coring with overseeding of high traffic areas use intense coring. It is not uncommon to core until there are 64 holes per sq.ft. (one hole every 1.5 inches).

Renovation

High school football fields usually require renovation every one to three years. The extent and cost of renovation will depend on how long the field has been neglected. Typical components of a renovation are:

- Repair field crown by adding soil and grading.
- Core aerify and add a complete fertilizer and other soil amendments.
- Topdress with sand, sand/soil mix, calcined clay, or compost.
- Drill or slit seed in two to four different directions with commercial turf-type equipment. Drill seeding is preferred, but broadcast seeding in combination with power slicing and coring has also been successful.
- Water light and frequently until turf is established.

Traffic Control

Managing a football field requires coordination among the administrator, coach, band director, and grounds manager. Administrators should keep in mind that proper traffic control costs nothing in terms of dollars and at the same time offers the most effective means of reducing dangerously worn areas on game and practice fields. Understanding your role as a user of the field is a first step in communication.

- The coach must take an active interest in scheduling practice activities and preventing excessive turf wear. The coach and the grounds manager can work together to develop improved grass areas specifically for drills that are conducted off the game and practice fields.
- The band director should have a practice field painted on another grass area or in a parking lot. The area should be situated so that the practice can be viewed from above, as if you were in the bleachers. Band practice on the game field should be limited to once per week and only when the soil is dry enough to resist compaction in marching paths. No activity (band, football, or field maintenance) should be conducted on the field while there is frost on the grass.
- The grounds manager should realize that he is caring for a multi-use facility rather than just a football field. Extra use requires additional labor, equipment and resources.
- The administrator should clearly define the conditions for using the field. As much as possible, reserve the field for games only. Be prepared to allocate resources on an annual basis for field maintenance and on a less frequent basis for field renovation. Have a process and personnel in place that will be used to determine when games are canceled because of field conditions.