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Establishment of Football Turf

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ESTABLISHMENT OF FOOTBALL TURF

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Turf on all athletic fields should provide playing safety, good footing, and a pleasing appearance. It should be resilient enough to cushion falls and prevent abrasions, but also firm enough to permit good surface stability. In order to establish a quality field, proper construction and establishment are necessary. There are many construction techniques used in building athletic fields, depending upon available capital and intended use. The following would be considered minimum recommendations.

Orientation

In most situations, the field should be orientated with the main or long axis running approximately north and south.

Excavation

Before the area is graded or contoured, the top 12-18 inches of topsoil should be removed and stockpiled nearby. If the topsoil is unsatisfactory, the field may be built over the existing soil level. Avoid working soil while it is excessively wet.

Contouring the Subgrade

In order to remove excess water from the playing field, it is absolutely essential that an 18-inch crown be established down the center of the field, along with necessary drainage down both sidelines (see Figure 1). In order to remove excess water from the sidelines, corrugated plastic drainage lines with pea gravel backfill or catch basins should be constructed. The drainage lines should be placed within slight swales running lateral to the sidelines.

With a properly constructed 18-inch crown, a tile drainage system under the entire field is not necessary unless underground seepage is a problem. Surface compaction usually renders a general tile system ineffective. (Since the high center crown of football fields makes side shots in soccer difficult, it is not advisable to use the same field for both sports. Soccer fields should not have more than a one percent grade from the center of the field to the edges.)

Irrigation Installation

Although irrigation is not an absolute necessity, it is a prime consideration in maintaining a quality, dense turf. It should be installed immediately after the subgrade is contoured-not after the topsoil has been replaced. Irrigation systems vary from padded pop-up types of sprinklers, spaced uniformly over the entire playing area, to occasional outlets placed near the sidelines. Traveling sprinklers with hose connections to perimeter outlets provide very satisfactory irrigation. These apply water over rectangular areas and can easily be adjusted to conform with wind direction and velocity. Lower initial costs of perimeter outlets may prove more expensive in the end if considering efficiency and additional labor.

Selecting and Spreading the Topsoil

Since soil compaction is the most common cause of poor turf on athletic fields, a sandy loam topsoil is preferable (but is not always available). If the topsoil that was removed initially was a sandy loam (or even a silt loam), it should be evenly spread (by the use of grade stakes) over the subgrade to depths of approximately 12 inches. This may require 2000 cubic yards of suitable soil.

Trying to make good topsoil from existent heavy clay soils is generally not economically feasible. Such modification requires uniform incorporation of large amounts of specially selected sand. If the wrong soil-sand combination is utilized, the mixture may set up like concrete and be very unsuitable for an

athletic field. Various types of organic materials are somewhat effective in reducing soil compaction. Raw or cultivated reedsedge peats are helpful when 1 to 2 cubic yards (per 1000 sq. ft. of surface) of the peat is thoroughly mixed into the surface 3-4 inches. Sewage sludge, seed hulls, and well-rotted sawdust are somewhat less effective and should be applied at much higher rates, depending upon their moisture content and other factors. However, there is no easy or cheap substitute for a good topsoil.

Fertilization and Liming

Lime and fertilizers should be added just prior to final seedbed preparation. Soil samples should be taken from 8 to 10 locations throughout the field. One to two pints of the composite sample should be taken to the local agricultural Extension Agent for analysis and recommendations. (in situations where this is not possible, apply approximately one to two tons of lime per acre and 800 pounds of 10-10-10 fertilizer.) The lime and fertilizer should be worked into the surface 3-4 inches.

Final Seedbed Preparation

The field should be smoothed and contoured to meet the 18-inch crown specification. This may be accomplished by dragging the field with a section of chainlink fence or steel drag mat. Be very careful not to drag soil away from the crown. The soil should be firmed with equipment such as a cultipacker prior to planting.

Selection of Grass

There are no grass species that will provide a trouble-free turf in the transitional climatic zone of Kentucky. Our best choice appears to be Bermuda grass or tall fescue. Some limited use of Kentucky bluegrass is often feasible.

Bermuda grass

Because of its ability to be mowed very close, and its very tight, sod-forming characteristics, Bermuda grass is probably the most resilient of the grasses that can be used in Kentucky. There are several major problems with Bermuda grass: (1) The biggest problem is its tendency to winterkill. (2) It becomes dormant (turns brown) during the football season. (3) Bermuda grass is very wear-tolerant during its normal growing season (May-September), but can be severely damaged by late season wear. (4) In order to repair most varieties of Bermuda grass, vegetative re-establishment is necessary. This can be a very time consuming job every spring if winterkill or heavy fall use has severely damaged the turf.

Varieties which may be considered for athletic field use include:

Quickstand and Vamont- are to be more winterhardy than other commercially available varieties. Their texture is slightly finer than common Bermuda grass. It must be vegetatively planted as sprigs or sod.

Common Bermuda grass- can be seeded but it is very likely to winterkill. It spreads rapidly and generally has good sod-forming characteristics.

Tall Fescue

This is probably the best adapted turf specie in Kentucky. Winterkill and fall dormancy are not problems of tall fescue; furthermore, it can be seeded. Major problems with tall fescue include: (1) Because it is basically a bunch-type grass, it does not have great resiliency. (2) Its minimum mowing height is between 1 1/2-2 1/2 inches. (3) It has very slow lateral spread and will not fill in areas previously damaged.

Varieties- Many new turf-type varieties of tall fescue are available. They have a finer texture, a darker green color and more dense cover than KY 31 and other pasture varieties.

Kentucky Bluegrass

Because it is slow to establish and does not have good wear tolerance, Kentucky bluegrass is not generally recommended for athletic fields. However, in situations where an immediate turf is needed

within four to six weeks, Kentucky bluegrass may be sodded. A two to three year old Kentucky bluegrass sod is much more resilient and wear-tolerant than a one year old seeded stand of Kentucky bluegrass. As the sod is thinned by traffic, the new fine-leaved perennial ryegrasses may be easily inter-seeded in order to obtain quick aesthetic quality and increase the overall wear-resistance of the turf.

Planting

Football fields are established by seeding, sprigging (of Bermuda grass), or sodding.

Tall fescue sod is not always available or affordable in Kentucky, and therefore it is usually seeded. Use a seeding rate of 200-250 lbs. of Certified seed per acre. (The playing area between goal posts is approximately 58,000 sq. ft., or 1.3 acres.) The best time to seed tall fescue is between mid August and mid September. Heavy traffic should not be permitted on the young turf until the following fall. Tall fescue can be seeded in late February or March but it will not mature in time for heavy fall traffic.

Common Bermuda grass sod is generally not available. Although not very winter-hardy, common Bermuda seed is available and it should be seeded at approximately 80 lbs. per acre (hulled seed).

Seeding should be done in May or early June and traffic should not be allowed on the turf until fall.

Quickstand and Vamont Bermuda grass may be established by sod or sprigs. When sprigging, approximately 400-600 bushels of sprigs per acre are necessary in order to obtain quick and satisfactory cover. The sprigs may be uniformly broadcast over the surface and then lightly disked into the top inch of soil. Sprigs should not be covered deep. Sprigs may also be planted with a specially designed sprig-planter or a hydro-mulching machine. Regardless of planting method, after the sprigs are in good soil contact, the seedbed should be firmed with a cultipacker or roller. It is of utmost importance that the soil surface must be kept moist for 14-21 days after planting. This may require two to four light irrigations per day. The sprigs should be planted during May or early June and traffic should be eliminated until September.

If play is to begin soon after the field is completed, sodding may be the only choice. A good sod, properly placed and managed, will "knit" and be ready for use in four to six weeks. Sod, rather than seed, should be used for patching thin or disturbed areas unless the field can be kept out of play for several weeks. Seedbed preparations for sodding should be the same as for seeding or sprigging.

Kentucky bluegrass sod is generally available throughout Kentucky but should be carefully selected in order to get a dense, weed-free turf. (The playing area between goal posts requires approximately 6,400 sq. yds. of sod. Most often, however, additional sod is needed for the sidelines.)

Mulching

Mulching with a weed-free straw helps new seedings by preventing erosion and preserving soil moisture. It should be applied at an approximate rate of 40-60 bales per acre. Other wood-fiber mulches are suitable but must be applied with a hydro-mulcher. Do not remove the mulch after germination.

Irrigation

Regardless of the establishment method, the seedbed (or sodbed) should be kept moist until the grass is well established and rooted.

Weed Control

It is almost impossible to establish a good turf without chemical weed control. After a late summer seeding, a late fall or early spring application of a broad-leaf weed herbicide and a spring application of a crabgrass preemergence herbicide is usually needed for tall fescue establishment. Two or three repeat treatments of a postemergence crabgrass herbicide are almost always needed when establishing Bermuda grass from seed or sprigs. If not applied, the crabgrass will often outgrow the Bermuda grass.

For information on proper weed control in turf, request AGR-72 from your local Extension agent.