



SOCCER FIELD
MAINTENANCE AND MANAGEMENT



GREEN DREAM
AGRICULTURAL



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Soccer Field Maintenance and Management

Field Inspection Report:

Inspection Report						
Field:	Date:			Other: Color, Density, Thatch, Compaction, Weeds, Catch Basins, Sprinkler Heads, etc.		
	Overall Appearance	Clippings	Height of Cut	Sharpen Mower Blade	Soil Moisture	
Date:						
Date:						
Date:						
Date:						
Date:						
Date:						
Date:						



Sample Maintenance Schedule

(Warm Season)

(Warm Season)

Field Name:	Pitch No: 6		Address:	Al-Shahamah
Type of Field:	Soccer Field			
Condition:	Good		Compaction:	Moderate
Type of Grass	Paspalum vaginatum		Drainage:	Surface
Type of Mower:	60" flail mower		Irrigation:	Spray gun
Type of Soil	Red sand		Thatch	1/4 "
Soil Test			Notes	Goal areas must be re-sodded
Year:	2018	Phosphor:	85	In may
pH	7.2	Potassium:	360	

Time of Year	Fertilization	Aeration	Top-dress	Over-seed	1/3 Rule Mowing Ht	1" Week Watering	Weed Control
May	13-13-13 2 lb N	Spiker Two ties	1/4 "sand		1" two times a week	Spray gun	
June	45-0-0 1 1/2 lb N				1" two times a week	Spray gun	2,4. D plus MSMA spot treat
July	45-0-0 1 lb N				1" two times a week	Spray gun	2,4. D plus MSMA spot treat
August	45-0-0 1 lb N	Spiker Two times	1/4 "sand		1" two times a week	Spray gun	
September	18-46-0 1 lb N		1/4 "sand After Over- seed	15 lb perennial rye	1" two times a week	Spray gun	
October	45-0-0 1 lb N			Spot over- seed	2" one times a week	Spray gun	
	0-0-61 1 1/2 lb k						
November	34-0-0 1 lb N				2" one times a week	Spray gun	
December	34-0-0 1/2 lb N				2" as needed	Spray gun	
January					2" as needed		
February	34-0-0 1/2 lb N				2" as needed		
March	34-0-0 1/2 lb N				2" as needed		

Mowing:



Mowing frequency is generally twice weekly from the 1st of April to the 31st October, and weekly for the cool season period. The grass is to be cut to a height of 25mm. Mowing direction should be altered at each mowing; the grass catchers should be fitted during mowing to remove grass cuttings.

Mowing involves the periodic removal of turfgrass leaves and is the most basic and time intensive of all the routine turfgrass management practices. Mowing increases shoot density by increasing tillering (stems that develop from the crown of the parent plant) and ultimately improves site functionality.

Effective mowing height is determined by: grass species and variety, site use, level of management, desired field conditions, traffic level and other management practices. Turf mowed below or above the recommended cutting height for an extended period of time may not be able to perform as expected or desired.

Turf mowed too low and scalped routinely will have a reduced root system, shallow roots and lower stored food reserves resulting in a weakened turf which is more susceptible to pest pressure and requiring more frequent irrigation and fertilization. You can also expect the encroachment of aggressive weeds with lower turf density.

Mowing height

Mowing at 3" or higher does not increase traffic tolerance. However, the turf will have a deeper root system and greater access to water and nutrients and will help reduce weed pressure. The lower shoot density of higher cut turf can give a more open and shaggy appearance. During times when the fields are not in demand mow higher.

For increased density pick a mowing height and stick to it throughout the growing season. If you want to change the mowing height, reduce it gradually (in ¼" – ½" increments per week or mowing) to avoid removing excessive leaf area, scalping or weakening the turf.

There is no need to raise the cutting height in the summer on non-irrigated droughty sites. At this time almost all the root growth of cool season grasses is over until the fall so raising the cutting height won't encourage deep root growth. However, more leaf area means more carbohydrates, the food source for plant growth.

If you get behind on the mowing and the turf grows much higher than desired gradually lower the height of cut over a couple of mowings. Think of returning clippings as providing free food, supplying nitrogen, phosphorus and some potassium.

However, leaving excessive clippings on the field (besides looking unattractive) can smother grass, cause heat stress and keep the area beneath the clippings moist, providing an ideal environment for disease organisms to flourish. The particular sport will ultimately determine mowing height. Based on grass species, the suggested mowing height is 2-2½" for Kentucky bluegrass and perennial ryegrass fields and 2½-3" for tall fescue. Keep in mind that mowing at the lower level will increase turf density.

Mowing frequency

The frequency of mowing will depend on grass growth rate and the time of season. In the winter when the growth of hot season grasses slows down, if not irrigated, you may only need to mow once every 10 days.

Delay mowing fields when the soil is saturated to avoid soil rutting which will create unsafe field conditions that will impact footing and ball response. Also avoid mowing fields that are showing signs of drought stress.



Mowing efficiency

No matter what mowing equipment you use be sure to have the blades sharpened every 10-12 hours of use. Sharpened blades provide a clean cut and more attractive appearance. Dull blades leave ragged edges which contribute to disease occurrence and can increase fuel costs 20%. Both reel mowers and rotary mowers are used on sports fields. Reel mowers are used on high quality fields where a lower cut is desired. Reel mowers are more fuel efficient and require extra maintenance. They do best on relatively smooth surfaces. Rotary mowers are very common, affordable and versatile. A clean cut can be achieved with sharp blades and a high blade speed. They can cut taller grass but sharp blades are essential. Care should be taken to control discharge when using rotary mowers where people may be nearby and to avoid excessive clipping piles.

How much time will it take to get the job done?

It really depends on the equipment you have. To mow an acre of turf it will take more than 2½ hours with a walk behind with an 18" width, about 30 minutes with a 60" riding mower and less than 10 minutes on a gang mower with a 20' width.

- Hours to mow an acre x 60 minutes = minutes to mow an acre
- Use the factor 108.9 which includes the acres per hour dimension and a 10%-time factor for turning at the end of swaths.
- The mowing speed equals the miles per hour rating at the recommended mowing gear or the usual ground speed.

Example:

- The normal, safe mowing speed of a ride-on mower is 3.5 mph. Assuming the mower deck width is 38 inches; multiply 3.5 times 34.2" (9/10 of 38"). The product is 119.7.
- Divide 108.9 by 119.7 and get the answer 0.909 or 0.9 hours.
- Multiply 0.9 hours by 60 minutes to get the answer: 54 minutes to mow one acre.

Mowing pattern

Sports field managers use skill and creativity to design field striping patterns that are visually appealing to spectators. The patterns give a professional look to the field and do not affect playability. By mowing in different directions the leaves reflect light resulting in the appearance of dark and light stripes. The rear roller or the cutting heads on reel mowers provides the best stripes. New rotary mowers that have now added rear rollers on each cutting deck can also provide the striping effect.

Mowing direction should be changed every mowing. Grass will lean or grow in the same direction it is mowed so changing the mowing direction each time you mow will avoid the undesirable streaking appearance. Varying the mowing pattern also helps prevent scalping high spots and wear in the wheel tracks.

We recommend mowing twice a week at a height of about 1" from May through September. That maximizes the strength of the turf-grass and encourages lateral spread of the grass plants. After overseeding in the fall, raise the cutting height to 2" to promote winter hardiness and protect the grass during winter season.



Aeration

Aeration can be done as often as is practical, i.e. at monthly intervals, with the frequency increasing according to pitch usage, soil conditions etc. Type of aerator can be varied between Spiker/Slitter, Hollow Tine and Solid Tine. Depth of aeration will vary between 25mm for the Spiker/Slitter, to 100mm for the Hollow Tine and up to 250mm using the Vertidrain. The Vertidrain is particularly beneficial in the cool season, which is the period of highest use. Using the machine on maximum dwell angle, compaction is relieved and the turf lifted fractionally, allowing for soil air to be replenished and surface water to drain. It is also beneficial to Aerate the soil following from Verticutting works.

For many soccer fields, the only periods of limited use during the growing season are early May and August. That means you can aerate the field to help the turf stay healthy. We like to use a spiker, run over the turf in 2 directions. If you topdress the field with sand, you'll smooth the divots created by the spiker, and help keep the surface as even as possible. Aerating frequently with different equipment at different times will help make the turf stronger. In April, we recommend core aerating the entire field, followed by topdressing with sand (and slit-seeding). Later in the year, use solid tine aeration to reduce compaction without leaving cores all over the field, and core aerate again at the end of the fall playing season.



Topdressing;

The need for top-dressing will vary according to the degree of turf establishment, the amount of usage, grass type and variation of surface levels. The ideal time to perform top-dressing activities is following on from Verticutting and Aeration works. The minimum machinery required to achieve this work on a Soccer pitch would be a tractor-mounted, PTO driven hopper of at least 0.4m³.

The material for top-dressing should be screened sand, free of stones and other debris. It should be dry to facilitate loading into the hopper (with screen fitted) and spreading from the hopper opening. The rate of discharge needs to be adjusted to achieve the correct amount of sand being applied. It is best to apply a thin layer of sand in opposing directions, followed by drag-matting to work into the turf surface. Irrigation should follow completion of top-dressing works.

Topdressing is the application of a uniform thin layer of soil or finely granulated organic materials applied over the turf surface. It is used to level the playing field when minor variations or depressions are apparent, help to amend physical soil properties and create a better growing environment for the turf and help reduce thatch.

If you have access to a readily available topdressing material, the necessary application equipment and a budget that can afford this practice, topdressing can be an important part of your management program.



Timing and frequency:

When conditions warrant it, topdressing is done as a routine practice 1-2 times per year when the turf is actively growing, for example, in late spring, early fall and/or in late fall after the playing season.

Frequent applications can, over time, actually modify the soil profile. It is often combined with core cultivation practices.

Topdressing materials

Selecting the correct topdressing material is critical and depends on the purpose of the topdressing. The chosen topdressing material must be consistent in type and particle size and available for future applications. Variations in particle size can lead to layering which will disrupt drainage and rooting.

Material	Use	Characteristics and Application Tips
Soil	All	When soil modification is not needed the existing soil or one similar in texture can be used. Pull cores, allow cores to dry on the surface and then drag to leave soil fill in aeration holes.
Sand	L,C,P	Can use 100% sand should be angular or medium course. Make sure the sand source will be available for future use. Can use a mix with 80% sand and 20% organic matter. The mix should not contain more than <5% fine gravel and <10% silt + clay or 2-5% very fine sand, 2-5% silt, 2-5% clay. After applying the topdressing material, first pull the drag mat making small circles then in large ovals so the material can filter into the aeration holes and also provide a level field.
Compost	All	Should be mature, screened, have a fine particle size, be within the pH range of 6.5-8.0 and have a low salt content. Compost should be tested. Apply no more than ¼ inch per application.
Crumb Rubber		Should have a small particle size: 0.05-2.0 mm. Apply at a ¼ inch depth per application until a cumulative depth of ¾ -1-inch depth is achieved over time. This material is expensive.
<p>Uses:</p> <p>L: to level minor depressions T: to reduce thatch C: to reduce hard compacted soils (following a cultivation practice) E: to improve aeration and drainage S: to improve seedbed for overseeding</p>		





Weed Control

Armyworm (*Spodoptera* spp.) is the main pest of turf grasses and routine observation is required to recognise early symptoms. Patches of turf look dry from a distance, closer observation will reveal that the green parts of the grass plant have been eaten away, leaving the stem. During the day, Armyworm bury into the soil surface to escape the heat, and come out to feed after sunset. Thus, it is important to apply Pesticides as late as possible in the day to ensure that the poisons are present at the time that the pest is emerging to feed. Ants can be a minor problem to soccer pitches, and can easily be dealt with by spot treatments of chemicals drenched into the soil surface.

Good cultural practices such as verticutting, aeration and correct fertiliser management will reduce the possibility of diseases of turf. It is also important to maintain regular, routine mowing practices, with mower blades maintained in optimum condition. The main diseases of sports turf are *Rhizoctonia* ("brown patch") and *Pythium* (Blight). When either symptoms appear, usually in the early part of the summer when humidity and temperatures are increasing rapidly, the above-mentioned cultural practices should be done and followed up with fungicidal treatments.

Watering

The irrigation requirement for sports pitches can be defined as follows:

- December, January & February - 3 Run Days per week, at 10mm/m² precipitation.
- March, April, October & November - 4 Run Days per week at 12mm/m²
- May, June, July, August, & September - 6 Run Days per week at 15mm/m².

Irrigation is best applied in two cycles, i.e. late evening (after use of the pitch) and early morning, avoiding windy periods of the day that affect sprinkler efficiency.

The system should be run on test once weekly during the day to observe sprinkler performance and to make repairs and or adjustments accordingly.

Generally, most fields need to be watered every day or so from June through September, and as needed the rest of the year to keep the soil moist. Applying at least 1" of water per week will help to maximize turfgrass growth. If you overseeding, or spot-seed thin areas, you'll want to water lightly and frequently at first to promote germination of the new turfgrass.

In the winter, it's good to water lightly but frequently, to help nurture new grass plants. As the season progresses, you can gradually decrease the frequency and increase the amount you apply each time you water.

If the fall season is dry, irrigate with an eye on the weather forecast. It's usually better to keep the turf a little dry than too wet during the playing season. That reduces the chance that sudden heavy rains could severely compromise competition





Pest & Disease Control

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Dethatching

Verticutting is the mechanised operation to remove thatch from turf. The minimum standard of machinery to achieve this job on a soccer pitch would be a pedestrian operated (walk behind) unit such as a Ryan Matt-away. Tractor-mounted equipment would be more suitable; usually comprising of 3 scarifying units hydraulically powered. It is normal practice to mow the turf short, verticut in one direction, remove the thatch using a tractor-mounted sweeper, and then repeat the operation in the reverse direction. The pitch should be generously watered as soon as possible after Verticutting to reduce turf stress. New developments in this field would encourage greater use of the FINC-CUT PLAK mower to reduce the build-up of thatch, and significantly reduce the need for intensive verticutting which can have a considerable recovery time.



Overseeding

Overseeding helps to fill in the thin spots, and keeps your field looking much better year-round. We like to overseed the field with a three-way perennial ryegrass blend at the end of September, putting down about 15 pounds of seed for each 1000 square feet. Areas where the turf is especially bad can be spot-seeded in October. Overseeding is especially important where there is year-round use of a field. If you spread 1/4” of sand over the field after overseeding, you’ll get better seed germination, because the topdressing promotes seed-to-soil contact.



Running Repairs

During regular use there is a constant requirement for filling in divots with a mix of moist sand and peat moss. Larger areas may require a barrow load of mix, applied by shovel and tru-luted in to levels. From time to time, it may be necessary to cut turf from the extremities of the pitch (i.e. from behind the goal posts) and use the turf to repair larger areas of wear & tear.



Fertilization

The frequent removal of Nitrogen from the grass plant caused by mowing activities and constant irrigation practices demands the frequent application of Nitrogenous fertilisers to replace it. Straight N fertilisers such as Ammonium Sulphate and High N fertilisers such as a 20-40-5 ratio are ideal. As a general guideline, application would normally be on a once monthly basis, but could be reduced according to season and grass type. The aim is to produce a dark green, dense healthy sward, the Horticulturist will decide when and what to apply. Application rates should be between 50 and 75 grs. per square metre. The quantity of fertiliser is to be used should be divided in half and applied at intervals in opposing directions. Applying fertiliser in the opposing direction eliminates missed areas and the “streaked” look; however, wheel marks can appear on the turf if the second application is made immediately after the first. Irrigation should be applied following on from fertiliser application, this may dictate early morning or late afternoon application if windy conditions prevent even and adequate coverage to ensure the fertiliser is completely washed in.

This maintenance program includes very aggressive fertilization, especially in the spring. That promotes rapid recovery from the competitive stress of the previous season. Irrigate the field after applying fertilizer, you can make the heavy Nitrogen applications all at once; otherwise, you should split the fertilizer into two applications two weeks.

In the summertime, apply one-half pound nitrogen and a full pound of potassium to protect the plants during the heat of the summer, and to help resist disease.

Applying most of the nitrogen in the fall helps the turf recover from the stresses that competition puts on it. The very best time to apply nitrogen is right after the last mowing of the season, while the grass is still green. At this point, shoot growth slows to a stop, but the roots continue to grow. The extra nitrogen you put down will be stored by the root system, and will help the turf green up early in the spring, as well as helping it withstand summer stresses the next year.

A complete fertilizer (like, for instance, 12-12-17) is good to apply in May to make sure that nutrient levels are strong as summer approaches. In the summer itself, fertilization calls for urea (45-0-0) for maintenance applications of one pound of N. An additional application of K in October helps the turf stand up well to the winter, and the winter fertilization application of ammonium nitrate (34-0-0) helps to maintain ryegrass growth.



Line Marking

The pitch marking must be done on a weekly basis as a minimum, and possibly again during the week if matches are being played and the lines have begun to fade. Water based emulsion paint, diluted with water makes an adequate product for line marking, although the manufactured products specifically designed for the job have a superior brightness and last longer after application.



Maintenance Equipment

TRIPPLE CYLINDER MOWER

(Typically: Hydraulically powered cutting units, 26-inch width, and 7 blades floating - head units with grass catcher.)

ROTARY MOWER

(Typically: Single blade, 560mm width of cut, 5 HP single cylinder engine, grass catcher, gear driven.)

LINE MARKER

(Typically: Battery operated pump and adjustable spray nozzle, 25 litre capacity paint tank with clean water tank for flushing after use.)

VERTICUTTER

(Typically: Pedestrian self-propelled unit, 11 HP engine, adjustable depth of operation, or Tractor-mounted PTO/hydraulically driven unit.)

SPIKER/SLITTER

(Typically: Tractor-mounted 1200mm width unit.)

SOIL RELIEVER

(Typically: Tractor-mounted, PTO powered "Vertidrain" unit, c/w 10-inch solid tines 18mm diameter, adjustable for depth of penetration and angle of entry, front & rear roller to closely follow surface levels.)

AERATOR

(Typically: Tractor-mounted/trailed multi-tine aerator, 100mm length hollow tines, operating width - 900mm.)

POWER BRUSH

(Typically: Tractor-mounted PTO powered brush-collector unit, 1200mm operating width, brush adjustable, and hydraulic tipping mechanism.)

TOP-DRESSER

(Typically: Tractor-mounted PTO powered Top-dressing unit, 1200mm operating width, adjustable rate of application.)

BOOM SPRAYER

(Typically: Tractor-mounted PTO powered pump, 6 metre width of application with nozzle spacing at 500mm, boom height 350mm above surface to be sprayed. 3 nozzle types, Fine, Medium and Coarse nozzle ratings.)

FERTILISER SPREADER

(Typically: Tractor mounted PTO powered 500kg hopper capacity "Cyclone" type spreader, spreading width 6-10 metres, adjustable rate.)

FINE-CUT FLAIL MOWER

(Typically: Tractor mounted PTO driven flail mower, 900mm, 1200mm or 1500mm width, 1200 litre hopper capacity, hydraulically raised and lowered to facilitate emptying. Fitted with 2mm Flails as standard, can be fitted with scarifying blades for dethatching of large lawn areas.)



















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