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Standard Guide for Maintaining Sports Fields and Recreational Turf in Ohio

Pamela J. Sherratt and **John R. Street**
Department of Horticulture and Crop Science

This standard covers the basic procedures for maintaining native soil sports fields and recreational turf in Ohio. This includes; mowing, aeration, fertility, irrigation, overseeding, and pest management. The relative success of these procedures depends upon the quality of equipment, soil type, and current weather conditions.

Mowing

Most importantly, all mowing practices are geared around the 1/3 RULE. In essence, no more than 1/3 of the leaf tissue should be cut off at any one mowing. For example, if turf is maintained at 2 inches height, it should be cut when it is no taller than 3 inches in height.

The mowing height will depend upon the sport and the grass species used (Table 1).

Mowing Frequency

In accordance with the 1/3 rule, fields in Ohio are generally cut 1 to 2 times weekly in the spring and fall and once per week in the summer.

NOTE: Mowing increases turf density—so fields should be mowed as much as time and budget will allow.

Mowing Top Tips

- Clippings should not be removed.
- The field should be mowed in a different direction each time.
- Fields without irrigation should be mowed at the higher end of the optimum range.
- Mowing patterns on the field prior to an event can significantly enhance field presentation.

Table 1: Optimum Range of Mowing Heights for Sports Fields

Sports Field Use	Grass Species	Mowing Height
Baseball infields, field hockey, and high quality soccer fields	Kentucky bluegrass and/or perennial ryegrass	1.0-2.5 in.
Baseball outfields, soccer, football, lacrosse, polo, and rugby fields	Kentucky bluegrass and/or perennial ryegrass	1.5-2.5 in.
Intramural and multiple-use fields	Kentucky bluegrass and/or perennial ryegrass, or tall fescue	2.0-3.0 in.

Aeration

The number one cause of poor fields in Ohio is soil compaction.

Soil compaction is relieved by mechanically "aerating" the field with a core aerator, deep tine unit, vertidrain (Figure 1), or similar device. Solid tine aerators, spikers, slitters, or similar mechanical devices that do

Figure 1: Verti-drain unit

not significantly disrupt the playing surface can be used during the playing season. The most important piece of equipment for sports field managers is a good aerator.

Aeration Frequency

Fields should be aerated a minimum of 6 times per year, preferably when not in use. Suggested times would be April, May, June, August, October, and November. The goal of each aeration practice is to open up (impact) at least 10% of the field surface.

The amount of the field that is impacted will depend upon the tine size and spacing on the equipment (Table 2).

Table 2: Percent of Field Impacted

	Tine Spacing (inches)			
Tine Size (diameter)	2 x 2	4 x 4	4 x 6	6 x 8
1/4 inch	1.2	0.3	0.2	0.1
3/8 inch	2.8	0.7	0.5	0.2
1/2 inch	4.9	1.2	0.8	0.4
3/4 inch	11.0	2.8	1.8	0.9
1 inch	19.6	4.9	3.3	1.6

Using Table 2. Examples:

Equipment "A" has ¾ inch tines at 2 x 2 spacing. Only 1 pass across the field is needed to impact 10% of the field.

Equipment "B" has ½ inch tines at 4 x 4 spacing. 8-9 passes across the field is needed to impact 10% of the field.

Aeration Top Tips

- Do not core aerate in hot weather
- Aerate when soil is moist but not wet
- Do not pick up cores—drag them back in
- Seed bare areas at the same time as coring
- Irrigate the field after coring and dragging to alleviate stress caused by coring.

Fertility

As a general rule:

1. Nitrogen (N) will produce leaf growth and color.
2. Phosphorus (P) aids seed germination and seedling establishment.
3. Potassium (K) aids stress tolerance (e.g. traffic and cold).

General maintenance fertilizers for sports fields have N:P:K ratios of 4-1-2 or 4-1-3. At least 30 to 50% of the nitrogen source should be slow release, except for the late fall application, which should have a higher proportion of quick release N.

Frequency of application

1. May/June = 1lb N/1000 sq. ft
2. Late August = 1lb N/1000 sq. ft.
3. Late September = 1lb N/1000 sq. ft.
4. Late Fall (Thanksgiving) = 1.5lbs N/1000 sq/ft. with a quick-release source of N
5. A ½ rate application can be made in early spring and July where turf recovery is required

Fertility Top Tips

- Conduct a soil test every 3 to 4 years to check on fertility status, especially P and K levels.
- Unless a soil test indicates a pH problem, do not apply lime to fields.
- Each fertilizer application should be made prior to rainfall or irrigation.
- Always apply a "starter" fertilizer (higher in P) when seeding.

Irrigation

Sports fields and recreational areas in Ohio will go dormant in summer if there is no supplemental irrigation. Fields can stay in a dormant state for several weeks and recover adequately. Playability on dormant fields of course, is reduced and potential wear injury is increased.

Irrigation Frequency

Only water AS NEEDED. If there is supplemental irrigation (automatic system, rain train, or water cannon) it is not uncommon for fields to be over-watered. This results in many problems, namely soggy playing conditions leading to compacted soil, and, most importantly, infestations of weeds and weedy grasses (e.g. annual and rough bluegrass) that favor wet soils.

Aim to apply 1 to 1.5 inches of water per week. Ideally the water should be applied in two increments, to avoid water run-off.

Irrigation Timing

Water early in the morning, when evapotranspiration losses are minimal. Light watering in the afternoon is acceptable if trying to cool the turf during hot weather or to keep new seedlings moist. Try to avoid irrigation 24 hours prior to a sporting event if possible.

Overseeding

Only overseed bare soil & thin areas of turf. There is no advantage to overseeding the whole field if there is a full stand of dense turf.

Suggested Annual Seeding Program

November to December: Dormant seed 100% Kentucky bluegrass that will germinate the following spring. Higher seed rate (3-4 lbs/1000 sq. ft.) should be used to compensate for a higher seed mortality rate than a conventional spring seeding.

April to May: Spring seed 100% Kentucky bluegrass in conjunction with a pre-emergence herbicide that will not affect Kentucky bluegrass germination, e.g. Siduron (Tupersan). Seed rate = 1-2 lbs/1000 sq. ft.

June and July: If temperatures allow and irrigation is adequate, seed bare soil with 50:50 Kentucky bluegrass:perennial ryegrass mix (ryegrass will dominate). Irrigation is critical.

Mid-August to Early September: 50:50 Kentucky bluegrass:perennial ryegrass mix (ryegrass will dominate).

September to Late October: 100% Perennial ryegrass. Seed bare soil areas weekly at 6-8 lbs/1000 sq. ft.

Overseeding Top Tips

- Seeds will not germinate without moisture, so light watering (syringing) is critical in the first few weeks. If possible, only apply light watering to areas of the field where overseeding has occurred by hand watering, setting of specific heads, or portable sprinklers
- Seeds need to have soil contact. Remove any surface debris and slit or slice seed into the soil or apply seed directly before a game so that players push seed into soil.
- Seed in at least 2 directions to avoid poor coverage and striping (Figure 2).
- Overseeding will produce the best results if done in conjunction with coring and a fertilizer application. Once all three practices have been done, drag the field and irrigate if possible. SEED + CORE + FERTILIZE = best result compared to doing any of these on their own.
- Mow as soon as seedlings are established. Regular mowing will increase density.

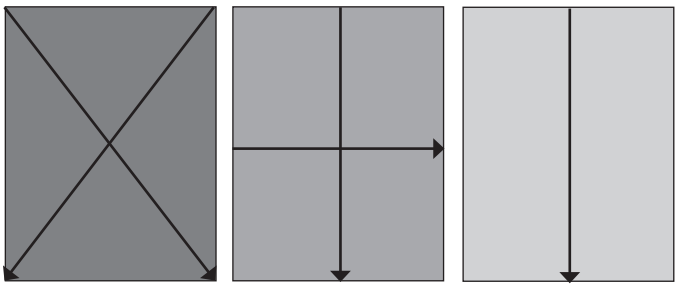

Figure 2: L-R: Diagonal seeding best, cross-seeding good, seeding in 1 direction results in poor coverage.

Divot Mix

If holes/divots on the field are deep, they need to be filled in with good quality topsoil before seeding. Alternatively, mixing seed with the soil to make a divot mix can be done 2 days before a game. Divot mix is generally 10 parts soil, 1 part seed. If the mix is kept moist it will also pre-germinate the seed.

Pest Management

The best defense against any pest is healthy turf. If there are problems on the field, the turf management program is probably not adequate.

Pests (grubs etc.)—Most fields are probably only susceptible to bluegrass billbug and occasional grub infestations. We would not recommend control of either until they have been confirmed to be present (e.g., as evidenced by damage last year). Then an application of clothianidin (=Arena™) in mid-May should control both for the season. Stay away from the "pyrethroid" insecticides because of skin sensitivity

Figure 3: White grub feeding on turf roots

issues. A "Rescue" treatment of white grubs (Figure 3) can be made with products containing trichlorfon (=Dylox™), but people should be kept off the field for 24 hours after the application.

Weeds are the most common pest on sports fields. Apply selective herbicides only when weeds are a problem, not as a preventative measure. Any high school football field should be able to tolerate a dandelion or two and most herbicides cannot be used where seeding may be needed to repair field damage.

Diseases are less common but can be found, particularly on perennial ryegrass fields. Most of these diseases are superficial and will not kill the turf, e.g. rust or red thread. The exception can be serious disease problems on young seedling in hot weather. Also there are occasional diseases that can kill the turf, such a gray leaf spot and brown patch. If disease is suspected, get an accurate diagnosis from OSU's clinic.

Ohio State's Diagnostic Clinic

If a pest, disease, or weed problem is suspected, a sample can be sent to OSU's diagnostic clinic. For details on how to do this, telephone (614) 292-5006 or visit: **http://ppdc.osu.edu**.

For more information on pest, weed, and disease control options, read The Ohio State University L-187 Bulletin, *Management of Turfgrass Pests Weeds, Diseases, and Insects* or view the bulletin on-line at **http://ohioline.osu.edu/l187/index.html**.

Contributing authors

Dave Gardner, Karl Danneberger, Joe Rimelspach, and Dave Shetlar.

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