



FIELD DAY HIGHLIGHT

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Strategies for Managing Heavily-Used Fields

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Managing a heavily-used athletic field can be a daunting task. While you may do your best to limit the number of events, the reality is that many times your field will host more activities than it can handle under your normal maintenance practices. As athletic field managers, we must remember that fields are meant to be played on and we need to do everything in our power to provide the best possible field conditions regardless of intensity of use. Here are some keys to successful management of heavily-used fields.

1. Mowing. It sounds simple enough and it is something that we all do on a regular basis. Because it is such a routine practice, sometimes it is a good idea to take a step back and really think about your mowing practices and how they can be improved.

How often do you mow? Most professional facilities are mowed a minimum of three times per week during the growing season. Sure, they may be mowing at lower mowing heights than most field managers do and those lower heights require mowing more often. But in general, more frequent mowing leads to increased density and uniformity. If you are currently mowing once per week, try to

mow twice per week. If you are mowing twice per week, bump it up to three times per week and see if conditions improve. More frequent mowing means that you are removing less of the grass blade each time,

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which is a good thing because you never want to remove more than one third of the grass blade during a single mowing. And, since you will be mowing more often, it is important to routinely sharpen the mower blades. A clean cut is important in the overall health of the turf plant.

It is also important to mow at the proper height for your situation. Professional fields consisting of Kentucky bluegrass (*Poa pratensis*) and/or perennial ryegrass (*Lolium perenne*) are often mowed between 1 and 1.25 inches. Unless it is a high maintenance situation, recreational fields should not be mowed that low. Mowing

heights of 2–3 inches typically work best on these types of fields. Lower mowing heights can lead to increased density but also result in less wear resistance and shallower rooting. Setting the mower higher than three inches will promote deeper rooting, but may also negatively affect the playability of the field—especially in a sport like soccer.

2. Fertilization. A good fertilization plan is the backbone to successful field management. Without enough nutrients—especially nitrogen—the turf cannot recover from the wear and tear of constant use. When putting together a nutrient management plan, the first step is to have a nutrient analysis performed on your soil. The results of that test will give you a starting point for your plan. It is recommended that you have your soil tested once per year at the same time each year. On unirrigated fields, we typically see the best results when we apply a minimum of 4 lbs of nitrogen per 1000 ft² each year. The amount of nitrogen can be increased to 5–7 lbs of nitrogen per 1000 ft² on irrigated fields.

You can get the most out of your fertilizer application when you apply it at

the proper time of the year. For example, fertilizing in the spring and fall is much more effective than fertilizing during the summer months. Applying a fertilizer to drought and heat stressed turf is never a good idea. If you have an irrigation system, you have a little more flexibility with summer fertilization. But, you still want to apply the majority of your fertilizer in the spring and especially in the fall.

3. Overseeding. On a field that is heavily used, you will lose turf cover. That is just the nature of the beast. As a result, it is important to have seed in the ground to take the place of turf plants that are worn away. How often should you seed? As often as you can. In most cases, a rotary spreader works best. Start seeding after the first game and continue to seed before and after each game. Seed that is spread before the game will be worked into the soil by players' cleats. You will build up a "seed bank" that will continually replace ripped-out plants with new seedlings. The more seed you put down, the more turf cover you will have. Best results occur when at least 30 lbs of seed /1000 ft² per year is applied.

It is also important to seed with the correct species. From both an agronomic and economic perspective, perennial ryegrass is the best choice for in-season overseeding because it germinates and matures quickly. Kentucky bluegrass should only be overseeded when there is sufficient time for the plants to mature

(several months without field use). Under most circumstances, high-use fields should be seeded with perennial ryegrass. Information on the performance of many perennial ryegrass varieties (along with other species) can be found on the National Turfgrass Evaluation Program's website (ntep.org).

Another trick to overseeding is to not treat the entire field the same way. If the outside portions of your field do not receive much wear and have good turf coverage, focus your efforts on the high wear areas like down the center of the field and goal mouths. There is no rule that you need to spread your seed evenly across the entire field.

Finally, include some seed in your divot mix. After each game, fill in divots with a mix of sand, organic fertilizer, and perennial ryegrass seed. An easy way to make divot mix is to cut a 55-gallon drum in half and pour in sand, some organic fertilizer, seed, and enough water to wet the sand. Then, give it a good mix with a shovel and continue mixing once per day. This will start the seed germination process so when you fill the divots, it won't take as long for the seed to germinate. New divot mix will need to be mixed each week because if the seed germinates in the drum, it is no longer viable for field use.

4. Aerification. Routine core aerification is another important step in maintaining high-use fields. One of the biggest enemies on

heavily-used fields, is soil compaction. Soil compaction increases surface hardness, reduces pore space, limits root growth, and slows water infiltration. Aerifying several times per year will help combat these problems, making your field safer and healthier.

The most effective and beneficial method is hollow-tine aerification. Select tines that remove the largest size cores (3/4-inch is typical) and set the spacing on the machine as close as possible. Large tines combined with close spacing will give you the best results. While hollow-tine aerification is best, it also causes the most amount of surface disruption and your field will need time to recover before it can be played on again. If your maintenance time-window is short, use solid tines. Solid tines do not remove soil cores so compaction is unaffected, but using solid tines does increase oxygen levels and water infiltration. You can also use a deep-tine aerator, which penetrates to depths of up to 16 inches and fractures the soil below the surface, increasing soil oxygen. Other methods of aerification include verticutting, slicing, spiking, and water injection. Aerifying when it is too dry will limit tine penetration into the soil and if it is too wet, the sides of the aerification hole can glaze-over and seal-up. So, it is best to avoid extremely wet and dry conditions. Deep-tine aeration is an exception. The soil should be dry so that the soil fractures easily.



Figure 1. Regular overseeding will result in more turf cover and less weed invasion such as the knotweed found in the center of this field.

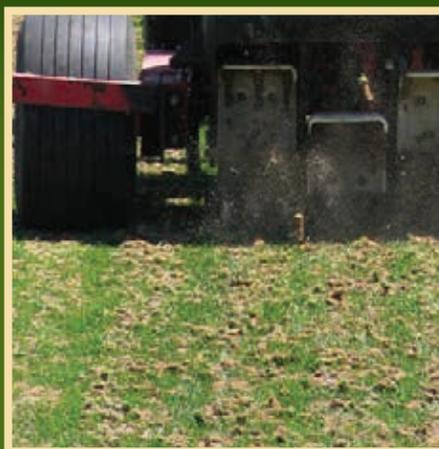


Figure 2. Aerification is a key component of managing high traffic fields



Figure 3. Intense wear often occurs down the center of fields. Apply the majority of your seed in these locations.

We often get asked the question of what to do with the cores after aerification. After you hollow-tine aerate, cores should be dragged back into the soil using a drag mat. Going over the field with a rotary mower also breaks up the cores (remember to sharpen your blades after you do this). If you plan to topdress with sand, the cores must be removed prior to topdressing instead of being dragged back into the field. If you are managing a sand-based rootzone, you should always remove the cores instead of dragging them back in.

Another technique to improve field conditions is to incorporate a good, quality compost into your soil. Spreading 1/4-inch of quality compost onto the field before you aerate and then incorporating it into the soil through aeration is an inexpensive way to improve your field. Compost increases nutrient retention and microbial activity along with improving soil structure.

Yearly compost applications will improve your field's turf density and color, increase root growth, and reduce the need for fertilizer and irrigation.

Additional information about using compost can be found at <http://plantscience.psu.edu/research/centers/turf/extension/factsheets/composts>. Do not use compost on sand-based rootzones.

Finally, after you drag in the cores or topdress, it is a great time to fertilize and seed. Then, if you have irrigation, give the field a good, long soaking. If you don't have irrigation, try to time this process before rain is expected.

5. Other Strategies. While the preceding four keys describe how to improve your field from turf and soil management aspects, there are some other techniques that can help you deal with heavy use of fields. If possible, try to rotate or slide your fields to spread out the wear on the most heavily used areas like goal mouths. By doing this, you can use the techniques we already described to revive your trouble areas. Designating practice areas off the field of play for repetitive practice drills can also help. Also, growth blankets can provide a jump start on recovery in late fall or early spring. Again, you don't need to put growth blankets over the entire field, just focus on those heavily-used areas. Finally if you manage a complex with multiple fields, select one field to be your "showcase" field. Pay a little more attention to this field and try to limit use on it. Then when teams play on it, it will be a special event for them and you can use it as an example of what you can do if play was limited on other fields and you were provided with the manpower, equipment, and budget required for those field conditions.

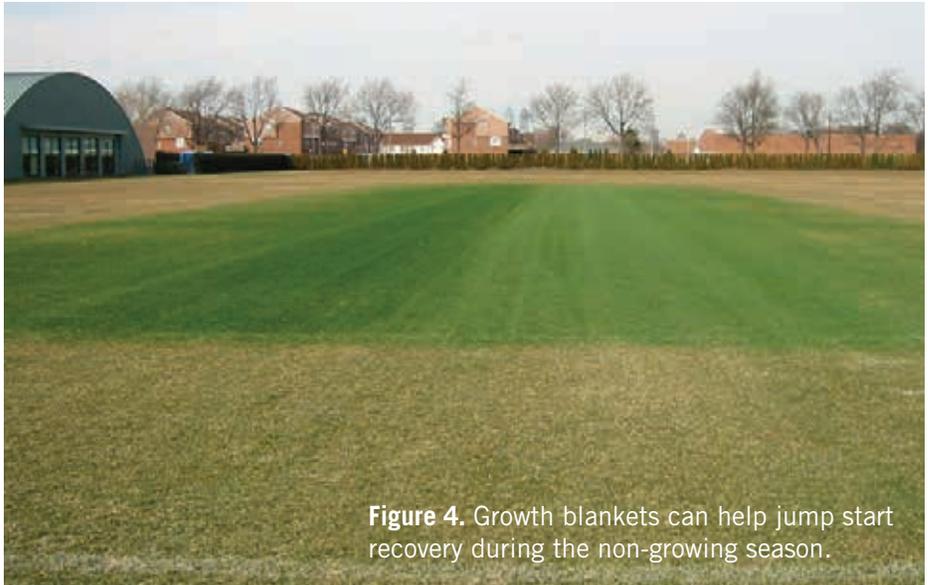


Figure 4. Growth blankets can help jump start recovery during the non-growing season.

Managing a heavily-used field is not easy. However, by improving your mowing, fertilization, aerification, and overseeding practices, you can overcome many of the challenges brought about by field over-use. So, when it seems like your field is being used all day, every day, don't throw your arms up and walk away. Take on the challenge and make your field the best it can be. •

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