



PENN STATE

CENTER FOR SPORTS SURFACE RESEARCH

From the Field: Preparing Your Field for Winter

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Welcome to From the Field - A Guide to Athletic Field Safety and Care.

Throughout this series, we will focus on a sometimes overlooked but critical component affecting the safety and performance for athletes of all ages – the playing surface.

Our goal is to provide you with simple, helpful tips about playing conditions that maximize both safety and performance.

Late fall field care is an important step in getting your field ready for next season.

If your field is as heavily-used as most, there is likely plenty of thin turf and even some bare ground on your field. While temperatures may be cool and sunlight is limited, there is still a benefit to late season field maintenance.

Fields in the North

The turf on football fields in the northern part of the U.S. is typically Kentucky bluegrass, perennial ryegrass, and/or tall fescue. Depending on your location, these grasses typically still have green color into November but their growth has dramatically slowed.

While the growth of the leaf blades may have slowed to a crawl, turf plant roots are still growing strong into the early part of the winter in most locations.

Fertilization

Applying fertilizer in late-fall is beneficial to turf roots and promotes an early spring green-up and an early start to recovery from fall field use. A good rule of thumb is to apply 1 lb. of nitrogen per 1000 square feet after the first hard frost.

Be sure to check if there are any fertilizer restrictions regarding any times of the year that fertilizer cannot be applied in your state. Be sure that the soil is not frozen when applying fertilizer. Also, slow-release nitrogen should be used. More information is available [here](#).

By fertilizing in late-fall, you will likely not need to fertilize first thing in the spring. You can wait until mid-spring to fertilize – after the typical spring flush of growth.

Fertilizing after the first frost also helps the turf plants deal with the cold winter by helping increase plant carbohydrates, which help the plant better deal with environmental stresses.

Aerification

Heavily-used fields are also prone to soil compaction. As a field is continuously used, the air gets squeezed out of the pores between soil particles. As those air pockets go away, there is less oxygen for turf roots.

As a result, turf growth suffers. A host of other problems including reduced drainage and increased surface hardness are also associated with soil compaction.

Soil compaction can be relieved through aerification. The process of aerating includes removal of soil cores from the field. This re-creates air pockets in the soil and produces a softer surface that is better suited for turf growth and is safer for field users.

Aerifying late in the fall offers several advantages compared to waiting until spring. First, the surface disruption will be minimal by the spring and will have little effect on spring sports teams using your field.

Second, the benefits of aerification will be enhanced by freeze-thaw cycles that further cause small cracks in the soil, which help introduce air into the soil.

Finally, a spring aerification may need to be delayed if the soil is waterlogged from spring rain. This potential problem is eliminated by aerifying in the fall after the season has ended if soil moisture conditions permit.

More information on aerification can be found [here](#).

Compost

Depending on the characteristics of your field, incorporating compost in conjunction with the aerification process can dramatically improve your field's soil.

A good way to determine if your field could benefit from adding compost is to have the amount of organic matter in your soil tested. Your state's land-grant university likely has a soil testing lab that can perform the organic matter test.

In general, for a loam soil, 3% organic matter is considered adequate, 4% is considered good, and 5% is considered exceptional.

Some labs, such as [Penn State's soil testing lab](#), will not only test organic matter amount, but also provide a recommendation on how much compost to apply. Typically, spreading a 1/4" thick layer of compost across the field works well.

After the compost is applied, the field should be aerified several times in different directions to mix the compost with the soil. Then, go over the entire field with a drag mat to continue the mixing process and smooth the surface.

Not all composts are equal and it is important to select a compost with characteristics that promote healthy turf growth. Information on selecting a quality compost is available [here](#).

Overseeding

Hopefully you have been overseeding throughout the season as we discussed in a previous *From the Field* column.

If you have some leftover seed from the season, you can spread it onto the field after the last game. The success of seeding this late in the year can vary. Some of the seed may not make it through the winter but depending on environmental conditions, some the seed will germinate as soon as soil temperatures warm in the spring.

Putting all of these maintenance practices together is a great way to put your field to bed for the winter once the season is over. If you will be adding compost – that is the first step. Second, aerify the field to relieve soil compaction – and mix in the compost if applied. Third, drag the field with a metal drag mat to break up the cores of soil and smooth the surface. Next, seed heavily used, thin areas within the field. Finally, fertilize at a rate of 1 lb. of nitrogen per 1000 square feet.

Fields in the South

Bermudagrass is typically grown on athletic fields in the south. Bermudagrass fields may or may not be overseeded during the fall with perennial ryegrass.

In all but the warmest locations, bermudagrass goes into dormancy over the winter. As a result, the field maintenance practices previously described for fields in the north do not apply.

For instance, no fertilizer should be applied to dormant bermudagrass fields after the season because the plants will not be able to take up the nutrients.

Aerification should also be delayed until the grass begins to green-up in the spring. If the field is aerified while it is dormant, there is a much greater chance for cold weather injury to the bermudagrass.