



Turfgrass IPM Advisory

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Turfgrass Integrated Pest Management

An integrative approach to the management of turfgrass insect pests, diseases and weeds is most effective. Prevention is the best strategy!

What to Watch For

Depending on location, you may be observing turfgrass thinning, weeds, and/or nutrient deficient turfgrass.

Focus On: Late Fall Fertilization

During the fall of the year, cool-season turfgrasses have a resurgence of growth in response to cooler temperatures. These grasses begin to recover from the stresses of summer, but may also be suffering from nutrient deficiency ahead of winter. The application of fertilizers in the late fall can improve the vigor and recovery of turf as well as improving drought tolerance the following spring.

One of the potential benefits of late fall fertilization of fields is prolonged green color into the early winter. Fertilization this time of year will also improve early spring color and may allow early spring fertilization to be skipped altogether, though a mid to late spring fertilization will still be required to maintain color into the early summer months.

The mechanism through which late fall fertilization benefits turf is by increasing the plant's carbohydrate reserves in the stems and rhizomes. Carbohydrates both help the turf to resist winter injury and aid in stress resistance of the turf the following spring and summer. In addition, late fall fertilization does not force as much leaf growth in the spring as would an equivalent amount of spring fertilizer, so carbohydrate reserves are not exhausted as quickly. Another potential benefit of late fall fertilization is an increase in rooting, though the precise mechanisms for this increase are not fully known. Some studies have shown that late fall fertilization allows more rooting than early spring applications.

Late fall fertilizer should be applied after leaf growth has stopped or slowed to the point that the turf no longer



PC: University of Minnesota

requires mowing. The grass should still be green and the soil should not be frozen. In northern Utah this typically occurs sometime in November. In southern Utah, this may occur in late November or even early December.

A fertilization rate of 1 - 1.5 lb. of primarily soluble nitrogen per 1000 sq. ft. is recommended to avoid nitrogen leaching or runoff as well as excessive growth in the spring. Consider slow-release fertilizers on sandy soils to reduce the potential for leaching and never apply fertilizers to frozen soils due to the potential for running off. Also consider a potassium application in the late fall should soil test results indicate it's needed since potassium may enhance cold-hardiness, disease-resistance, and wear tolerance of turfgrasses.

Additional Fertilizer Information

The amount of fertilizer that turfgrasses require depends on the type of turf being grown, soil conditions, previous fertilizer applications and aesthetic expectations. A first step toward making appropriate fertilizer applications is having the soil at the site tested. USU County Extension Offices have soil testing kits available and can offer guidance on testing procedures as well as interpretation of the results. A comprehensive soil test is desirable every 2-3 years, or more often if problems arise. Your soil test report will recommend appropriate fertilizers and rates, with nitrogen (N) recommended most often.

Table 1. Annual turfgrass fertilization recommendations.

General Requirements*	Recommendation
Low Maintenance	0-1 pound of N/1000 square feet
Intermediate Maintenance	2-3 pounds of N/1000 square feet
High Maintenance	4-6 pounds of N/1000 square feet

*Low Maintenance-occasional foot traffic, little to no child's play, Intermediate Maintenance-regular child's play and/or occasional garden party, High Maintenance-heavy traffic and play including athletic fields.

Once soil has been tested and maintenance level has been determined, an appropriate fertilizer blend may be chosen. Fortunately, all fertilizers are required to prominently display a three number formula on their packages. These numbers are the percentages (by weight) of N, phosphate (P_2O_5) and potash (K_2O). For example, a lawn fertilizer with an analysis of 25-5-10 contains 25% N, 5% phosphate and 10% potash. This means a 50 lb. bag of this particular product contains 12 pounds of N, 2½ lbs. of phosphate, and 5 lbs. of potash. All three nutrients are involved in many physiological processes of plants. The rest of the weight of the fertilizer is made up of other elements such as carbon, hydrogen, and oxygen within these compounds.

The source of N within different fertilizer blends varies, with the most common sources being ammonium sulfate $[(NH_4)_2SO_4]$ and urea $[(NH_2)_2CO]$. These two forms are released relatively quickly, lasting 4 to 6 weeks, but make N immediately available to plants. Some other sources include slow release forms of N – where N is released over a period of 8-12 weeks once applied. Currently the vast majority of these fertilizers are coated urea products.

Slow release forms of N fertilizer reduce leaching of nutrients from the soil, and can also reduce the amount of mowing over time because quick flushes of growth do not occur. Slow release N is especially important to use if applications are needed during the hottest times of the year. Organic sources of N are also available including products made from plant and animal sources. A common animal source is fish meal. Plant sources include cotton meal and soy products.

Mid-summer applications of fertilizer are generally discouraged except for highly maintained turf, and then only in smaller amounts. This is primarily because of the slowed growth rates of cool-season grasses such as Kentucky bluegrass and fescues during the hottest part of the growing season. In fact, over-fertilization during the hottest part of the growing season promotes weed growth and can cause grass to become drought stressed due to over-stimulation of top growth. If fertilization is undertaken in mid-summer, a slow release fertilizer is the best choice.



Photo by N. Tisserat, Kansas State University



Summer Patch (*Magnaporthe poae*)

Favorable Conditions: moderately warm air temperatures (60-70°F) and high soil pH. Excessive N fertilization in the spring.

Summer patch (SP) damage appears as circular patches or rings from 6 inches to 3 feet in diameter. Patches are initially off-color and prone to wilt, eventually turning yellow or straw-brown. Outer edges of the patch are usually orange or bronze. Affected plants have rotten roots, rhizomes, and crowns and pull easily from the turf.

Cultural Practices

Fertilization with sulfur-coated products or ammonium sulfate can help moderate pH and minimize SP development. Practice deep and infrequent irrigation. Alleviate thatch buildup and compaction.

Resistant Turfgrass Varieties

Kentucky bluegrass: Midnight, Everglade, Everest, NuDestiny, Granite Seed Co. Corsair, America, Blue Velvet. Perennial ryegrass is also resistant to the disease.

*Fungicide Options**

Azoxystrobin (Heritage), myclobutanil (Eagle), propiconazole (Banner MAXX, Propiconazole Pro), and azoxystrobin + propiconazole (Headway).

Necrotic Ring Spot (*Ophiosphaerella korrae*)

Favorable Conditions: cool (40-60°F) and moist conditions, may be compounded by drought and compaction.

Necrotic ring spot (NRS) primarily infects Kentucky bluegrass, though it may also be seen in annual bluegrass and tall fescue. The disease damages the roots and crowns of the grass plants and the first symptoms are small, light green patches of turf that get larger over time. Frequently the turf will survive the infection and re-grow in the center of the patches, giving them a ring-like (“frog eye”) appearance.

Cultural Practices

Maintain the highest mowing height possible and prevent drought stress. Core aerate once annually to reduce thatch and avoid over application of N fertilizers.

Resistant Turfgrass Varieties

Kentucky bluegrass: Midnight, Award, NuDestiny, Blue Velvet, America, Jump Start, Everglade, Everest, Ginny II, Langara. Perennial ryegrass is also highly resistant to the disease.

*Fungicide Options**

Azoxystrobin (Heritage), myclobutanil (Eagle), propiconazole (Banner MAXX, Propiconazole Pro, Fertilome Liquid Systemic Fungicide), and azoxystrobin + propiconazole (Headway).

Overseeding Turfgrasses

One of the cultural practices recommended for turf areas plagued with the necrotic ring spot/summer patch disease complex is overseeding with disease resistant turfgrass varieties. By planting resistant turfgrass varieties, the need for costly fungicides and recovery practices is lessened while maintaining the desired turf quality.

Prior to any overseeding efforts, basic management practices should still occur including adequate fertilization, irrigation, aeration/cultivation and pest control practices. Soil conditions should be acceptable, thatch should not exceed 1/2 in., light should be adequate, and perennial weeds should be managed.

Timing

In Utah, there are two times of the year when overseeding is most successful: spring and late summer/fall. Of these, late summer/fall is better because the seedlings can establish adequate root systems before the following growing season. In addition, the pressure from annual weeds is less in the fall, reducing competition with newly emerging seedlings. Springtime is also an appropriate time for overseeding, but there is more annual weed pressure and more irrigation may be required than during a late summer/fall seeding.

Also keep in mind that overseeding into Kentucky bluegrass lawns that are dense and actively growing can be difficult with slowly germinating Kentucky bluegrass seed. If the turf has been damaged by disease or other stresses, however, overseeding is generally more successful.

Selecting Grass Seed

High quality grass seed is necessary for a successful overseeding effort. Once you have determined the species and variety of seed that you require, look for a purity level greater than 90%, a germination rate greater than 85%, less than 0.5% other crop seed, less than 0.3% weed seed, less than 8% inert matter, no noxious weeds and a germination test date within the last 9 months. Regarding cost, as with most things,

cheaper does not necessarily mean better. The seeding rate and cost per pound are both components of the total cost of establishment.

Soil/Seed Contact

For successful overseeding, the seed must be in contact with the soil and there are several methods for accomplishing this. If the soil is exposed in damaged or dead areas, use a rake to roughen the surface. After raking and broadcasting seed, use the back of the rake or a stiff broom to work the seed into the soil. In larger areas, vertical mowers, slicers, core aerators, or slit-seeders may be needed. Vertical mowers should work the soil to a depth of 1/4 - 1/2 in. in two directions. Core aerifiers should pull at least 20 plugs per square foot. For both vertical mower and core techniques, work the broadcast seed into the soil by hand or by dragging a piece of chain-link fence or cocoa mat over the area. Slit seeders or mechanical overseeders automatically place the seed into the soil and often include rollers to firm up the seed bed.

Recommended Seeding Rates

Species	Rate
Kentucky bluegrass	1-3 lb/1000 sq. ft.
Bluegrass/Per. rye mix	3-6 lb/1000 sq. ft.
Perennial ryegrass	4-7 lb/1000 sq. ft.
Tall fescue	6-10 lb/1000 sq. ft.

Low Water Use Turfgrass Seed

Low water use turfgrasses are one tool in the box for addressing ongoing challenges of a variable climate and intermittent drought, while conserving water and preserving turfgrass ecosystem services.

There are multiple suppliers in the state for this seed as well as sod. Learn more [here](#).



Recommended Cultural Practices for Fall

Fertilization

Nitrogen is of primary concern in turfgrass fertilization. In the late summer, apply 1 pound of slow-release nitrogen (N) fertilizer per one thousand square feet of lawn area. This will help the grass to recover from summer damage and any stress that may have occurred. It will also be especially helpful for areas that have suffered damage due to diseases such as summer patch or necrotic ring spot. In a slow-release form, N fertilizer will provide a consistent source of nutrients as the turf begins actively growing again.

Irrigation

The irrigation season over in many parts of the state and this is particularly true in northern Utah. At this time of year, the decreasing temperatures and day length encourage grasses to go into dormancy. And dormant grasses are no longer taking up water or nutrients, so it's a good time to turn off irrigation clocks and blow the water out of irrigation systems. Of course, if you live in Washington County or other southern parts of the state, expect to keep irrigating turf areas for another 2 months.

Aeration/Cultivation

Fall is also an ideal time to aerate your lawn if the soil is compacted or there is a significant layer of thatch beneath the grass. If the thatch underneath your lawn is more than 1/2 inch thick, consider core aeration to stimulate the natural decomposition process. Likewise, if you have a very fine-textured soil, compaction may occur, particularly in high traffic areas. Core aeration will help to alleviate this compaction.

Relevant USU Extension Fact Sheets

[Northern Utah Turfgrass Management Calendar](#)

- Recommended scheduling of turfgrass management practices

[Southeast Utah Turfgrass Management Calendar](#)

[Southwest Utah Turfgrass Management Calendar](#)

[St. George, Area Utah Turfgrass Management Calendar](#)

[Summer Patch and Necrotic Ring Spot](#)

- Symptoms, diagnosis, and management

[Basic Turfgrass Management](#)

- Routine turfgrass management practices

***Precautionary Statement:** All pesticides have benefits and risks, however, following the label instructions will minimize the risk and maximize the benefit. Pay attention to the directions for use and follow precautionary statements. Pesticide labels are considered legal documents containing instructions and limitations. Inconsistent use of the product or disregarding the label is a violation of both federal and state laws. The pesticide applicator is legally responsible for proper use.

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