

Fall Fertilization Strategies

By Dr. Dean K. Mosdell

A good turf fertilization program is designed to ensure optimum utility of the turf-grass stand by providing required nutrients at the proper time. Sports fields are generally evaluated by their playability, although standards vary considerably. A significant aspect of a good turf fertilization program is fertilizer applications to cool-season grasses in the fall.

Research has shown that such applications of fertilizer improve turf density and color in the fall, ability of turf to withstand winter stress, and early spring green-up. Since top growth of the turf has slowed, the theory is that more nutrients are stored rather than immediately utilized by the plant.

Timing

The first step of a fall fertilization program is to improve turf density and help the turf recover from summer stresses by applying fertilizer in late summer/early fall.

This application of fertilizer helps “set-up” the turf for a late fall application. The early application occurs while the turf is still actively growing. Also, additional phosphorus or potassium can be applied to correct any deficiencies of these nutrients.

The late fall application should be applied as the growth of the grass slows. The general recommendation is to coincide fertilizer application with the last regular mowing. However, this timetable would vary with the source of nitrogen applied.

Organic nitrogen sources such as methylene ureas, ureaform, & natural organic forms require microbial activity to convert organic nitrogen to plant available inorganic nitrogen.

This fall strategy allows for up take of the nutrients, primarily nitrogen, without causing additional top growth. However, applications need to be made before the ground is frozen to realize the full benefits of fall fertilization.

Selection Of Fertilizer

There are numerous fertilizers available that contain various nitrogen sources from all-soluble to controlled-release that can be used in a fall fertilization program. However, it is important to understand how the nitrogen converts to plant available forms to determine timing and rate.

Slow release nitrogen sources can be divided into chemical and coated controlled-release sources. Coated fertilizers have a soluble core of nitrogen covered with a water insoluble barrier. Water must penetrate this barrier to initiate release of nitrogen. Temperature is the primary factor affecting nitrogen release rate.

Organic nitrogen sources such as methylene ureas, ureaform, and natural organic forms require microbial activity to convert organic nitrogen to plant available inorganic nitrogen. Methylene ureas contain some simple-organic nitrogen forms that do not require microbial activity. Factors affecting microbial activity, such as temperature, play a role in nitrogen release rate from these nitrogen sources.

Isobutylidene diurea is a slow-release



To reap the full benefits of fall fertilization, applications must be made before the ground is frozen.
Photo courtesy The O.M. Scott & Sons Company.

nitrogen source that reacts with water to form plant available nitrogen. Factors, such as particle size, soil pH, and , to a lesser extent, temperature and water, affect the nitrogen release rate.

Late summer applications of fertilizers are made during a period of active turf growth and possibly periods of high air temperatures. Use of slow release nitrogen sources significantly reduces the chance of salt injury and excess top growth. Rates of 0.9 to 1.5 pounds nitrogen per 1,000 square feet of a controlled-release nitrogen source can be applied at this time. If soluble nitrogen sources are selected, their split application of 0.5 pounds nitrogen per 1,000 square feet can be applied at a three to four week interval. Also, this period is a good time for addition of potassium and phosphorus as required. High potash containing fertilizer can be

used to increase soil potassium levels. At this point, turf is still actively growing to maximize potassium uptake by the plant.

Late fall applications of fertilizer are timed to coincide with cessation of top growth. However, since soil temperatures are declining at this time as well, nitrogen sources that are significantly affected by soil temperature should be applied three to four weeks earlier than soluble nitrogen sources. This timing permits some nitrogen availability in the fall before dormancy without reducing spring green-up. Soluble nitrogen sources can be applied in late fall, but rates should be reduced to 0.5 to 0.75 pounds of nitrogen per 1,000 square feet especially in sandy soils. Controlled-release nitrogen sources can be applied at one to 1.5 pounds nitrogen per 1,000 square feet.

Research has shown high nitrogen analysis or nitrogen only fertilizers can be used successfully as a late season application. This period is generally not the most efficient time to correct plant nutrient deficiencies.

Fall fertilization is simply one part of a good turfgrass fertility program to ensure optimum playability of a sports field. However, benefits derived from a fertilizer application at this time of the year make it a significant turf management practice. □

Editor's Note: Dr. Dean K. Mosdell is manager, product development for Research & Development at The O.M. Scott & Sons Company. He identifies and executes research programs in the areas of fertilizer and plant growth regulators.