LANDSCAPE MANAGEMENT

COVER STORY

Early-season turf fertilization concepts

Some turf managers have found that they can substantially reduce annual N rates by using iron, without sacrificing turf quality.

Judicious, well-timed spring fertilization can aid in disease and weed prevention and enhance overall turf quality.

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■ Late-season fertilization is commonplace in most cool-season turfgrass fertilization programs, and even with warm-season species in the transition zone and southern regions. However, quality turf cannot be sustained without some kind of early-season fertilization.

Certainly, applying too much N in spring causes more mowings and increases the likelihood of turf diseases. Concerns about the potential for water contamination via runoff and leaching force us to more closely consider N sources, application rates, and in which situations we should —or should not—be using that fertilizer.

Stimulate color, not growth—This is a good rule-of-thumb for the average turf that is not subjected to intensive wear. On a heavily used soccer field, however, N

TABLE 1

TURFGRASS N REQUIREMENTS

(lbs. N/1000 sq. ft.)

	Desired quality and management level	
Cool-season species	**Lower**	**Higher**
Bentgrass	1-3*	3-8
Fine fescues	0.5-2	2-4
Common Kentucky bluegrass	1-2	2-4
Improved Kentucky bluegrass	1.5-3	3-6
Perennial ryegrass	2-4	4-6
Tall fescue	1-2	3-5
Wheatgrass	0-2	2-4
Warm-season species		
Bahiagrass	0-1	2-4
Bermudagrass	1-4	3-8
Buffalograss/blue grama	0-1	2-3
Carpetgrass	1.5-3	4-6
Centipedegrass	0-1	2-4
St. Augustinegrass	2-4	5-7
Zoysiagrass	2-4	5-7

** Lower rates for shorter growing seasons and/or on heavy soils. Higher rates used where growing season is longer; soils are sandy; precipitation rates are high; clippings are routinely removed.*

Source: Dr. Koski

must be applied more frequently to stimulate the growth that promotes better wear tolerance and speeds recovery from intense foot traffic. Common sense must be used in determining frequency and amount of fertilizer to apply. The proper amount will vary with species, desired quality level, and what the turf is used for. (Annual N requirements for cool- and warm-season lawns, Table 1.)

Some turf managers rely on residual activity of fertilizer sources to carry them from one application to the next. In Table 2, note that those fertilizers which promote rapid greening possess short residual activity, and that the potential for fertilizer burn is higher with these quickly-available sources. On the other hand, the quickly-available N sources are less affected by temperature and are less expensive per pound of N. Slowly-available N fertilizers provide more even feeding and longer residual activity than fertilizers like urea or ammonium sulfate. However, some

TABLE 2

INFLUENCE OF NITROGEN FERTILIZATION ON DISEASE INCIDENCE

Severity increases with under-fertilization	Severity increases with over-fertilization
Cool-season turfgrass diseases	
Anthracnose	Brown patch
Dollar spot	Leaf spot
Red thread	Melting out
Rust	Pythium blight
	Pythium blight
Warm-season turfgrass diseases	
Anthracnose	Brown patch
Cercospora leaf spot	Gray leaf spot
Dollar spot	Leaf spot
Rust	Melting out
	Pythium blight
	Spring dead spot

Source: Dr. Koski

TABLE 3

CHARACTERISTICS OF NITROGEN FERTILIZERS

Fertilizer name	Analysis	Source of N	Moisture dependence	Low temperature response	Residual N activity	Salt index (per N unit)	Leaching potential
Quickly-available N fertilizers							
Ammonium nitrate	33-0-0	ammonium nitrate	minimum	rapid	4-6 weeks	3.2	high
Ammonium sulfate	21-0-0	ammonium sulfate	minimum	rapid	4-6 weeks	3.3	high
Ammonium phosphate	18-46-0	diammonium phosphate	minimum	rapid	4-6 weeks	1.6	high
Urea	46-0-0	urea	minimum	rapid	4-6 weeks	1.6	moderate
Slowly-available N fertilizers							
Slow-release sources							
Sulfur-coated urea	22-38% N	urea	moderate	mod. rapid	10-15 weeks	NA	low
ONCE	24-35% N	urea, nitrate, ammon. N	moderate	mod. rapid	15-36 weeks	NA	low
Slow-soluble sources							
IBDU	31-0-0	isobutylidine diurea	high	mod. rapid	10-16 weeks	0.2	mod.-low
Ureaform reaction fertilizers							
Nirtoform	38-0-0	ureaformaldehyde	high	slow	10-30 weeks+	0.3	very low
FLUF	18-0-0	urea/ureaformaldehyde	moderate	medium	6-10 weeks	NA	low
Nutralene	40-0-0	methylene ureas	moderate	medium	7-9 weeks	NA	low
Methylene urea	39-0-0	methylene ureas	moderate	medium	7-9 weeks	0.7	low
Coron	28-0-0	urea/methylene ureas	minimal	mod. rapid	7-9 weeks	NA	moderate
N-Sure	28-0-0	triazone/urea sol.	minimal	mod. rapid	6-9 weeks	NA	moderate
Natural organic fertilizers							
Ringer	6-1-3	blood, bone, seed meals	high	medium	10-12 weeks	0.7	low
Sustaine	5-2-4	composted turkey waste	high	medium	10-12 weeks	0.7	low
Milorganite	6-2-0	activated sludge	high	slow	10-12 weeks	0.7	low

Inclusion of products does not imply endorsement, nor does exclusion imply criticism.

Source: Dr. Koski

slowly-available fertilizers may provide a slow initial green-up, especially under cool, dry spring conditions.

Slow response can be offset with high rates (1.5 to 2 lbs. actual N per 1000 sq. ft.) of the slowly-available sources, as is often done with straight ureaform and natural organics.

This is one of those rare instances in which more than 1 lb. of N per 1000 sq. ft. can be safely applied. Unless you wish to adhere to a strictly natural organic program, it is wiser and easier to apply a blend of quickly- and slowly-available N sources in the early season.

The resin-coated product called "Once" allows you to fertilize once in the spring and yet provide even greening throughout the growing season. This fertilizer has performed impressively in three years of testing at Colorado State University.

Use N for disease control—Over- or under-fertilization, especially in the spring, can result in turfgrass disease problems (Table 2). Red thread can be a problem during moist, cool springs on fine fescue and perennial ryes if they are under-fertilized and not growing at a satisfactory rate. On the other hand, diseases like stripe smut can become severe if susceptible Kentucky bluegrass cultivars get too much fertilizer during the spring.

Research at Cornell University and other universities shows that nitrogen sources may also play an important role in suppressing certain diseases. That work suggests that natural organic fertilizers and composts, when used as turf fertilizers, can sometimes reduce the incidence or severity of diseases like brown patch, necrotic ring spot, red thread, dollar spot and pythium root rot. Success may vary depending on fertilizer and location.

Clippings return nutrients—Grass clippings provide legitimate and important nutrient sources when returned to lawns. In addition, the severity of rust and red thread may be dramatically reduced on ryegrass and bluegrass lawns where clippings are returned.

Use fertilizer responsibly—Any fertilizer application has the *potential* to contaminate water resources through surface runoff or leaching. Continuing research, however, indicates that careful fertilizer use presents negligible risk to most ground and surface water sources.

Using water-soluble fertilizers on sandy soils with high precipitation or irrigation rates greatly increases the potential for groundwater contamination.

Runoff from turf sites probably presents little hazard to water quality. However, sloppy application of fertilizer onto hard surfaces like driveways and streets will obviously present a problem when that fertilizer (which often is a pesticide carrier) is carried into storm drains with precipitation. The responsible applicator will guard against this altogether, or clean up any mistakes by sweeping up the mis-applied material.

Benefits of other nutrients—Remember to test for and maintain adequate potassium levels for your soil type. Research shows that potassium can be an important enhancer of wear, heat and drought stress on both cool- and warm-season species. Try reducing the amount of N you use by making iron a more important part of your standard fertility program.

—Dr. Koski is an extension turfgrass specialist at Colorado State University's Department of Horticulture.

LM REPORTS: IRRIGATION COMPONENTS

Today's technology means savings on water and money

■ Why the interest in centralized irrigation? The reason is water—or, more precisely, the cost of water—which spouts ever higher as its availability evaporates with more frequent droughts.

Today's irrigation technology gives turf managers near-psychic ability to forecast plant water requirements and compensate for dry spells. By combining weather stations with moisture sensors and irrigation controllers, the odds against over- or under-watering are minimized.

And you no longer need to have massive acreage to take advantage of the technology.

Stephen Smith, of Aqua Engineering in Ft. Collins, Colo., predicts even more site-specific irrigation controls and monitoring systems in the next two to three years. "Your imagination is the only hindrance," says Smith.

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The money you can save is considerable. By coordinating evapotranspiration (ET) rates with centralized irrigation controls, Smith says the city of Pueblo, Colo., saved $125,000 in water costs in one year, far exceeding its investment in central controls, data collection, a weather station and implementation. Smith calls it "a cost-effective way to approach large-scale landscape irrigation."

Dorothy Borland, water conservation analyst for Denver, Colo., parks and recreation, reports millions of gallons of water being saved by the city, thanks to a rain shut-off feature found in the best controllers.

—Terry McIver