

Balance nutrients for early fertilization

Organics, 'bridge products' and coated fertilizers now offer more choices.

by Tony Koski, Ph.D.
Colorado State University

■ Late-season fertilization is common in most cool-season turf programs, and even in some warm-season programs. 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 run-off 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 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.

Some turf managers rely on residual activity of fertilizer sources to carry them from one application to the next.

In Table 1, 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.

Slowly-available N fertilizers provide more even feeding and longer residual activity than fertilizers like urea or ammonium sulfate. However, some slow-

TABLE 1
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, amon. N	moderate	mod. rapid	15-36 weeks	NA	low
Polyon	11-44% N	urea, potassium nitrate	moderate	medium	4-12 weeks	NA	low
Scotts Poly-S products	16-40% N	urea, methylene urea	moderate	medium	12-24 weeks	NA	low
Slow-soluble sources							
IBDU	31-0-0	isobutylidene diurea	high	mod. rapid	10-16 weeks	0.2	mod.-low
Ureaform reaction fertilizers							
Nitroform	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	10-16 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
Sustane	5-2-4	composted turkey waste	high	medium	10-12 weeks	0.7	low
Milorganite, Terrene	5-6% N	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

ly- 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/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/1000 sq. ft. can be safely applied. Unless you wish to adhere to a strictly natural organic pro-

gram, 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.

Disease control—Over- or under-fertilization, especially in the spring, can result in turfgrass disease problems.

Red thread can be a problem during moist, cool springs on fine fescue and perennial ryegrasses 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 help suppress 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 run-off 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.

Run-off 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.

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Controlling fire ants in the South

Baits, dusts, broadcast sprays, mound injections and drenches—these are some of the answers.

■ The key to controlling imported red fire ants in warm-season areas is to kill the queen and her brood, says Dr. Beverly Sparks of the University of Georgia. "The mound will rebuild if you only kill the workers," she says.

"Controlling fire ants can get confusing because there are so many products labeled," she notes. "But it's not necessarily the product—it's how you apply it—that makes a difference."

Red fire ants (*Solenopsis invicta*) came to the United States in the 1930s from South America. Entering the country in Mobile, Ala., they have infested many parts of the southern U.S. Unlike most landscape pests, the small (3 to 6 millimeters) imported red fire ant does little damage to turfgrass. "They are a people problem," says Sparks. "They will attack anything that disturbs their mounds." Fire ant bites will cause white pustules to form on humans.



Sparks: fire ant control a long term program, over months.

health risk with the environmental impact of chemical applications. That decided, you must then commit to a long-term program.

You can temporarily control fire ants with chemicals. However, if you stop treatment, the fire ants will probably re-infest the area, perhaps at levels exceeding the original infestation.

One of the key principles in control-

ling fire ant infestations is that they tend to seek warm soil and that freezing soil temperatures limit their distribution. "The queen and brood will be closer to the soil surface and much easier to control in the spring and fall and immediately after a rain," Sparks points out.

Some solutions—Sparks says mound drenches are effective and economical for controlling fire ants.

Products such as chlorpyrifos (Dursban), acephate (Orthene), carbaryl (Sevin), diazinon (home lawns only) and others are labeled for this purpose.

The basic prescription is two gallons of diluted product per mound. "Sprinkle one gallon around the mound, one gallon over the mound and you get 90 percent mortality," she points out. "Do not disturb the mound before application, though."



After first chemical treatment, fire ants will re-infest an area in greater numbers.

Photo by Harry N. Howell, Jr., Center for Urban & Public Health Entomology, Texas A & M University.

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The main drawback to drenches is that they kill by contact and may require several days to be effective.

Granular products and dusts can also be used. Bendiocarb (Turcam), chlorpyrifos and diazinon (home lawns) are also

formulated as granules that need to be watered in, or the mound will just move to a different location. Some products containing acephate are specially labeled for dusting individual fire ant mounds when water is not available. Granulars will generally take several days to kill a colony while dusts can take up to a week.

"Often, it is not feasible to treat fire

ant mounds individually, and for these situations there are several products labeled for broadcast application," Dr. Sparks notes. She lists granular or liquid formulations of chlorpyrifos, isazophos (Triumph) and isofenphos (Oftanol) to kill foraging worker ants and prevent small mounds from becoming established.

Some insecticides, like pyrethroids and chlorpyrifos, can be injected directly into the mounds. "However, at \$1 to \$1.50 per mound, this is a very expensive control procedure," Dr. Sparks says.

Liquid fumigants—methyl chloroform (MC96) in particular—have also proven effective. One to two ounces of the liquid poured into the mound rapidly

If you cannot treat mounds individually, several products are labeled for broadcast application.

changes into a deadly gas that kills the fire ants within a matter of seconds. "This method is good on athletic fields and places where you're concerned with pesticide residues," notes Sparks.

Baits for the long haul—Baits can also be used as a two-pronged solution to fire ant infestations: (1) broadcast at 1 to 1.5 lbs./acre, and then, two to three days later, (2) follow with an individual mound treatment. Some products labeled as fire ant baits are hydromethy-lon (Amdro), fenoxycarb (Award, formerly Logic) and Bushwacker.

"In situations where immediate control is needed, I do not recommend baits," Dr. Sparks admits. "However, baits work well as broadcast treatments for control over a long period of time."

According to a University of Georgia extension booklet authored by Sparks, to achieve satisfactory results with baits, you should:

a) use fresh bait, preferably from an unopened container or one that has been tightly resealed and not stored for more than two years;

b) apply when the ground and grass are dry and no rain is expected for 24

hours;

c) apply in late afternoon or early evening when worker ants are actively foraging for food; and

d) treat individual mounds by sprinkling the recommended amount of product up to three feet away, but not on top of an undisturbed mound.

Treatment options

■ For small areas of turf, or where preservation of native ants is desired:

- 1) Treat unwanted fire ant mounds using the individual mound treatment of choice.
- 2) Selectively treat new or undesirable mounds as needed.

■ For long-term suppression of ants in turf and non-agricultural lands:

- 1) Make an annual or semi-annual broadcast application of bait formulated insecticide in the spring and/or fall.
- 2) At least two days after broadcasting the bait, begin treating individual mounds in sensitive or high traffic areas using the individual mound treatment of choice.

■ To eliminate all mound building and foraging activity in turf:

- 1) Make an annual or a semi-annual broadcast application of a bait formulated insecticide in areas where there are fire ant mounds; or treat individually.
- 2) Routinely broadcast or spray a contact insecticide every eight weeks or when new ants are detected.

"Baits take several weeks to six months to be effective," says Dr. Sparks. With a second bait application in the fall and annual treatments, you get 90 percent control for \$15 to \$20 per acre per year. "If you do get on this regime," she adds, "you need to stay on it."

—Jerry Roche

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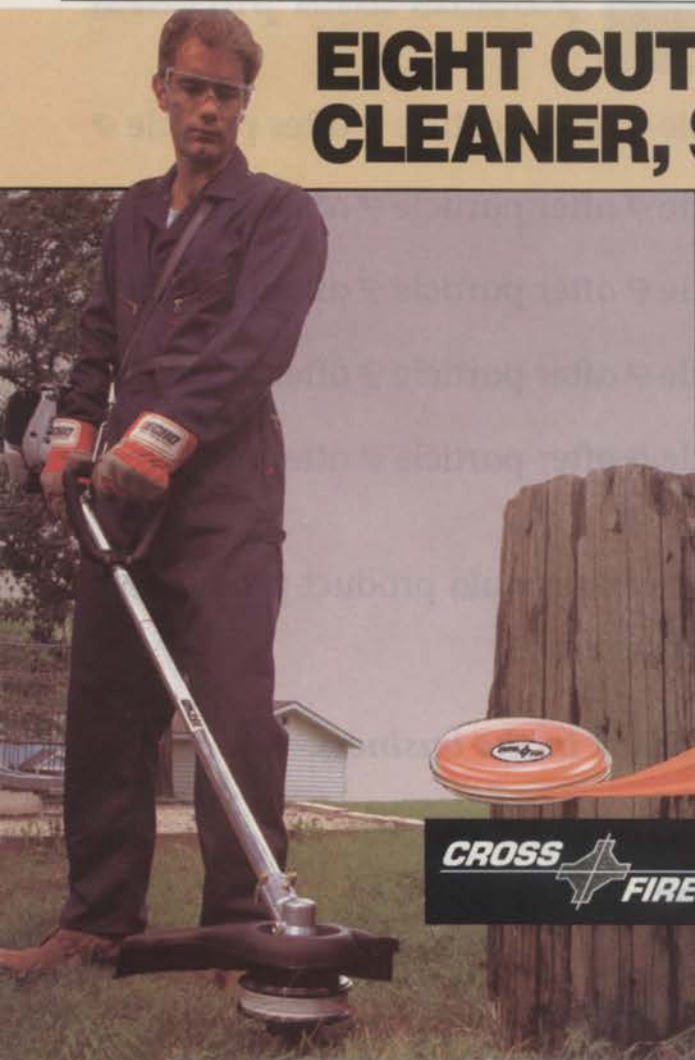
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