

By JAMES ROBBINS

Early spring is a critical period for turf in many parts of the country. As soil thaws after winter, grass that is no longer dormant needs quick access to a reliable nutrient supply. Fertilizers that release nutrients at a controlled rate in all weather conditions are preferred for this application.

Potentially complicating matters are soil microbes that many fertilizers depend on to release nitrogen—these temperature-sensitive microorganisms may not be sufficiently active in early spring to provide vital nutrition to grass.

Because of labor and weather conditions, fertilizer products that require fewer applications and release nitrogen at a consistent rate over time are preferred for these late-winter and early-spring applications. Also, the close mowing heights on greens and tees prompt superintendents to use small-sized, uncoated fertilizers, rather than coated fertilizers.

What follows is a comparison of the properties of common, uncoated, slow-release fertilizers and the ways they affect turf growth.

“Uncoated” refers to synthetic organic materials of low water solubility, or organic sludges. These products are not coated with a polymer or other physical layer.

Uncoated fertilizers rely on hydrolysis or microbial activity to release nitrogen. Common uncoated products available under a variety of brand names are ureaforms (UF), methylene ureas (MU) and isobutylidene diurea (IBDU Slow Release Nitrogen).

UFs and MUs are similar technologies created by reacting urea with formaldehyde, creating polymer chains of various molecular lengths. Granular UFs and MUs are reliable, warm-weather fertilizers.

UFs and MUs differ in their overall percentages of unreacted urea, and in their percentages of short- and long-chain polymers. The longer the molecular chain, the less water-soluble the product and the longer it takes soil microbes to convert the nitrogen into a form plants can use.

UFs have a higher percentage of long-chain polymers than MUs, resulting in a product with overall lower solubility and slower nitrogen availability. In fact, some of the long-chain molecules are not available to the turf in a single growing season, potentially resulting in undernourished grass and less predictable nutrient release.

UFs and MUs release nitrogen through their limited water

solubility and microbial decomposition. Because soil bacteria need a suitable environment in which to survive, optimum nitrogen release depends on warm soil temperatures (above 55 deg. F), adequate soil moisture and oxygen, and a favorable soil pH. Soil microbes' dependence on

warm soil means they can be fairly inactive during the thaws of early spring. This limits the amount of nitrogen available to the turf at these critical times.

Unlike other uncoated compounds, IBDU does not rely solely on temperature-dependent microbial action to release

nitrogen but, rather, on hydrolysis.

Less impacted by weather conditions, IBDU<sup>®</sup> may be the preferred product for all-weather applications. For example, IBDU can nourish turf in early spring when microbes may still be dormant.

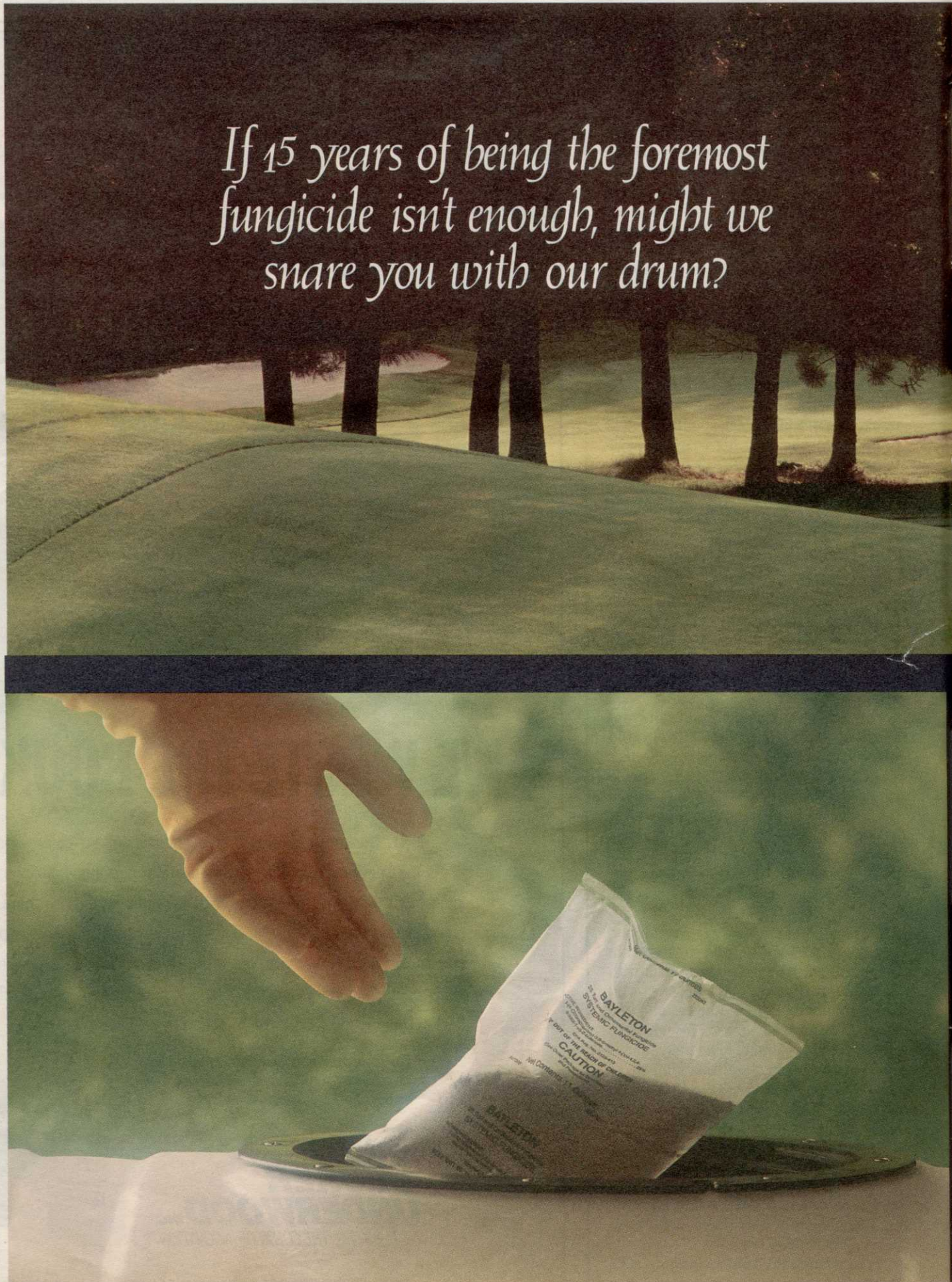
Because IBDU releases very little nitrogen when initially applied, most blends include a fast-release nitrogen source such as ammonium sulfate, potassium nitrate or urea. New developments such as sprayable IBDU<sup>®</sup> continue to improve the performance and use of IBDU<sup>®</sup> in turf applications.

While superintendents generally seek the fertilizer with the

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## Keeping turf healthy in early spring weather with uncoated, slow-release fertilizers

*If 15 years of being the foremost fungicide isn't enough, might we snare you with our drum?*



*Dr. James A. "Jim" Robbins is director of horticultural research for IMC Vigoro, Winter Haven, Fla. IBDU Slow-Release Nitrogen is a registered trademark of IMC Vigoro.*



## Riverdale fungicide receives registration

Patchwork 0.78% Granular Fungicide (contains Rubigan, a trademark of DowElanco) is registered and available from Riverdale Chemical Co. With easy-to-understand rates and use recommendations, Patchwork is labeled for the preventive treatment of necrotic ring sport, summer patch, fusarium blight, take-all-patch, and spring dead spot. Patchwork is cleared for use on golf courses, including greens and tees.

Rubigan has always been extremely effective preventing patch diseases. Applying the active ingredient in Rubigan (fenarimol) on a granular carrier insures that all of the active ingredient reaches the soil surface for improved efficacy. Patchwork must be applied preventively for most effective control. For more information, call Riverside at 800-345-3330.

CIRCLE #310

## Barricade application gives season-long control

DES PLAINES, Ill. — Barricade herbicide's flexible application timing allows superintendents to apply in very early spring, yet still retain season-long control.

Supported by Kansas State University research, where Barricade and other pre-emergence herbicides were applied in late fall and early spring, Barricade showed the same consistently high level of performance.

"Its extended residual opens up numerous application options," said Gene Hintze, turf and ornamental business manager for

Sandoz Agro. "An early-spring application — on ground that is not frozen — can provide up to 26 weeks of control."

Barricade herbicide offers consistent control of crabgrass, goosegrass, annual bluegrass, spurge, knotweed and 25 other grassy and broadleaf weeds. Its unique, non-staining active ingredient can be applied at rates as low as one-fourth of that required for other preemergence herbicides. For more details call 800-248-7763.

CIRCLE #311

## Fertilizers

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highest percentage of water-insoluble nitrogen (WIN) for reasons of safety and longevity, they should realize that some of the WIN of some products, such as UFs, may not be available in a single growing season. By comparison, the WIN in IBDU is virtually 100-percent available in a single season.

To select the most economical and predictable product, the fertilizer's WIN percentage must be closely evaluated. The WIN percentage actually is composed of two parts: cold water-insoluble nitrogen (CWIN) and hot water-insoluble nitrogen (HWIN).

HWIN is the percentage of WIN that is not available in a single growing season. The higher the proportion of CWIN to HWIN, the more controlled-release nitrogen will be available in a single season.

Besides the solubility of the fertilizer compound, golf course superintendents need to consider several factors when selecting the proper fertilizer. These can include soil type, soil moisture and the desired rate of nitrogen release. Uncoated, slow-release fertilizers would be a good choice on USGA Green Section greens for the following reasons:

- Reduced leaching relative to soluble fertilizer.
- Reduced burn potential relative to soluble fertilizer.
- Absence of protective coatings means they are less affected by spike damage.
- Uncoated greens fertilizers typically are available in smaller particle sizes than coated fertilizers, so they are less likely to be picked up by mowers.

One other factor influencing the use of slow-release fertilizers is a golf course's labor force. Fewer required applications make uncoated, slow-release fertilizers ideal for use when labor is at a premium.

## New course prep

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At a new course that has been overseeded, a superintendent could benefit from warming soil temperature to jump-start the underlying Bermudagrass and increase coverage on new greens. "Some superintendents will use carbon or Milorganite, something dark to absorb the sunlight and warm the soil a few degrees," said Lon Chatfield, a superintendent at Bonita Bay (Fla.) Country Club.

"Some cultural practices, like a light verticutting, would help. Fertilizing with a quick-release material like ammonium sulfate could get some additional coverage."

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