Find the right fertilizer Rx

Fertilizer needs to vary from property to property. Find out how to simplify your decision making

BY SHANE RILEY

Lawn maintenance contractors often want a "prescription" for their fertilization programs that fits all needs. Manufacturers have responded, supplying fertilizer formulations with all types of ingredients. Most fertilizers will work even though there are differences in quality from "ag-blended" fertilizer to homogeneous-based products.

Savvy landscape and lawn care contractors decide which product(s) they use based on three areas: external customers, agronomic requirements and internal customers.

Customer-focused business

Meeting a customer's needs means designing programs to meet different requirements. For example, a school district maintenance manager has lower fertilizer inputs than a high-end residential contractor.

Properties such as school grounds may require nitrogen fertility of two to four

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TABLE 1

Nitrogen Sources	Value	Release Mechanisms
Urea	46-0-0	Water, temperature, microbial
Ammonia sulfate	21-0-0	Water, moderate temperature
Nitrate (ammonia)	33-0-0	Water, low temperature

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pounds per 1,000 sq. ft. per year. Sand-based athletic fields may include six or seven pounds per 1,000 sq. ft.

In contrast, high-end residential contractors' customers may demand lush turf year-round, which may require up to eight pounds of nitrogen per 1,000 sq. ft. annually.

Match needs to the property

Your customer type will also dictate your agronomic programs.

Since you probably can't take soil samples of every residence, design your program to fit most of your customers. These programs will rely on the same formulation in each application period and the same formulation year-round for predictable results and easy application.

On the other hand, a school grounds manager may take soil samples of athletic fields and select a custom formulation that meets the nutritional requirements of the turf areas that are heavily used.

Don't forget to consider regional variations. For example, in the Pacific Northwest's Cascade Range, the annual rainfall is between 30 and 70 in., with most of the precipitation occurring from November through May. Programs in this region should start with the fall application (September or October), which require an earlier return for the follow-up application (February or March) than if the fall application was in November or December. The latter application prolongs the spring application.

Also, consider the product type used in the fall. A highly soluble fertilizer with no controlled release nitrogen needs to be applied more often than a blend containing a controlled release N source.

Which components are needed?

Different ratios of nitrogen, phosphorous and potassium are necessary components of balanced fertilizers. Other than carbon, hydrogen and oxygen obtained from carbon dioxide and water, turfgrass needs these macronutrients in greater amounts than micronutrients.

TABLE 2

Product Category	Release Factors				
Coating	*thickness*	*temp.*	*pH*	*microbes*	*water*
Polymer coated sulfur coated ureas (SCU) (42-0-0)	XX	XX	X	X	XX
Methelyene ureas (40-0-0)	—	XX	X	X	XX
Ureaform (38-0-0)	—	XX	X	XX	X
IBDU (31-0-0)	—	X	—	—	XXX
Polymer coated ureas (i.e. Polyon), (42,43,44-0-0)	XXX	XXX	—	—	—

Degree of influence

— = NONE **X** = MINIMAL **XX** = MODERATE **XXX**= MAJOR

Several soluble or quick-release nitrogen sources are commonly used in turfgrass programs. This list also includes factors affecting nitrogen release (see Table 1.)

Nitrate nitrogen works more efficiently in cooler months than the two other forms of soluble nitrogen. Conversely, the clippings produced from nitrate are higher than urea if applied in summer. Ammoniacal sources are between these two N sources in solubility.

Phosphorous is the second macronutrient. Blended or nonhomogeneous fertilizers include one of several phosphate sources in the mix, including diammonium phosphate (18-46-0, N-P-K); monoammonium phosphate (11-52-0); or treble superphosphate (0-46-0). Selected types vary by the type of blender using the products and aren't considered critical by the end-user.

The third macronutrient is potassium or potash. The two most popular potash sources used in blended fertilizers include sulfate of potash (SOP — 0-0-50, N-P-K) and muriate of potash (MOP – 0-0-60, N-P-K). In the Cascade Range, most blends include muriate because of its higher K value and lower cost over sulfate. However, sulfate has lower burn potential than muriate in warmer weather and has the added benefit of sulfur (18%).

Some customers add micronutrients such as iron, calcium, magnesium and sulfur to their mixes, which are often used as amendments. In low pH soils, calcium sources such as calcitic limestone and dolomotic limestone raise pH to better levels. Sulfur acidifies soils and is used more in high pH soils.

The combination of the three macronutrients (N-P-K) and minor elements comprise agricultural or mixed fertilizers. A 50-lb. bag from a local supplier consists of these nutrients in varying sizes and can segregate

Lush green turf year-round may require up to eight pounds of nitrogen per 1,000 sq. ft. annually. (Photo credit: Simplot Turf and Horticulture)

three different ways: blending segregation at the plant; conical segregation in the bag or in bulk containers; and spreader segregation in the turf. Use caution when purchasing dusty "ag" formulations that save you dollars but don't perform as well as homogeneous-based blends.

All homogeneous fertilizer particles consist of the same nutrient value. Using these pellets eliminates the question of segregation. Formulation examples are 16-6-8, 12-8-16 and 15-15-15.

These pellets are used in making two particle blended homogeneous-based fertilizers to obtain a balanced N-P-K and add a controlled release nitrogen source. This gives you an up-front release for quick response and adds the desired longevity of turfgrass color from the slow release nitrogen source.

Controlled release

To enhance turf color for extended periods, landscape managers select controlled release nitrogen sources. They minimize additional labor inputs from excess mowing and "spoon feed" the plant over a longer period of time.

Table 2 lists controlled release nitrogen sources and the mechanisms required for release.

Polymer coated sulfur coated ureas are advanced versions of the original SCU technology developed by the Tennessee Valley Authority in the 1960s. They are the lowest cost controlled release source today and give six to eight weeks extended nitrogen release.

Methylene ureas were developed in the 1950s and consist of a combination of ureaformaldehyde with urea. Formulations are listed under several trade names, and products release by molecular chain length. The longer the chain MU, the longer the release curve. Conversely, the shorter chain MUs perform with less temperature dependence and more up-front release. These products perform better in summer in cool areas and last from eight weeks to several months.

IBDU is manufactured by condensing urea with isobutryaldehyde. Release factors are water and temperature. Smaller particle sizes release more quickly than larger coarse granules. Release can last from eight weeks to several months.

The latest advancements in controlled release fertilizer technology are polymer-coated ureas (PCUs), which consist of urea as a base and include thin polymers that allow diffusion of the urea through a thin membrane. They are made with different percentages of coating so the release works in varying temperature conditions, and have greater coating integrity than polymer coated sulfur-coated ureas. Also, they are not dependent upon water for consistent release.

Internal customers

Internal customers are those who place restrictions on what you can use in the field, such as purchasing departments, labor requirements (or limits) and restrictive timelines (such as field use in school districts). These dictate how much you can spend on programs.

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Choose your best option

Below are two examples of how a high-end residential contractor and a school district grounds manager might select the right fertilizer.

High-end profile for optimum color

This contractor makes six applications of product 16-6-8 homogeneous pellets per year. Her associated costs are $55 per acre at six applications, totaling $330 per year. The labor inputs are 7.2 hours at $12 per hour, totaling $43.50 per year per acre and equaling $373.50 per year for optimum color year round.

Moderate, low-input program

The school district grounds manager makes three applications of product 19-6-12 consisting of 50% controlled release nitrogen. His costs are $85 per acre at three applications, totaling $255 per year. Labor inputs are 3.6 hours at $12 per hour, totaling $21.75 per year per acre. The sum equals $276.75 per year to have acceptable color for the growing season.

Which program best fits a customer's needs? Many will use a combination of the two. A more soluble product may be desirable in cooler months to achieve the desired effect.

More controlled release products may be applied in late fall for residual response well into the following spring. Avoid the heavy surge growth periods when perennial ryegrass is affected by a combination of temperature and moisture.

— Shane Riley