Fertilizer Label Literacy

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Micronutrients, acids, biostimulants? Today's labels go beyond NPK. Here's a primer.

Historically, the NPK analysis told you everything you needed to know about a fertilizer: the percentages of nitrogen, phosphorus, and potassium. You would just test your soil, determine your turf's fertility needs, and find a product with your desired three-number combination.

Today, fertilizer selection has become a more cryptic process with the growing emphasis on micronutrients and nutrient sources in general. But it doesn't have to be overwhelming. In this article, we'll discuss what fertilizer is, how to make buying decisions, and where soil conditioners, amendments, and biostimulants fit into the whole picture.

(Image: Adobe Stock / Kalium)

What Is Fertilizer?

At its simplest, fertilizer is food for plants. Like you and me, plants require certain macronutrients and micronutrients. Seventeen elements are essential for plants.

The first three are carbon (C), hydrogen (H), and oxygen (O)—plants source these through photosynthesis. Then there are the primary macronutrients: nitrogen (N), phosphorus (P), and potassium (K) which exist in the soil, but not always in sufficient amounts. That's where the standard NPK fertilizer comes in to supplement.

The secondary macronutrients are essential in lower amounts than the primary ones, but higher than micronutrients. They are calcium (Ca), magnesium (Mg), and sulfur (S). Lastly, micronutrients are essential, but in the lowest amounts. They are boron (B), chlorine (Cl), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo), nickel (Ni), and zinc (Zn).

Fertilizer ingredients, differing in efficacy, include mineral nutrients, amino acids, organics, poly-aspartic acid, humic and fulvic acids, and seaweed, among others.

Amino acids improve nitrogen fixation to optimize nitrogen delivery to the plant. They also increase the production of chlorophyll and plant energy. The plant can utilize the amino acids to make the metabolites it needs, taking some burden off.

Organics provide nutrients over time, feeding biology as they break it down and release nutrients. Compost can act as a soil conditioner by adding organic matter and feeding the biology in the soil.

Liquid vs. Granular

The most significant trend I expect to see over the next decade is the transition from granular to liquid fertilizer in lawn care. Historically, liquid fertilizer was the mainstay of turf applications, but the tech was somewhat limited. Granular fertilizer became more popular as it had better performance and allowed larger areas to be applied more efficiently. Yet these days, we have more tech available for liquid applications that improve performance and enable applicators to be more efficient on lawns that are 10,000 square feet in size or less. We are seeing more companies adopting liquid applications with great success.

The liquid category has two subcategories: foliar and soil drench. Foliar fertilizers are applied to plant foliage using a sprayer. Liquid fertilizers for turfgrass are foliar-applied products. Soil drench products are used on ornamental plants and trees, which can be very useful if your company treats more than just grass.

Within granular fertilizers, there are other subcategories. As many know, straight granular requires a spreader to apply and requires irrigation to water in the product. Temperature also affects application success. For these reasons, granular fertilizer is more fickle. Water-soluble granular fertilizers are dissolved and then foliar-applied or drenched. Foliar-applied fertilizers are then taken into the soil by irrigation and rain at a faster pace.

Granular fertilizers are sometimes blended with chemicals to control weeds, disease, or insects and allow application efficiencies. The vast majority of crabgrass control products are applied on fertilizer as well as grub control applications.

Decisions, Decisions

The debate between liquid and granular is controversial in our industry, but I am a proponent of adopting more liquid programs. Liquid fertilizer is more cost-effective and flexible while providing quicker green-up. Some excellent technology and products are available now to improve performance.

With tighter budgets, liquid fertilizer is an excellent way to save. Even investment in liquid application equipment is just that: an investment. It will pay off within a season.

Another factor to consider right now is availability. We know urea and potash are two raw materials corresponding to the nitrogen and potassium elements of fertilizer, respectively. They are also significant exports from Russia, which has made availability more scarce this year. Skyrocketing natural gas prices and subsequent fertilizer plant closures have only added to the supply

strains. The fertilizer available goes to farmers before it becomes available for lawn care.

Ultimately, fertilizer decisions can be specific to the properties you treat. Even within the same geography, what works on one may not work on another. Soil testing is an essential baseline for identifying nutrient needs so you can meet them without overapplying.

Quick-Release vs. Slow-Release

Another decision to make when selecting a fertilizer is choosing between slow-release and quick-release products. Slow-release technology delivers small doses of nutrients over long periods of time, while quick-release fertilizers are fast-acting but shorter-lived. Both options have advantages and disadvantages, and the decision ultimately depends on your specific needs.

One of the deciding factors is timing. We know Fall is the best time for application to cool-season turfgrass because it’s already in its peak growing season. Warm-season turfgrass benefits most from nutrients in Summer, at the peak of its growth. The beginning of the growth spurt is a good time for a slow-release fertilizer, while toward the end of the growing period, a quick-release fertilizer maximizes healthy growth.

Soil Amendments & Conditioners

Tangent to fertilizer, soil conditioners and amendments are valuable to plant health. These two product categories are not considered fertilizers themselves, but accomplish similar jobs. Soil amendments and conditioners never replace fertilizers, but they almost always complement them.

Soil amendments improve the soil to make a better environment for plants. Soil amendments alter soil properties, add organic matter, help with air /water infiltration, create better soil structure, reduce compaction, and even help flush salt. There is a distinction between organic and inorganic soil amendments. One soil amendment is lime, which raises the pH of the soil. Likewise, sulfur lowers the pH of the soil.

Soil conditioners “feed” the soil, nourishing the plant and making it healthier. Conditioners are a broad product category that interacts with the soil microbiome. According to the USDA, one teaspoon of soil can contain 100 million to 1 billion bacteria.

Mycorrhizae is a popular soil conditioner these days. Mycorrhizae are fungi that live in the rhizosphere via a mutually beneficial relationship with the plant. The microscopic fungi serve as conduits by which turfgrass obtains nutrients from the soil.

Biostimulants

Another term I hear a lot these days is plant biostimulant. The earliest definition of a biostimulant was a product that promotes plant growth in small quantities compared to nutrients. Amino acids, spoken of earlier, are considered biostimulants. Besides the previously mentioned contributions they make to plants, biostimulants can also be modified to enhance their benefits.

One example is poly-aspartic acid. Aspartic acid is put through a process to create a long chain polymer. The polymer is bristling with negative charges that can grab and hold onto positively charged nutrients in the soil, keeping them more available for the plant to uptake. These nutrients include the ammonium ion form of nitrogen. I have seen a 30% increase in nitrogen efficiency with this polymer coating fertilizer.

Seaweed extracts can also be considered biostimulants. They can provide natural plant hormones like gibberellins and cytokinins that aid plant growth. They also contain micronutrients and some macronutrients that the plant can utilize. At the same time, seaweed is considered a soil conditioner as it forms polymer chains in the soil that can help water and air infiltration.

Lastly, humic and fulvic acids are used as conditioners and biostimulants. They are derived from the biological decay of organic matter. When applied to the soil, they can also help sequester nutrients and make them more available to the plant, as well as aid in the increase of biological activity in the soil.

In addition to understanding product features, a strong relationship with your distributor enables smart buying decisions. Take advantage of the expertise in your network to determine the best products for your needs. Reading labels isn’t glamorous, but it’s vital to the success of your program and customer satisfaction.

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