

Features

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What's In Plant Foods Nowadays?

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We grew up learning about fertilizers as the N-P-K ratio, or the percentages of nitrogen, phosphorus and potassium contain within it. Those three macronutrients are the building blocks of most plant life, and their presence in plant foods and fertilizers is vital for growing crops. But nowadays there is a lot more “stuff” contained in plant foods that not only provides the building blocks of the plant but also helps supply much-needed minor elements, deliver nutrition more efficiently and ward off disease.

In an effort to keep garden center staff in the know about what types of stuff plant food manufacturers are incorporating into their products, I asked a few companies point blank: “What’s in plant foods nowadays?”

First the Soil

One of the concepts that has changed the composition of plant foods from a straight-up N-P-K formulation to a product with a more robust offering is a greater understanding—from grower to retailer to consumer—of the importance of a healthy and “living” soil. “When I first started working with garden centers, I knew more about soil science than the owners and employees,” said Cameron Bonsey, director of marketing at Coast of Maine Organic Products. “That has all changed in the last 10 years.”

Gardeners are looking not just for plant foods, but products that will enrich their soils, too. Natural and organic ingredients in those products go a long way in doing just that. “As [natural ingredients] break down they add humus to the soil, and that improves soil,” explained John Harrison of The Espoma Company. Improved soils not only allow for better oxygen and root penetration, but also give the soil’s microbial organisms the nutrition they need to thrive.

About Those Microbes

Microbes put the living in the term “living soil.” They refer to microscopic organisms that are beneficial to plants. That is, the microbes assist the plants in some way, depending on which microbes are present. For example, “they can populate the soil in and around the root zone so they serve as a barrier to soil pathogens,” explains Chance Finch, general manager for Nature’s Source Plant Food. “Some also create enzymes; these will chelate minor elements and make plant nutrients more available in the plant. And they’ve been proven to reduce stress and have a great benefit against drought.” The bacterial microbes are typically strains of bacillus, pseudomonas and a host of others. “For us it’s as much about the soil condition as it is about the plant.”

Certain fungi are also beneficial to plants, creating mycorrhizal relationships between themselves and plant roots. The fungi help the roots absorb water and nutrients and also create a barrier to pathogens. The fungi, in turn, receive carbohydrates. Several species of *Trichoderma* are also a beneficial fungi but work in a symbiotic, non-mycorrhizal manner.

Mark Highland, found of Organic Mechanics, has one caveat for microbial products: “They need to be stored correctly in the garden center.” The elements—mainly the sun and heat—can severely limit the efficacy of the inoculants. Take care to store products containing microbes inside on the retail shelves.

Another danger is that other living elements of many soil and compost mixes—microscopic algae or mosses, for example—could germinate and effectively use up the inoculants within the product. “Your effectiveness goes down,” Mark says. “The additives that indicate ‘use at planting time’ are, in my opinion, the best quality.” Organic Mechanics’ Fuhgeddaboudit mycorrhizae root zone feeder packs are packaged dry, “so it’s still dormant until the gardener puts a pack in the hole with the plant and those species will wake up and start doing their own thing.”

That’s not to say microbes can’t be incorporated into liquid fertilizers. Nature’s Source has developed a way to fuse its oilseed extract technology with the microbes to form a basic microencapsulation. “The microbes are basically in an environment that is stable and are kept dormant until which time it breaks a pH threshold or it gets into the soils or the plant and they break dormancy and go to work,” explains Chance.

Espoma has also figured out a way to keep the Bio-tone microbes inactive while in liquids. The company released liquid plant foods into the market in 2016. “Those liquids have the same kinds of ingredients as our organics,” says John. “Liquid manure, bone meal, animal and fish and soy protein—ingredients that have been there for a long time and now we’ve added a set of microbial inoculums.”

Seafood as Plant Food

The other thing we all learned as schoolchildren was how, when the pilgrims came to New England, the Native Americans had been including fish heads in the planting holes along with their seeds. Fast forward several centuries and the folks at Coast of Maine Organic Products are helping gardeners incorporate fish—and lobster, crab, kelp and squid—into their soil. “N-P-K is a small piece of the component,” said Cameron.

Kelp meal, he explains, has more than 60 micronutrients and “it’s really like taking a multivitamin.” Lobster and crab meals have lots of calcium but also contains chitin, which promotes healing. Fish bone meal has calcium but also is very high in phosphorus (5-13-0). The company’s Stonington Blend of granular organic plant food contains all of the above as well as worm castings and a diversity of micronutrients. In addition, they’ve also just released a new line of mostly single-component liquid fertilizers—crab, squid, salmon and kelp.

Why go the liquid route? “You’re looking at the same or similar efficacies as with granulars but it’s about how quickly they work,” Cameron explains. “Liquid fertilizers act almost instantly, whereas granulars have to break down.” If you see something happening to a plant, the liquids will be able to act on the issue more quickly.

Efficiency With Sustainability

Nature's Source products are based on oilseed extract technology. This extraction results in an amino acid-based product, and these amino acids, which are proteins, are essentially nitrogen, explained Chance. Amino acids are utilized more in the agriculture industry than horticulture thus far, he noted, because ag sees the benefits of amino acids in terms of increased yield and part of a sustainability component.

"These amino acids are like natural chelators," he says. "Not only are they going to better utilize the nutrition you are intentionally applying but if your soils have locked up nutrients, they are going to release those nutrients like any other chelator and make them available to the plant." The result is using less fertilizer and using it more efficiently. "Our goal is sustainability in everything we do," Chance adds.

Future Tech

While N-P-K is necessary, the future developments in plant foods seem to be headed toward organic components, Chance suggests. "With the rising demand of the organics market—people eating more organic food—the higher demand there is driving this in terms of more natural inputs." He says Nature's Source is looking into micro-algae, which are full of the micronutrients as well as amino acids. They're also looking into introducing their Plant Probiotic, a commercial product containing their microbe package, into the consumer market. "People recognize probiotics in terms of what they do for human health," Chance says, "so having a plant probiotic should register with the consumer."

John Harrison agrees with the assessment of the future looking bright for organics. "Espoma sees an opportunity to put more organics in front of people," he says. "We believe it's the best way to feed a plant." And part of putting organics out there is making the products easier to use. Espoma's new Easy Dose Cap—a two-chambered cap that auto-fills when inverted—allows the user to measure the correct liquid dose without spilling and getting hands dirty. "We're making it as easy as possible to use our product."

Mark Highland sees the future of plant food as introducing ways to do more with less. The shift will be away from seeing "waste products" as waste and instead seeing them as resources. For example, turning bycatch fish into fertilizers instead of throwing them out. Another example is biochar—a charcoal produced from the burning of organic materials—can assist nutrients in working better in the soils so they aren't lost out of the pot or downstream. "Future technology in fertilizer is all about more efficient use of fertilizer so we aren't throwing it away," Mark says. "We won't be able to afford that." **GP**