

Organic Grow: Fertilizers & Amendments

by Rick Weller, Founder of Organically Done Plant Products

Like all living things, plants desire a balanced and complete diet – the more complete the diet, the happier and healthier your plants will be. A 'complete' plant diet includes macro nutrients, trace elements (over 70), amino acids, vitamins and plant growth hormones – many of which are missing from your bottles of chemical fertilizer.

For years, science fiction writers have shown humans getting their daily nutritional needs from pills and synthetic bars – remember *The Jetsons*, *Charlie and the Chocolate Factory*, *2001: A Space Odyssey*, *Soylent Green*... Sure, our grocery stores offer a wide variety of vitamins and synthetically derived products but I doubt that any of us are ready for *The Jetsons* dinner pill - we do not have the scientific knowledge to create such a thing. Is there any reason to believe we can do better with our plant food? (**So, which of my chemical fertilizers provides a complete diet?**)



What are organic fertilizers? They are products derived from a wide variety of ingredients including agricultural crops, mined minerals, animal waste and animal remnants. Because each of these is a complex organic form, the right recipe of components can provide all of the elements of a 'complete' plant diet, just like our human food pyramid. An organic fertilizer that conforms to the true meaning of organic is derived from renewable resources, uncontaminated by chemicals, pesticides or GMO.

Fish meal (for example) contains about 10% nitrogen. Synthetic nitrogen fertilizer is produced from natural gas. Both of these sources provide the same nitrogen, i.e., synthetic nitrogen is neither inferior nor superior to organic nitrogen, it is the same element. The problem is that chemicals are manufactured using harmful production processes, they are derived from scarce natural resources, they only provide a limited number of necessary plant

requirements, they have heavy salt content, they leach into the environment, etc.

Chemical fertilizers provide nutrients in an inorganic form, instantly available to your plants - your plant absorbs as much as it can as soon as the chemical is applied ('over-eating' will cause burn). Watering will typically leach the remaining fertilizer out of your soil. This is a gorge-starve cycle.

Organic nutrient forms are not immediately available to your plants and require mineralization and nitrification before they are ready to be absorbed by the plant. Because of this, you want maximum soil contact with your organic fertilizers to give maximum access of these nutrient sources to your soil biology. This conversion is an ongoing process and results in a steady feeding cycle. Leaching or run-off is rarely an issue.

Labeling laws require that all fertilizers display the N-P-K (nitrogen-phosphorous-potassium) of a product. Organics will typically display lower numbers than chemical products. But, an apples-to-apples comparison of these numbers is not really appropriate.

Applying a 50-0-0 (high nitrogen) chemical product to your plant will provide an instant jolt of nitrogen. Then, whatever your plant has not absorbed will be washed away. Applying a 6-0-0 organic product to your plant will provide a steady source of nitrogen for weeks as it breaks down. So, which product provides more total nitrogen?



What are the 'best' organic components? This can be discussed from two different perspectives: 1) what does a component provide to the plant and soil, and 2) what is the environmental impact of utilizing the component.

Broccoli and nuts are both important elements of a healthy human diet because they each provide something the other cannot. This is analogous to choosing the right organic components for your plant environment. For example, **alfalfa meal** provides a nice blend of macro nutrients along with triacontanol, a natural plant growth hormone; **kelp meal** provides limited macro nutrients but is rich in trace elements, cytokinin (growth hormone) and amino acids. Blended organic

fertilizers should have a diverse set of ingredients to achieve a 'complete' diet.



Along with providing different dietary aspects, organic components differ in their environmental and health impact. Some components are not rapidly renewable – it takes millions of years to form peat moss. Some components have significant residue risk – cottonseed meal is derived from cotton crops, one of the mostly heavily pesticide-applied crops we grow. Some components have significant contamination risk – blood, bone and manure products are derived from livestock that is almost guaranteed to have some level of bacterial contamination and or antibiotic. Some components have unknown risks – soy meal is derived from soy crops, over 90% of which are now grown from GMO seed.

So, there is no 'best' choice. All products produced for industrial usage have a level of environmental impact and health risk. Our goal is to be cognizant of these risks and make informed decisions.

Organic fertilizers come in **liquid and granular** form. Which to use? I say both. There are more available options for dry components so our ability to add diversity into our growing environment is greater along with having more flexibility to provide specific nutrients, etc. These components take weeks or months to break down, depending on your soil environment.

Liquid fertilizers break down much more quickly than dry, providing a faster boost of stuff (nutrients, amino acids, etc.) to your soil and plants. They can (and should) be used for both soil feeding and foliar feeding.

Humic and fulvic acids are a category of plant products that are receiving a lot of attention from both chemical and organic growers. They are derived from fully-decomposed organic matter such as leonardite and are a core component of healthy soil. Humic acids are not nutrients, they are supplements that support and improve soil processes. Although the 'how' science is not well understood, benefits are broad and include:

- improved nutrient uptake
- improved root growth
- chelating unavailable nutrients and pH buffering
- microbial food source
- retention of soluble nutrients (less leaching)

Humic acid products, found in both granular and liquid form, are generally used as soil conditioners. Fulvic acid, a subset of humic acid with a smaller molecular structure, is normally used as a foliar spray. Either (or both) can be used in combination with your organic nutrient products. Chemical growers will realize similar benefits.

Coming next: Organic teas



Organically Done (www.organicallydone.com) is a Michigan manufacturer of organic fertilizers and soil amendments. Our mission is to produce high-quality truly organic products that provide what your plants need while being free of potential contaminating sources that are found in many of today's "organic" alternative – **NOT ALL ORGANICS ARE CREATED EQUAL.**