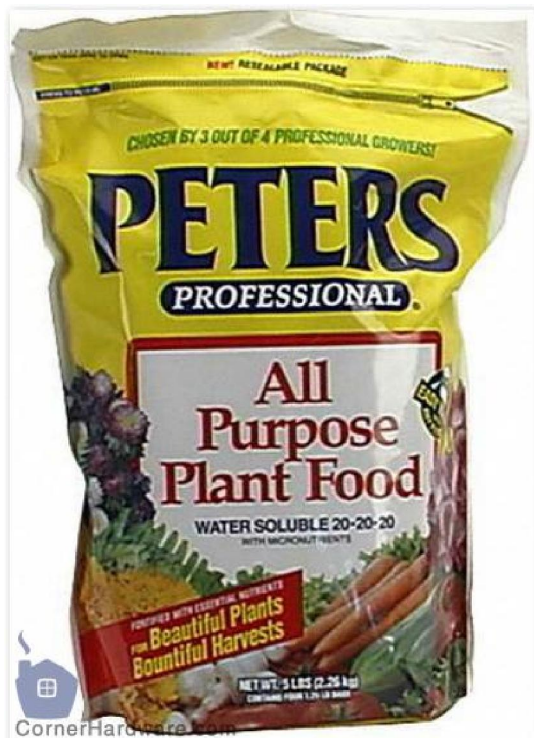


## CHEMICALS AND FERTILIZERS



Just like people, plants have a few basic requirements in order to thrive. Along with fresh air, sunlight and water, plants need fertilizers. The air supplies oxygen, hydrogen and carbon and everything else comes from the soil. Fertilizers are any material that provides any of the nutrients plants use as food. Just like us, they need a variety of foods - lots of some things and a little bit of others. When nature is allowed to follow its own course, plants will only grow where the nutrients are available. Since we would rather they do their best for us where we want them to grow, we apply additional fertilizer to the soil.

### **How do I know if my soil needs any fertilizer and how much to add?**

To get an accurate evaluation of the nutritional needs of your soil, you will need to have a sample analyzed. Ohio State University no longer does soil testing. There are a list of places on the website which is listed at the end of the article, from which the homeowner can choose. Once you have gardened for a while, you will begin to see signs your plants are hungry, but too often the same symptom might mean very different things. Soil samples every few years can be extremely helpful and remove a lot of the guesswork.

### **What is the most common mistake in fertilizing?**

Without a doubt, over fertilizing is the most common mistake made by beginners and experienced gardeners alike. Just because a little is good, does not mean more is better. It is much better to err by giving a plant too little than too much.

**Every package of fertilizer gives three numbers, such as 10-20-10. What exactly do these numbers mean?** They indicate how much nitrogen (N), phosphorus (P) and potassium (K) is in that fertilizer. The numbers are percentages of the total package and they are always listed in the same order, N-P-K. A package labeled 10-20-10 will contain 10% nitrogen, 20% phosphorus and 10% potassium by weight.

### **10-20-10 only adds up to 40%. What else is in there?**

Nitrogen, Phosphorus and Potassium are all joined to at least one other element to form a compound. An example would be calcium nitrate which would provide not only nitrogen but also calcium. Synthetic (non-organic) fertilizers are then mixed with something that makes it easier to spread. These are listed on the label as inert ingredients.

### **What is meant by macronutrients and micro-nutrients?**

Primary nutrients such as nitrogen, phosphorus, potassium, sulfur, calcium and magnesium are called macronutrients. Nutrients needed in much smaller amounts (such as iron, manganese, zinc, chlorine, boron, copper, nickel and molybdenum) are called micronutrients. Keep in mind that just because a plant needs less of a micro-nutrient doesn't mean it is less important to the health of that plant.

### **What are the pros and cons of inorganic fertilizer?**

Inorganic fertilizers, also called non-organic and synthetic, are made up strictly of nutrients obtained from non-living sources. They are available in higher concentrations and their nutrients are readily available to the plants and inexpensive, making it very easy to use too much.

**What are the pro's and con's of organic fertilizer?**

Natural sources of nutrients, usually derived from living things, are referred to as organic fertilizers. Organics are slowly released to the plants and have low levels of nutrition. Organics also improve the soil's structure and ability to hold nutrients. Organic fertilizers tend to be more expensive than inorganic. It is hard to use too much organic fertilizer.

**Aren't there lots of different organic fertilizers to figure out?**

There does seem to be a lot to choose from, but they fall into basic groupings that make it easier. Manures and composts are good sources of organic matter and nutrients. Pulverized rock, such as limestone or rock phosphate, are good sources of minerals, but are slow to break down and become useful to the plants. Dried blood, bone meal and fish meal/emulsion are all good sources of nutrients. Remember to check the N-P-K, as they all differ.

**How is a soil amendment different than an organic fertilizer?**

To be a fertilizer, the material needs to contain significant amounts of the nutrients needed by plants (such as N-P-K). Soil amendments are materials that improve the soil in some way (structure, drainage, microbes) but don't contain much nutrition. Compost and peat moss are both soil amendments. Manure, bone meal and blood meal are examples of fertilizers. Both are important to the soil and many fertilizers are also soil amendments.

**Is it less expensive to use organic or inorganic fertilizer?**

Initially, organic fertilizers are more expensive to use than the inorganics, but organics have the added value of improving the soil, and they are much less likely to damage the plants.

**Are dry or liquid fertilizers best?**

These vary quite a bit. A dry granular fertilizer is usually the least expensive and easiest to spread over a large area. Liquid and water soluble fertilizers are more quickly absorbed, aren't much more expensive than dry, but take more time to apply.

**What is meant by slow-release?**

Fertilizer granules can be coated with something that releases the nutrients slowly over a period of weeks or months, depending on the coating. These slow-release fertilizers are very useful in indoor plants and containers, but may be too expensive for general use.

**Are fertilizer spikes slow release?**

Spikes release their nutrients slowly just because they are so hard it takes them that long to dissolve. During wet weather, they dissolve much more quickly.

**What do they mean by pH and is it important?**

pH is a measurement that tells you about the soil's acidity level. It can greatly effect your plant's ability to make use of the nutrients in the soil. A neutral pH is 7.0. Measurements below 7.0 are considered acid and those above 7.0 are called alkaline. Most garden plants grow best when the soil is slightly acid to neutral (6.0-7.0). Very few plants require acid or alkaline soil. It is important to check the pH every year or two and make the necessary adjustment. We have an information sheet available on soil pH.

**LINKS**

<http://ohioline.osu.edu/hyg-fact/1000/1132.html> Provides information on soil testing list of sites which do soil testing.

<http://www.fertilizer.com/garden/garden.htm>

<http://aggie-horticulture.tamu.edu/extension/veghandbook/chapter3/chapter3.html>

