

Intro to understanding garden amendments by Mike Weeks, from Fifth Season Gardening Co.

- Soil Testing and why it is a great place to start
- What is NPK?
- Biology - the other soil amendment
- Compost
- Cover Crops

Lets review typical amendments and their roll in the garden.

## **Nitrogen Sources**

### **Alfalfa Meal**

This soil conditioner is a reasonable alternative to blood meal. Its carbohydrates and proteins encourage microbial activity in the soil. The alfalfa's extensive root system provides micronutrients to plants from deep below the earth's surface. Typical analysis: 3-4-7.

### **Blood Meal**

A fast-release source of nitrogen for plants that have a high nitrogen requirement. Blood meal can also be used in compost piles to speed the decomposition process. This product also tends to repel deer. Typical analysis: 12-0-0

### **Chilean Nitrate**

Chilean Nitrate (SQM Nitrate of Soda) is a mined natural source of nitrogen from northern Chile, the only known deposit of this mineral salt in the world. It has an analysis of 16-0-0 (+ trace minerals), and is water soluble, and thus readily available. NOP requires that you use Chilean Nitrate for no more than 20% of your annual nitrogen need.

### **Cottonseed Meal**

This product's low pH level makes it an excellent, slow-release source of nitrogen for acid-loving plants. Typical analysis: 6-2-1.

### **Feather Meal**

Crops that need a steady, long-lasting source of nitrogen will love Feather Meal. Because of its low water solubility, leaching is almost nonexistent. The nitrogen becomes available to plants through microbial activity.

### **Fish Meal**

This product is an excellent source of organic nitrogen and phosphorous. Its high levels of carbohydrates and protein stimulate biological activity in the soil and increase tilth. Because Fish Meal's nutrients are released through the soil's microbial activity, it is long-lasting and does not leach. Typical analysis: 9-3-1

## **Phosphorous Sources**

### **Steamed Bone Meal**

Use this product as a general application or as a starter fertilizer for new plants and transplants. Bone Meal is an excellent source of plant-available phosphorus. It also provides calcium and a small amount of nitrogen. Typical analysis: 1-13-0.

### **Tennessee Rock Phosphate**

This product is an excellent source of phosphorus, calcium and essential trace elements. Because it's a high carbon phosphate, Rock Phosphate has about one fifth of lime's neutralizing power. It releases best at a low pH, so apply before liming.

### **Soft Rock Phosphate (Colloidal Phosphate)**

Soft-rock phosphate contains less phosphorus (16 percent) and calcium (19 percent) than hard- rock phosphate, but the nutrients are in chemical forms that plants can use more easily. This powder breaks down slowly, so one application may last for years in the soil. It also contains many micronutrients. Available in granular form for easier application.

### **Pottassium Sources**

Sulfate of Potash

Pottassium deficient soils will thrive with this mixture of pottassium and sulfate. Typical analysis: 0-0-50-20S

### **Greensand**

Greensand loosens clay soils, increases moisture by up to ten times, and contains over 30 trace minerals. These properties make it a perfect soil conditioner for both agricultural and horticultural applications.

### **Green Potash**

A naturally accruing potash source derived from kelp. Greensand is added for the benefit of the trace minerals and potash. Green Potash work great in a situation where the soil is in need of potash. 0-0-15

### **Other Soil Conditioners**

**Nature's Nog** is a formulation of Norwegian cold harvested seaweed and humates. Nature's N.O.G. is a totally organic, natural compound designed to enhance root formation, increase vascular strength, promote green color, and reduce stress on ornamental and agricultural plants.

### **BioChar from Chargro**

Biochar is a biological source of beneficial soil microorganisms, enriched substrates and microbial foods. This formulation allows beneficial microbes to survive harsh soil environments, improve nutrient cycling and increase plant health.

### **Azomite Micronized or Pelletized Soil Re-Mineralizer**

This naturally mined mineral product is an excellent re-mineralizer for depleted soils. Azomite is a hydrated sodium calcium aluminosilicate (HSCAS) containing other minerals and trace elements.

### **Aragonite**

This sea calcium contains exceptionally high levels of calcium and low levels of magnesium. Many soils have had dolomite lime added for years, and the resulting high magnesium levels may be tying up other nutrients in the soil. When used with gypsum, Aragonite can offset soil's high magnesium levels. Typical analysis: 0-0-0-39 Ca.

**Gypsum** (Calcium Sulfate)

If your soil has an adequate or high pH level but lacks calcium, use Gypsum. This quick-reaction product loosens the soil, encourages soil life and adds needed calcium. Gypsum also deters weeds, since most weeds prefer acidic soils. When combined with water, the sulfur forms a weak sulfuric acid that releases calcium from the soil. Typical analysis: 0-0-0-23 Ca.-17 S.

**Hi-Cal Lime**

This product raises soil pH and increases the release of phosphorous and potassium from their insoluble compounds, making them plant available. Use it with Gypsum on soils where magnesium is high. Hi-Cal Lime also loosens clay soil. When soil is sandy, it binds particles together. For immediate use and a gradual breakdown, use the product in pulverized form. It contains less than 5% magnesium oxide.

**Dolomitic Lime** Use this when soil test shows low magnesium. This is the most common lime on the market.

**Thorvin Icelandic Kelp Meal – Certified Organic**

Conditions the soil, builds soil life, retains moisture and stimulates root and plant growth. It also improves yields and reduces the effect of drought and frost. Kelp Meal is made from dehydrated *Ascophyllum nodosum* seaweed. Because Kelp Meal is water insoluble, its nutrients are released by microbial activity so you should allow two weeks for Kelp Meal to become available to plants.

**Menefee Humates from Earthgreen Products**

This rich, humus-based granular soil conditioner provides humic and fulvic acids that act as organic chelators, helping plants better utilize nutrients in the soil. It also stimulates the soil's microbial activity for both indigenous bacteria and those added to the soil, especially mycorrhizae. Used in conjunction with a balanced fertility program, quality humates will enhance the overall performance of the fertilizers to a point that an actual reduction of basic N- P-K per 1,000 square feet may be appropriate over time; enhance success of seed germination and overall plant development; enhance overall plant health, resistance to stress, and appearance. NOP approved for organic production.