

## FERTILIZING...ORGANICALLY!

### *Using Organically Approved Fertilizers, also called Soil Amendments or Grow Powders.*

Now that you've decided to switch to organic methods, your priority is to enrich that soil! Feed the soil and you'll feed your plants. Feed your soil with soil nutrients, microorganisms, and organic matter. This way, you set in motion a sustainable fertility that is healthy for you, your crops, and your ecosystem.

### **Synthetic Fertilizers**

To begin, wean yourself off petrochemical fertilizers. You will hear that plants can get their nitrogen and other nutrients from any source, not just organic fertilizers. This may be true, but synthetic fertilizers are detrimental to your soil's health, and ultimately to your plants' health. The chemical granules of 10-20-20 (or 8-32-16 or whatever) are harmful to earthworms and microbe communities. For example, the **K** component is frequently in the form of **KCl**. As muriate of potash or potassium chloride, it is extremely harsh on beneficial organisms in the soil foodweb. Synthetic fertilizers can also destroy humus in your soil and build up unwanted levels of salts and hardpan. Since microbes are essential to transform minerals into useable forms for plants, your goal is to nurture high and diverse populations of microorganisms. Build a healthy soil foodweb and those microbes will :

1. Unlock existing nutrients that were present but previously unavailable, and
2. Vastly reduce the amount of fertilizers and water you need to add.

Ecologically, synthetic fertilizers are energy-intensive to manufacture and transport. Most of these acid-based fertilizers are highly water soluble, so they leach easily and can pollute surface and groundwater. In your lawn and garden, they force-feed your plants. The fertilizer can make too much of a nutrient uptake too soon. As the plants take up water, they are forced to draw up dissolved fertilizers— whether they need those nutrients at that stage of growth or not. Excess nitrogen, for example, forces maturing lettuce to retain too much water. This imbalance makes the vegetable more attractive to pests and disease, and causes rapid deterioration after harvest.

As an organic gardener, you'll want to imitate nature. Nature's nutrient cycles release minerals slowly and steadily. You accomplish this by choosing fertilizers that feed your soil, not force-feed your plants.

**The Organic Method** The goal is to build

- ! macro-nutrients AND
- ! micro-nutrients (trace elements) with organic amendments
- ! microorganisms (feed instead of kill with toxic fertilizers and pesticides)
- ! organic matter (compost, green manures, manures, humates)

To an organic grower, fertility depends on adequate organic matter and plentiful microbes to release nutrients and make them available to plants. Fertility means a healthy soil foodweb, nutrient balance, and excellent soil tilth. Organic means long-term stewardship, rather than deplete or poison the soil. The result? Healthy soil grows healthy plants.

### **Organic Fertilizers**

Organically approved fertilizers are strange-sounding rock powders and ground-up plant and animal materials called "meals". For example, blood meal supplies **N**, bone meal provides **P** and **Ca**, and greensand is a source of **K** and several trace elements. These sources of fertilizers are also called "soil amendments" or "grow powders".

### **Where to Start?**

You still need those same 3 major (or "macro") nutrients that were present in your synthetic fertilizers: nitrogen (**N**), phosphorus (**P**), and potassium (**K**). These are simply referred to as **NPK**. A bag of synthetic fertilizer labeled 10-20-20 means it contains 10% **N**, 20% **P**, and 20% **K** by weight. A label on an organic fertilizer like blood meal that reads 12-1-1 means 12% **N**, 1% **P** and 1% **K**.

Man cannot live on bread alone, nor can crops live on **NPK** alone! Your soil also needs elements not included in the synthetic fertilizer, especially calcium (**Ca**) and magnesium (**Mg**), plus many micro-nutrients or minerals in trace amounts. Micro-nutrient examples include sulfur, boron, manganese, zinc, and iron. Organic sources of NPK contain many trace minerals. Healthy soil grows healthy plants that are naturally more resistant to insects, disease, and frost than plants grown in depleted soil. Plants without nutrient deficiencies have a longer shelf life. Most importantly, if trace elements are deficient in your soil, your food and therefore your body will have mineral deficiencies.

## **HOW TO MIX AN ORGANIC NPK FORMULA**

Start with a soil test— both an analysis and recommendation. Find out what NPK you have in your soil now, and avoid expensive guesswork about its needs. Find out if you need to adjust your soil's pH as well.

Now choose sources for your **N**, **P**, and **K**. Select one grow powder from the **N** list, one from **P**, and one from **K**. (Fishbone meal is the exception. It is made from fish guts and

fish bones, so it contains both **N** and **P** in one application). Calculate the amount you need of each from the table below. The sources have micro-nutrients in them, and so they come along automatically. Fear not about making the wrong choices! You can't make a mistake with any combination you choose. You are "going organic". You will be helping, not hurting, your soil and microorganisms.

Here's an Alaskan example if you are still puzzled. Let's make a formula by choosing fishbone meal and greensand. The fishbone meal gives you **N** and **P** in one bag. It supports an Alaskan by-product industry. It provides several trace elements and calcium. Matanuska Valley farmers report impressive results in the first year they switched to this white cod bone meal. The greensand provides **K** and nine trace minerals as well.

Another formula you might choose is:

- Blood meal for **N**,
- Rock phosphate for **P**
- A combination of greensand and kelp meal for **K**.

Simply refer to the chart to calculate the amounts for your choices of **NPK**.

Still hesitant? You can actually buy a commercially prepared blend of organic fertilizers. Look for brand names like *Whitney Farms*, *Vermont*, *Gardens Alive!*, *Earth-Safe*, *Sustane*, and *Fertrell*. These commercial organic fertilizers are convenient for lawns, tiny areas, and container gardening. Always read the label. Some claim to be organic but are not. Contents should be organically approved grow powders, not ammonium nitrate, urea formaldehyde, muriate of potash, etc.

### **HOW MUCH DO I NEED?**

The soil test will recommend application rates. They are based on pounds per 100 square feet for the home garden. So measure your garden's length and width and multiply for total square feet. Calculate with enclosed table. **DO NOT** overdo applications. You can seriously damage your soil balance. Too much fertilizer is worse than too little. Use left-overs in compost operations.

### **HOW TO APPLY THEM**

Weigh your powders for your area. Mix them in a wheel barrel. Then sprinkle them evenly on the soil surface. Now cultivate them into the top 5-6" of topsoil. You are ready to plant!

Congratulations! By fertilizing organically, you're replacing used-up nutrients. You are building soil, instead of polluting. Now your enriched soil food web can reward you with

healthy vegetables, flowers, fruits, lawns, and trees with far fewer pests and less drought damage.

### **AIM FOR SUSTAINABLE FERTILIZATION**

The goal is to bring in less and less purchased fertilizer from outside the garden. Taper off these amounts each year, so that by the 6<sup>th</sup> year your legumes, cover crops, and compost provide most of your NPK.

Additional practices that help maintain soil fertility:

- Recycle as much food and crop waste as possible into compost.
- Rotate crops, following heavy feeders with heavy giver crops.
- Grow trees and compost the leaves containing nutrients brought up from deep subsoils.
- Grow your own compost crops (plants specifically for making into compost).
- Keep your organic matter levels at the 4- 6% level in the top 6" of your soil. This will encourage microbial life and minimize soil nutrients from leaching out of the soil.