Thinking of starting a compost pile? Be sure to enrich it with a compost starter. Most of the compost starters sold commercially do not contain microorganisms in the blend. Our formula contains alfalfa meal and seaweed extract as base ingredients, but most importantly, we have infused it with several species of TruBiotic® microorganisms, which are the heart and soul of composting.

Compost and Manure

A well-made compost functions similarly to a well-made organic fertilizer, except it is not nearly as potent in nutrients. Compost is simply the remains of once living organisms that have been degraded by microorganisms. Compost usually consists of organic materials such as yard wastes, plant trimmings, leaves, grass trimmings, soil with microbes and various wet kitchen scraps, other than meat. Applying this composted substance to your soil will help provide great tilth, microorganisms, nutrients and nutrient stores.

With compost, the nutrients found in the organic matter it contains are released slowly. Compost is so nutrient rich it often meets the needs of a plant for one year or more, although you do not reach the maximum growth and health potential if you apply compost only once a year. Plants grown with healthy and diverse compost will absorb a slower, steadier and more diverse set of nutrients than if they receive synthetic nutrients. Natural compost leads to healthier, disease-resistant plants packed full of nutrients. Caution: Avoid compost made from bio-solids or sewage sludge. Many organic experts warn against them, because they are linked to heavy metals and human pathogens.

Adding compost to your soil is an excellent way to build it up, especially if the soil was nutrient deprived in the past. In certain urban areas, some asphalt lots and industrial yards have been redeveloped for residential use, because land values increased. The soil beneath would have been deprived of organic matter and nutrients for many years. If you live in a similar area, amending the soil with compost is one effective way to prepare your area to support healthy growth. Applying a premium homemade or commercial compost benefits a soil in any stage of maturity and helps to establish any edible garden. To get safe, effective compost for your garden, look for a trusted nursery or professional grower who can advise you on how to boost your soil's fertility.

Manure, or animal waste, is another effective but risky way to spread nutrients into your soil. Fresh manure has a substantial effect on soil fertility for agriculture. However, I do not recommend using it in a home garden. Raw manure may release ammonia, which is detrimental to plant health. For this and other reasons, manure needs to be composted for a long time before you use it in your garden. Once composted, though, manure is a nutrient-rich material to mix with your soil. Never use the waste of a carnivore (meat eater) such as a cat or dog, as it can carry harmful pathogens. If you raise rabbits, sheep, chickens, horses or cows, these manures are great. Just remember to compost them before you apply them to the garden.

Remember - healthy soils equal healthy plants that equal healthy people

It is that simple.

Organic Fertilizers and Soil Amendments

These materials consist of natural ingredients that the beneficial microbes in a living soil digest as food. Popular ingredients include fish meals, feather meal, alfalfa meal, cottonseed meal, bone meals, kelp meal, seaweed extracts, blood meal and liquid animal manures. The meals and extracts contain organic matter and nutrients, while the bacteria and the symbiotic mycorrhizal fungi convert the nutrient sources into usable forms plants can absorb as needed. Also, fungi extend the reach of plant roots to acquire more nutrients.

Organic fertilizers have a much lower chance of leaching through the soil and contaminating the water table. With organic fertilizers, nutrients are physically bound into larger pieces of organic matter lodged in the soil and available so that microbes can free them up for plant use. There is nothing mysterious or magical about organic fertilizers. They simply give you a way of working with nature rather than against it. The objective in using them is to recycle organic matter back into the soil rather than discarding it and relying on chemicals. In fact, the organic process is much less mysterious than the methods of the chemical grower.

A program of organic fertilizers involves far more than just growing plants without chemical fertilizers and artificial sprays. Using organics is a life choice and commitment that recognizes the complex, successful workings of nature in maintaining life for hundreds of millions of years. Sound organic cultivating principles closely follow processes found in the natural world. Also, do not think that using these principles leads to lower yields or quality. In fact, with organics you are likely to increase both. Organic methods also support habitat for wildlife while insuring the fruits and vegetables you produce in your garden are safe, nutritious and free of chemicals. You also reduce the possibility of the harmful effects of chemicals on infants and children.

The soil teems with millions of microorganisms that release nutrients required for healthy plant growth from organic matter. Rather than feeding plants directly, organic fertilizers feed the soil with natural materials that allow your plants to draw on a humus reservoir of nutrients as they need. Plants grown this way are stronger and more resistant to pests and disease. Organic fertilizers work and persist for many months (unlike the short-term affects of chemical fertilizers) because they become a part of the living soil.

You can find a number of different organic fertilizers and amendments at your local nursery. Some are formulated to support the nutritional needs of particular plant categories such as vegetables, while others take an all-purpose approach good for a variety of plants. Fertilizers are generally tested and proven for a specific application. Choose a selection specific to your types of plants: vegetable fertilizer for vegetables; fruit fertilizer for your fruit trees. In any case, organic fertilizers and amendments are geared for the slow, controlled release of plant food. They are perfect for preparing the soil for upcoming seasons without having to worry about nutrients being wasted or washed away.

Organic fertilizers ensure that your soil remains fertile for hundreds of years. Land located at the site of ancient civilizations, such as India and China, are still fertile, even though agriculture has been practiced there for thousands of years. The fertility is maintained because organic fertilizers were always used in the past.

The Answer: Feed the Soil Not the Plants

Feed the soil, not the plants! When we feed our plants and not our soil, we lose all the benefits from microbes. When we feed the soil, we actually feed the microbes in the soil. Microbes make nutrients available for plants. You feed microbes by adding organic material. If you give plants a synthetic chemical fertilizer, you feed only the plant, not the soil nor the microbes. Soil has supported plants and given them nutrients since long before we invented other fertilizers, so why not feed the soil and preserve the natural biological interactions that support plant survival and growth?

Why are people generally indifferent to the tiny life all around us? Perhaps we modern people ignore microorganisms, because we have a strong bias against all microscopic life. Now that we understand the germ theory of disease, and appreciate the many health improvements that came from it, we have become "biophobic." Are we prejudiced against anything alive but so small we cannot see it? Do we think anything microscopic and alive must be bad for our health? Do we take for granted what we cannot see? This is a dangerous bit of blindness.

True, some bacteria and viruses threaten our health. But the vast majority of tiny life is either neutral or helpful. Much of it is even essential. Our lives would be impossible without the essential bacteria and fungi in our guts and in our soil. Without microorganisms we could not have penicillin or yogurt (to name just two).

The large-scale, corporate food industry sees organic gardening as a major enemy and touts the benefits of genetically enhanced crops instead of first enhancing the soil organically to make crops more healthy and nutritious. If everyone grew their own food, and consequently enjoyed good health, we would not need giant monoculture and commercial farming. Pharmaceutical companies would generate much less revenue. You would need a medical doctor only if you had a broken bone. It all comes down to corporate manipulation, control and money.

Buy heirloom seeds and transplants. Grow everything you can. What you cannot grow, buy from someone you trust. If you're an attorney, CPA, architect, nurse or have a 9-to-5 job in the middle of the city with no time or space to garden, barter your services with an organic produce farmer, chicken farmer, cattle rancher or neighbor who grows the healthiest organic tomatoes. A few words from you could be worth a fresh basket of healthy fruit or vegetables. Please consider these ideas to ensure your health and the health of your loved ones.

16 NUTRIENTS PLANTS MUST HAVE

Sixteen basic nutrients are required for crop development (plus hundreds more we know are needed in minute amounts). Commercial agriculture tends not to address these trace nutrients. The oversimplified commercial approach is like taking a multivitamin with only an emphasis on vitamin C or calcium. Conventional agriculture tells us that 16 basic nutrients are all that is needed for plant growth.

It is best to use well-rounded organic fertilizers, soil amendments, aged manures and composts for healthy plants and soil on a regular basis. You never know how much of any one nutrient is needed at a certain time of year, or time of day, for that matter. For example, nitrogen requirements can vary hourly depending on the time of day, soil temperature or the amount of photosynthesis a leaf is producing at the height of the solar index, which is from 10 A.M. to 4 P.M.

Long-lasting organic materials are great sources of nutrients and are a safe way to ensure that all nutrients are available anytime a plant needs them. We favor ocean-based fertilizers, because they are loaded with nutrients, well beyond the basic sixteen needed for crop development. All the nutrients plants use are equally important, yet each is required in vastly different amounts. These differences have led to the grouping of essential nutrients by the relative quantities in which plants require them, namely, primary or macronutrients, secondary nutrients, and micronutrients.

DID YOU KNOW?

NPK rating (or N-P-K) is used to label fertilizer based on the relative content of the elements nitrogen (N), phosphorus (P), and potassium (K) that are commonly used in fertilizers. These elements promote plant growth in three different ways. Nitrogen promotes the growth of leaves and vegetation. Phosphorus promotes root and shoot growth. Potassium regulates water and nutrient movement.

Macronutrients

The macronutrients, required in the largest amounts, are nitrogen, phosphorus and potassium (referred to by the chemical shorthand N-P-K). Many of these nutrients may never make it to your plants if the pH is out of balance.

NITROGEN (N)

Needed to produce amino acids. Essential for plant cell division, vital for plant growth, directly involved in photosynthesis, necessary component of vitamins, aids in production and use of carbohydrates and affects energy reactions in the plant. Helps trap energy from sunlight.

Deficiency causes thin stems, yellow leaves, slowed growth and yellowing where plants should be green.

PHOSPHORUS (P)

Needed for genetic material, cell membranes, root development, seed number and size. Facilitates the use of energy, involved in photosynthesis, respiration, energy storage and transfer, cell division and enlargement. Promotes early root formation. Improves quality of fruits, vegetables and grains.

Deficiency causes purple leaves beginning underneath, halted roots, slow growth, poor fruit and vegetable production.

POTASSIUM (K)

Needed for carbohydrate metabolism. Influences the uptake of calcium, sodium and nitrogen. Increases photosynthesis. Essential to protein synthesis. Important in fruit formation. Activates enzymes and controls their reaction rates. Improves quality of seeds and fruit, improves winter hardiness, increases disease resistance.

Deficiency leads to flabby stems, halted growth, burnt leaf edges and vulnerability to disease.

Secondary Nutrients

The secondary nutrients are calcium, magnesium and sulphur. Most crops need these three secondary nutrients in lesser amounts than the primary nutrients. People are giving them more prominence in crop fertilization programs as they learn that N-P-K fertilizers alone cannot fulfill plant requirements.

CALCIUM (Ca)

Helps regulate access to plant cells. Used for continuous cell division and formation. Involved in nitrogen metabolism. Required for enzyme activation and cell reproduction. Reduces plant respiration, aids translocation of photosynthesis. Increases fruit set and stimulates microbial activity.

Deficiency halts growing tips, curls leaves, and causes cell membranes to disintegrate, producing thin cell walls and blossom end rot.

MAGNESIUM (Mg)

Needed for the chlorophyll molecules that put the green in plants. Also used for enzyme activation. Improves utilization and mobility of phosphorus. Increases iron utilization in plants and influences earliness and uniformity of maturity.

Deficiency causes yellowing of lower leaves and, in some cases, lower crop yield.

SULPHUR (S)

An integral part of amino acids needed to build proteins. Contributes to the development of several enzymes and vitamins. Aids in seed production and promotes nodule formation on legumes. Needed in chlorophyll formation.

Deficiency causes younger leaves to yellow.

Micronutrients or Trace Elements

IRON (Fe)

Important for nitrogen fixation, chlorophyll synthesis and used in other enzymes and proteins.

Deficiency more likely in alkaline soil. Causes yellowing between enlarged veins and short, skinny stems.

CHLORIDE (Cl)

Most soils have enough chloride for adequate plant nutrition. However, chloride deficiencies are reported.

Deficiency in sandy soils in high rainfall areas or those derived from low-chloride parent materials. There are few areas of chloride-deficiency, so this micronutrient is not considered in fertilizer programs.

ZINC (Z)

Essential component of various enzyme systems for energy production, protein synthesis and growth regulation. Needed to produce plant growth hormones. Greatly benefits seed and grain production and maturation.

Deficiency displays yellowing and mottling of leaves. Plants also show delayed maturity.

COPPER (Cu)

Important for reproductive growth. A catalyst for enzyme and chlorophyll synthesis. Aids root metabolism and helps in using proteins.

Deficiency symptoms generally appear on young plants. First symptoms are yellowing of youngest leaves with slightly stunted growth. In extreme cases, leaves die after becoming shriveled, twisted, broken and ragged.

BORON (B)

Important for all growing tissues. Exists in cell membranes. Needed for nitrogen fixation, protein synthesis, starch and sugar transport, root growth, water uptake and transport.

Deficiency more likely in alkaline soils. May lead to growing points dying and cells being disrupted.

MOLYBDENUM (Mo)

Important for nitrogen metabolism and protein synthesis. Needed to convert inorganic phosphates to organic forms.

Deficiency occurs mainly in acid soils. Can cause pale, deformed, thin leaves.

MANGANESE (Mn)

Needed for synthesis of chlorophyll, assists in vitamin, carbohydrate and nitrogen metabolism.

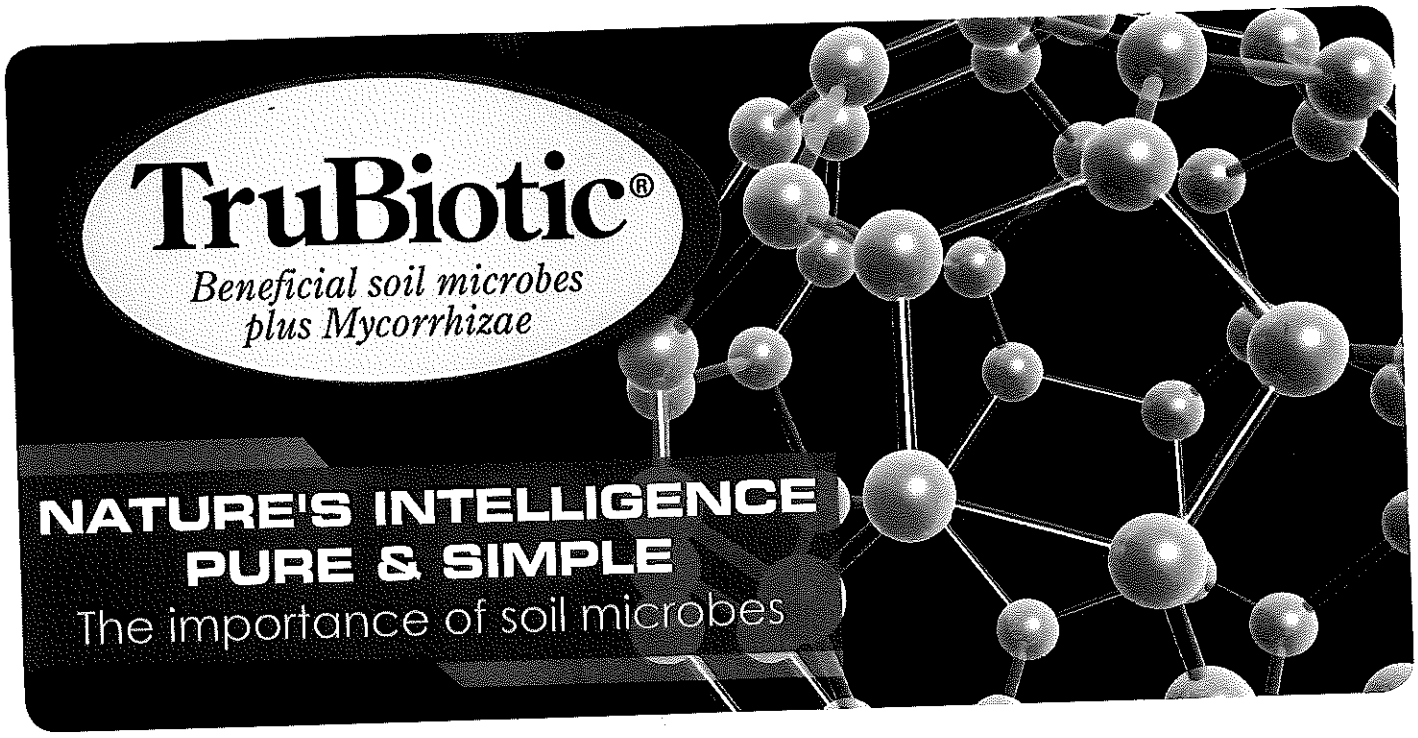
Deficiency more likely in alkaline soil. Stops new leaf growth and pale color, mostly between veins.

CARBON (C)

HYDROGEN (H)

OXYGEN (O)

In addition to the 13 nutrients above, plants also require carbon, hydrogen and oxygen. Plants extract these elements from air and water to make up the bulk of their weight.



The soil is alive! Below our feet and invisible to the naked eye, tiny microbes—the great digesters of the earth—constantly break down organic material into a more usable form that plant roots can identify, absorb, and ultimately incorporate for new growth. This material includes complex organic compounds, such as tannins, lignins, proteins, carbohydrate, cellulose, pectin, etc.

Healthy soil should contain no less than 10,000,000 bacteria per gram. The presence of microbes ensures that nutrients are made available to plants at a steady rate. While the plants are actively growing—and requiring more nutrients—so do the microbes in the soil. As the weather warms, both the plant and microbes respond at a similar rate. The microbes become increasingly active in their role of breaking down organic materials into forms more readily absorbed by the growing plants that need extra nutrition. As the weather cools—and plants require less nutrition—so do the microbes. The reduction in their activity means fewer nutrients in the soil are being released to the plants. In this way, the soil can rebuild food reserves. This self-regulating cycle has occurred for millions of years as part of the wisdom of nature.

Microbes also help to stabilize the soil by physically binding soil particles together; they release a by-product called glomalin that acts as a glue, binding mineral particles and organisms to each other. This contributes greatly to soil aggregation. All of these processes happen naturally in a healthy, productive soil.

FEED THE SOIL

When we feed our plants instead of our soil, we lose all the benefits that microbes contribute. When we say "feed the soil," it means feed the microbes in the soil, because it is the microbes that make nutrients available for the plants. The way you feed microbes is through the addition of organic material. If you feed with a synthetic chemical fertilizer, you are feeding the plant, not the soil, or the microbes. Adding petrochemical synthetic fertilizer also drives up the salt index in the soil and changes the pH, which can have adverse effects on plants.

More importantly, chemical fertilizers only feed for a short period of time; organic fertilizers offer continual feeding because the microbes cannot digest all of the organic fertilizer at once. With chemical fertilizers, we also lose the microbes' contribution to soil aggregation. Good soil aggregation leads to improvements in tilth, water retention, the rates at which water penetrates the soil, the amount of oxygen in the soil, and the reduction of runoff. All of these desirable soil conditions can be achieved by adding organic material. As you can see, microbes are immeasurably important and essential to the health of all productive soils.

To elevate the microbial colonies in your garden, use Dr. Earth® organic fertilizers and soils. They contain TruBiotic®, a broad-spectrum soil and seed inoculant, already mixed into the products. Two things will happen when you use Dr. Earth®:

- The organic fertilizer and soil will become the food source for the microbes, providing almost immediate nutrition for your plants, which means fast results.
- Your soil will contain the proper number of microbes to truly benefit your plants because – unlike most organic fertilizers and soils – Dr. Earth® products have various species of beneficial microbes already included as components.

Increased biological activity in the soil, and the buildup of existing bacterial populations, will help make your plants and garden resistant to diseases, frost, and insects, while maximizing the potential for growth and health. Remember: your soil is alive. **DO NOT TREAT IT LIKE DIRT!** Learn to work with, and nurture, the natural bio-system of your soil.