

*“Roots are leaves in the ground, and leaves are roots in the air” - Alan Chadwick*

## **Foliar Feeding for Flowers, Vegetables and Turf**

Foliar feeding is feeding your plants through the foliage (leaves). When nutrients are applied directly to the leaves, they are absorbed quickly into the plant through the stomata, tiny mouth-like organs on the leaves that facilitate nutrient intake and gas exchange. Plant uptake of nutrients can be 100% to 900% more effective when the foods are applied to the leaves than to soil. Foliar feeding helps move concentrations of growth nutrients to the most critical parts of the plants -- buds, young leaves and growing roots. 90% of the foliar fed fertilizer can be found in the roots in as little as 60 minutes. It will also help to counteract pH problems or lockup and may even be used to produce a quick reaction in plants to speed up blooming for special occasions.

Foliar feeding on wilted or damaged plants allows food to be taken in when roots may be in poor condition. It perks up the plant without danger of root or crown rot. Benefits of foliar feeding may be noticed in 2 to 3 weeks.

Good soil with the right balance of nutrients is critical to a healthy garden. Yet, researchers found that foliar feeding maintains a better overall nutrient balance within the plant, which may not be achieved through soil uptake alone or soil that is too alkaline (pH of 7.5 or higher). They note that root distribution, soil temperature, available soil moisture, soil-nutrient imbalance and other factors can limit nutrient absorption through the roots. Foliar feeding is the last step a good grower will make for healthier plants and to increase yields.

Build healthy soil with good organic materials, compost and fertilizer - always add 2 tablespoons of **Rich Earth™ Soil Conditioner** per average plant (handful around roses and shrubs) and 1 to 2 lbs per 100 sq. ft for turf and landscapes. It works for 6 to 9 months in the soil and acts as a catalyst for any compost or fertilizer program.

**Macronutrients** (N,P,K, calcium, magnesium and sulphur) must be applied on the ground as the plant requirements are higher than what could be supplied through the foliage. These nutrients found in man-made fertilizers are often difficult to absorb through leaf tissues. Soil feeding is recommended. Trace amounts of easily absorbable macronutrients though are found naturally in all **Rich Earth™** products.

**Micronutrients** (including zinc, boron, copper, iron, manganese, molybdenum, etc) are usually required in small amounts and can be applied through foliage as you can normally cover the plant's needs with two or three annual applications. However, for the leaves to absorb them, they must be produced in a foliar spray version - all 65 trace minerals are found in **Rich Earth™ Liquid Minerals** and are plant-derived for easy absorption by the leaves including the critical minerals zinc and iron. Remember, Liebig's Law of the Minimum points out, the nutrient in **least** supply is the one that limits plant growth.

## **Foliar Feeding Basics**

**DO NOT SPRAY** when the temperature is **above 80F** and when the weather is hot and dry and water vapor is leaving the cells.

- **DO NOT** spray during the heat of the day, as the magnification principles of the water droplets can burn the leaves which are not receptive at this time anyway because the stomata are partially closed.
- **DO SPRAY** when the temperature is **72F or below**
- **DO SPRAY** when the cells of the leaf are full of water and dew has collected on the foliage (early in the morning)
- **DO SPRAY** when **air temperatures and humidity both equal 135 or less**
- **DO SPRAY** when air temperature is cooler than soil surface temperature.
- **DO SPRAY UNDERNEATH** and top of leaves - Stomata are located primarily underneath the leaves
- **DO SPRAY** with warm water, if possible. Allow drips to nourish soil microorganisms and plant roots.
- **DO SPRAY** if a plant is suffering from root rot or yellowing leaves (chlorosis) - leaves greens up quick
- **DO SPRAY** early mornings and evenings (an hour or two after sunrise or an hour or two before sunset) are best. Some prefer evenings because this gives the nutrients to the plant during its nighttime respiration period when the stomata are most active. Mornings are excellent times due to water-filled stomates from dew.
- **DO SPRAY** with a fine mist - best on a day that's not too windy. For large applications, a backpack sprayer is often used, but a hand-held pump sprayer works well for most jobs. (Hunter) Ortho "Dial and Spray works well - easy settings, no mixing needed!
- **DO USE** a spreader sticker in case of rain. 1 tablespoon of molasses in the mix works just fine.
- **DO SPRAY** indoor plants, apply once a month.
- **DO SPRAY** just before the full moons - the full moon energy pulls up and out through the plant while applying during the **new moon for root crops, as the moon pulls energy downward.**
- **DO** water soil around plants with dolomite lime solution to neutralize acid buildup and leach fertilizer buildup every four to six weeks. If you go organic and use **Rich Earth™** and compost this will not be a problem.

## Critical Feeding Times (Do's)

Foliar feeding your plants and turf with **Rich Earth™ Liquid Minerals** is to supplement a good organic, soil-building program including **Rich Earth™ Soil Conditioner**. The foliar feeding adds that extra nutrient boost at key plant-life events, including:

- Seedlings in the nursery (in cell trays, flats, or containers)
- With rooted leaves, foliar feeding helps the development of healthy baby plants and baby plants receiving foliar spray are not damaged as they could be with using the usual fertilizer solution in the watering.
- After the plants are up and in full vegetative growth
- When the plants start making buds, blossoms, fruits and seeds
- During times of stress, especially from prolonged dry weather or if your plants look wimpy and undernourished
- Before and after food harvest to stimulate and inspire continued healthy production
- During early and late season frost times to lengthen the growing season and increase plant hardiness to environmental stresses (the uptake of nutrients increases the soluble solids levels in plant tissues lowering the plant freezing point)
- With long season crops, an application of foliar fertilizer every two weeks and spray once a month with **Rich Earth™ Liquid Minerals** to extend the fruiting season and improve the flavor and quality of the crop.
- Container gardens benefit from regular monthly foliar feeding to correct mineral deficiencies and fertilizer lost from watering.

## Make Your own Compost Tea Mix

A simple recipe for foliar feeding is 2 Tablespoons of **Rich Earth™ Liquid Minerals** concentrate per 1 gallon of herbal tea spray (3 oz. of herbs per gallon of water). This gallon of foliar liquid contains sufficient nutrients to treat 2,000 sq. ft. of your garden.

## Best Herbs for Compost Tea

**Yarrow tops** - high in potassium and helps to regulate potassium formation, which enhances carbohydrates and root development as well as sulfur formation, which in turn helps build proteins and certain enzymes to govern the chemical environment of soils.

**Chamomile** - flowers are high in calcium and help regulate calcium formation for building cell walls and other fibrous structures of plants. It also helps regulate the availability of other mineral nutrients.

**Oak bark** - high in calcium and helps to make plants more disease-resistant.

**Stinging nettles** - high iron, magnesium and protein content, which all help to form chlorophyll, without which there can be no photosynthesis. They also aid in overall plant vigor, growth and insect resistance.

**Valerian** - flowers and roots help in the formation of phosphorous, which is essential to flower, fruit and seed development and sugar metabolism.

### **Mixing Foliar Fertilizer**

Use the usual formula for fertilizer, ie., 1/4 tsp. to a gallon of WARM, even HOT water -- an even lighter application of 1/8 tsp to a gallon of water is recommended if fertilizer is unknown.

Add 2 tablespoons of **Rich Earth™ Liquid Minerals** to the gallon of water. Make sure your spray bottle or vaporizer gives an even spray and does not allow water to drip causing accumulation of formula on the leaf.

Foliar feeding may be used as often as twice a week for a period, then plants may be misted with plain, hot water. Do not neglect watering the plant. When watering the soil, once a month add 2 tablespoons of **Rich Earth™ 12% Humic Acid Plant Booster** with trace minerals and fulvic acid to give the plants an added boost!

Not all fertilizers are good for foliar feeding. Make sure the label states this fact.

Due to environmental reasons, we do not recommend use of high N-P-K fertilizers directly into the soil, only for occasional use in foliar feeding. We do recommend the use of compost or natural, slow-release fertilizers in concert with our 100% natural **Rich Earth™** products.

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