

# Jump-start your plants

By Christopher Kline, PhD.

## Foliar feeding puts the nutrients where your plants can use them best

Foliar sprays put the nutrients where your plant can use them. There are many commercial products available.

Foliar feeding – applying liquid fertilizer directly to plant leaves – promotes maximum nutrient absorption, causing an increase in sugar levels in plants that then stimulate root activity and plant nutrient uptake. This is particularly beneficial in hydroponics where the roots have access to high quality nutrients all the time.

### Why foliar feed?

In 1953, the U.S. Atomic Energy Commission provided a grant and radioisotopes of all plant nutrients to Michigan State University. The objective was to study the foliar absorption of fertilizer nutrients and trace their movement in the plants.

The study revealed that foliar-applied nutrients are absorbed by the leaves and even through the woody tissue of trees (bark). The study found the amount of nutrients required and the speed with which those nutrients were utilized were eight to ten times more effective in foliar feeding than root feeding. With modern hydroponics techniques root feeding is

greatly improved, but these findings are still impressive.

Just as spraying plants with a non-selective herbicide such as Roundup will kill the plants down to the roots, spraying foliage with liquid nutrients can produce remarkable yields. The leaves are as effective a transport mechanism for nutrients as they are for poison.

Phosphorous and iron are two very important nutrients, but they don't move well from one part of the plant to another. By foliar feeding, these nutrients are available to new growth much more quickly.

Foliar feeding may seem to go against long-standing garden practices of never allowing the leaves to get wet, particularly on such plants as African violets or tomatoes. Because foliar feeding is done with a fine mist and in the morning, which gives time for the leaves to dry, the benefits far outweigh any risks.

### More benefits of foliar feeding

In addition to promoting maximum nutrient uptake, foliar fertilizers may have other benefits, including prevention of plant diseases and fungal attack. Foliar fertilizers

cover the leaves and stems, the plant parts most susceptible to pests and parasites.

Perhaps the biggest side benefit of foliar feeding is that it can increase the plant's uptake of nutrients from the hydroponics nutrient solution or the soil in gardens using soil-based growing media.

Feeding through the leaves works more quickly than adding fertilizer to nutrient solution or soil, which then has to be taken up through a plant's root system. Foliar feeding is not a substitute for root feeding, but used in conjunction with root feeding, foliar feeding can increase its effectiveness. Applying a foliar fertilizer directly to the leaf increases the activity in the leaf, at the same time increasing chlorophyll and thus photosynthesis.

Because of this increased activity, the leaf's need for water is also increased, which in turn increases water uptake by the plants vascular system. This increases the uptake of nutrients from the hydroponics nutrient solution or soil.

This is great news for hydroponics gardening because plants can actually be stimulated through foliar feeding to "suck up" more nutrient solution resulting in explosive

# More Fine Products from Hydro-Organics®

## No Pests! goGNATS®



A poison-free alternative for the effective control of fungus gnats and other flying and media-infesting insect pests. For indoor and outdoor use. GoGNATS liquid may be sprayed directly on plants, areas of infestation or added directly to hydroponic reservoirs.

**Hydroponics:** Add directly to reservoirs to control waterborne, root zone and media pests and diseases. Recommended to add routinely every 14 days at nutrient solution change.

**Planting Mixes:** Spray entire surfaces of media. Once a month, add to fertilizer solution at recommended hydroponic rates and feed thoroughly, drenching the media.

Directions on labels in English, Spanish and French. Available in pint, quart, gal. 2.5gal, 55gal, 275gal

## Sweet Organics! Earth Juice Catalyst®

*First and Original – Since 1990*

Highly concentrated plant sweetener & more

- ~ **Organic Molasses** *fermented/raw hi brix*
- ~ **For Hydroponics or Soil Use**
- ~ **Kelp *ascophyllum nodosum* fermented**
- ~ **Free Amino Acids**
- ~ **Plant Acids**
- ~ **Humic/Fulvic Acids**
- ~ **Vitamin Complex**
- ~ **OMRI Listed**



[www.hydro-organics.com](http://www.hydro-organics.com)

Ask for them at your favorite garden supplier.

growth and fruit production.

### Guidelines

- Make sure that the pH level of your foliar fertilizer spray is at a neutral range. If the spray is a concentrate mixed with water, use pH adjusted water or distilled water to make the solution.

- It is always advisable to dilute foliar fertilizer before application. Too much concentration of foliar fertilizers can cause foliage burning. Make sure the solution is not too concentrated by spraying a few healthy leaves to see if there is any damage. If the leaves curl or look unhealthy in any way two days after spraying, dilute the mix by 50 percent and try again.

- Nutrient absorption of foliar fertilizers is enhanced when the air is humid and moist, with a temperature of 80 degrees Fahrenheit or below (26.6C.) This is because the plants' main nutrient canals, the stomata, are open in low temperatures. The best time to spray is in the morning so the spray has time to dry.

- Foliar fertilizer sprays achieve best effect by using a fine mist, allowing the liquid to drift over the plants.

- For better nutrient absorption, make sure that your foliar fertilizer sprays reach the undersides of leaves, where the stomata are located.

- After foliar feeding the first day, spray the

plants with pH adjusted water daily for a few days. This provides the plant an opportunity to absorb any fertilizer residue.

- Another good, relatively new product is made with liquid obtained from worm farms. It is full of different nutrients which are wonderful for foliar feeding.

- Sea-based nutrient mixes, especially seaweed and alge concentrates, are great for foliar feeding because they have all the trace elements plants need in suspension and it may be harder to balance these elements within the hydroponics nutrient solution or soil.

- To minimize runoff and help these sprays stick to the leaves, add a quarter of a teaspoon of natural liquid detergent to each gallon of spray.

- For best results, plants are often sprayed during their critical growth stages such as transplanting time, blooming time and just after fruit sets. By applying during flower set, foliar feeding can cause a dramatic increase in fruit production.

### High-tech choices

The current commercial foliar fertilizers are concentrated solutions using very high grade elements, in which the nitrogen, phosphorus and potassium are combined to the desired ratio in a controlled environment. The fertilizing elements in these high tech sprays are true solutions, soluble, and thus very available to plants. To most of these

commercial foliar solutions, trace elements in the form of chelates are added, along with seaweed and/or humic acid, or other additives depending on preference, to give a balanced fertilizer, supplying not only NPK, but all the trace elements as well as growth hormones and vitamins etc.

The following is a list of great foliar spray products that can be found with a simple Internet search on their name:

- **General Hydroponics Chi Liquid Organic Foliar Spray**
- **Vita Grow Thunder Bloom Foliar Spray.**
- **JTM Nutrients**
- **B'Cuzz Foliar Spray**
- **DNF Enhance**
- **Bill's Perfect Fertilizer**
- **Dutch Master Penetrator**
- **Spray-N-Grow**
- **Earth Juice Essential**
- **Sea Rich**
- **Nitrozime**
- **GreenSense Foliar Juice**

With all of these great products available, there is no excuse for not giving foliar feeding a try. It is fast, easy, relatively inexpensive and very effective. 🌿

*Dr. Christopher J. Kline is a member of The Garden Writers Association and a master gardener and writer living in Paradise Valley Arizona. He can be contacted at [ckline72@cox.net](mailto:ckline72@cox.net)*