



Staying Alive



Take air inputs from indoors!

EVEREST'S TOP TIPS

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Indoor gardeners! Air taken from another room indoors is less susceptible to temperature and humidity extremes and is more suitable to vent into your indoor garden.

There are a number of products on the market that add "beneficial biology" to your soil or growth media. Perhaps some compost tea, mycorrhizae or a concoction of friendly bacteria. These critters colonize your plants' root zones and help them to take up nutrients more efficiently. So it stands to reason that if you can make life easy for your beneficial biology you are, in turn, making life easy for your plants. But once you've introduced beneficials, how do you keep them there? **Richard Gellert** explains some key steps to maintaining a healthy microbial population in a variety of different scenarios...

I'd spent years building the soil in my gardening beds and, every summer, my garden would be the envy of the town - teeming with lush, joyous plants of every shape, size and color. My soil was a labor of love. You name it, I'd done it - I weeded religiously, added various amendments, compost teas and treated my soil to a whole range of the best organic materials I could get my hands on. Season after season of hard work and perseverance was beginning to pay off. Microorganisms such as beneficial fungi and bacteria, mycorrhizae, protozoa, and a slew of other beneficial organisms had colonized all my garden beds and they were producing my best yields yet.

Then one hot Summer's day, my wife and I came home after a long weekend away and I found my neighbor with his garden hose watering my plants with chlorinated tap water! Arrrrrrgh! I freaked. The dude thought he was doing me a favor - sadly he was one of many people who don't realize that using straight, unfiltered hose water KILLS thriving populations of microorganisms or at the very least, severely affects their numbers.

So let's get one thing straight. If you're at all serious about creating colonies of thriving microorganisms for your plants, stay well away from tap water.

Why is Tap Water Bad?

Tap water invariably contains chlorine. Chlorine is a biocide, meaning it kills things. It targets all living microbiology, good or bad. Most chlorinated water is from city or municipal sources whereas a few lucky people on well or spring sources don't have chlorine in their water.

Of course, you've heard the gardener's tap water tip. Leave tap water for 24 hours in an open container (preferably bubbling air through it) before applying it to your garden and most of the chlorine will evaporate away. This is true, and it used to be of practical significance for your garden, that is until the municipalities started to use chloramines.

Chloramines are chlorine's evil twin. It is essentially chlorine bound to ammonia and was developed to be a more stable form of the biocide. Chloramines are becoming more popular with municipalities because they are much more stable and last longer than chlorine. The only way to get rid of chloramines is with a water filter.

However, chlorine and chloramines aren't the only enemies of microbiology. Water high in PPM and especially sulfur, iron and salts can also have negative effects on beneficials. The contaminants in the water can interfere with the microbes' lifecycles and keep their numbers suppressed. High salt levels increase EC levels. If the EC in the soil rises too high, the rate of nutrient absorption decreases. This absorption reflects the osmotic pressure capabilities in your plants. High salts levels reduce the osmotic pressure in the growing environment, essentially causing "root lock". Bio-extract solutions rich in beneficial microbes consume salt and help balance the osmotic pressure. Using purified water will have a dramatic influence in the health of your plants and the success of your harvests.

Brews, Extracts, and Powders: Maximizing their Effectiveness...

Compost teas, microbiological extracts, powder forms of mycorrhizae and other beneficial, compost mixes, etc: What do these have in common? Well, they're all alive and potentially teeming with a powerful blend of helper microbes. Microorganisms transform nutrients into a plant-available form – in other words, they help your plants to feed. Some of the benefits of friendly microbiology include:

- Protection against pathogens
- Increased fertilizer uptake
- Decreased transplant shock
- Larger blooms and yields
- Increased roots and micro-roots
- Promotes crop uniformity

How do you maximize the effectiveness of microbes in your garden? First and

foremost, it is imperative that those inoculating with or brewing their own blend of microbial rich solutions use pure water. In side by side test the results consistently show that the use of clean water resulted in superior results and increased numbers of good microbes. Plenty of oxygen and cool root zone temperatures are also crucial.

Beneficial micro-biology comes in all sizes, shapes, and configurations but they all need to eat. Each of these microbes has a different food source and conditions that allow them to thrive. Some eat simple sugars, such as glucose and maltose, others feed on more complex carbohydrates, or polysaccharides, while others feed on an assortment of humic substances as well as sugars. Stranger still to conceptualize: many microbes feed on other microbes producing chelated minerals as a byproduct. In general a sugar source such as molasses will suffice. Supplements that are considered carbohydrates and catalysts are also good food sources. Keep them fed and they will multiply.

Growing in Pots

You'll find a natural population of microbiology already present in the bags you bring home from the garden center. Seasoned gardeners amend their soil or coco throughout the grow cycle with earth worm castings, living bio-extract solutions and home brewed compost teas. These additions make the medium and root zone even more active and full of life. Microbes thrive in a soil environment, especially mycorrhizae, bacillus and trichoderma.

When growing in containers the use of organic materials, guanos, and compost will give your helping microbes a nice home and food source. In addition, keeping the medium well aerated with perlite or something similar will ensure plenty of oxygen for the roots and the microbes.

Hydroponics

Growers who prefer a fully-fledged hydroponic growing method can also harness the power of beneficial

microbiology. Even though these grow systems lack an abundance of organic matter suitable for microbes, a healthy population can successfully be established. Re-inoculation may have to occur more frequently and at higher concentrations but the results of having the helping microbes is well worth it.

Hydroponic environments call for different forms of microbiology. Mycorrhizae does not survive well in a nutrient reservoir. (Bacillus strains tend to do better in these environments.) Rockwool and clay pebbles can be more difficult for the microbes to colonize. More frequent inoculations will be necessary to achieve good results. As these mediums don't hold much humic or other organic material, the biology has a hard time getting a firm grip.

Solutions for Success

There are a number of ways that a conscientious grower can ensure the healthiest population of beneficial microbiology in their garden. Good biology, pure water, lots of oxygen, and moderate temperatures are the cornerstones for success.

The biology is readily available to the modern gardener, whether it's a fresh microbial-rich extract brewed onsite at a garden center or a homemade batch of compost and worm tea. Dried products as well as shelf-stable types in bottles can also form convenient solutions.

If you are using tap water to grow your plants and are concerned about its quality and possible adverse affects on the microbial population, my advice is to get down to your local grow store and take a look at their selection of water filters. There are filters that are specifically designed for use in the garden, both indoors and outdoors. They have the ability to remove chlorine, chloramines, and total dissolved solids.

After that, all you need is some proper aeration and moderate root zone temperatures for a perfect habitat for microbiology. One thing is for sure; beneficial micro-biologically rich inputs can stimulate your garden to give you extraordinary results. Look after the little guys and they will look after you!