PURIFIED WATER FOR MY PLANTS?

by RICHARD GELLERT

WALK INTO ANY HYDROPONICS SHOP and you will most likely see that they sell reverse osmosis water purification systems. You may ask yourself why someone would spend money on a water filter to grow plants. Most people give straight tap or hose water to their house and garden plants and they do just fine.

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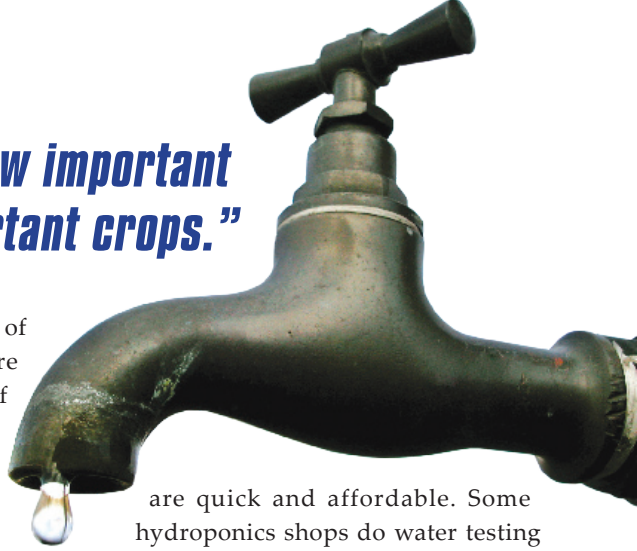

But what about more prized plants and fruits? What if you only want to give your plants the best ingredients? Most important, what if you were interested in pushing your plants to the max and achieving explosive growth? Serious gardeners have long realized how important pure water is to the success of their important crops. After all, water is the root of hydroponics and, therefore, the most important component to a healthy garden. Water acts like a carrier and bathes your root zone with nutrients, additives, and promoters.

If you look at the top nutrient manufacturer's feed charts, you will notice a common theme. They all require using 0 ppm (parts per million) water as a starting base for the nutrient solution. Without this ultra-pure base, it is much more difficult to dial in the ppms of your formula while making sure you have the proper amounts of each component vital to healthy growth. When the feed chart says bring the nutrient solution to 1200 ppm and you are starting with water that is at 500 ppm, what do you do? It is hard to even guess what that 500 ppm is composed of; nonetheless, try and adjust for it in the nutrient formula you are trying to perfect.

The first step is to determine how bad your water is and what type of system would be most beneficial to your garden. Free water reports are available from your municipality or water company, though water quality fluctuates greatly throughout an area and over the seasons. Test kits can be ordered online and are quick and affordable. Some hydroponics shops do water testing and there are many labs that can do an analysis. A key indicator of water quality for plants is total hardness as expressed in ppm of calcium and magnesium or in grains per gallon (gpg). With too much hardness, the nutrient formula can be thrown out of balance and deficiencies and lockouts can quickly become a major problem. Any water source over 50 ppm of hardness should be purified. This translates to 3 gpg and is considered soft water, which few people have straight from the tap.

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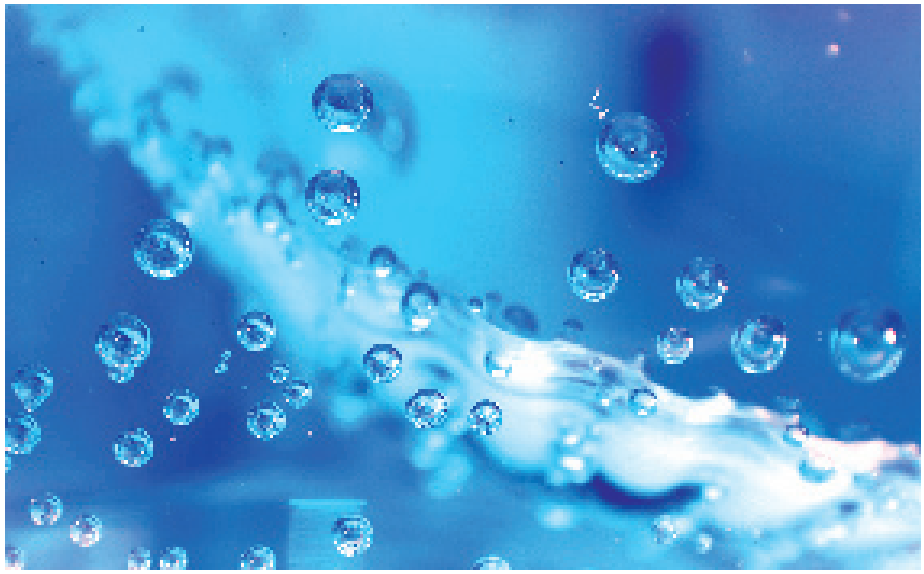

Organic gardeners using compost teas or bio-extraction solutions should use purified water. Anyone gardening with living micro-organisms such as beneficial bacteria, fungi, and nematodes, mycorrizae, and trichoderma, must have chlorine and contaminant-free water in order for those helpful microbes to survive and flourish. Unfortunately, it's rare someone's water source is perfect for his or her prized plants. Letting city water sit out overnight may get rid of some free chlorine, but it doesn't affect the chloramines or other contaminants. Water from well or spring sources is often too high in minerals such as calcium, magnesium, sulfur, and iron. This water may be fine to drink, but for hydroponics it may be too heavy with these minerals and may contribute to nutrient lockup. Gardeners that start using pure water never go back to untreated water. There are still plenty of people that haul five-gallon jugs of water to their garden. They will go to these lengths to pamper their plants and make sure they only get the best. If you do the math, a water purification system from a hydroponics shop pays for itself quickly with the money and energy saved hauling water. There are several customized filtration systems on the market available for gardening and hydroponics.

The following table shows the most common contaminants in your water, their sources, and what harmful effects they can have on plants. After looking it over and realizing how many things can do damage to your crop, you may want to grab yourself, and your plants, a nice glass of pure water!

WHAT'S HIDING IN YOUR WATER AND PLANTS?

CONTAMINANT	SOURCE	SOURCE
PPM OF TDS	Well/Spring Municipal/City	Water with high ppm of TDS (total dissolved solids) has unknown contaminants that is the key cause of nutrient lockout and deficiencies in plants.
CHLORINE	Municipal/City	Biocide that kills beneficial bacteria, fungi, and micro-organisms. Any healthy organic or biohydro garden is chlorine-free. If you are using or brewing compost teas or bioextract solutions, removing the chlorine is essential.
CHLORAMINES	Municipal/City	Biocide that is a combination of chlorine and ammonia and is much more stable than chlorine. It will not dissipate by bubbling or even by boiling off. It can only be removed by proper filtration. It is toxic to beneficial bacteria, fungi, micro-organisms, fish and amphibians.
HARDNESS	Well/Spring Municipal/City	Dissolved calcium and magnesium that forms scale on equipment and tubing. Too much of either of these in your water and you are locking out key nutrients to your plants. Your plants will be unable to feed properly and will exhibit deficiencies. Pipes and equipment can eventually get clogged and fail. Mineral hardness is the key cause of water problems in hydroponics and other gardening systems.
FLUORIDE	Municipal/City	A hazardous waste product that is present in all municipal water. This is a toxic substance to humans and plants. Thirty-four enzymes in plants are affected by fluoride, as is seed germination. Enzyme additives will not do their job properly with fluoride in the water.
VOLATILE ORGANIC COMPOUNDS	Municipal/City	Some VOCs are known or suspected carcinogens. Trace amounts of these can end up in the plant's tissues, flowers, and fruits.
IRON / SULFUR	Well/Spring Municipal/City	Water containing iron or sulfur may have a metallic taste and an offensive odour. Nutrient lockout, algae growth, and equipment staining can be results of too much iron in the water.
PESTICIDES/ HERBICIDES	Well/Spring Municipal/City	Local agricultural areas may be leaching harmful contaminants into the groundwater. These can end up in your water supply and in your plants.
BACTERIA	Well/Spring	Local water sources may be affected by animal and human waste. These toxic substances can be found in trace amounts in fruits and flowers and can be harmful to humans.
NITRATES	Well/Spring Municipal/City	Found in runoff from agriculture, animal yards, etc., these toxic substances contribute to over-nitrification and algae growth. They cause "blue baby syndrome."
PH	Well/Spring Municipal/City	Water that has either too high or too low pH will not allow nutrients to be absorbed properly and can be corrosive to equipment. Adjusting pH may be difficult due to fluctuations in levels.

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