

# The Latest Breakthroughs on pH, Water and Fertilizer by Neil Lipson

It's been a while since I have written on growing tips for violets and avoiding common mistakes with water, fertilizer and pH testing. Hang on to your hat, things have changed.



Typical TDS Meter

First, never test pure water with a pH meter, as it will remove the electrolytes in the glass bulb. Pure water is rain water, distilled, etc. If you want to know if there are impurities in it, use a TDS meter, which is Total Dissolved Solids. If it is below 20, it is pure enough to avoid any problems, like hard water or well water.

When you test for pH, check only the soil, NOT the water. The water pH will change once it hits the soil, even when you add fertilizer to it.

When I switched to rain water, I was in for a big surprise. The results were spectacular. I won more rosettes than ever before.

For decades I believed that you should never use chemically pure water for African violets. To reinforce that concept, the smartest of the smart also told me that too. However, if your water source is a problem, you need to make a change or you can lose your plants. I then changed to pure water WITH micronutrients and trace elements added in the fertilizer. Two fertilizers that have micronutrients are Plant Marvel and Optimara, for example. If you have well water, you could have a much bigger challenge that could result in a much bigger problem.

First of all, let's define "pure" water. It is distilled, reverse osmosis, and usually rain-water with total dissolved solids below 10ppm. If you get the rain-water from your roof, make sure it is not a new roof 6 months old or less. If you have acid rain in your area, you'll want to check the pH. My rain-water in Philly is always about 7.0. Included is a rain-water map of the US.

For 10 years I was designing water filtration plants all over the country. I learned quite a bit on water quality during those years. Now it's my challenge to apply that knowledge to water quality for African Violets.

First of all, water filtration plants are designed for human consumption and NOT violets. The chloramines they add are only one of many problems that will occur. Therefore, just removing chloramine will NOT solve all of your problems. You first need to check what's in the water. How can you find out your water quality and what should you do? Here's a hands-on approach without needing a degree in chemistry or sanitation engineering.

Not too long ago, analyzing water was not too easy. pH meters were \$180 and TDS meters (total dissolved solids) were few and far between. Now, excellent quality pH

meters are below \$50 and TDS meters are under \$20. Water companies now give a breakdown of everything, including trace elements. Water testing is done free at Home Depot, and reverse osmosis (resin filters, also called RO water) go cheap on Ebay and Amazon. I've written over three articles on water quality and rain barrels, so there's plenty on information out there, all published in AVM.

What to do? If you have well water, you're high on the list for having possible problems and should have the water tested. Well water quality varies greatly across the country. If your TDS is above 100, you'll want to treat it, depending on the impurities. pH is not as critical, as the soil will adjust it most of the time. However, there is one thing you can do right off the bat to see the potential of pure water, and that is to try distilled water and a non-urea fertilizer WITH trace elements and micronutrients. Three that I know of are Plant Marvel 14-12-14 (which is only available in 25# bags), Optimara 14-12-14, and DynaGro 7-9-5 fertilizer. DynaGro is available from Cape Cod Violetry, an AVSA supporter. All three of these fertilizers are top notch. What will fixing your water do for you? A lot.

First, you won't have huge pH fluctuations in the water. Second, all of your trace elements and micronutrients will be in the fertilizer. No chlorine, no chloramine and no water hardness or sodium.

## FERTILIZERS, MICRONUTRIENTS AND TRACE ELEMENTS

For years, I have used 1/4 teaspoon of fertilizer to a gallon of water. I have now found out that is way too much. I have cut it down to 1/8 to 1/16, depending on the humidity.

The primary elements in fertilizer are the N-P-K, or nitrogen, phosphorous and potassium. There are 13 secondary elements essential to healthy African violets: boron (B), calcium (Ca), carbon (C), chlorine, (Cl), copper (Cu), hydrogen (H), iron (Fe), magnesium (Mg), manganese (Mn), molybdenum(Mo), oxygen (O), sulfur (S), and zinc (Zn).

There are four trace elements (which includes silicon), in particular, that may be beneficial to your African violets. Those are cobalt, (Co), nickel (Ni), silicon (Si), and sodium (Na). I will not go into the chemistry of what each of these elements does for the plant, as I am trying to keep things easy and clear. I have heard that too much Boron can prevent variegation, but this needs more research.

More and more top growers do not change their fertilizer for shows, and skipping the bloom boosters, while some other growers will use foliar feeding to the underside of the leaves instead of putting it into their water. If you like blooms all year long, skip the bloom boosters completely. Optimara and Plant Marvel have the 14-12-14 which are almost identical to each other, and DynaGro is 7-9-5 and has some calcium in it, which many other fertilizers may not include. If you use tap water with the pure water as a mix, then your water will almost certainly have calcium.

Many growers rotate their fertilizers so they get a combination of all the different elements over time, and this works quite well. If you wick or mat water, you would decrease the

amount of fertilizer. Too many growers over fertilize and are not aware of it. Watch for tight centers as a symptom. This is a classic case of too much of a good thing can be bad.

One additional point, some growers will mix in a portion of their tap water to their rain water to get the benefits of both the low TDS and also the calcium and magnesium components. If you do this, make sure to add a tap water conditioner from API available everywhere including Petsmart and Amazon to remove chloramines which do NOT dissipate over time. It is very cheap and works immediately so you don't need to let the water sit for days. In Amazon, enter "API Tap water Conditioner, 16-Ounce".

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