

## Why Citric Acid?

***In 1998, 535 million pounds of citric acid (yes, the same stuff found in oranges, lemons, and grapefruits) was exported and imported to/from the United States. For what? Did you know that 70 percent of citric acid goes to the production of food and carbonated drinks? The remainder is used to make detergents and cleaners, cosmetics, pharmaceuticals, and in chemical processing. But what can citric acid do for you as a grower?***

Citric acid can be used as a pH reducer. It can also be used as a tank mix buffer solution, as well as a soil and water pH conditioner. And citric acid is gentle. Imagine being able to buffer your stock tanks without needing separate acid-injection heads!

Citric acid is a naturally occurring organic acid. That is, it has a carbon base. This is welcome news indeed for organic growers and/or those who would like to stay away from mineral acids.

***What are some of the other uses and benefits of citric acid?***

***Perhaps the most important thing is that it is a lot gentler on your plants. With citric acid, you won't run into problems like root pruning (which is quite common when using harsher acids like phosphoric and sulfuric). And almost any grower will tell you that***

***healthy roots greatly contribute to the establishment of healthy plants.***

Citric acid is also very safe for YOU (as a user). Corrosive acids bring with them inherent risks like chemical burns on skin and destroyed clothes. Wherein safety is concerned, working with our citric acid is like handling common vinegar. Unless you have a cut, you won't even feel it on your skin. And our citric acid will NOT eat through your clothes. It is environmentally friendly and organic. Mineral acids (like phosphoric, nitric, sulfuric, and hydrochloric) are hazardous materials ("HazMats"), which also means they will wreak havoc on beneficial microbe populations.

But wait, there's more. As an organic, carbon-based material, citric acid also acts as a potential food source for your beneficial microbes (they feed on carbon). This will help keep your "good" microbe population happy, while avoiding unhealthy, anaerobic conditions.

***The best part of all is that citric acid really works. In fact, it does all of the "good" things that mineral acids do, but in a much gentler fashion. It also does some things that mineral acids aren't able to.***

Unlike mineral acids, Citric acid will not change your N-P-K ratios or PPMs. How does this work?

Well, nitric acid contains nitrogen. With phosphoric acid, you've got phosphorus. And with sulfuric acid, you're adding sulfur. By using citric acid, you'll get its acidifying benefits, but you won't be adding any additional nutrient sources, so there's no need to re-think your N-P-Ks after applying it.

***Citric acid also helps chelate essential minerals that are bound up in the soil. Applications of citric acid will take these insoluble, oxidized micronutrients and make them available for uptake and use by your plants. Citric acid is also part of the Krebs cycle, and transports micronutrients through the xylem.***

Growth Products' pH Reducer is an organic-based material that is a natural and environmentally sound management tool. It is especially good for use in alkaline conditions.

Want to learn more about the Growth Products Line? Call us at (800) 648-7626. You may also visit us at [www.growthproducts.com](http://www.growthproducts.com). E-mail: [questions@growthproduct.com](mailto:questions@growthproduct.com) Faxes may be sent to (914) 428-2780.