



pH measurements and adjustments

Posted by [Josh Willis](#)

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[Josh Willis](#)

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February 04, 2023 07:28PM

Registered: 6 years ago

Posts: 134

As I consider adding some Sil-Matrix to the mix this year, with its 11.3 pH, I'm assuming I'll actually have to start measuring our tank mix for pH. I have a few questions that I haven't been able to find answers here.

Is adjusting pH as simple as adding baking soda or vinegar? From what I can tell, the extension websites recommend some synthetic chemicals that I doubt HON growers use, although maybe I am wrong.

Is there an online resource or chart for how much to add per volume to adjust a specific amount pH levels? (i.e., X amt of additive per X pH level change per 100 gallon, etc.).

And what device do you all use to test for pH in the tank mix? I've read that test strips can have significant error levels. Meters seem to range from \$50 to \$150.

Or perhaps the relatively small % of Sil-Matrix's 11.3 pH is not a factor is the well water is generally neutral?

Thanks all. Hopefully others find this question helpful, too.

Earthworks

Zone 7a in West-Central MD

Non-commercial, ~100 fruit trees, dwarf to MM106

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[Brittany Kordick](#)

[Re: pH measurements and adjustments](#)

February 04, 2023 08:01PM

Registered: 4 years ago

Posts: 211

Hi Josh,

Don't have a lot of time, but did want to say a quick something about Silmatrix if you've never used it before. Silmatrix's pH is definitely a factor and the product is just more sensitive than other spray tank additives in general. Before we understood this and spoke to someone at the company, we messed up a few tank mixes. Basically, it has the propensity to precipitate out of a mix solution if everything's not right and you'll end up with a lot of chunky glass-like particles that will clog up your sprayer. For us it was not the pH of what we were mixing, so much as the other compounds we were adding (zinc sulfate and manganese sulfate, courtesy of a micronutrient blend) that caused issues.

So according to our notes from that time, at a pH of 6, Silmatrix will precipitate, but at a pH of 4 to 5, it's fine, and at a pH of 7 to 8, it's fine. The company knows that Silmatrix happens to be sensitive to zinc sulfate and manganese sulfate, as mentioned. They have also seen this problem when other fertilizers are tank-mixed in, so be warned that sensitivity is not limited to those two compounds. The company recommended that we never add Silmatrix to a concentrated mix that we then add to our tank. Rather, mix all your components except Silmatrix and dilute them in your tank of water. Then remove some of that dilute spray and do a jar test to check compatibility and any precipitates. If it looks OK, then add your Silmatrix to the tank and carry on. Basically, always plan to add your Silmatrix to your tank last, regardless.

You can add dilute citric acid to drop pH and help the Silmatrix dissolve, but we didn't need to in our case, so can't speak to amounts to add for desired effect. I believe some people also use vinegar. Otherwise, there are certainly buffering products out there to adjust pH up and down, but we've never had to use them before, so again, can't speak to precise measurements and guides. We use a pH meter to test our tank mixes, and it pays for itself if you intend to brew EM-1, etc. on your own and want to keep track of the pH readings there, as well.

[Kordick Family Farm](#)

Westfield, NC

Zone 7a

Edited 2 time(s). Last edit at 02/04/2023 08:08PM by Brittany Kordick.

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[Mike Biltonen](#)

[Re: pH measurements and adjustments](#)

February 05, 2023 12:00PM

Registered: 11 years ago

Posts: 298

I don't use litmus strips for the exact reason described above. A pH/EC meter is my go-to (manufacturer Hanna, many different models), but you need to be aware of calibration, storage and replacing the probes every once in a while (per manu specs). Now, pH is obviously important and if I need to reduce the it I use citric acid and nothing else. AEA a few years ago opened my eyes to the importance of EC (electrical conductivity) and the problems of mixing too many products in a single tank mix. (This is where the EC meter comes in handy). They have charts on how much of one thing plus how much of another (v/v) results in a particular EC, but principally only for their products. When you starting adding in other products from other manufacturers, then you're basically on your own - though their threshold measurement still stands (I believe). Then of course there is the simple "tried and true" jar test of mixing appropriate amounts of products in your spray water and looking for precipitates or other "odd things happening" can you tell pretty quick whether your tank mix can work or whether it will be a disaster before you mix up 100 gallons of it. (I'll start a separate thread on mixing order). So pH, EC, and mixing order all have an effect on final spray tank mix efficacy. And when in doubt - split it out.

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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[Josh Willis](#)

[Re: pH measurements and adjustments](#)

February 07, 2023 06:53PM

Registered: 6 years ago

Posts: 134

Thank you Brittany and Mike for your responses. That is great to know about Sil-Matrix, and a good reminder to do jar testing. I'd been happy to ignore pH as we just did the basic sprays, but since we are adding more to the tank this year, I suppose we should pay more attention to mixing. Or at least double check the labels on the products we use to see what they require. And that's in addition to the other blending issues you identified.

We'll have to think about whether Sil-Matrix is worth it in this context, as we would definitely be combining with other micronutrient mixes, and I don't think we'll be keen to add another separate round of sprays. But it sure would be nice to get some SiO₂ out there. We are up on a hill, so not a lot of horsetail or nettle around here.

Earthworks

Zone 7a in West-Central MD

Non-commercial, ~100 fruit trees, dwarf to MM106

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