



follow up on bicarbonate

Posted by [Brian Caldwell](#)

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[Brian Caldwell](#)

[follow up on bicarbonate](#)

April 30, 2023 04:01PM

This is to follow up on the HON newsletter from over a year ago:

Registered: 10 years ago

Posts: 69

Two other aspects of potassium bicarbonate use as a fungicide are 1) its potential for kickback (eradicator) activity; and 2) issues with tank mixing and pH.

In Quebec, as pointed out in the Holistic Orchard Network forum, bicarb is used for its kickback activity. Unlike sulfur, which must be in place before a scab infection occurs, bicarb can be sprayed within 12-24 hours (depending on temperature) after an infection has taken place, and will still control the scab. Some Quebec growers, organic and not, take advantage of this. I have not heard of this use in other regions. In the Quebec case, potassium bicarbonate has not been mixed with potassium silicate, though it may be sprayed with 1/2 rate sulfur. However, spraying within 12 hours of the onset of an infection period has its problems. If it is still raining heavily, the bicarb will be washed off. Spraying during or just after a rain might lead to soil rutting. And that is a tight window to cover many acres. So to me, it is not an attractive option. I don't think Quebec growers and researchers have been aware of the bicarbonate + silicate synergy, so they have not used it as a protectant.

If one did want to spray bicarb + Silmatrix after rains, it might be possible to combine the eradicator and protectant effects, reducing the number of sprays needed. One could wait to spray until an infection event had certainly occurred, rather than covering the trees in advance, "just in case". Then, with the silicate mix, one would also have a roughly 5-day window of protection for any following rains. However, there would still be the chance of a long-lasting rain and washing off of the bicarbonate. I think this is too risky, and plan to stick to a protectant approach. If I wind up putting on an extra spray or two, so be it. The mix is not expensive, and I don't think it is environmentally damaging.

Finally, there is the question of how to tank mix with bicarb. At the rates I use—1 quart of potassium bicarbonate powder + 1 pint of Silmatrix per 100 gallons—the tank mix pH is above 8. It is too high for many products such as Bt, so you should not tank mix them with bicarb. This is particularly true of some mineral sprays like micronutrient blends. Lowering the tank mix pH with an acid would probably cause precipitates and perhaps make the bicarb ineffective.

Instead, I use bicarb only with compatible products. I often spray calcium for bitter pit. Biomin Calcium is compatible with a high pH; another calcium product, ORCA, is not. Effective microbes (EM-1) has a very low pH and is also not. Etc. So if I need to spray one of those plus a fungicide, I will use sulfur instead of bicarb. I figure this is probably good, since a moderate amount of sulfur (not every spray!) keeps soil S levels where they should be. Also, maybe relying solely on bicarb would lead to other problems, just like relying only on sulfur did in the past. It's likely good to mix it up. Copper products for fire blight, which also protect against scab, could also enter into the rotation, though I spray copper only rarely.

The way this works out for me is that I mostly use bicarb in early scab season, sulfur around bloom, and then switch back to mostly bicarb sprays after primary scab season, for sooty blotch and Marssonina. It would be good if we could identify some effective microbial products to add to the rotation. I'm trying out a new product called OSO in those later-season sprays.

[Hemlock Grove Farm](#)

Zone 5 in New York

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[Chris McGuire](#)

[Re: follow up on bicarbonate](#)

May 21, 2023 01:45PM

Registered: 1 year ago

Posts: 17

We have been doing some sprays of potassium bicarbonate with SilMatrix this spring based on Brian's advice and the papers he has mentioned. We have used 1 qt SilMatrix plus 2.5 lbs Carb-o-nator per 50 ga per acre or 1 qt SilMatrix plus 5 lbs Carb-o-nator in 100 ga per acre.

We have also used the "post-infection" also known as "during-infection" type of potassium bicarb sprays for several years (in the past without Sil Matrix). In the past we used some advice from David Rosenberger to time the sprays: "during the interval between the accumulation of 200 and 540 degree hours (base 32 F) counting from the time that the Mill's criteria were met." I have seen timing advice from others which differs from that. This year we have paid for a RIMPRO subscription linked to our NEWA account and we are timing post-infection sprays based on RIMPRO's scab module.

(I will say that compared to NEWA, which has a pretty simple scab model based on Mills table, RIMPRO appears to have been beneficial for us in distinguishing between very weak infection events which may not even need any spray treatment from more severe infections, whereas NEWA provides a simple yes/no model, infection event or no infection event, and does not differentiate between more and less serious infection events.)

The post infection bicarb technique does have the advantages and disadvantages that Brian describes - saves some sprays but may require sprays in wind or bad conditions. Sometimes we add in 5 lbs/ac S as well for some preventative, pre-infection protection as well. Our scab pressure is generally not super high (our orchard has only varieties that are at least fairly resistant and inoculum levels are low), but the technique does seem to

have worked in 2021 and 2022 - no primary scab seen.

With regards to pH, the Sil Matrix label says aim for pH 4-5 *OR* 7-8. Pure SilMatrix has a pH around 11 according to the label. Carb-o-nator label says tank should have pH>7. Dipel says pH 4.5-8 is best. So with our hard water we have used about 3/4 cup citric acid per 50 ga to lower the pH achieve a pH of about 7.5 with SilMatrix and Carbonator at concentrations above. (I am hope I am adding everything to the tank in the right order.....) And that pH should be compatible with Dipel. We have not actually mixed it with Dipel, but we have applied it together with Regalia and Ecoswing.

Chris McGuire
Southwest WI, zone 5A

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[Brian Caldwell](#)

[Re: follow up on bicarbonate](#)

May 22, 2023 04:33AM

Registered: 10 years ago

Posts: 69

Thanks Chris! I am very interested to hear how the lower pH bicarb sprays go.

[Hemlock Grove Farm](#)

Zone 5 in New York

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[Brittany Kordick](#)

[Re: follow up on bicarbonate](#)

June 08, 2023 04:31AM

Registered: 4 years ago

Posts: 209

Somewhat off topic, just wanted to say thanks, Chris, for commenting on RIMpro in your above post. One of our local university specialists has been pushing RIMpro as the best option for a year or so now, but since we get NEWA without subscription in conjunction with our weather station, we have have been reluctant to try RIMpro. Recently, however, he mentioned that RIMpro also boasts a *Marssonina* model, which is pretty cool. I guess it makes sense, given that RIMpro has its roots in Europe and *Marssonina* is currently a much bigger issue there. Anyway, glad to know that someone in our circle gives RIMpro a thumbs up and thinks it's worth the money.

[Kordick Family Farm](#)

Westfield, NC

Zone 7a

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[Mike Biltonen](#)

[Re: follow up on bicarbonate](#)

June 08, 2023 03:55PM

Registered: 10 years ago

Posts: 298

I've been a HUGE fan of RIMpro for at least the past decade. That said, its been hard to get growers to sign up and use it. Since it is a subscription service, there is cost involved. However, I've found the models they use and the information they provide augments what NEWA provides. It does give a greater level of detail into scab and fireblight predictions [as well as other pests like *Marssonina*]; and a deeper understanding of what's actually going on with disease and insect life cycles. It does require a local weather station to be accurate for your site; even better one that's on site. With the current level of climate chaos that we have going on, the more good information we can get, the better we can be at making decisions. Microclimate ecology understanding will be key. RIMpro is a great tool to gain a deeper understanding.

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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[Charlie Showers](#)

[Re: follow up on bicarbonate](#)

October 05, 2023 04:17AM

Registered: 2 years ago

Posts: 17

This may well be one of the papers that Brian has mentioned before however (under lab conditions) it is interesting to see that potassium bicarbonate has a preventative and curative impact on apple scab. This paper also shows evidence that that impact is increased if applied with mineral oil however not vegetable oil. Also phytotoxicity was decreased when used with oil due to a more even film coverage compared to drops without oils.

[www.researchgate.net]

[Black Barn Farm](#)

Zone 8b in Victoria, Australia

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