



## bicarb for scab and mixing

Posted by [Brian Caldwell](#)

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[Brian Caldwell](#)

[bicarb for scab and mixing](#)

June 08, 2022 02:23PM

Registered: 10 years ago

Posts: 69

I've become more aware of pH issues in tank mixes since I've been working with potassium bicarbonate vs apple scab.

Bicarbonate mixes have high pH, above 8, so they will inactivate Bt, for instance. Be sure to check labels to see what tank pH range works for each component.

Also, if you mix bicarbonates with EM or other acidic ferments, you will very likely get precipitates. The same is true for acidic trace mineral products like Biomin Zinc (whose pH is 3-5). You can check the MDS to find the pH of a product to make sure it is compatible.

SO--if I need to spray for scab and also want to add Bt, I cannot mix with bicarbonate, so I choose sulfur for that spray.

If I want to add calcium to a mix, I use Biomin Calcium for a high pH tank mix, or ORCA calcium for a more acidic mix.

Sadly, I don't add EM or acidic ferments to any bicarbonate tanks.

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Zone 5 in New York

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[Chris McGuire](#)

[Re: bicarb for scab and mixing](#)

June 09, 2022 05:22AM

Registered: 1 year ago

Posts: 17

This is a good point Brian. What concentration of potassium bicarbonate are you using to raise pH above 8?

We spray potassium bicarb for disease control, both scab and summer diseases; we are usually spraying 5 lbs Carb-o-nator/100 gallons, which is really only 4.25 a.i. actual potassium bicarb/100 gallons. That brings the pH of our hard water to just about 8. We have sprayed Dipel, Madex, Venerate, beetleGONE for several years with that concentration of potassium bicarb and suffered no really obvious failures of insect control.

When we spray pure potassium bicarb for blossom thinning, we are using 15 lbs/100 gallons. I have never tested the pH of that spray water but I am sure it is quite high and I have never tried mixing anything in.

Chris McGuire

Southwest WI, zone 5A

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[Brian Caldwell](#)

[Re: bicarb for scab and mixing](#)

June 09, 2022 06:33PM

Registered: 10 years ago

Posts: 69

I mixed 2 qt Biomin calcium + 2 cups potassium bicarbonate + 1 cup Silmatrix + 1 cup golden (soy) oil per 100 gal and got a pH of 8.2.

2 cups of bicarb is about 1 lb, so this is a very low rate. I use it twice a month for sooty blotch and flyspeck after the scab season is finished. It also controls any secondary scab and leaves the orchard with very low inoculum for the next season. I use twice that rate of bicarb and Silmatrix during primary scab season.

Biomin calcium has a pH of 6-8, Silmatrix is 11.3 (!), so this is an alkaline mix. Our water usually runs about 7.5 or so.

I think the Silmatrix (potassium silicate) helps the bicarb stick/penetrate and work better.

Chris, have you had good scab control with bicarb? Also, in Quebec they spray it right after a scab infection event and get 12-24 hours of kickback. Do you use it that way? I have not yet, I use it as a protectant the same as I use sulfur.

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[Brian Caldwell](#)

[Re: bicarb for scab and mixing](#)

June 09, 2022 06:43PM

Registered: 10 years ago

Posts: 69

PS. 1 qt/100 gal potassium bicarb is about 2#/100 gal. Since I use about 200 gal/acre, that works out to about 4 lb bicarb (AI) per acre. I have sometimes used twice that rate with no apparent phytotoxicity.

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[Chris McGuire](#)

[Re: bicarb for scab and mixing](#)

June 11, 2022 02:10PM

Registered: 1 year ago

Posts: 17

With regards to post-infection or during-infection sprays of potassium bicarb for scab: yes, we have tried that for the past two springs. Saw no scab at all, period, last year, and none so far this year, but I could certainly be missing it given the enormous amount of Surround which is now covering the orchard and making it hard to see anything on the leaves... **BUT** our orchard is primarily scab-immune varieties. In 2021 the only scab-susceptible variety we had is Prima, and even that is highly resistant although not immune - it did have a noticeable level of scab in 2019 and 2020. In 2022, we now also are managing several heirlooms (Golden Russet, Hudson's Golden Gem, Ashmeads, and a smattering of others) which can get scab. (Prior to this year, we were growing the heirlooms inside covered high tunnels, which, to make a long story short, controlled disease but did not work that well in other ways, so now we have uncovered the tunnels and are growing the trees outdoors.) In some cases we do apply sulfur in the standard pre-infection mode but have been leaning towards the during-infection sprays for a few reasons: (1) we spray some oil in the spring, mostly as a Regalia+Oil mix for thinning and CAR control, and oil and sulfur are said to not play well together when sprayed in close proximity, so we want to avoid high rates of sulfur in the 10-20 lbs/acre range. (2) we have a pretty decent amount of CAR pressure at our site; it's pretty clear that sulfur does nothing for CAR, but we can at least hope that the during-infection potassium bicarb sprays might also knock out CAR as it's infecting the leaves.

In gory detail, what we have been doing is spraying 5 lbs/acre carb-o-nator and 5 lbs/acre sulfur in 100 GPA according to the timing given by Dave Rosenberger, which he said was based on the timing used in RIMPRO: Apply KBC at 200-540 degree hours base 32 F after Mills Table infection criteria are met. This spring I had some discussion with consultants in our area as well as Vincent Phillion from Quebec and it seems there are some competing schools of thought about when exactly these during-infection sprays should be timed. Phillion's email was a bit confusing for me but he seemed to recommend spraying 150-630 dh b32F after onset of rain (or after dawn if rain starts at night), which overlaps with Rosenberger's criteria but is not quite the same. Our local consultant recommended 180-450 dh base 32F after onset of rain/dawn, which is a short quick window, but he has no experience with this technique personally and I am honestly not sure where he got these numbers. There was a paper from Belgium ([https://orgprints.org/id/eprint/35229/1/Jamar%20et%20al\\_2010.pdf](https://orgprints.org/id/eprint/35229/1/Jamar%20et%20al_2010.pdf)) testing sprays made at 90-540 dh base 32F after the onset of rain. Some of these differences in numbers may sound fairly small but from my limited 2-years experience a wider range of numbers can translate into being able to avoid spraying in the middle of the night, during high winds, etc. The danger of relying on this method is being forced into spraying in some untenable weather conditions (or at 2 AM, which I am definitely not fond of). So far for us the timing and weather has worked out reasonably well but some day it won't.

We have a NEWA weather station and it seems like you can use that data in a RIMPRO subscription for fairly moderate cost, so I am slightly toying with the idea of getting a RIMPRO subscription next year and following their recommended timing for the sprays.

I am curious about the Sil-Matrix. What's your thought process / experience about how that helps the potassium bicarb work better?

Are you using tech or food grade potassium bicarbonate for disease control, and not one of the brand name potassium bicarbonate pesticide products (Carb-o-nator, Armicarb, Milstop, etc)? We've always used the pure tech grade potassium bicarb for blossom thinning and Carb-o-nator for disease control. No really good reason for that, other than the brand name products have a small percentage of other ingredients which I thought might help with spreading and sticking. But maybe I am just wasting money!

With regards to SBFS, for three years we have used summer-long sprays of potassium bicarbonate (Carb-o-nator) 2.5 lbs per acre plus Lifegard 3 oz per acre, in either 50 or 100 GPA. Without doing any really controlled trials, I do feel like this has suppressed SBFS significantly compared to the previous 5 years or so where we had experimented with several other methods.

Chris McGuire

Southwest WI, zone 5A

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[Brian Caldwell](#)

[Re: bicarb for scab and mixing](#)

June 11, 2022 05:23PM

Registered: 10 years ago

Posts: 69

The reference that got me started with bicarb + Silmatrix for scab is at:

[[www.google.com](http://www.google.com)]

I'll send more soon!

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Zone 5 in New York

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[Brian Caldwell](#)

[Re: bicarb for scab and mixing](#)

June 12, 2022 06:40PM

Registered: 10 years ago

Posts: 69

I've used bicarbonate + Silmatrix the same as I would sulfur--as a protectant. I assume I have 5 days of protection after I spray, barring a very heavy rain.

I think that is easier than using it in the tight window after an infection, but having that option is valuable if one misses a spray. Silmatrix is a labeled fungicide based on potassium silicate, similar to sodium silicate, "water glass". I assume that it helps seal the bicarb onto the leaf. Once it dries on the leaf, I don't know how soluble silicate is, but I'm sure it does wash away over time. It also helps to induce plant resistance to pathogens.

I use food grade potassium bicarbonate for disease sprays and baking soda for thinning. Both are exempt from residue requirements, at: [\[www.federalregister.gov\]](http://www.federalregister.gov)

About 2/3 of my apples are very scab susceptible, including Jonagold, Idared, Golden Delicious, Fuji, Gala, etc. I've had good control for the past few years, using sulfur at times when I needed an acidic or neutral mix. A program including both bicarbonate and sulfur seems like a good idea, especially since sulfur can actually be deficient sometimes.

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[Chris McGuire](#)

[Re: bicarb for scab and mixing](#)

June 12, 2022 11:17PM

Registered: 1 year ago

Posts: 17

Very interesting! Do you have CAR in your orchard? How has the potassium bicarb + potassium silicate worked for that?

Chris McGuire

Southwest WI, zone 5A

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[Mike Biltonen](#)

[Re: bicarb for scab and mixing](#)

June 12, 2022 11:48PM

Registered: 10 years ago

Posts: 298

I've assumed that K-bicarb was short-lived since its reaction with water or humidity is what kicks it into action. K-silica is interesting from a plant protection standpoint (but not a plant immune booster) since it "fills" the intracellular spaces between cells and strengthens the overall tissue structure. Whereas calcium strengthens cell walls. calcium and silica together (along with the minerals and nutrients) create a sturdy resistant organism. However - back to k-bicarb - I have no basis for this, but feel that 5 days is a long time for k-bicarb to remain active (unless there is no rain) and then in the 5 days there is uncovered tissue that has grown from underneath the protection. as far as CAR, I have wrestled with this fungus for years and not come up with any good answers except constant protective cover and especially before a CAR infection period. I have started to use EcoSwing in my spring mixes because Keith Yoder (retired UMD pathologist) showed it help improve the efficacy of fungicides apps against CAR. So far so good this year, but we are still in the midst of our seasonal infection window. In short, I would use k-bicarb as a contact eradicator and other biofungicides for protection (including EcoSwing) as well as sprays to improve the trees immune system. I have no basis for this, but feel that k-bicarb is best applied in short before/after window for immediate efficacy, while there is some efficacy in the 3-5 day window assuming no heavy rains (as Brian indicated)...but by day 5 all bicarb coverage is null and void. I'll let everyone know how I fare with EcoSwing.

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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[Brian Caldwell](#)

[Re: bicarb for scab and mixing](#)

June 13, 2022 03:10AM

Registered: 10 years ago

Posts: 69

Lots of mysteries here. I don't think anyone actually knows how bicarb + Silmatrix works. The 5 day coverage window has worked for me; I stretch it to 15 days after mid June for secondary scab and sooty blotch/flyspeck at half rate and get decent (not perfect) control of SBFS and seemingly very good control of any secondary scab. In the very wet fall of 2021 I felt like it would have been better not to switch to half rate--there was more sooty blotch than I'd like to see.

We have almost zero CAR here, so sorry, I don't know if it helps.

Marssonina leaf blotch has been a serious issue here since around 2018. The sprays after mid-June appear to reduce it, but don't eliminate it.

[Hemlock Grove Farm](#)

Zone 5 in New York

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[Chris McGuire](#)

[Re: bicarb for scab and mixing](#)

June 13, 2022 05:08AM

Registered: 1 year ago

Posts: 17

Thanks for sharing the great info. Mike, are the Ecoswing / Cedar apple rust trials published? I cannot find anything on google...

Chris McGuire

Southwest WI, zone 5A

[Reply Quote](#)

[Mike Biltonen](#)

[Re: bicarb for scab and mixing](#)

June 14, 2022 04:11AM

Registered: 10 years ago

Posts: 298

Hey Chris,

Honestly, the results - which I can send you - were in a conventional research program with lots of different tank mixes. Ecoswing did seem to make a difference, but it wasn't clear cut since they never tried it alone or with other biofungicides. However, it was enough of a difference that I decided to finally try it in my bio program and see what results it made for me. This is year one. Next year I will do more controlled studies, but for now it seems to have made a difference - pretty soon we'll see how much. PM me if you want the report I am referring to as I don't think there is a way to attach docs here.

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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