



bicarbonate for thinning

Posted by [Brian Caldwell](#)

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[Brian Caldwell](#)

[bicarbonate for thinning](#)

December 06, 2012 04:57AM

Registered: 10 years ago

Posts: 69

There is a very interesting article from Europe on using bicarbonate for thinning. It might be a reasonable alternative to lime sulfur/oil, which raises phytotoxicity concerns with me. Since I use sulfur for scab and occasional lime sulfur, I don't want to burden the tree with more LS. This [thinning article](#) is in the HON library.

Since we got virtually no crop this year, I expect next spring's bloom to be heavy. We'll probably need to thin heavily!

[Hemlock Grove Farm](#)

Zone 5 in New York

Edited 1 time(s). Last edit at 12/07/2012 04:38PM by Michael Phillips.

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[Francis Brabant](#)

[Re: bicarbonate for thinning](#)

April 20, 2013 03:18AM

Registered: 10 years ago

Posts: 11

First, dont use Armicarb. Get a technical grade potassium bicarbonate (2,65\$ a kilo).

Test have shown that Armicarb causes more phytotoxicity then the technical grade product. Go figure.

Second, I tried it, probably a bit too late and got little results to show for.

This year, I expect a heay crop so I will be using Lime sulphur like a mad man!

7 acres in Oka (Québec)

Certified Organic Orchard

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www.verger-bio.ca

Edited 1 time(s). Last edit at 06/05/2013 04:17AM by Michael Phillips.

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[Michael Phillips](#)

[Re: bicarbonate for thinning](#)

May 10, 2017 05:56PM

Moderator

Registered: 11 years ago

Posts: 621

I was wondering if anyone has an update on using potassium bicarbonate for blossom thinning? Brian tells me his team has put on a couple sprays of Milstop @ 12.5 lb/100 this past week and really fried some petals! The big unknown when you take out subsequent bloom (following reasonable king bloom pollination) is how this truly plays out with fruit set. Two years back Brian felt he had really overdone it with his Goldens but then the apples sized up nicely and it indeed proved to be a proper crop.

Two other approaches used in Switzerland jumped out at me in reading that [research paper](#) anew but I can only speculate how these work as blossom thinners. Using ordinary foodstuffs has a certain appeal:

Molasses, applied 2 to 3 times, at 5 to 7% concentration . . . excess sugars overwhelm the bees? More likely gunks up the works, eh?

Cider Vinegar, applied 2 to 3 times, at 3% concentration . . . does acetic acid fry fragile flower parts? This might even have relevance for fire blight, given vinegar's anti-microbial oomph. Good use for a batch of vinegar gone awry.

Anyhow, it would be great to hear [actual bicarb results](#) from those of you who have tried this in past seasons. I'm tempted to go with

ordinary baking soda, aka sodium bicarbonate, Arm & Hammer brand, costing as little as \$8 for a 12 pound box. The base rate is the same, 10# per hundred gallons, along with one ounce of Therm-X as a sticker. Varieties like my Sweet Sixteens are loaded with blossom buds, and spraying half of those dozen trees will make an effective trial. The need to thin will very much tie to it warming up next week and bees of all persuasions flying in earnest.

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

Edited 1 time(s). Last edit at 05/14/2017 07:04PM by Michael Phillips.

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[Francis Brabant](#)

[Re: bicarbonate for thinning](#)

May 10, 2017 08:33PM

Registered: 10 years ago

Posts: 11

I will check in with other organic growers in our club.

A+

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[Mike Biltonen](#)

[Re: bicarbonate for thinning](#)

May 12, 2017 01:29AM

Registered: 11 years ago

Posts: 298

Trying regalia + oil at several locations for thinning and CAR. Burned lots of petals, but nothing def yet. Will update when we have some details.

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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[Michael Phillips](#)

[Re: bicarbonate for thinning](#)

May 14, 2017 07:42PM

Moderator

Registered: 11 years ago

Posts: 621

I'd also be interested to know how potassium bicarbonate does in blossom potential. One theory holds that the freshly-exposed stigmas are somehow damaged, thereby blocking the gateway by which pollen reaches the ovules. High pH could alter stigma receptivity by no longer supporting pollen hydration and thus the formation of a pollen tube. Brown flower petals might deter bees but I don't think it's that simple. Russetting is said to be an issue if it rains within 24 hours of application. Not sure how temperature fits in here.

First app is made at about 20 to 30% bloom, following a day or two of decent king blossom pollination. A cool start to bloom would delay a thinning app accordingly. All keys to the bees. The second app comes at 50 to 70% bloom. Heavy-setting varieties with significant *straggler bloom* (formed at the base of annual shoots but needing slightly more time to develop) will even want a third app at 90% bloom.

Another part of the storyline concerns rates. According to the Swiss, some varieties are more sensitive to bicarb and thus must use lower rates. The 10# per acre threshold should not burn leaves but ornery varieties may require a higher rate to get proper results. I noted earlier that Brian uses 12.5# per acre. This is more than double what the label states for anthracnose and mildew prevention. Thus the cost at a "thinning rate" looks something like \$120 to \$150 per application ... whereas thinning by hand might cost \$2000 in labor per acre and never be as timely ... which is so key to delivering return bloom the next season. There's talk that bicarb dehydrates the scab spore as well so that's a plus in a rainy bloom spell.

And then I'd really like to know if bicarb sets back the beneficial microbe scene to the same extent as lime sulfur.

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

Edited 1 time(s). Last edit at 04/29/2021 10:50PM by Michael Phillips.

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[Brian Caldwell](#)

[Re: bicarbonate for thinning](#)

January 18, 2020 04:05AM

Registered: 10 years ago

Posts: 69

A belated thanks to Francis B for the tip on using straight potassium bicarbonate! Milstop is very expensive when used at thinning rates. If you are certified organic, be sure to check with your certifier before any new materials...

Here is my update--I've been leery of increasing my rate (I used baking soda last year), and so have been using 6# per 100 gal which translates to 12# per acre since we put on about 200 gal/acre. Baking soda is cheap, a few dollars a pound similar to the KHCO₃.

I try to put on 2 thinning sprays--one at ~30% bloom, then another 5-7 days later. It is difficult because we have over 30 varieties. Two sprays at that rate are not enough to fully thin the crop, but our hand thinning is much reduced. This year we saw little russet from the thinning sprays, but there is always some.

[Hemlock Grove Farm](#)

Zone 5 in New York

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[Brittany Kordick](#)

[Re: bicarbonate for thinning](#)

February 27, 2021 07:13PM

Registered: 4 years ago

Posts: 211

Thanks to all for this great info! We're planning on experimenting with regular old baking soda for thinning this season, picking up Michael's prospective rate of baking soda at 10 lbs/100 gal, plus Natural Wet spreader-sticker. We're a little concerned about tipburn/russetting, but more concerned about the costs of commercial potassium bicarb products on our scale, and don't want to use lime sulfur as we have in the past (we're applying very heavy TerraNeem throughout the season, trialing it as a replacement for pure neem in our regular holistic mix to get a handle on some of our pest issues, and won't be able to keep 14 days between lime sulfur and oil apps). Any updates from anyone who has experimented with straight-up baking soda for thinning would be welcome!

[Kordick Family Farm](#)

Westfield, NC

Zone 7a

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[Brian Caldwell](#)

[Re: bicarbonate for thinning](#)

March 02, 2021 08:18PM

Registered: 10 years ago

Posts: 69

An update from the 2020 season--we had frost during bloom so I held off until I could see the crop. I used no bicarbonate, but sprayed overset trees with a full rate of fish oil + lime sulfur when the fruit was about 10 mm in diameter. It didn't seem to do anything. We did a lot of hand thinning.

[Hemlock Grove Farm](#)

Zone 5 in New York

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[Josh Karp](#)

[Re: bicarbonate for thinning](#)

April 18, 2021 04:54PM

Registered: 10 years ago

Posts: 18

Brian C. started this thread back in 2012, but it seems that we collectively haven't moved forward that much in the intervening 9 years.

Or maybe we have...anyone have something to report? It sounds like Brian has the most experience using bicarb., sounds fairly successful, i.e. didn't eliminate hand thinning but reduced it appreciably. Hey, if it reduced hand thinning by 30-50% that's a huge win in my book!!

Last year, we had something like a 10% crop after a huge year in 2019. And this year is looking to be an extreme on-year. Great, exciting, and all that, don't get me wrong, but if I want any crop next year I clearly need to do some serious timely thinning of some kind. And also for this year's crop quality...how many times I've had varieties overbear and the poor trees just can't ripen the fruit, ending up with tasteless underripe fruit useless for anything, and then to put the icing on the cake, no crop the following year! i.e. Two years wasted!

Spray thinning is always lurking out there as some kind of holy grail option because the cost of hand thinning is crazy..if you can even find enough folks to do it. I've tried hand thinning in the big on-years and just never get it done in that 30 day window. The hand thinning I've done has, indeed, greatly improved the quality of the crop, but is never completed early enough, or enough fruit removed, to make much of a dent in the biennialism. [I know biennialism can be variety-specific but for the purposes of this discussion I'm conveniently discounting this]

But, if you calculate the loss of, say, 60% of the crop in the off-year, hiring a small army of hand-thinners might actually provide a pretty good return on investment. But for many orchards, June is not exactly a great cash-flow month and paying for all that labor would be quite a stretch...

Do we know enough to say: that it doesn't matter if it's potassium bicarb or sodium bicarb? A quick search shows baking soda to be approx. 10x cheaper.

How much collateral damage are folks seeing? i.e. russetting, phytotoxicity, etc? Keeping the rate on the low side, with the expectation that some hand thinning will have to follow, may minimize these issues?

Michael brought up molasses and vinegar...any further thoughts on these?

It seems that lime sulfur has been shown to work pretty well for blossom thinning, but I don't spray lime sulfur at all and don't think I'm willing to start.

What if there was a [non toxic] substance that bees would find just disgusting, that one could spray after king blooms were pollinated?? (And to you wise guys/gals out there, I'm not talking about a bunch of entrust sprays during bloom)(not sure killing all the bees is the approach we're seeking)

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[Brittany Kordick](#)

Registered: 4 years ago

Posts: 211

[Re: bicarbonate for thinning](#)

April 18, 2021 05:18PM

Very timely, Josh! I am going to be going out today and doing some trial thinning sprays of baking soda on our 'Ashmead's Kernel' and 'Virginia Winesap.' Not enough chill hours, two hard freezes, and a recent hailstorm have contributed to our not being quite so concerned with thinning in general this year due to less return bloom overall and some existing blossom damage. We remain concerned about phytotoxicity, and being that so much of this year's crop is apparently going to be coming from the aforementioned varieties, we're not going to risk spraying both blocks entirely with baking soda, but want to at least trial it so we know for the future. We'll be spraying one row of each variety (a third of the trees in each block) with a rate of 10 lbs baking soda and the recommended rate of spreader/sticker that I have hanging around. It's sunny this morning, so just waiting til the clouds start rolling in later in the day to spray, but will report back as soon as there's anything to report back.

[Kordick Family Farm](#)

Westfield, NC

Zone 7a

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[Brian Caldwell](#)

[Re: bicarbonate for thinning](#)

April 19, 2021 11:12PM

Sounds good Brittany and Josh. I just use straight food grade baking soda. I'm still not sure of the best rate. I would spray at about 25-40% bloom, then again a week later for the fullest effect. Brittany, I'll also be curious to hear if you see any differences in fire blight (hopefully you won't see any F cool smiley where you spray the bicarbonate. I wonder if there will be less bee visitation and thus less FB. We're mostly at tight cluster here.

Good luck!

Brian

Registered: 10 years ago

Posts: 69

[Hemlock Grove Farm](#)

Zone 5 in New York

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[Brittany Kordick](#)

[Re: bicarbonate for thinning](#)

April 22, 2021 03:22PM

Well, not much to report -- we were at about 80% petal fall in both varieties we sprayed baking soda on at the 10 lbs/per 100 gal rate, plus spreader-sticker (and we also just used food-grade Arm & Hammer baking soda). The primary reason for going ahead with it was to know for next year if we could plan on using it, and so, see if there were any adverse effects and how it affected the blossoms. We've concluded it's worth using widely throughout the orchard. We were waiting on cloudy conditions to lessen the likelihood of phytotoxicity, but the sun kept right on a-shining, and we finally said, the hell with it, and sprayed anyway. Did not see a speck of damage to the still-tender foliage, so felt particularly good about that. Because of the relatively small amount of trees involved in our trial, we applied the spray by hand, rather than our usual airblast, so the coverage was not particularly even, and I think this is why there is some disparity in how blossoms were affected. At 24 hours and 48 hours post-spray, some blossoms were pristine, most had minor physical damage, and others (very few overall) had major physical damage.

Unfortunately, we won't be able to conclude much in the way of this baking soda spray's effectiveness against fireblight, as we have been applying AgriPhage to the entire orchard to combat it this year. So far, so good, but I suppose if we do end up seeing strikes widespread throughout the orchard, except in the baking soda trees, it could be notable. Another side benefit, however, was the soda spray's apparent effectiveness against woolly apple aphids. We have been inundated ever since periodical cicadas visited last summer. A late season lime sulfur spray seemed to wipe them out (visually, at least), but the aphids have emerged from dormancy along with the apple trees, and we are swamped again. The baking soda spray seemed to wipe them out (probably cuts through their waxy protective layer quite effectively) again, or at least flushed them from where they had been situated.

So, not the best experiment this year, but enough of one to make us feel good about trialing baking soda thinning in the orchard wholesale next season, assuming we feel the need.

[Kordick Family Farm](#)

Westfield, NC

Zone 7a

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[Ian Graham](#)

[Re: bicarbonate for thinning](#)

April 23, 2021 04:12AM

Just wanted to thank you for going ahead with a report for the rest of us on your trial with baking soda. You made a very real option for me next year.

Old 99 Farm and permaculture site

Dundas ON 5b

[Reply Quote](#)

[Michael Phillips](#)

Registered: 10 years ago

Posts: 59

Moderator

Registered: 11 years ago

[Re: bicarbonate for thinning](#)

Posts: 621

April 29, 2021 05:04PM

A piece of the puzzle seems to be missing in this bicarbonate discussion but take note this only complicates matters. SMILEY THING

Ike Kershner of North Star Orchard in southeastern Pennsylvania shared his organic spray plan at the 2018 Berkshire Roundtable. His observation notes included this statement: "There were no appropriate windows of opportunity for thinning with Armicarb [potassium bicarbonate] so we hand thinned immediately after bloom followed by touch up after June drop."

Ike went on: "I will consider lime sulfur plus oil for thinning in seasons when Armicarb is not an option. Our hand thinning regime worked well but was costly."

I wasn't about to let that go by without further discussion, and so I asked him to explain his thinking pertaining to the "**Armcarb Window**" as regards choice of thinning options. Ike explained it was *not warm enough* for effective thinning with bicarbonates. That temps need to be over 70F when applying this strategy AND that trees cannot be wet from rain for the next 24 hours.

Ike did apply Armicarb in 2017, this on tertiary bloom after king and secondary flowering had past. This was primarily to deter fire blight on straggler bloom... as dead blossoms are not going to serve as bacterial infection vectors. His one note that season reads thusly: "Applied Armicarb at 16.5# per acre by mistake; I wanted 12# per acre which still would have been too much."

Don't say I didn't warn you!

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

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[Brian Caldwell](#)

[Re: bicarbonate for thinning](#)

Registered: 10 years ago

Posts: 69

June 15, 2021 06:06PM

Not sure where Ike got that info. Sadly, I was too shy this year and only used pot bicarb @ 10 lb per acre-- 5 lb per 100 for me. It did nothing to thin the crop, though the petals were burned.

[Hemlock Grove Farm](#)

Zone 5 in New York

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[Sebastian Luczak](#)

[Re: bicarbonate for thinning](#)

Registered: 2 years ago

Posts: 3

August 06, 2021 12:05PM

3-4% urea $\text{CO}(\text{NH}_2)_2$ when is cold/cool , can be used on pink balloon ,blooming,little after blooming . Its strong thinner , 2-3 application and trees will bloom green . Natural fertilizer with amide should work , 6-8% pure N.

Lime sulphur 3% burns very well ,used 2x and its ok for strongly fruiting species . KHCO_3 should burns a little , every day application after 30% flowers pollinated . K_2CO_3 2% or 3% , is as stronge as lime sulphur , maybe faster ,more damaging to leafs and flowers when little rain comes out . Every fertilizer that burns in exceed dosage will work , but needs to be sprayed every day or 2 days . Just check what will burn stamen , not entire plant 🙄winking smiley

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