



2017 scab review

Posted by [Liz Griffith](#)

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[Liz Griffith](#)

[2017 scab review](#)

August 24, 2017 12:57AM

Registered: 7 years ago

Posts: 46

Wondering how everyone did with scab this year (2017) as we have had our worst-ever infection. The rain just wouldn't stop all spring and into summer. Luckily we grow so many varieties that we still have sale-able fruit, but our most scab-prone varieties (Mac, Gala, Macoun) are a complete wash. And of course those are very popular with our clientele.

We always practice good orchard floor sanitation going into winter by mowing/chopping leaves, but will definitely be adding compost, etc. to help this year. What specifically have you folks used for this with success?

On the other end of things, I am also curious, Michael, as to how your cobalt idea has been going. Very intrigued.

[Editor's Note: Couldn't resist splitting this off from the [scab conundrums](#) thread, Liz, as it will get more immediate attention this way.]

Door Creek Orchard
Zone 5a in Wisconsin

Edited 3 time(s). Last edit at 08/24/2017 09:10PM by Michael Phillips.

[Reply](#) [Quote](#)

[David Doncaster](#)

[Re: scab conundrums](#)

August 24, 2017 01:49AM

Registered: 11 years ago

Posts: 50

Liz are you using the holistic spray mixture at all ?

[Reply](#) [Quote](#)

[Liz Griffith](#)

[Re: scab conundrums](#)

August 24, 2017 02:55AM

Registered: 7 years ago

Posts: 46

Hi David. Had hoped to implement it this spring/summer but my year has been blown to bits by a new, colicky baby. So no. Thankfully the wee one has calmed down a lot so am trying to get back into the swing of things. Hoping again for implementation in the coming spring.

Door Creek Orchard
Zone 5a in Wisconsin

[Reply](#) [Quote](#)

[Michael Phillips](#)

[Re: 2017 scab review](#)

August 24, 2017 09:04PM

Moderator

Registered: 11 years ago

Posts: 621

Comparisons from site to site are challenging given all the variables involved. Especially the weather! But I'm glad to report I've never had fruit this clean. Looking back at my scab log (religiously kept going on twenty some years now) I see that the biggest wetting event in terms of spore release came during bloom . . . which was the principle reason I made a competitive colonization boost the day before that May 22 rain which delivered a 40% chunk of the spore load for the season. Similarly, I proceeded six days of drizzly rain starting at petal fall (averaged across varieties) with the Spring3 holistic app and followed it one week later with Spring4. I am adding trace minerals (including cobalt) on both sides of bloom for the second year in a row now. This is integral to healthy plant metabolism at [critical points](#) in the tree's growth cycle.

I do see some scab in minimal amounts on a few varieties but I actually think that is a healthy sign. Environmental reality is what gets phytochemical juices flowing. The holistic approach is all about stimulating green immune function and renewing complete colonization at the right times. I made three "comp sprays" which include the calcium and silica teas at two week intervals following the spring apps (which is the only period for which I record wetting events) but it was definitely on the wet side then too. My one and only holistic summer spray was made on August 3, again with the teas but this had trace minerals as well to boost terminal bud set doings. This wider spray frequency was made possible by good results up front. I'm quite sure that the "cuticle defense" is integral to quelling secondary scab, and accordingly I would have sprayed more often in the summer months if scab had gotten a major foothold back in spring.

For what it's worth, my [scab indicator tree](#) (a mostly untreated, ornamental crab) looks about as sick as I've ever seen it. Leaves are falling off shoot growth quite extensively at this point. That would be secondary scab spread from fruitlets to terminals throughout this very rainy summer . . . which is why it really helps to look back at the timing of wetting events and spray decisions and even where scab can be found. Once again, a good thread to learn together as a community!

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

Edited 1 time(s). Last edit at 08/25/2017 03:01PM by Michael Phillips.

[Reply](#) [Quote](#)

[Brian Caldwell](#)

[Re: 2017 scab review](#)

September 04, 2017 10:11PM

Registered: 10 years ago

Posts: 69

Our season in the NY Finger Lakes region was dramatic and instructive regarding apple scab. We had 13 days of rain over .01" in April, 14 in May, then 11 in June. Early varieties started to bloom around April 29, but bloom lasted until about May 18. Non-resistant unsprayed crabapples and wild trees were badly infected and have sparse foliage with brown leaves. We have two orchard sites which were managed slightly differently, with big differences in results.

We have not had good success with Michael's holistic sprays, but employed a variation this year:

- 1) we timed the sprays according to scab infection periods based on the Mills chart, not according to critical growth stages.
- 2) we used 1 gallon of Trilogy (clarified neem oil) and 1 quart of Regalia per 100 gal tank; 2 tanks per acre. We added EM once on May 11.
- 3) during bloom (after king bud set) we thinned with Milstop (potassium bicarbonate) @10-14 lb/100 gal
- 4) scab sprays continued until May 20, when primary scab spore release was thought to be over

Results were not good in the orchard where we stuck with this program. Susceptible varieties were infected with scab in early May and have poor foliage and mostly small, cracked fruit.

In the other orchard, sulfur was sprayed twice in early April and again on May 5 instead of the Trilogy/Regalia mix. There is virtually no scab in that orchard, including on Jonagold, Golden Delicious, Paulared, and Idared, which are in bad shape in the other one. The May 5 spray was just before a major scab spore release over 3 rainy days. The scab spore load may be low in this orchard because of mid- and late-season sprays in previous years there to control sooty blotch and flyspeck. These SBFS sprays use low (half) rates of lime sulfur, Cueva copper, or Milstop in rotation, about every 15 days from late June until two weeks before harvest.

In addition to making fruit small and cracked, severe scab also caused many fruit to drop, and the crops on those trees are light. So a silver lining may be the possibility of a decent return bloom on them next year. But we'll see about that!

[Reply](#) [Quote](#)

[Zea Sonnabend](#)

[Re: 2017 scab review](#)

September 07, 2017 07:56AM

Registered: 10 years ago

Posts: 58

Do you think Regalia could be meshed with a sulfur based program to help counteract the effects of sulfur on the biome? I never heard about Regalia against scab, but I am interested to learn more.

Also, we had horrible scab our first season (2012), but practically eliminated it the following year by spreading limestone in the fall ahead of leaf drop (right after would work too). The lime made the leaves and scab spores break down thoroughly.

[Fruitilicious Farm](#)

Zone 9b in California

[Reply](#) [Quote](#)


[Garrett Miller](#)

[Re: 2017 scab review](#)

September 10, 2017 08:50PM

Registered: 10 years ago

Posts: 2

Hello all. Just wanted to chime in a few thoughts here. I'm also growing fruit in the Finger Lakes of New York (same region as Brian) and I can attest; rain, rain, and more rain. Its been great for shoot growth on the newly planted orchard and grass growth for our cows, but somewhat difficult for disease management. Most of our apple varieties are scab 'immune' or at least scab resistant (Honeycrisp, Sweet 16, russets, etc) and those look fantastic this year regarding scab. I can say confidently that growing immune/resistant varieties is the most effective part of my scab program  However, I've been lured by the sirens call of some 'not so resistant' varieties, including many European bittersweets that are coming into bearing over the past few years. A few of those varieties (not most, but a few) got hit hard with scab here this year, signaling a need for more involvement from me. I've been generally 'slipping by' the past few years having a low disease inoculum to start with, good orchard floor management, and generally healthy arboreal biology, but this seems to be a crossroads now for future fungal disease management; the elemental fungicide 'clean slate- then rebuild annually' approach to orchard biology or the activated immunal resistance/competitive colonization strategy. Being that I choose the later approach for my own personal health (because of effectiveness), I'll be doubling down on this holistic approach next spring for orchard disease management as well.

I also had the good fortune of visiting Micheal's orchard in NH in late August this summer, and it would be an understatement to say I was impressed by the quality of the fruit. Apple scab was a very minor voice in the cacophony of a wildly diverse orchard biology. Very clean, beautiful fruit all around, with enough 'imperfections' one could tell biological controls were at work. I can only guess at all the pieces needed to make this puzzle work (orchard floor management, crop loading, training, fungal mngt etc) but clearly the spray program is also effective. No question. One dramatic difference I can see in the trials Brian mentions above is Michael's use of whole plant foods (pure neem vs extracted neem 'supplement') and the repeated applications of competitive, microbial active teas along with fatty acids food sources. Again, this is akin to approaches I've seen work wonders in the human body (whole foods, active gut microbiome, etc) and the parallels seem too great to ignore. Regardless of 'how', this metabolic approach to plant disease seems to be working wonders up there in northern NH and there is a lot to be learned from it. For me the challenges are less the orchard pests/diseases themselves and more changing my own out-dated modes of thinking and patterns of self doubt.

Wow, that was a ramble. Congratulations on reading this far!

Looking forward to hearing from others,
Garrett

[Reply Quote](#)

[Garrett Miller](#)

[Re: 2017 scab review](#)

September 10, 2017 08:56PM

Registered: 10 years ago

Posts: 2

I will also say that some part of Michael's fatty acid based, Holistic spray program is causing some interesting russeting on non-russet varieties. Not sure if I understand the mode of action at work there, but I found it kind of beautiful. Both desirable as a cider maker (often better aromatics, drier, indicator of high brix) and a story-teller (aka direct marketer of fresh fruit)- "plant health you can see".

Garrett

[Reply Quote](#)

[Henry Jacobson](#)

[Re: 2017 scab review](#)

September 11, 2017 03:39AM

Registered: 6 years ago

Posts: 14

This fall I am picking apples at a local orchard on the weekends for some extra money to help with college tuition. They are not organic but I keep pushing my employer to go organic. This summer has been really wet here as well so I asked how and what he sprayed with. He uses Captan for the scab. He had to spray really hard to get a good crop without any scab but even then, there were a lot of apples that still had spots of scab here and there. It seems the badly effected apples were either inside the canopy of the tree or the spray was blocked by the leaves. He sells the scabby apples for a lower price which is great. I hinted to him that sulfur or a mixture of sulfur and some other ingredients works well for scab and he said he will possibly have to try it for next year if it is cost efficient. Hopefully he goes organic because when he sprays his pesticides he uses a huge fan to cover his 4-5 acre orchard with mist!

In other words I still have a lot to learn about organic fungicides/pesticides for next year.

Henry Jacobson

Central Wisconsin Apple Rediscovery Project

New London, WI

Zone 5a

Edited 1 time(s). Last edit at 09/11/2017 03:40AM by Henry Jacobson.

[Reply Quote](#)

[Brian Caldwell](#)

[Re: scab conundrums](#)

October 28, 2017 05:09AM

Registered: 10 years ago

Posts: 69

Zea's question about Regalia is a good one, and Garrett's mention of neem oil and russet is also right on. It all fits in with marketing as well.

Our spray program this year was heavy on both, and our apples are heavy on russet. This is not a big issue with our direct customers, who mostly buy "utility grade". But we sell through our coop as well, and next to other shiny apples they look pretty rough, though I like to call it rustic, rugged, robust...

The russet may also mean that the trees are experiencing some phytotoxicity. That may be part of the way that Regalia works to induce a disease resistance response. Regalia has also been shown to burn blossoms and can be used for thinning. However, there is a new Regalia formulation which may not have the thinning effect.

I think we need to fine tune our approach to reduce the russet. We don't know exactly what material caused the heavy russet this year, but we'll learn more about each and try to figure out how to best use them. There is also the vexing issue of using sulfur and oil within too short an interval--so, I'm not sure how to use Regalia and/or oil to reduce sulfur use.

Back to the drawing board!

[Hemlock Grove Farm](#)

Zone 5 in New York

[Reply Quote](#)

[Mike Biltonen](#)

[Re: 2017 scab review](#)

November 11, 2017 12:10AM

Registered: 10 years ago

Posts: 298

Wow, so many incredible observations from so many perspectives. I'll start by saying that the beauty of my occupation – I am an orchard consultant and grower – is that I get to work with and observe many different situations from hard-core conventional growers to the wildest of wild apple growers. Let me start by saying that this year was the complete opposite of 2016 – at least in western NY – and was wet wet and cool - and wet again – all spring long. If there was ever a season where scab should have been a major issue, this was it. It wasn't until early July that we really got into "summer mode."

First, I believe that the drought of 2016 played a big role in keeping overwintering inoculum at a low in most orchards. Most, but not all. That said, scab is always a concern. Last year, we were able to keep scab non-existent in a NY organic orchard comprised of McIntosh and Cortland, primarily. We did this with a holistic program + two well-timed sulfur sprays ahead of major scab infections. As it turned out, those two sprays turned out to be the two major scab infection periods of the year (according to NEWA and RIMpro). But it was a drought year and anybody could write that success off based on the low disease pressure. 2017 however was THE scab year – or should have been – to beat all. It was cool, wet for the entire primary scab season. There was very little cuticle formed by leaves – because they didn't need it, leaving foliage that much more susceptible, or one would have thought.

We attempted the same basic program and had the same success, more or less, as in 2016. Holistic + 2 sulfur sprays. The key component in all of this is the focus on micro-nutrition - esp cobalt. In two separate cases, one grower applied a straight cobalt material, the other a micronutrient blend that

contained cobalt, several times in April/May. Both had similar results and has lead me to believe deeply that micronutrition is the secret ingredient in all of this. The competitive biology angle creates a hostile environment for scab and other pathogenic fungi. The fatty acids are food for them and strengthen their local populations. This is essentially what Michael was saying. It appears that the lack of success that Brian saw may have been the lack of nutrition incorporated into the sprays.

The nutrition angle lead me to the uncanny realization that our modern (read: ivory tower) understanding of tree nutrition is woefully lacking in both depth and comprehensiveness. It doesn't acknowledge the role that many micronutrients play in tree nutrition, physiology and overall health – nor the interactions between the nutrients. Modern nutritional theory oversimplifies what plants need for healthy crops and how farmers should apply them. Read 'The Farm as Ecosystem' by Jerry Brunetti and you'll see what I mean. Refocus your plant disease efforts with more of nutritional angle and you'll really see what I mean. Read your local extension pubs and you'll find the exact opposite.

Re: sulfur. We worry way too much about the detrimental effects of sulfur. Sulfur is a necessary nutrient that is often mislabeled as an enemy when in fact I see too many soil and leaf analyses that show deficiencies in sulfur levels. Sulfur is needed for the proper assimilation of nitrogen in the plant. Without it, you end up with rank growth that dilutes other nutrients and causes huge imbalances in the plant growth and development. How do we apply sulfur is the more important question to ask. Sulfur applied 10 times a year at 10 – 15 lbs/acre will have very detrimental effects. Applied 2-3 times per year at half that rate will not. In fact, the benefits of the sulfur will enhance the fertility of the orchard, not detract from it. Even microbes need nitrogen and appropriate amounts of sulfur assist them, too. Even if you are not using sulfur for scab or disease control, applying granulated sulfur to the soil will increase the utility of nitrogen by the plant and microorganisms. Why? Because the size of the particles is important. Larger particle will degrade and solubilize more slowly than small particles that quickly enter the soil solution and create a toxic environment that does kill of soil biology. At low doses and frequency, regardless of source, you're unlikely to do any damage to the soil environment with sulfur. Check recommended levels of sulfur for proper nutrition against your soil/leaf analyses, and you'll see what I mean.

Re: Regalia – still haven't totally figured this one out, though I totally believe in it. More than for scab, its potential for controlling cedar apple rust are where my hopes lie. As well, it is a powerful stimulator of acquired and induced systemic resistance pathways in plants. And, as Brian pointed out, a mild thinner that works well when applied at high enough concentration at bloom and petal fall. That said, I don't think that Regalia plays a major role in scab control – a minor contributor to the overall program, but not a major player. I am not afraid of Regalia's thinning effects and feel it is the elderberry of the plant world – it increases the natural immunity of plants, like elderberry does for people.

I am not even sure if the silica or calcium are all the necessary if micronutrients are applied throughout primary scab season, though they don't hurt when it comes to beefing up the cuticle and primary cell-wall strength of the plants.

Having a solid biological + nutritional + SAR/ISR program that starts from green tip forward – a la conventional growers – is critical to ensuring scab doesn't poke through during primary scab season. Keenly applied allopathic strategies – like sulfur – when scab infection potential is super high don't hurt (and I don't believe they negatively effect the overall biology in the orchard as common wisdom would have you believe) and really do have great potential to boost the nutritional interactions in the tree, orchard, and soil biome.

That said, we'll see what next year brings. But another year of holistic successes with fertility as the cornerstone of scab control will begin to cement my evolving philosophy that synthetic fungicides are not necessary. Then I'll take it to some conventional growers, many of whom were applying captan/manzate 3-4x a week when there was so much rain, in part because they didn't have a healthy trees or biology to give them the boost they needed through dark time. Now if someone can just tell me how to control Cedar Apple Rust – and Trump. Give me the answers to those two questions and the keys to the kingdom are yours.

PS I think I outdid Garret. So congrats, again, if you made it this far. Yikes!

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

[Reply, Quote](#)

[Glenn Aldridge](#)

[Re: 2017 scab review](#)

December 15, 2017 05:40AM

Registered: 6 years ago

Posts: 8

This is my first time posting.... I'm in Long Island NY, Zone 7. I'm part of Restoration Farm. I caretake an orchard of about 1 1/2 acres planted by Nassau County in 1992 at the Old Bethpage Village. Been doing that since 2013. Following lots of advice from Michael Phillips' books (except Neem - cannot spray that stuff!) The orchard was planted with older varieties including Roxbury Russet and Newtown Pippen. Also a few Gravensteins and Summer Rambos. These were on standard rootstock and planted 30 feet apart in each direction. I've planted 2 trees of some other varieties such as Cox's Orange, Hauer Pippen, Enterprise, Liberty, Gold Rush and recently Milton. Some of these are on M111.

Some of the orchard was not suitable for apples (heavy, wet etc.) and I have planted berries and some peaches as well. Loving the berries!

I'm interested in the fungal problems, particularly Cedar Apple Rust. I used a product called Green Cure (potassium bicarbonate) this year, leaving a control group as well. Very little problem with CAR in 2017, but that included the control group! Also - the product is expensive! We haven't had a bad scab problem - knock on wood! I read with interest Mike's ideas about trace minerals etc. We were able to get truckloads of seaweed in the winter of 2017, and I am hopeful that this helped with the fungal pathogens. Hard to know. I just got my 1 and only truckload of seaweed for this winter. I will be spreading that around and keeping the faith.

I'm also interested in having varieties that will flourish in my zone, also considering climate change... Roxbury Russet and Newtown Pippen do well here. Gravenstein is outstanding. Summer Rambo is excellent. Hauer Pippen was awesome this year, and those trees were only in their 5th year (M111). However - Northern Spy does poorly and I'm considering taking the 2 trees out. Cox's Orange and Gold Rush are not looking good.. No results from Enterprise. Liberty was good, but some weirdness on the skin.

I would welcome any ideas for other varieties that seem to do well in my zone.. Also would like to know if anyone else has experience with Green Cure. Thanks much. Glenn Aldridge

[Reply](#), [Quote](#)

[Karen Brindle](#)

[Re: 2017 scab review](#)

December 18, 2017 06:46AM

Registered: 9 years ago

Posts: 103

Hi Glen, welcome! We are not in the same zone as you but I'm curious why no neem? We have huge problems with scab but not CAR here. Enterprise is one of our favorite apples, tree growth is tidy, apples are BIG and beautiful and they keep so well! I'm interested in learning about and possibly trying Green Cure.

Re Regalia: I tried that this year for brown rot on peaches. one tree was too far gone but the other 2 seem to have way less dead branches and less gummy lesions, and put on good growth (no fruit this year, spring was too wet and peaches/plums/early apples did not get pollinated) Those trees also got the holistic sprays.

I can't recommend varieties because ones that do well for us on the wet west coast may not do well for you. I've read postings from folks with Dabinnett for example, that had terrible problem with scab. That variety is spotless for us, in spite of bad scab on adjacent trees. There are so many other factors besides "zones" that determine varieties that do well, or not. Our focus is cider apples and so far, they are proving to be quite resistant to scab.

Honestly I feel that the fermented tea spray makes our trees the happiest! Maybe it's because our ground that we started with had almost no top soil and required a lot of amending, and still does. Compost and wood chip mulch take a lot of our time in applying each year. I managed to get a late fall spray done this year, really hoping that will make a difference next year in controlling the scab in 2018 crop.

[Vista Ridge Orchard](#)

Zone 8a in Washington

235 Cider and heritage apple trees, 72 varieties,

[Reply](#), [Quote](#)

[Zea Sonnabend](#)

[Re: 2017 scab review](#)

December 21, 2017 10:33AM

Registered: 10 years ago

Posts: 58

Mike,

What is the name of the cobalt product you used and is it approved for organic? We want to try it if so.

[Fruitilicious Farm](#)

Zone 9b in California

[Reply](#), [Quote](#)

[Mike Biltonen](#)

[Re: 2017 scab review](#)

December 27, 2017 07:23PM

Registered: 10 years ago

Posts: 298

I've only used AEA - Advancing Eco Ag - products. They have at least three products with cobalt - Rebound, Salute, and Micropak. The first two are only cobalt, the third is a micro blend. The Rebound and Micropak have a statement that they comply with NOP standards, but you should check with your certifier. Salute doesn't have any such statement and I have been told doesn't comply in the least. Personally, I like the Micropak because it does have a good mix of important micros and I suspect that all micronutrients that play a role in good leaf surface biology. As well, it has molybdenum that plays an important and totally underrated role in plant health. [www.advancingecoag.com]

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

[Reply](#), [Quote](#)

[Mike Biltonen](#)

[Re: 2017 scab review](#)

December 27, 2017 07:35PM

Registered: 10 years ago

Posts: 298

Cedar apple rust is as much about inoculum as it is the control. Apple scab and powdery mildew are both ascomycetes - both have different biologies and infection protocol. Cedar apple rust however is a basidiomycete. I am not an expert but I suspect this basic difference plays a lot into why common organic fungal regimens do not work against CAR. Every year I feel like we are getting a little closer, but then by the end of the year - not so much. As far as potassium bicarbonate (there are many different brands), it doesn't have a long lifespan on the leaf surface and so needs to be applied very close to the infection period. It works better in conjunction with other products - depending on the disease and the pressure - and is not a silver bullet. When you say that it worked well against CAR, I'd ask what the pressure is like - because no red cedar trees, no inoculum. On the other hand, I can see that light pressure + K bicarb could keep pressure at a level that is very low to non-existent.

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

[Reply](#), [Quote](#)

[Tim Bates](#)

[Re: 2017 scab review](#)

February 05, 2018 11:46PM

Registered: 11 years ago

Posts: 58

First an apology for "stepping out" for about 8 months. Great dialogue going on above...some of the best I can remember. Michael should be happy with all that input. So, 2017 has turned out to be my worst year ever--lost 2 acres and 31 pear trees to floods last Feb. The smallest crop in my 34 years here with the least amount of income ever. Some extremely unhealthy looking trees all season (No Spy, Splendour, Fall Pippin. Pineapple Quince (30 years of no disease problems) all looking like the might not make it this year...but not dead yet...was kinda reeling for 6 months. Probably had undiagnosed fireblight in Sierra Beauty (smallest crop in 20 years). My beautiful looking Arkansas Blacks 25-30 year olds have been slowly going out of production when they should be at peak (same happening to my neighbor). The Pink Pearls flesh has been getting paler and paler for the last at least 3 years. And to top it off my honey bee supplier will no longer rent me hives. They have been complaining that hive health was not so good for the last 4 years (I am distraught to report that coincides with getting an active Neem/Fish program..oh my). Stop with the whining. On the so called positive side...I promised to report on my return to using Lime Sulfur/Micronized Sulfur to clean up after 2016's worst scab year

ever especially in my reduced pear block and Golden Delicious and others. The only bright light is I had the cleanest pears in several years and a big crop to boot. The Golds had less success but much better than '16, but I used less L S. My rate for pears was 6 gals L S and 8 lbs Micro per acre (and 8 oz Nu Film P) applied twice and one 4 gal LS/8lbs Micro. I did a small section with some Golds in it with just Micro and was virtually wasting my time. So, if you need to clean up I suggest LS. I am going to continue with it again this year to hopefully finish cleaning the whole orchard. Am planning on reducing to 4 gal LS with 8lbs Micro in pears, but 6 gals first apple sprays and see how I feel on second and third sprays if needed. (We are back to drought conditions right now after last years drenching---another big worry.)

Wot happened. I am sure climate change has had a lot to do with my woes and maybe some varieties were still in 2016 drought mode. Some lagging varieties are digging the change and finally growing more, but several not. If interested I will talk about that more if you ask. I've been using the Holistic Sprays for many years and was quite happy until recently. I also assumed (stupidly) that all the sprays were helping keep my soils up to snuff--for sure biologically as shown by Trace Genome testing (top 80% except for oxygen). But I was hoping for calcium and potassium to be up enough too--not. (High Mag here--normal in this area). I went to several soil maintenance workshops at Eco-Farm last month and shrunk in my seat with embarrassment at my neglect of basics for the last 10 years or so. I pretty much "got away with it" as the soils are very good here, but the reckoning has come. An old dear friend's son stopped by a few weeks ago and is now a soil specialist/consultant here in Nor Cal so he knows the soils around here pretty well...I hired him. He's big on humic acids, potassium sulphate, Fish, lot's of sea crop, cobalt and molybdenum etc. Much of the same stuff as mentioned above. Will spend most of my money getting the soils back to max with several foliar sprays similar to what we have been doing but less costly than the Neem (which, with much regret I will forgo this year except for the Fatty Acid Knockdown later this month (I have some Neem left and the bees should be safe). I look forward to seeing if you all have comments and reporting to you on my modified program. Will be gone for a couple of weeks and will catch up later in the month.

[The Apple Farm](#)

Zone 8b in California

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