

MY YEAR OF NEEM

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Last July (2012) I began Michael's recommended Neem program in earnest. I was waist deep in the worst scab year ever and also an "on" year for a large crop--yuk. I will do my best not to get too verbose as I walk you through that year.

JULY--Probably not the best choice to begin Neem in earnest. Recipe: 240 gals compost tea (with 1 to 2 gals of Fish Hydrolysate as food for tea) 2 1/2 gals Neem--160 gals of water to fill the tank--To do 5 acres at 80 gals/acre) I knew I'd need at least a 55 gallon barrel to get the price to get through a year, but facing very restricted sales, I couldn't borrow enough from anticipated sales from myself. I bought just enough to do the whole orchard (15 acres) at the 1/2 gallon per acre rate--8 gallons). Downside--my air blast sprayer was on its last legs--reading my notes, all I can decipher is complete erratic application (pressure reg. acting up--nozzels clogging--trying to do it without soap but in the end the right amount got applied to the whole orchard at different ratios. Another note-I began an individual Neem application to the trunks of 3 year old and younger trees roughly every 3 weeks beginning in early May for flat headed borer (with milk paint)

Observations: I had previously used a summer Neem application in 06 and 07, mostly to control whitefly, which it did "knockdown" for about 3 weeks. It did so again in 12. LESSON--use soap, dummy. Along with the "Holistic Orchard" coming out, I was getting jazzed up about Neem's other possibilities. Leaf shine? Oh yeah. As for the young trees, over a year later there are no signs of new borer damage. Assessment will be clearer by the end of this summer.

FALL--November has arrived and I prepared my wife/accountant that even with diminished income from a big crop year I really really want to do the Neem Thing, please please. We ordered a barrel sometime mid November. The normal timing here at my farm would probably be closer to Christmas as the leaves some years NEVER seem to drop. Well it rained and rained and then 10 days in Mexico and upon return more rain. Finally found a break and applied Jan 7-12. I had a new sprayer ordered but wouldn't be ready until Feb. Once again an erratic application with clogged fuel filter idle down in the mix--but once again the total right amount went on the trees!

FIRST PULSE--1 gal Neem, 4 gals Fish, 8 oz seaweed, 40 gals Tea per acre. With 80 varieties spread hither and yon looking for 1/4" leaf make for a long spraying over 32 acre farm and only half a tank--but I had my new sprayer (300 gals instead of 400) and had worked kinks out with 2 or 3 Compost tea sprays. Mar 15--hit the pears (all varieties) Crabs, Braeburns, Fall Pippins, Peaches, and some of the Pink Pearls. Mar 18--Full tank. Hit rest of Pink Pearls, RI Greenings, Macs, Jonathans, Spitzenbergs, Orange Pippins, Ashmeads. Mar 21--Full tank. Sierra Beauties, King David, Splendour, and earliest Golden Delicious. Mar 24--1/2 Tank. Finish Golden's, start 2nd pulse on Crabs and some pears. Nothing to observe with this spray.

SECOND PULSE--1/2 gal N, 2 gals Fish, 8 oz Seaweed (Kelp) 40 gals Tea (with

some Equisetum Tea) Things more on a even keel--I could do full tanks with enough "pink" showing. I also did one compost tea spray between Neem. Pretty much the same pattern as above. Dates 4/3, 4/7, 4/10--spacings designed to brew tea--3 days and pink showing up following suit. Also the major rain event we all look forward to--wet and warm for over 12 hours at 462 degree days (calculated 45% spore ready with maybe 90% release) on 4/3-4/4. I sulphured 3/4 of my farm and left the "Tea/Neem" block alone--feeling kind of confident as I was ~~neem~~neeming+at the same time. Things stayed dampish until 4/6.

Observations: Beginning to see the shiny leaves especially in the pears (let's face it--pears have mostly shiny leaves anyway--but this seemed more so than ever). There was a general pick me up feeling in almost all varieties. They were starting to look as healthy as trees that do not set much fruit--bigger healthier (shinier) looking leaves, if you know what I mean.

THIRD PULSE--Same brew as above. Petal Fall. 4/14, 4/18, 4/20. A little trickier--just when are MOST of the petals off? No rain since 4/4. Leaf shine becoming very apparent (the pears so bright on a sunny day they hurt the eye--not kidding).

Observations: Oh oh--2 days after Neem in pears, the Comice, Flemish Beauty, and Orca showed blackening leaves--but not ALL of the Comice. Was it the Neem--an oil? See further discussion on this in the Fungal Pathogens category in the Forum. Went out for first serious look for scab--4/18. I had seen none from the tractor seat--usually do by now especially the last 2 years. I only found 2 leaves and one stem infected and only in pears and in the block that was Lime Sulphured!! Wow! Only 2 leaves in my earliest apple the Astrachan. My heart was a flutter.

FOURTH PULSE-- 4/25, 4/7, 4/29. Same brew as above--except I misread a sentence in HO--Michael says the Fish ends with the Fourth Pulse I took to mean ended with the third, so one tank had no fish, one had some fish--I couldn't help it. The next got the usual 2 gals/acre as I had reread the text.

Observations: Could not see a difference where Fish was used or not used. Now the old ascospores are manifesting. Mostly in susceptible varieties-Crabs, Fall Pippin, RI Greening, Winter Pearmain. Some (very little) in Golden Delicious. Still next to nothing in the pears!! One renegade Bartlett tree in a sulphured block has serious infection. No scab in Sierra Beauties--a fairly susceptible apple. Braeburn and Splendour (scab magnets) are extremely clean!

SIX WEEKS LATER--There was one more little rain on 5/6 with a dry spell of two hours mid day. Only 0.11 inches---but ten days later fresh lesions. Beginning to think there are no "rules" concerning scab. A fair amount of scab has slowly shown up on the Golden (nearly 1/3 of my orchard) but very very little has moved on to the fruit. I'd say at this point there is 75% reduction from last year! Let's face it, this was one dry Spring (I've heard it was the driest first 4 months in California's history--definitely the driest here in 30 years)

CONCLUSIONS?--Definitely the Neem: Leaf Shine and overall health--I have a local apple Art's Apple that has never looked healthy (lots of cankerous-looking lesions)

lucky to have 4-6 inches new growth (of course, a fantastic flavored fruit) this year took off--almost a foot new growth and green instead of grayish looking leaves. My Seckel and Winter Nellis Pears have always had good bloom but never set fruit until this year! Also Tremlett's Bitter and Newtown Pippin apples. For my small crop year, it looks like the biggest in 6 years. (will advise after harvest.)

I'm sure it's the Neem but can't prove it: Reduction in Aphid damage--but it has always waxed and waned somewhat. NO scab in Sierra Beauties. Hardly any scab on fruit---yet. The fruit is larger than ever for this time of the year---thinned or not.

Warning: Just to prove Michael was right and not wanting to return later to a section of the orchard just to spray 2 or 3 trees, I definitely sprayed some trees in full bloom and pretty much burned them right off--Wickson (just one out of 30 trees thank you) a Crab, and (curse me for a fool) all my six Crimson Golds. On a few other trees I just skipped a spray until next time--a much better strategy.

Did Not Help: Surprise! I had the worst powdery mildew damage in 30 years! I used to get it only in Jonathans, sometimes. Usually my sulfuring program took care of it. More damage in the Neem only block (also where the Jonathans are) but also in RI Greenings, Spitzenbergs, and even some Goldens. Reading up on mildew however reveals that it is worse on drier years. Counter intuitive or what? I was hoping Neem would help with varieties that split a lot--especially Cox Orange Pippin and the Russets--but no, also more than usual splitting in Pink Pearls.

COST ANALYSIS--2012-13. Neem in bulk \$40.15 gallon; Fish Hyd. (Eco Nutrients) Bulk \$7.00 gallon; Seaweed (Kelp Eco Nutrients) 5 gal price \$18.00 gallon. I figure my Compost Tea at 60 gals an acre to be around \$5.00 with depreciation on the brewer. Drum Heater (for Neem viscosity) and barrel pump \$256.00 divided by three years \$85.00, divided by 75 acres treated or \$1.20 acre. All in all, around \$333 bucks an acre for the full program. A typical sulfuring year is \$14 an acre each time (with Lime/Sulphur \$35 acre--I only treat one acre of pears three times maybe) with an average of 6-8 times an acre or around \$110 an acre for the season. I would have also done 12 compost tea apps or \$60 an acre. Liming--\$90 bucks a ton-- 1 1/2 tons an acre, every three years, \$45.00 a year. I probably should add some other foliar nutrition (I haven't been lately--was hoping running sheep and goats and chickens through the orchard would maintain fertility--alas not enough) probably Fish and/or seaweed, old favorites. Say \$20 an acre worth.

Playing with numbers: So, Full Neem \$333 plus Lime \$45= \$378 an acre. Sulphur, \$110 plus Lime \$45, plus Tea \$60, plus Fish \$20= \$235. Phew, those numbers come out closer than I first thought. less than twice the cost! How about just for scab control? Drop the summer Neem and the lime, we get down to \$220 an acre. Sulphur--Drop the lime, drop the foliar, drop the Tea = \$110 an acre. Now it's double. Since Sulphuring did not perform well the last two years (wet wet Springs) I'm happy with the positive results reported above.

BEWARE: I see the cost of Neem has gone up. The bulk price is now \$41.15 (not so much as I feared) and up to \$83 gal for one and \$63 gal for 4 or more. Plus if you cannot buy in bulk you need to add 35% or so to all these other costs.

WHAT'S NEXT--As long as I can afford it (sulphur, I can spread out the costs

over two months, Neem \$2200+ up front (ouch) and Fish I can spread out a little, but have to buy 50 gals at least at a time) Neem is the game for 2014. Now that I have a drum heater (works great) I plan on using my soon to be empty Neem drum to brew a big batch of Effective Microbes and try to set up a side by side trial with Compost Tea