



The Community Orchardist

March 2009

Michael Phillips, Editor

These very last days of March are tentative, eh? People in warmer places report trees in bloom and in the next breath speak of air too cold at such a vulnerable point in the season. Here the snow has given way to drizzle, with my south-facing block of trees showing all grass but the last inches of white still holding strong in the younger orchard. The big trees are mostly pruned, a new sprayer ordered, and “organic apple shares” are being purchased by those loyal customers who help support my insatiable orchard habits. And yet it may snow any day this week! My mind shifts gears from feeling overwhelmed by all there is to do to feeling ahead of the curve. Bloom here in the North Country will occur sometime in May, whether the first week or the last, I do not know. The weather shifts and seems more erratic than ever. And yet, come fall, we’ll all be picking the good fruit regardless of how things stand now where we each live. All tentativeness will be fulfilled.

Pulsing Agents

Roots start to stir a month or more before we observe green tissue springing forth from dormant buds. Mycorrhizae respond, albeit slowly as well, as the cool earth unveils a spring flush of feeder roots and accompanying hyphae growth. Holistic orchardists have something to do now that sets the stage for managing disease pressure by biological means.

Liquid fish and pure neem oil can be used as “pulsing agents” to give the microbe world a positive boost just as the trees announce their readiness with a showing of green. Choose a warmer day and spray the orchard to the point of “extreme runoff”—thus wetting the ground thoroughly as well as the trunk and branch structure. Fish goes on at a rate of up to 2 gallons per 100 per acre; early neem can be safely applied at a 1% concentration. This saturation makes nutrients available to both the soil food web and the overwintered species in the arboreal food web. Liquid fish (unlike fish emulsion) has not been pasteurized and thus contains the fatty acids and enzymes that fuel the biology. Cold-pressed neem oil has not been pasteurized and thus contains the fatty acids and over a hundred other compounds that fuel the biology. These “fungal foods” also help decompose the last of any overwintering leaves laden with potential scab spores from the year before. I add effective microbes as well to provide “biological reinforcement” for the canopy colonization that I’ll be wanting in the months ahead. I repeat this same combination a second time around tight cluster...

Fungicide Consciousness

This talk of pulsing agents is a bit of a “biological teaser” to lead us into looking at just how we might be planning to deal with disease—be it scab, cedar apple rust, rots, or what have you—in the season ahead. I know the diversity of theories that abounds in this group of fruit growers! Some of you will have already sprayed copper, others have thoughts that lime sulfur will clean up after a definite infection period, and still others will be spraying sulfur somewhat continuously through the months ahead. The venturesome among us might be thinking about boosting beneficial microbe populations with applications of aerated compost tea after the early fungicide onslaught... or using Serenade... or trying herbal essential oils... or whatever “hot product” next comes down the pipeline.

I’ve been relatively happy with the “minimal sulfur” approach that gets extensively shared in the revised edition of *The Apple Grower*. Last year’s two applications of micronized sulfur did the trick despite a very wet summer. Still, I’ve always wanted to go over the “biological edge” and eliminate the use of all mineral-based fungicides... if I indeed felt I could get similar results. It’s a long and fascinating story (currently being written up for books to be published next winter) but one thing is for certain: Light awaits at the end of this tunnel. Orchard health is becoming understood in ways we humans can get our heads around. This year my principle organic orchard trial will be all about not using any traditional fungicides in my younger orchard, comparing a totally-biologically based approach to the minimal sulfur maneuvers of past seasons. I now have bearing trees in both blocks of the same variety to work with and thus actively explore such nuance.

Recognizing that the “arboreal food web” needs to be both replenished with specific microbes early in the season and then requires supplementation of homegrown food resources throughout the season has gotten me to this point. Plant immune response dynamics play a big part here as well. What I plan to do is very different from the compost tea approach involving aerobic brewers and finicky biomass analysis. Working with pulsing agents and the like makes “earth sense” to me and fits the observations of these past few orcharding years. Trials set up in integrated small orchards will be revealing many exciting things that I hope more and more growers will finally come to see as relevant.

Here are some reasons why we need to be looking to change mindsets. Sulfur has nearly doubled in price and will likely continue to rise as world demand ups the market ante. Recent New Zealand research revealed that organic growers utilizing a “sulphur programme” for apple scab were suffering from a reduction of photosynthesis and therefore yield. Each of us intuitively knows this! The same holds true for reliance on lime sulfur—phytotoxicity speaks for itself when we consider how LS works as a thinner at petal fall and all the more throughout the season. The downunder study summed it up well: *Finding an effective organic replacement to sulphur and to a lesser degree improving organic blossom thinning techniques are the key to enable organic producers to match production costs and yields with their conventional counterparts.* Lastly, the work of Alyson Mitchell and others at UC-Davis on antioxidant levels in fruits

and vegetables tied to growing methods reveals that fungicide use—regardless if chemical or certified organic—reduces important phytochemistry in the foods we eat by a factor of three. That old saying about ‘an apple a day keeping the doctor away’ shifts to many apples a day when our growing methods are not health-based but rather exclusively focused on dealing with symptoms.

Plant-based solutions and understanding the needs and capabilities of the ecosystem biology at specific points in the season are where the answers to reasonably disease-free fruit lie, in my opinion. We will be revisiting this many times in the years ahead!

Precision Agriculture or Waterboarding? You Decide.

Here’s a ‘I hope you get my humor’ twist on the meaning of words.

The folks at the USDA Appalachian Fruit Research Station in Kearneysville, West Virginia, kindly keep me updated on their work. Much of this has to do with what’s been termed *precision agriculture*: using trapping strategies to effectively lure pests to a definite end with minimal exposure of toxic materials to the orchard environment in the process. Work with the spinosad-laden sphere traps for apple maggot fly goes on here along with looking for smart ways to manage the infamous plum curculio.

Tracey Leskey leads the team doing the PC research: “We have some very exciting breakthroughs including developing an electroantennogram technique for the plum curculio—it allows us to determine what odors stimulate their antennae. With this newly developed technique, we can really target studies of identification of pheromone components and host fruit-based attractants.”



This photo of a plum curculio in a so-called “EAG torture chamber” (you gotta have some fun when you research serious fruit pests!) looks a whole lot like a similar technique in the news these past few years at Guantanamo.

Perhaps curculio is finally going to be revealing all his secrets after all!

Happenings at Grow Organic Apples

Recent progress on our apple networking website includes updating and expanding the **Grower Resources** page considerably. A number of companies offering “fungal support” and “testing services” are already posted with more such themes already written up and in the pipeline. I do want growers to provide feedback as well as suggestions on regional sources for good products useful in the holistic orchard. I admit certain nurseries lacking business websites aren’t shown here simply as this is a web-activated resource list. Please take heed of the “orange pippin apple” by the names of supporting business members who have made donations to our collective work. Hopefully I’ll be able to build on this idea by encouraging other orchard and organic suppliers to support the Holistic Orchard Network.

Our **Happenings** page celebrates another important facet of the community orchard movement: Growers need apple lovers to get involved and actively support health-based orcharding in all the places we live! We’ll be posting ways appreciative customers can help build momentum for our message, general interest stories about the world of apples, and pertinent quotes concerning efforts to ensure local fruit. That whole notion of “six degrees of separation” comes into play here...being that each one of us is only six people away from contact with everyone on the planet... please use this page and its links to help spread the word, okay?

"I'm a lunatic farmer, that's my new catch phrase. I have a Ph.D. That stands for Post Hole Digger. Today we only need to buy toilet paper and Kleenex, everything else we make here. The only reason the framers of the Bill of Rights did not include freedom of food choice along with the right to bear arms, worship and speech was that they couldn't conceive of the day when food would have to have a USDA sticker on it."

Joel Salatin - Owner and operator of Polyface Farm in Staunton, Virginia



Should We Trust the People that Make Entrust?

The organic formulation of spinosad—derived from filamentous soil bacteria—kills certain insects through ingestion or contact. It’s known as Entrust, perhaps because it is indeed amazingly effective and has a ten day residual. That’s quite a tool for any orchardist with overlapping insect challenges. I’ve used it to knock back European Apple Sawfly larvae right after petal fall. Summertime use has merit against second generation moths and apple maggot fly, just be aware of resistance issues.

This product goes for big bucks, on the order of \$550 a pound this year. Useful as it may be, however, holistic growers should be aware of the ethical side of the corporation that manufactures Entrust. Dow AgroSciences is insisting that Quebec’s province-wide ban on the residential use of another of its products (the herbicide 2,4-D) violates legal protections owed by Canada to its investors under the NAFTA. The case has gone to “free trade arbitration” to keep the democratically-elected government of Quebec in line. *How dare they ban a weed-killing chemical with known health risks?* seems to be the overt message to anyone else seeking to enact sensible legislation.

Sure makes me not want to give such bastards my hard-earned apple dollars!

See http://www.embassymag.ca/page/view/peterson_nafta-10-22-2008 for the full story.

Question of the Month

I've been hearing a lot about an anti-fungal called Sporan. Any thoughts? I'm interested because it stays liquid at a lower temperature than Neem.

I have not worked with Sporan, which is a mix of wintergreen and rosemary essential oils. The systemic acquired resistance (SAR) attributes of herbal essential oil are similar to neem. But you don't get the fatty acid contributions to tree health nor the insect molt-inhibiting aspects of pure neem oil. If neem's buttery nature at low temps is a problem early in the season (and it can be) then I can see trialing Sporan early if you are not using a sulfur program. How you choose to deal with scab in the primary infection window must be understood—the mechanisms of a mineral protectant are entirely different from inducing SAR. Spray choices are always about understanding the underlying mechanism.

Hold on a minute! Are you saying to put fresh manure on my trees' trunks to rejuvenate the bark, perhaps smother aphid eggs, and even suppress fire blight bacteria?

Biodynamic tree paste isn't bull but I can understand your asking. The manure introduces beneficial organisms and the clay has long been noted as a skin rejuvenator. The sand acts as a binder. Some people do this mix on a thirds basis; I opt for equal parts fresh manure and native clay, with say about 10% sand. Brush on thick on the trunk and main limbs. Some growers make a watered-down version that can be sprayed. Early spring is the right timing. Pruning out active (infecting) cankers caused by fire blight the year before is still essential, even when this means losing a scaffold limb. But some canker-like wounds are merely a compartmentalized healing response by the tree. Tree paste should help deter perennial canker especially as this fungal infection must renew itself yearly. A manure pack on bacteria-laden bark crevices will check some fire blight before it spreads, yes, but the broader endemic potential still exists on the tiniest twig. Disease-causing bacteria are a ubiquitous force best outcompeted by benign arboreal microbes like *Pseudomonas* species.

Network Support

GrowOrganicApples.com is a place for commercial and dedicated backyard fruit growers to share lessons learned in community orchards. Together we are finding the ways to grow healthy fruit. Good causes require support so that the burden isn't all on a few. Regular small donations from growers who are benefiting from these efforts—and even outright “lifetime” membership!—is required now to help keep this work strong.

Stay in touch, think deeply, and treasure those venerable trees!

Michael Phillips

Hearty thanks go out to the folks below who made a [network donation](#) in the first quarter of 2009 to make our current site updates possible!

Lucien Hinkle
Tom Moore
Julie Krasnecki
Linda Hoffman
Jeff Corbett
Dan Kelly

The finances of the Holistic Orchard Network are shared fully on what's known here as [The Boring Bit](#). This time around \$340 was raised.