



The Community Orchardist

December 2010

Michael Phillips, Editor

Another growing season passes, the harvest is in, snow falls, and deer (oh dear!) are on the move. New England and across the middle Atlantic states and even up into Ontario got hit with a blossom freeze back on the evening of May10-11. The cold was spotty but effective, dropping to 24°F here at my Lost Nation Orchard in northern New Hampshire. True to the books that represented an 80% crop loss. Little did I know when a mosquito bit me on April 1 (when temps reached 86°F) that the real joke was yet to come! Orchardists know how to hang in there so of course I'm already psyched about next season. Fruit buds look good. . . yet deer eyes are now appearing outside the fence most evenings. Hmmm.

Our Precious Fungal Duff

Finding the right words to capture a far-reaching idea is the challenge of any writer. Holistic orcharding offers fertile ground for me in that respect. Let me tell you why I want to see more of us making the term “Fungal Duff” one of the core concepts underlying healthy orcharding.

Understory management encapsulates many notions, from soil life action to the plant allies that grow there to leaf decomposition aimed at disease reduction to how we deal with grass. Each of us likely has various takes on how we view the orchard floor. This after all is the place where feeder roots meet mycorrhizal glory, saprophytic fungi help to decompose organic matter, and balanced nutrition is achieved. That last includes the “right nitrogen” being delivered to the tree for growing fruit that will be far less susceptible to disease – the ammonium form abets plant immune function while nitrates do not. It's this “soil food web chemistry” that's one of the chief gifts of fungally-dominated soil. Stewarding these natural processes is simply understanding how to build fungal duff beneath each and every fruit tree.



Tree lessons are learned by looking at what takes place below.

Ramial wood chips, orchard compost, catalyst sprays of liquid fish, and laying down the grass (with a scythe or sickle bar) right after the spring root flush are all means of building a vitalized fungal duff. Encouraging plant allies like comfrey to go about their tap-rooted business around the dripline of the tree helps make this zone incredibly self-maintaining. The diversity of microorganisms working in our favor go up in such a ground-level environment – which has great relevance to the notion of competitive organisms spreading further upward to become the “arboreal food web” that helps to protect all healthy plants from the havoc of pathogens. Ground beetles and wolf spiders that capture emerging larvae from dropped fruitlets also love this coarse lignin-rich environment. The soil gets softer... you can lay beneath any tree and literally feel the pulse of life.

Two small words imply all this. Fungal. Duff. Even now in the dormant time, even beneath this beautiful blanket of snow, good things are taking place in the fungal duff to help us grow fruit in the coming year. Speaking a biological language is going to help fruit growers stay focused as to where holistic priorities lie.

The Glomalin Factor

Being a short excerpt from Michael's *Holistic Orchard* book coming out next fall...

Soil type is what it is to start. Both an extremely sandy soil and heavy clay muck can be positively influenced by soil biology and additions of organic matter. Mulching and composting over time go a long ways towards improving unfriendly ground. Having the proper mixture of minerals, organic matter, air and water in the upper layers of the soil—the area where plants grow—is ultimately more important than feeling limited for the rest of your life by poor soil structure.

Were I to write a suspense novel about all this it would absolutely be called *The Glomalin Factor*. This soil "super glue" permeates organic matter, binding it to silt, sand, and clay particles. Not only does glomalin contain 30–40 percent carbon, but it also forms clumps of soil granules called aggregates. Glomalin gives soil its *tilth*, being that subtle texture quality that enables experienced growers to judge great soil by crumbling a handful through the fingers. A sandy soil's moisture retention capacity can be increased just as a clay soil can be unbound (to drain better) by this substance. Here lies the key to improving soil structure. And so, you eagerly ask, where can one buy this wonder product?

Mycorrhizal fungi alone produce glomalin. The arbuscular strains of these fungi use carbon from the plant to grow and make glomalin. This is the other half of the mutually beneficial pact between mycorrhizae and the roots of fruiting plants (the first being providing nutrients and moisture to the colonized roots in exchange for photosynthate sugars). Glomalin is secreted along the outside of the hyphal filament to provide enough rigidity to span air spaces between soil particles and contain nutrient flow.

The fungi follow the root. . . continually forming new hyphae to colonize feeder root expansion. Hyphae higher up on what become permanent roots stop transporting nutrients eventually, at which point the coating of protective glomalin sloughs off into the soil. It then attaches to soil particles, minerals, and organic matter. The resulting aggregate soil structure becomes stable enough to resist wind and water erosion and yet porous enough to let air, water, and roots move through it. Any soil becomes capable of hosting a greater diversity of beneficial microbes, holding more water, and resisting crusting on the surface as glomalin levels build.

New Apples

Ours is a culture that loves new things. Naturally, the search for new apple varieties through good breeding work excites growers. These days of tight budgets are bringing a new twist to the notion of the patented variety. Paying a royalty fee through the nursery for each tree was reasonable; as that money went directly back to the breeding programs that discovered an exciting apple. The newest varieties, however, are being released under the strictest terms of trademark marketing. Growers must agree to a costly licensing agreement to obtain these varieties, and not just anyone gains admission into a varietal club.

The University of Minnesota breeding program produced the **Sweetango** variety of apple, for one. They gave it the testing designation “MN 1914” while deliberating on its growth habits and taste appeal. This apple was subsequently trademarked as the Minneiska cultivar, being a cross of Honeycrisp and Zestar, which were also developed in Minnesota. Market branding led to the far more flavor-friendly name of Sweetango.

David Bedford, the inventor of the Minneiska apple says, *“We’re very excited about our newest apple, Sweetango. I think that it’s one of the best apples that we’ve discovered in 100 years of breeding at the University of Minnesota.”*



Here’s the rub. Trees of this variety are only licensed to a grower's cooperative of 45 members from Nova Scotia to Washington State. The cooperative is known as the Next Big Thing.

Work out of the New York Agricultural Experimental Station in Geneva has been quiet the past decade when it comes to stunning varietal introductions. Two recently-announced selections are the 65th and 66th releases from the Cornell apple breeding program. Established in the late 1890’s, the program has produced apples well-adapted to cold winters and shorter growing seasons. Previous releases include Cortland (1915), Macoun (1923), Empire (1966), and Jonagold (1968), as well as the apple scab-resistant variety Liberty (1978).



The juicy snap of **New York 1** highlights its Honeycrisp parentage, but the trees produce more reliably and the fruit stores better. The harvest window runs from late September into October. Some of this new apple’s best attributes, though, will especially be appreciated by growers. Honeycrisp can be challenging to grow because of calcium issues, a biennial tendency, and extremely brittle wood. New York 1 purportedly provides exceptionally crisp apples without that baggage.

Both sweet and tart, **New York 2** is suited for baking and fresh use and boasts the added benefit of high levels of vitamin C. Harvested in mid- to late-October, this firm, red apple is a dependable cropper exhibiting little if no pre-harvest drop. Two high vitamin parents were used for this cross—Braeburn and the recently named Autumn Crisp (formerly NY 674).



These two new varieties will be licensed exclusively to members of the New York State Apple Growers. The goal being to direct market branding from the get-go through managed release of these varieties. All they need are good names!

The Heirloom Connection

My own take on those “club apples” above is that the rest of us still have plenty of access to fantastic varieties that are righteous for the soil and climate where we each live. Accordingly, I’m taking on a new project for the [GrowOrganicApples](http://www.GrowOrganicApples.com) website: A listing of apple varieties that truly rock’n’roll in various orchards across the country based on grower input and state of origin.

I expect many of these will be classic heirlooms like Roxbury Russet or Hauer Pippin. Last century’s introductions are certainly invited to be considered as well. Propose your “very bestest” varieties, tell me where it was first discovered (as that gives an indication to others what might be worthy of trial at a similar latitude), and why you absolutely love this apple. Stories about each variety are especially welcome as well, for good lore helps build local market appeal. Drop an email to michael@groworganicapples.com, being sure to put “Heirloom Connection” in the subject line. This will be fun to share with all of you in another month or two!



Here’s one from me. Bethel this year was fantastic as a fresh dessert apple right after its picking in the second week of October. I always thought of this Blue Pearmain type more as a traditional storage apple for northern New England. This particular heirloom has quite a storyline:

In August 1780 a raid by a band of 21 Indians resulted in the captivity of three Vermont men, one of whom was David Stone. At the time of his capture, Stone was clearing his land along Gaysville Road in the town of Bethel. He escaped captivity three years later, making his way back only to discover his land had been sold for taxes. He moved to Connecticut, but eventually returned to Bethel, stopping on the return trip and sampling an apple at a cider mill. He brought the seeds from that apple back to Bethel, and he was able to redeem his land. He used the seeds to grow an apple tree, the fruit of which became known as “the Bethel Apple.”

Pollinator's Corner

The following newspaper clipping came across my desk earlier this summer. It speaks loads to the problem of "colony collapse disorder" faced by honeybees. The immune systems of these valuable pollinators are being assaulted on several fronts but it's the so-called "targeted pesticides" that play the far too obvious role.

"Nicotine Bees" Population Restored With Neonicotinoids Ban

by Roberta Cruger, Los Angeles Times on 05.15.10

Following France and Germany, last year the Italian Agriculture Ministry suspended the use of a class of pesticides, nicotine-based neonicotinoids, as a "precautionary measure." The compelling results - restored bee populations - prompted the government to uphold the ban. Yesterday, copies of the film 'Nicotine Bees' were delivered to the US Congress explaining the pesticide's connection to Colony Collapse Disorder. Despite the evidence, why does CCD remain a 'mystery' in the US? Nicotinyl pesticides, containing clothianidin, thiametoxam and imidacloprid, used to coat plant seeds, are released into the lymph as a permanent insecticide inside the plant. But after just sucking dew from maize leaves that absorbed neonicotinoids, disoriented bees can't find their way to the apiary. Massive numbers of bees get lost and die.

In 2009, Italy's neonicotinoid-free corn sowing resulted in no cases of widespread bee mortality in apiaries around the crops. This had not happened since 1999. The European Research Center, Youris, reported that Moreno Greatti, from the University of Udine stated, "Bee hives have not suffered depopulation and mortality coinciding with maize sowing this year. Beekeepers from Northern Italy and all over the country are unanimous in recognizing that the suspension of neonicotinoid- and fipronil-coated maize seeds."

Although varroasis (infections from mites) and other pathologies are found at other times of the year, suspending neurotoxic insecticides improved the situation significantly. Francesco Panella, President of the Italian Association of Beekeepers, says: "On behalf of beegrowers working in a countryside dominated by maize crops, I wrote to the Minister of Agriculture to confirm the great news, for once: thanks to the suspension of the bee-killing seed coating, the hives in the Po Valley are flourishing again."

Not true in Southern Italy, where bee mortality was high in citrus groves, which were sprayed with neonicotinoids, also used in vineyards and other crops. The new law has been challenged by the agrochemical industry but the Italian government upheld the ban.

With pollination responsible for one-third of our food supply, the loss of 30% of our bee population prompted the Pollinator Protection Campaign by the Sierra Club. It bought 333 copies of Nicotine Bees which were delivered to Congress on May 13 and 14, along with 50 more from the filmmakers, with a letter from the National Honey Bee Advisory Board. The American Beekeeping Federation and American Honey Producers Association are asking Congress to stop the threats from systemic pesticides to food supplies, honeybees and

pollinators. Send a copy to the other 152 members of Congress by contacting the Sierra Club's bee campaign.

The bees steep decline in 2005 and 2006 was catastrophic around the world. In the UK bee numbers have been halved over 20 years, with reasons including the pesticide and warmer winters due to climate change. Honeybee pollinated fruit trees and crops in Britain amount to 165m annually, so a campaign to grow bees in city gardens and roofs has been an attempt to halt decline.

Despite the scientific data, reports still claim the reason for the bee crisis is unclear, even blaming cell phones. So what's really holding up the banning of neonicotinoids? As a beekeeper in the documentary says, "A fifth grader can figure this out."



Meanwhile we all need to actively support native pollinators. The work of the Xerces Society is a good place to start. Check out www.xerces.org, especially its Pollinator Conservation Resource Center. Consider purchasing a North American Bee Calendar for 2011 to help fund this very important work.

Question of the Month

In one of our 3-yr-old breeding orchards this winter, voles have stripped the bark above and below the spiral tree guards. Fedco Trees recommends painting young apple trees with latex paint thickened with joint compound to deter apple bark borers (beetles), and reports no adverse effects. Wouldn't this also deter rodents from chewing the bark?!? Much better for branchy trees, and protects against sunscald, too. You could add bitrex to the slurry. One application would last all winter. Have you observed anything like this on apple trees so-treated that have had no vole guards?

You could consider a bitter-tasting paint for vole protection on mature trees but I think you definitely need a physical barrier on young stock. Tender bark is just too tempting! I use spiral wraps in the nursery as it's convenient but once trees are in the field, I absolutely go with hardware cloth. A roll of black plastic mesh from Orchard Equipment & Supply provides for approximately 60 trees at a cost of \$2 per tree (once you add in the plugs and shipping). Home orchardists have access to galvanized metal mesh at any hardware store. A mesh-style wrap with extra space in its circumference allows spray access when making a botanical trunk spray for borer. My trees have a peastone ring at the base, which helps in snugging the mesh collar slightly into the soil line. Snowshoeing around the base of your trees in winter will help by keeping the snow packed down around the trunk. This not only prevents "over the top" entry but makes foe an ice pack that can't readily be tunneled through.

Hey Guy!

Here's a look back at Guy Ame's excellent writings "Considerations in Organic Apple Production" from 2001:

<http://www.attra.org/attra-pub/omapple.html>

He left the ship—Ames Orchard and Nursery is no more—to pursue bluegrass music but his vibes still linger in my orcharding to be sure. The good news is that Guy is now back working for ATTRA... which will do much to restore orchard credence to that federally-funded outreach program. His first project is updating the state of the art of organic peach production. You can reach Guy directly with your peach insights at guya@ncat.org. (Copy me with the same as we'll be adding stone fruit information and research to our network website shortly.).

The mark of a man is one, who will plant a tree when he is old.
Elijah Grant Edens

Network Support

The amount of fiscal support you choose to provide on behalf of the community orchard movement can be any amount. **It's the fact that you participate and support this effort [click here] that makes the Holistic Orchard Network stronger. . . and thus able to achieve more long-standing goals.** Currently less than 5% of the people receiving this newsletter help make this work possible. I appreciate that appreciation immensely. And I fully understand my responsibility to deliver good value so that more growers grasp the connection between vitally-needed holistic research and encouraging explanation.

The pressure in on us all, mon.

And so is the enthusiasm for what we are going to accomplish in 2011. May this promising New Year be fulfilling for us all!

Hearty thanks go out to the folks below who made a network donation during the past growing season:

Deirdre Birmingham
 Robin Wilson
 Chris&Michelle McColl - RENEWAL
 Ralph Elwell
 Neil Collins - RENEWAL
 Robbie Anderman - NEW MEMBER
 Greg Mund - NEW MEMBER
 Andrew Felger - RENEWAL
 Gordon Tooley - RENEWAL
 John Bemis - NEW MEMBER
 Bob Piluri - BUSINESS MEMBER
 Robert Chang

. . . and what about you ???

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

Michael Phillips