

Just Picked

Newsletter of the
Upper Midwest Organic
Tree Fruit Growers Network
Volume 1, Issue 4, August 2005

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Welcome to the fourth issue of *Just Picked*, the newsletter of the Upper Midwest Organic Tree Fruit Growers Network.

In this issue we announce a fourth Network field day. Keith Kozub of White Pine Orchard just east of the Twin Cities will host us on August 26 and include Prof. Brian Smith of UW-River Falls. Also in this issue: Prof. Kathleen Delate writes of her experience at the National Organic Tree Fruit Growers Meeting last June, a new pear variety with fire blight resistance is announced; Maury Wills provides his next installment on new products for pest control; members suggest weed control strategies in the tree nursery; and we have updates on relevant research and education projects.

Our budget will allow us to do a fifth newsletter so plan on that in mid-fall. If you have ideas or content, please send them to me by September 15.

- Deirdre Birmingham

Third National Organic Tree Fruit Conference, Chelan, Washington, June 6-8, 2005

Not your mother's backyard orchard: U.S. organic tree fruit production comes of age

By Kathleen Delate, Iowa State University

Posted July 14, 2005: The Kachess Lodge near Snoqualmie Pass, 50 miles out of Seattle heading into the Cascade Range, advertises "TOWING" as opposed to FOOD or GREAT VIEW. When we reach the top of the pass, at 3,022 feet, the temperature has fallen from 67°F on Puget Sound to 44°F, and sprinkles of rain have turned to snow.

We're making our way over to the Third National Organic Tree Fruit Conference on the banks of Lake Chelan and praying our transmissions hold. Shades of Twin Peaks appear in the toothless grin of the logging truck driver who gears down for the long climb next to us on I-90. Once over the pass, the transition from temperate, Douglas fir-dominated rainforest to sagebrush-encrusted desert begins. Acre after acre of lush green orchards fill valley floors and ridge tops, creating an illusion of eternal spring amidst the otherwise gray-green native steppe vegetation, occasionally studded with spikes of purple lupines.

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A project of the Midwest Organic and Sustainable Education Service
Funded by the USDA Risk Management Agency



**Featured Orchard: White Pine Orchard, River Falls, Wisconsin
August 26 Field Day Host**

While few know it, Keith Kozub of White Pine Orchard near the Twin Cities is one of the most experienced organic orchardists in Wisconsin if not the Upper Midwest. Since Keith is graciously hosting another field day on August 26, we thought readers would appreciate information on his operation and what to expect at the field day.

In the beginning. Keith planted his first apple trees with friends and business partners back in 1975 when he and others were starting an organic fruit and vegetable farm on land they had just purchased. “The only experience the four of us had with apples was that I had harvested them one year in Wenatchee, Washington”, said Keith. “That was it. Plus there were no resources on organic orcharding, or at least that we were unaware of.” Their first dozen years they were busy building their respective homes, working off-farm jobs, and growing organic vegetables for market. The orchard may have received as much neglect as attention.

As you can imagine, the insect pests got out of control. They tried all the botanical sprays, such as Ryania for codling moth, Sabadilla for plum curculio, diatomaceous earth (DE), and Triple Plus, which Keith thinks was a blend of rotenone, pyrethrum and possibly DE. None were very effective, particularly for plum curculio. In addition, these products were hard on natural enemies of insect pests, and Ryania was not consistently available. (While Ryania is on the NOP List, it is no longer allowed for use by the EPA and is generally not available.)

Keith takes over. In 1988, when they considered cutting down the trees, Keith decided to take over the three-acre orchard comprised of standards and M-7s. He culled a number of trees and switched tactics from relying on sprays to trapping for insect pests. The varieties he has today are Connell Reds, Red Baron, Minnesota Jona-

thon, Haralson, Fireside, Red Free and Liberty. He has a few Honeygold and MacIntosh, but removed most of these as will be explained later. His favorite is Liberty from both a management and eating perspective.

Resources. Keith also sought out other sources of information for the challenges he was facing. A book he had already found useful was Joe Smiley’s Orchard Handbook, which though not strictly organic, is oriented that way. He scoured old issues of “Pomona”, a member-produced publication of the North American Fruit Explorers, in which he read about limb jarring for plum curculio. He continues this practice to date. Professor Ron Prokopy of the University of Massachusetts was quite helpful, particularly on controlling apple maggot. “He knew a lot and he was willing to share it,” said Keith. “I could call him and he would have time for me. I have nothing but respect for him.” (Prof. Prokopy passed away about a year and half ago.)

Keith enjoyed his subscription to the “Great Lakes Fruit Grower” from which he learned about Michigan State University’s Fruit School, aptly titled from “Roots to Fruits.” Keith attended their one-week program at which he valued learning about fruit tree physiology. He also attended a three-day Fruit School taught by the Extension Service of the University of Wisconsin and he continues to frequent the annual conventions of the MN Apple Growers Association and the WI Apple Growers Association. While none of these events directly provided information on raising tree fruits organically, he gained valuable information about orcharding in general, and in particular about insect pest and disease life cycles, and the importance of orchard sanitation. “The key,” he said, “is to find the weakest point in the insect’s life cycle and to target your efforts there.”

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(Continued from page 2) White Pine Orchard

Managing insect pests. He traps apple maggot using Red Delicious apples coated



Keith Kozub Preparing Apple Maggot Trap

with Tangletrap, which he hangs strategically in his orchard knowing from careful observation where they are problematic. He rarely hangs them on the Connell Reds, for example. "It must be their waxy skin that deters the apple maggot as I get few on traps in these trees."

And why the Red Delicious rather than the usual plastic red balls? "It was probably while I was complaining to a customer about making repeat applications of this messy stuff and scented lures on red plastic balls, and then the disposal problems, that she asked why I did not just use a ripe, red apple instead of scented plastic." So every summer Keith now orders four cases of Red Delicious to coat with Tangletrap, which he will demonstrate on August 26. He hangs them using 17-gauge wire pierced through the apple. In a storm the plastic balls blow off, but the heavier apple traps better stay in place.

Keith uses mating disruption and orchard sanitation for codling moth (CM) control. He puts about 200 pheromone twist ties per

acre. He also removes the first generation found in the unripe apples, so that they never hit the ground. Since pheromone-mating disruption is not ideal for the size and shape of his orchard, Keith is considering trying the products that Maury Wills wrote about in the last issue of "Just Picked", which are cydia pomonella granulosis virus and spinosad.

Regarding aphids, mites, and scales, these are not problems in his orchard. In the past, he saw localized outbreaks of aphids, particularly in his plums. But Asian lady beetles and other beetles seem to manage them well today. He does see scale damage in a low spot that has Connell Red and Fireside apples, but it is not of economic consequence. He does not know if the low spot or these varieties might be related to this localized phenomenon.

He did have a problem with mites over 15 years ago when they were using botanical sprays for codling moth and plum curculio. Now these insect pests seemed to be managed well by natural enemies. Bring hand lenses to the field day and we will check the apple maggot traps to see what pests and natural enemies they may hold. Keith finds green lacewings in apple maggot traps, for example, so he knows they are out there working on the pests.

He does apply Bt in the spring to help avoid any major problems with leafrollers. He applies it right before bloom and ten days after bloom. This is often sprayed with a foliar feed or sulfur.

We talked more about the nemesis of organic apple growing, the "dreaded" plum curculio, as Jim Koan of Michigan says. Keith tried traps but found they only trapped about half of the PC population,

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Shenandoah - a New Pear Variety with Promise

*From the News Service of the
Agricultural Research Service of the USDA*

Shenandoah, the third fire blight-resistant pear developed by Agricultural Research Service horticulturist Richard Bell, was recently released. The luscious new pear will appeal to consumers who enjoy rich-tasting fruit, because its higher-than-average acidity gives it a snappy flavor. Shenandoah's relatively high acidity is balanced with a high level of sugars that makes it sweet.

Fire blight is a devastating pear disease caused by a bacterium, *Erwinia amylovora*, native to North America. It greatly limits pear production in eastern and midwestern states, so growers in California, Oregon and Washington produce most of the pears harvested in the United States. Shenandoah can be grown in all production regions, but will be especially useful in areas where fire blight is prevalent.

In the Eastern United States, pears mature and are harvested from early August through early October. Shenandoah matures in September, about four weeks after the widely grown Bartlett variety. Commercial and backyard pear growers will find the new pear can be stored for up to four months in cold air storage.

Bell and colleagues at the ARS Appalachian Fruit Research Station in Kearneysville, W.Va., began developing the original seedling of Shenandoah more than two decades ago. Because pear trees have a long juvenile period, they don't produce enough fruit for evaluation until they are five to eight years old. The researchers then spent an additional eight years studying how long the Shenandoah pear tree takes to bear a crop, the quality of the crop's yield and its consistency from one year to the next.

Certified bud wood of Shenandoah is available to nurseries from Pullman-based Washington State University's National Research Support Project No. 5, by contacting manager William Howell via e-mail at we-howell@wsu.edu or by contacting Bell at <http://afrsweb.usda.gov/DBell.htm>.

Project Updates

Michigan State University: They are in the middle of evaluating Cu in cherries for an organic program. Mark Whalon and crew are looking at *Beauveria bassiana* and nematodes to control plum curculio.

University of Wisconsin-Madison: The Eco-Apple Project, run by the Center for Integrated Agriculture Systems, a supporter of this Network, received an award from the EPA for its pesticide reduction work. Michelle Miller writes: "We are moving forward on the NRCS EQIP integrated Orchard Management standard. Organic growers could apply for this EQIP money to scout, prune, compost, establish beneficial habitat (including raptors) especially if they are using copper and sulfur as pest controls." "People using any kind of pesticides on the organic approved list could apply for EQIP orchard 595 that ran last year, too." While this applies to WI, check with the NRCS office in your state. MN has been quite progressive in using EQIP funds to help organic growers get started.

Matt Stasiak and Dick Wiedeman of UW-Madison's Peninsular Research Station at Sturgeon Bay were awarded \$10,000 from the WI Department of Agriculture, Trade and Consumer Protection to test and document best management practices for organic tart cherry and apple orchards.

Send project updates from your university or on-farm research project to the Network Coordinator. Next deadline is September 15.

Member Suggestions on Weed Control

From time to time I will attempt to synthesize discussions on the list-serv as our non-computer Network participants have requested.

One recent query focused on controlling weeds in the nursery. Five responses followed for both the nursery and the orchard.

One participant pointed out a needed clarification. By using the term “weeds”, we mean any vegetative growth that competes with the roots of the young tree.

For the nursery: Landscape fabric topped with heavy straw or hay mulch worked and lasted longer. Weeding in between the trees was done at least twice a year. The weeds pulled up easily as the soil was moist due to the mulch. Rodents were not a problem in the summer. Tree guards were applied in the fall. Cardboard topped with straw or hay did not work. Aisles not mulched were weeded by mowing and then cultivating with a rototiller.

The wheel hoe works best; the ones patterned after the Plant Jr. model of old. Use it with a slicing hoe of a width to fit your soil and your ability to push. So in rows 3 ft apart, and 1 ft in the row, use a 20-inch slicing hoe, once up and back. I have sandy soil and do this every 10 to 14 days depending on rain and weed growth. Several companies are making these and should be found through a search on google.

What did *not* work: Sometimes this is just as important to know!

Some local straw may have enough oats in it to sprout profusely. Similarly some hay may be loaded with weed seeds. Duckweed from a pond was applied, but as it dried and cracked, weeds penetrated through the cracks.

When in the orchard: Some members responded with ideas for weed control on young trees. We use our own grass hay to mulch around new and very young trees. The more seed-free the hay, the better. Sometimes we put poultry manure down first and then hay mulch on top of that if trees really need a boost. The earlier you apply mulch in the spring, the better. Keep mulch away from the trunk.

After the trees are mature the shading favors less vigorous grass growth and competition is not a problem. At that point we just mow and weed-whack to keep the under-story clean. I would suspect that with Bud 9 it would be more important to keep competition down over more of the lifetime of the tree. I put tree guards back on in fall – making sure that mulch is not near the trunk. I don’t have girdling from rodents – but I do have three dogs that are very good at rooting out critters before they strike. If real concerned about rodents, disturb the mulch through mowing or raking in the fall to discourage fall nesting of voles. We have also found benefit in plowing and disking the tree-row strips and plant rye one year before planting trees.

In an orchard with a wide spacing, success was had using a haybine to mow before the fescue seeded followed by a hay rake to move the grass up to the trees. A hayfork was used to make giant donuts. Chickens in the orchard throughout the summer polished off remaining weeds. The orchard was over-seeded in the fall with red clover resulting in red clover filling the donut-hole rather than fescue.

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In 2004, certified organic apple acres reached 7,049 in Washington state, says our host, David Granatstein of Washington State University's Center for Sustaining Agriculture and Natural Resources. Organic pears account for 1,509 Washington orchard acres; organic cherries, 581 acres. But what led the pioneers to found the United States' largest apple-growing region in this rugged land? we wondered when we finally reached the Chelan area, three hours out of Seattle. Steep basalt rock faces framed valleys ending in azure blue lakes and reservoirs. The landscape was dotted with hydroelectric dams and apple packing plants, the latter edged with small mountains of wooden fruit bins.

Or plastic bins, in the case of organic apples. Plastic bins are easier to clean, we learned, and the codling moth likes to take up residence in the wooden bins after wriggling out from apples awaiting washing on the packing line. The bane of apple growers everywhere, the "little cod" (*Cydia pomonella*) gorges itself on sweet fruit-flesh for months before descending to the ground to rest in its pupal shell for the winter.

Anthropomorphically, it is easy to understand why the moth wants to give her larvae such a sweet life. In addition to their wonderful flavor, apples have enormous nutraceutical power, supplying antioxidants to fight cancer and decay (the old "apple-a-day" adage still holds true). But because of this pest, the most intensive spray program of any organic crop must be rigorously followed to obtain the best-looking fruit. This is not farming for the faint of heart: While all of the products are naturally derived and generally regarded as safe, many require the use of respirators and other protective gear. More than one person on the orchard tour expressed a preference for the relatively simple worlds of organic vegetable and grain production.

But oh, the cherries! But one mouthful of the best sweet cherries you have ever tasted could change your mind. It's not apple season yet, but in many minds, cherry season is even better!

The cherry harvest stretches from May 31 to September 1, according to Andy Gale, a Field Services Manager at Stimilt, the largest packer of organic fruit in the country. Their famous ladybug-perched-atop-twin-peaks logo greeted us at every turn in the facility. Called Responsible Choice, it's a brand that people feel good about eating.

We all marveled at the intense flavor—truly the best sweet cherries we had ever tasted! "Bursting with flavor" doesn't do them justice. The deep red color alone sets your senses reeling. The packing plant is industrial-size, filled with cherries sluicing through a cleaning line worthy of Rube Goldberg and ending up in perforated bags holding two pounds of the jewels.

The numbers boggle the imagination: 65,000 bins of organic fruit; 700 tons of organic cherries. (I put it into organic soybean figures—1200 tons from Iowa alone—to put everyone on notice that Iowa is big in organics too—just in a different crop.)

A new challenge for organics, In the Peshastin (pronounced *peh-shash-tin*) district, Dennis Nicholson grows organic pears that melt in your mouth. His biggest problem, he explains, is not insect pest management. Washington State and USDA-ARS researchers have found that creating "predator gardens" of wild roses and strawberries attracts a parasitic wasp to control leafrollers, while NOP-compliant materials, including mating disruption with pheromone dispensers, spinosad (Entrust™), *Bacillus thuringiensis* (Dipel™) and a new granulosin virus formulation (Cyd-X™) help manage other insect pests.

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Instead, Dennis, like many of the other organic fruit growers we met, worries about price. Widespread conversion to organics in Washington—a full five percent of the state's apple production is now certified—along with increased competition from Chile and Argentina has brought organic apple prices down to conventional levels.

The organic growers have started to organize, however, and are working towards receiving prices that meet their economic needs. A merchandiser from Dovex, another large company that packs organic (as well as conventional) fruits, opines that it's a matter of adding new markets. Just that morning, he says, he was contacted by a "very large corporation" interested in making organic juice.

Does this mean that smaller organic juice makers will get squeezed out? Not necessarily. Another new label is on the rise: SOFF (Sustainable Organic Family Farmed). It proposes to showcase the exact identity of the organic fruit, as opposed to the single label of a packing shed or corporation, and identify for savvy consumers that the higher price represents the real costs of raising organic fruit on a family-owned and operated farm.

Organic fruit: separate but equal? Interestingly, while there were many conference talks and poster sessions concluding that costs of production could be equivalent in conventional and organic fruit production systems, discussions about market prices were few and far between. "The farmer only receives 19 cents to every \$1.99 per pound of organic apples sold in retail outlets," said Harold Ostenson, an organic grower who received an award for his pioneering work in organic fruit production in Washington.

One problem lies in the fact that organic fruit is graded by the same standards as

conventional, and in conventional produce, it's all "size, size, size." The fact of the matter is that organic fruit is typically smaller, with enhanced taste and storage life trumping mere size. But the industry has chosen not to promote separate grading standards for organic fruit. An organic grading system could reward growers using lower inputs and reduced N-P-K rates, in keeping with the spirit of organic regulations.

In the meantime, many organic growers have opted to investigate alternative marketing strategies. Dennis Nicholson reports excellent sales from his roadside stand, which features photos of the entire operation—from production to postharvest storage—to give customers an appreciation of the extra labor and care that goes into an organic crop.

The mixed blessing of low rainfall. There is no doubt that the success of the organic fruit industry in Washington relies on dry weather, which keeps the diseases at bay. The coastal California and Northeast organic apple growing regions, by contrast, must rely on weekly doses of stinky sulfur to stop scab from infecting the orchard. The Midwest has the highest adoption of scab-resistant varieties—cultivars like 'Liberty', 'Jonafree' and 'William's Pride'—that are just as flavorful as McIntosh and Red Delicious (if not more so) but have lower name-recognition for customers. (When I talk to growers tempted to try organic McIntoshes in Iowa, I ask them, 'What would you value more: A crisp apple right off the tree without worry of residue—or a McIntosh subjected to multiple sulfur sprays?')

Rain, however—and the lack of rain—is on everyone's mind in the West. Installing drip irrigation systems can save water and on repair costs from elk and deer trundling through elevated irrigation lines, Dennis informs the group. He and his neighbors

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are active in the Peshastin Creek Watershed Association and volunteer many hours of service devising methods to keep their watershed alive.

Washington: A model for the country. Washington's U.S. senators Maria Cantwell and Patty Murray like organics; so does Christine Gregoire, the Democratic governor who, while we were in Wenatchee, passed an external review of the November gubernatorial vote tally that the Republicans had challenged. With over \$200,000 in federal support to enhance their sustainable and organic ag program at WSU, the Pullman campus now boasts the nation's first degree program in organic agriculture. A dozen researchers from WSU and USDA presented organic research results at the conference. The Washington Tree Fruit Research Commission also supports an active organic research program, currently focusing on blossom-thinning and apple rootstock selection for replant disease.

According to growers at the conference, the USDA led the way in working with organic orchardists in this area; WSU entomologists came on board later, once the organic sector grew to a size they could no longer ignore. Growers also credit the Washington Sustainable Food and Farming Network, a statewide advocacy organization, with bringing about better support for organic producers. The WSU students I met at the conference were enthusiastic and committed to organic research—a rising generation that is sure to have a lasting impact in years to come. A unique partnership between WSU and Wenatchee Valley Community College gives WVCC students access to WSU professors while working in the community college's organic research orchard, where a GF-120 NF Naturalyte™ organic fruit fly bait is being used on cherry trees with much success.

Despite this improved overall climate for organics—backed by substantial funding—you still heard researchers use words like “organic-ish” and “soft chemicals,” as opposed to 100 percent certified organic meth-

ods. “They’ll work with us as long as the grant requires it, but I can’t see them buying organic apples for the family,” one grower told me. Currently, only four land-grant universities have research positions exclusively dedicated to organics.

Still, organic growers here are extremely grateful for the help researchers are providing. One conundrum that haunts some growers is “the replant situation.” Nematodes and various soil-borne diseases have been implicated in the condition that arises when an orchard is replanted and the new trees never seem to take to the old field. Certain rootstocks appear to do better than others, reports Mark Mazzola of USDA–Wapato, but they've also had good results with wild mustard seed meal (*Brassica juncea*). Mazzola believes that the meal may prompt a condition called SAR (systemic acquired resistance), which enhances activity from beneficial microorganisms (*Streptomyces* spp.) and protects the trees against critters trying to colonize it.

Ray Fuller of Stormy Mountain Orchard is anxious to test the material on his farm—an idyllic 110 organic acres overlooking the lake and offering some of the most spectacular views in the state. On the final stop of the tour, Ray described his various weed management tools, including the “Weed Wonder,” which chops cover crops into a nice, loamy mulch.

Sitting on the lawn overlooking this family-run orchard as the sun went down, conference goers had one thing in common: A hope that Washington's success with organics will continue to spread across the country.

Dr. Kathleen Delate is organic agriculture extension specialist at Iowa State University. This material was developed with the support of the U.S. Department of Agriculture through the Risk Management Agency, under Agreement No. 031E08310147.

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Review of Products

Allowed in Organic Tree Fruit Production – Part II

(Maury Wills, Iowa Department of Agriculture and Land Stewardship)

This is the second in a series of articles on new products allowed for use in the organic orchard. The first article was in the last issue of *Just Picked*, issue #3, which is available on the web at www.mosesorganic.org/treefruit/newsletters/htm. Alternatively you can contact the Network Coordinator for a hardcopy.

Azadirachtin is an extract from the seed of the Neem tree. This extract is the active ingredient in **Aza-Direct**® by Gowan and **Neemix**® by Certis, USA. Both products are allowed for use in organic operations. The percent of active ingredient varies between these two products. Neemix contains 4.5% of the active ingredient azadirachtin and Aza-Direct contains 1.2% of this ingredient. [Editor's Note: It can also be bought as pure, cold pressed, wild-crafted, 100% neem oil from Ahimsa Organics in Minnesota. It is OMRI-listed.] Keep this in mind when comparing prices.

Azadirachtin acts as an insect growth regulator. Aza-Direct and Neemix are registered for use on many food crops and for use against many insects such as aphids, peachtree borers, peach twig borers, tarnished plant bug, leafrollers, mites, pear psylla, scale and a number of other pests such as caterpillars and loopers. B.t. products may control some of the insects listed above more cost-effectively. (See article in previous newsletter.) It appears that the niche for this product may be in managing the tarnished plant bug.

Plum curculio remains on the *most wanted* list of pests that seems to escape the tools and methodologies of organic orchardists. Unless you intend to tap the branches of your trees to jar these little critters from

their roost, there is no sure-fire way to rid your orchard of this pest. One product that has provided limited success is **Surround**® **WP**, manufactured by Engelhard Corporation. This product is not an insecticide as it does not kill insects but rather it deters them and suppresses their activity. (Garlic products generally would also fall into this category.) Surround is made from a natural, mined substance called kaolin clay. This very fine powdery clay product has been manufactured to cling to plant material and anything that comes into contact with it. Therefore, it is an irritant to insects that get it on their body. It can also be an irritant to you, the applicator, making it a challenge to work with. It is wise to wear gloves and a mask while adding this product to your spray tank. Sprayers should be equipped to recirculate the water and provide agitation to keep the product in suspension.

In addition to its insect deterrent properties, Englehard claims that Surround can enhance tree growth and reduce heat stress and sunburn. While you may use this product throughout the entire season it may be most cost-effective to use it only through plum curculio season. A light rain will not wash off the product but strong or frequent rains will. Surround is easily washed from harvested fruit.

Disease Control Products

Sulfur is a traditional disease control substance that may be used in organic orchards. However, not all sulfur products available in the market place are allowed. Consult with your certifier to be sure. One sulfur product that is allowed is **That**® **Flowable Sulfur** by Stoller Enterprises, Inc.

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This liquid sulfur product is registered for use on a number of fruits and vegetable crops including apple, pear, cherry and peach. This product may be used to control scab and powdery mildew in apple trees. The label cautions the use of this product during periods of high temperature and advises not using it with oil or within 4 weeks of an oil application unless in dormant, or delayed dormant oils. Sprayer agitation is required to avoid settling.

Non-traditional disease control products, known as bio-fungicides, contain microbial organisms that can destroy pathogens and occupy pathogen foothold sites on foliage and fruit. These products are environmentally benign. This class includes products such as Sonata[®] and Serenade[®] by AgraQuest. The active ingredient in Sonata[®] is *Bacillus pumilis*, which produces an antifungal sugar compound that disrupts fungal cell metabolism. Sonata[®] may be used to control powdery mildew in apricot, cherry, plum, apple and pear. It also suppresses fireblight and scab in apples and pears. The active ingredient in Serenade[®] is *Bacillus subtilis*. This product may also be used to control powdery mildew, a variety of rusts, and to suppress scab.

Please submit your questions or comments regarding organic tree fruit products that you would like addressed in future articles via email to maury.wills@idals.state.ia.us.

(Continued from page 3) White Pine Orchard

leaving half the population in the trees, which was too many to Keith. The limb jarring not only knocked the PC out, but also helped him find the three areas from which they were entering the orchard. So now he can concentrate his efforts on about 50 of his trees.

He also tried pasturing chickens in the or-

chard using an electric woven-wire fence. "Their manure really stimulated the trees. It was noticeable. But I did not see a significant reduction in the PC population," Keith explained. Some chickens needed to be over-wintered so that they were in the orchard by late April. But it was a challenge to rotate them through the entire orchard in the one month that plum curculio are a particular problem. As the chickens were further from the house, they fell victim increasingly to predators. PC can fall from the trees at the slightest disturbance and then the chickens can get them. But if there is a week or more of nice weather, the PC may stay up in the branches and avoid becoming chicken feed. Keith had the chickens out of the orchard by mid-July to keep the nitrogen in their manure from stimulating the trees when fall was approaching. After about eight years of this effort, with up to 150 birds, he decided that he was too busy with his carpentry work to effectively manage them.

But the fact that he added another acre of 100 trees on M-7 in 1995 must have meant he was having some success. So we moved from discussing plum curculio to scab.

Scab. "When we first planted the orchard", he said, "we were totally ignorant of scab and scab-resistant varieties." Over time he got rid of most of his MacIntosh and Honey Gold among other scab-prone varieties that were not very productive under organic management. They were keeping the populations of scab spores high.

He sprays sulfur in 2/3 of the orchard from five to seven times a year, trying to keep his sprays to a minimum. Some years the winds seem to blow the scab spores into the orchard, and other years, they seem to blow them out of the orchard, which is more long and narrow than square-shaped. On the other third, he has no scab.

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"Timing of applying sulfur is key. You have to be on top of it," emphasized Keith. "When I read Michael Phillips' book, The Apple Grower, I saw that I had come to the same system he describes. Get a head start by spraying at 1/2-inch to one-inch green. Spray sulfur again at the start of bloom. Then hit the trees with sulfur at the end of every rainfall to keep a cover on the leaves." "Rain usually comes every five days here," Keith added. "At this time the tree is rapidly putting out new leaves and the repeated sprays help cover the new growth."

He also controls scab by two other means: pruning and orchard floor management. Keith prunes in the winter to keep the trees open and increase airflow through the tree, a practice he will show at the field day. "I have definite opinions on it and I like the way it works for me," said Keith.

In terms of orchard floor management, Keith feels the grass cover during the growing season has a filtering affect helping to limit the spores that get above the tall grass and on the tree leaves. He mows the orchard floor twice but only in late fall, leaving the clippings in place.

Michael Phillips suggests applying a lime spray in the fall and then compost to encourage the biological activity needed to decompose the plant material. Keith feels that the biological activity is the key part of Phillips' suggestion, and may do more than the lime in managing scab. After thirty years of organic management Keith can see the vitality of his soil and its ability to decompose the clippings and apple leaves rapidly, thus destroying habitat for scab spores.

Amazingly, almost 1/3 of his orchard has not had scab for several years. Thus he no longer sprays there. I thought this might be due to scab-resistant varieties, but Keith says the varieties in this section are only somewhat resistant to scab. He attributes the phenomenon to the removal of varieties that

were scab prone thus removing a major source of inoculum. This strategy, combined with consistently applying the practices above and not letting scab get out of control, have likely yielded this positive result.

The foundation: Soil health. Building the soil's health was not an overnight process either. For two or three years Keith and his partners added soybean pulp from a nearby tofu plant. He pastured chickens for eight years. The grass and leaf mowing added nutrients, both major and minor ones, year after year.

He does not add any nitrogen since his trees are thriving and yields are good. Yet he does add potassium, zinc, and boron in small amounts directly to the soil. He uses a naturally mined potassium-sulfate from Midwest Bio-Ag, which is 17% sulfur and 50% potassium, at the rate of 30lb per acre. "While sulfur is used to control scab it is also a micro-nutrient that the tree needs," explained Keith. During the season he sprays a foliar feed three times: before bloom, at bloom, and a couple weeks after bloom. The spray contains kelp, humates, and chelated micro-nutrients, which he purchases from Peaceful Valley Farm Supply. He tests his soil about every three years and finds that the results are consistent. His pH stays the same at 6.8.

The rewards. Keith finds that his orchard has "settled down" and seems to not only enjoy a healthy soil ecology, but a natural balance in much of its insect world. It helps that much of the land surrounding him is CRP land or pasture, which fosters a more diverse insect population than crop land would. His trees are healthy and yield about 500 to 600 bushels annually.

Keith thins his fruit by hand to help manage his fruit load, a topic he will discuss at the field day. He manages the orchard himself, sometimes with the assistance of an intern or apprentice.

(Continued on page 12)

Announcements and Useful Resources

If you are interested in visiting the organic research plot at Michigan State University's Clarkesville Experiment Station, please contact Harry Hoch at hochl@acegroup.cc or 507-643-6329, or the Network Coordinator. We are considering renting a van to leave from WI, spend one night in Michigan and return the following evening. We are considering this adventure for September and are exploring how many would be interested in going.

Previous issues of this "Just Picked" Newsletter are available on the Network webpage www.mosesorganic.org/treefruit/intro.htm. You may also receive past issues by contacting the Network Coordinator.

The **Network's web page** is a valuable resource. One section is titled "Resources." Under the Resources section is a comprehensive listing of many items that you can find from ATTRA, other web-based resources, or via mail order.

Don't Forget: you can join or un-join the Network's list-serv at anytime.
For information, please email the list-serv moderator at
deirdreb@mindspring.com

(Continued from page 11) White Pine Orchard

Marketing. When he started out, Keith and his partners sold all their fruit to Roots and Fruits of Minneapolis. Soon customers started asking Roots and Fruits from what organic orchard they found their apples. Keith's phone started ringing. He eventually switched to selling all his fruit from his farm believing this to be a more secure market. His customers come because he is organic. He is open on weekends in the fall and his customers are primarily repeat customers from the Twin Cities. Others arrive from all over western Wisconsin. He sells out by Halloween at the latest every year. Some customers come and hang out for a few hours, which Keith enjoys. "It is a nice compensation for giving up my fall weekends."

He also sells sweet cider, which he has pressed from his apples at another orchard. No windfalls go into his sweet cider. Those are ground and composted or sent to a hog farm. Some people making apple sauce might request them. The pressing facility is not certified although Keith's practices are certifiable. He was certified organic throughout much of the 90s. But since he now sells his entire crop directly from his farm, his faithful clientele no longer needs certification.

Come see for yourself. Hopefully this article has raised as many questions as it has answered. To learn more, attend Keith's field day on Friday, August 26. Keith has also invited Professor Brian Smith to join us from UW-River Falls. To attend, fill out the registration form above.

2005 Field Day Upper Midwest Organic Tree Fruit Growers Network

REGISTRATION FORM August 26 White Pine Orchard, River Falls, WI

Please list who from your farm plans to attend :

Name(s): 1.	
2.	
3.	
Farm Name:	
Street Address:	
City/State:	Zip:
Phone:	Email:

Professor Brian Smith is an Extension Commercial Fruit Specialist who helps growers improve their cultural efficiency and profitability, and diversify their operations. He has an active research program focused on developing winter-hardy strawberries, raspberries, and plums that are also of high quality and with insect pest and disease resistances. He has developed a new plum variety, called Lydecker, which he will discuss. He will discuss the 80 trees of Kazakhstan, which he started from seed eight years ago. He will also discuss scab-resistant apple varieties. We are delighted he can join us. His website is www.uwrf.edu/extension/BrianS.htm

Bring hand lenses. We'll be looking at both pests and their natural enemies in the orchard.

Workshop cost \$15.00 per person to cover lunch and refreshments.

Number attending x \$15.00 = amount due \$ _____

Please make a check out to MOSES and include with this form. **Mail by August 18 to:**
Deirdre Birmingham, Organic Tree Fruit Grower Network, 7258 Kelly Rd, Mineral Point, WI 53565

Field day will be from 10 AM to 3 PM, rain or shine.

Registration will be confirmed by email with directions to the field day. Any questions, contact Deirdre at deirdeb@mindspring.com or 608-967-2362

For more information on the Upper Midwest Organic Tree Fruit Growers, visit our webpage at <http://www.mosesorganic.org/treefruit/intro.htm>

Upper Midwest Organic Tree Fruit Growers Network

The Upper Midwest Organic Tree Fruit Growers Network was started in 2004 for the purpose of sharing information and encouraging research to improve organic tree fruit production and marketing in the Upper Midwest. The Network is supported by the Midwest Organic and Sustainable Education Services (MOSES) and the Risk Management Agency of the USDA in addition to other event sponsors.

For more information about the Midwest Organic and Sustainable Education Service, visit our website at www.mosesorganic.org or contact us at 715-772-3153, info@mosesorganic.org or PO Box 339, Spring Valley, WI 54767

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