

Spring 2007 Issue

PAGE

- 2 Upcoming Events
- 3 4th Organic Tree Fruit Symposium
- 4 Research Topics
- 5 Snippets
- 6 Vanishing Bee
- 7 Pruning Clinic, Apple Storage Survey
- 8 New Zealand Apples
- 10 Pork and Apples
- 11 MI Research Discussion
- 12 Pink, List-Serv
- 13 Web Based Insect Control, New on Web

Just Picked

Newsletter of the
Upper Midwest Organic
Tree Fruit Growers Network
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Welcome to our Spring Issue of Just Picked for 2007!

This newsletter serves as a vehicle to better network growers involved in organic tree fruit production in our region. Please use it to that effect.

In this issue, read about the new Advisory Council's discussions and the Network's annual meeting held at the Upper Midwest Organic Farming Conference on February 23. A report on the Organic Tree Fruit Research Symposium, which took place in early March in Michigan, lists the presentations and posters given. The research priorities determined by the participants elaborated the last morning of the Symposium are on page 4. Upcoming events, a report on the pruning clinic held at Countryside Orchard, additions to our webpages, and topics discussed on our list-serv are inside.

Kathleen Delate gives us Chapter 2 of her sabbatical leave from Iowa State University to New Zealand. Chapter 3 needs to be Kathleen's plans to lead a group of us to NZ; this article makes you want to go—now! Eric Mader of central Wisconsin starts a series of articles on pollinators. Important research project awards were made to two parties involving Network participants. Read about Jim Koan's integrating organic swine and organic apple production systems. Also read about Dan Kelly's project funded by SARE using the web for site-specific apple insect control.

--Deirdre Birmingham, 608-967-2362; deirdreb@mindspring.com

Network Advisory Council and Annual Meeting

As described in our Winter 2007 issue, an Advisory Council to guide the rapid growth of this Network was formed this year. The Council, taking its role quite seriously, met twice by conference call in February and during the Upper Midwest Organic Farming Conference. The Council also participated in the Network meeting held during the Conference's Friday lunch break.

In those conference calls, they landed on the following mission statement for our Network: To share information and encourage research to improve the organic production and marketing of tree fruits in the Midwest, and to represent the interests of growers engaged in such.

continued on page two

Upcoming Network Events

So far John Armbruster succumbed to a little 'arm'-twisting to host an orchard walk at his farmette in western WI. David Sliwa, if he has a pear crop, would like to do a field day on organic pear production. Again, the Agro-Ecology Program at the University of Illinois at Urbana-Champaign is game to host a field day with us. Let me know if you would like to host an orchard walk, field day, demonstration event or whatever you choose.

Tentative: July 10, 1:30 to 4:30 PM, Viroqua, Wisconsin - John Armbruster, a teacher at North Crawford Schools, lives on five acres in an old farm house with his wife and two sons. He has an orchard of 150 apple trees, 50 cherry trees and about 1,000 ft of raspberries. He started the orchard in 2003, managing it organically from the beginning. "Bob Johnson has been of enormous help, as he has visited my place several times," according to John. John will be sharing what he is learning and where he is going with his small-scale, market-oriented operation. Bob Johnson will also lead the discussion. Please watch the website and the list-serv for registration information. The Summer issue of Just Picked will likely come out after this event.

David Sliwa of Sliwa Meadow Farm, Decorah, Iowa, will announce on the list-serv and in the Summer issue of Just Picked if he will host a field day this year. Keep your fingers crossed on his pear crop. Last year he lost his plum crop to freezing temperatures. If he does have a pear crop and hosts a field day, it would likely be in early September when he hopes to have some delicious pears to sample.

Cancelled due to freeze damage! Friday, September 14, Dixon Springs, IL. Visit the organic apple orchard research site of the University of Illinois at Urbana-Champaign's most southern location. This tour is co-sponsored with the UIUC's Agro-Ecology and Sustainable Agriculture Program. We hope to try again next year! ó

Advisory Council....From page one

To represent grower interests and to provide on-going support for the Network, they are discussing a membership structure, including multiple membership options. At the Network meeting, the notion of membership was briefly raised and feedback obtained from the 57 people attending. While the most vocal were not in favor of a paying membership, a number of others expressed individually that they were in support in order to keep this good thing going.

We do have funds currently from the Risk Management Agency (RMA) via MOSES. We enjoy a great deal of administrative support from MOSES, which is paid for by RMA funds. We hope to have another year of such support, which would end September 30, 2008. While the run has been good with the RMA and with MOSES, we don't expect RMA support to last forever. In addition, MOSES is getting others who want MOSES to start networks for their topic of interest. They may not realize that this Network was started by growers and our partnership with MOSES came later.

In the meantime, the Council will be considering various organizational options. They will eventually present the more desirable options to all Network participants via this newsletter and the list-serv, and invite your feedback. Even though the growing season is getting under way and all Council members will be busy with seasonal activities, they will still be working on this. So stay tuned.

In the meantime, feel free to contact any Council member or the Network Coordinator will gladly forward anything you wish to communicate. They are on the list-serv as well. The Council members, (also listed in our last issue), are: Iowa – David Sliwa (psliwa@gmail.com) and Maury Wills (mmwills@colisp.com); Michigan – Jim Koan (almarapple@aol.com) and Tom Rosenfeld (troses@aol.com); Minnesota – Harry Hoch (hoch1@acegroup.cc); Wisconsin – Bill Wright (Wright_WP@co.brown.wi.us).

4th Organic Tree Fruit Research Symposium A Network Perspective

Michigan State University hosted the 4th Organic Tree Fruit Research Symposium March 4-6. This is a biannual event. The quality of the Symposium and the sheer volume of participants were greatly enhanced by this Network. Thanks to all who participated. There were 19 of us there out of approximately 100 participants. Six of us were presenters--and we were the only grower-presenters. The rest were researchers, who are typically the bulk of the presenters at previous Symposia.

Network participants who presented were Harry Hoch (MN), David Sliwa (IA), Dan Kelly (MO), Jim Koan (MI), Dennis Mackey (MI), and Deirdre Birmingham (WI). Others from the Network attending were, from MN: Patricia Bliska, John Horrigan, Everett Meyers, Jackie Hoch, and Hoch employee Randy Sundquist and a new intern; from IA: Paul Rasch and Jack Knight; from WI: Peter Johnson, Joan Smith, and Jim Lindemann; from IL with an orchard in MI: Richard Rustchman and from MI: Gene Garthe. Also participating were Emily Hoover of U of MN, Matt Stasiak of UW-Madison, and Peter Hurst of Purdue. Kathleen Delate of ISU and Deirdre were also on this Symposium's planning committee, supporting the main organizers, Mark Whalon and George Bird.

The list of presentations and posters follows. Some of these are or will be posted to the Network's RESEARCH webpage. Otherwise you might try contacting the presenter directly. The next issue will feature the research priorities that participants elaborated the last morning of the Symposium.

The next Symposium may return to its roots—Colorado, where it would be hosted by its main founder and grower, Steve Ela, along with Colorado State University. Dates would be in early June 2009. Other options discussed were Oregon State University (host Anita Azarenko) and University of Arkansas (host Curt Rom). Stay tuned!

Presentations

Comparison of Organic Apple Systems in New Zealand and the Midwestern US by Kathleen Delate, Iowa State University

Organic Materials Update by Dave Decou of OMRI

Transitioning or Establishing Organic Orchards

Establishing a Balanced Ecosystem and Implementing Advanced IPM to Enhance Organic Controls in a Minnesota Apple Orchard by Harry Hoch, Hoch Family Orchard and Gardens, MN

The Organic Apple Project: Preliminary Top-Grafting Results in a Transitional Organic Apple Orchard by Lorraine Berkett, University of Vermont

Sweet Cherries: High Tunnels Change Just About Everything by Gregory Lang, Michigan State University

Horticultural Practices

Preliminary Observations of Serviceberry (*Amelanchier* ssp. *Rosacea*) as a Dwarfing Rootstock for Pear in an Organic Orchard by David Sliwa, Sliwa Meadow Farm, IA

Organic and Integrated Fruit Production Systems in New York: Three Years of Research in a Liberty Apple Orchard by Gregory Peck, Cornell University,

Evaluation of Orchard Floor Management Systems for Apple Under Organic Protocol: Effect on Rootstock Performance by Dario Stefanelli, Michigan State University

Pest Management

Effective Biological Control of Rosy Apple Aphids by Interplanting Peach Trees into Apple Orchards by Mark Brown, USDA-ARS, WV

What We Know About Insects in Minnesota Orchards by Emily Hoover, University of Minnesota, MN

Plum Curculio Management in Organic Systems by Mark Whalon, Michigan State University

Soil Management

A Nematode Community Structure Standard for Assessment of Soil Quality by George Bird, Michigan State University

continued on page five

Most Important Research Topics for Improved Organic Tree Fruits

Developed by growers, researchers and industry reps. at the 4th International Organic Tree Fruit Symposium, Michigan State University, March 4-6, 2007. Summarized by Kathleen Delate kdelate@iastate.edu, 515-294-7069

1. Systems approach for insect pest management

Understanding interactions among biotic and abiotic environment, ecosystem, and social environment of organic tree fruit systems

a. Organic management of plum curculio (PC)

- i. Effect of parasitoids (braconid; eulophids on eggs/larvae)—because it's a native pest, PC has few natural enemies
- ii. Effects of control measures
 1. Biopesticides: Beauveria/Metarhizium/nematodes
 2. Roto-tilling soil for PC in August; banding floor of orchard with control measure
 3. Ground trapping over-wintering PCs
 4. Mowing; mowing at night when beetles active
 5. Bird predation: guinea fowl wander too far; chickens better
 6. Botanicals and natural products (terpenes, etc.) as deterrents (planted/sprayed)
- iii. Resistant cultivar development

b. Japanese beetle

- i. Trapping outside orchard; use milky spore on orchard floor (every few trees)—beetle at root level
- ii. Tulip poplar blooms as attractants of typhoid wasps/natural enemies
- iii. Surround™ as repellent; feeding deterrent

c. Blossom beetle on cherry

d. Black cherry and cherry fruit fly

e. Rose chafer

f. Cherry aphid

g. Apple maggot

h. Peach tree borer

- i. Protection with aluminum and Tanglefoot™
- ii. Painting lime/whitewash
- iii. Lesser peach tree borer—mating disruption
- iv. Borers in graft union; cover with uncompacted, mounded soil when borers are flying

i. Codling moth

- i. Hedgerows' effect on maintaining mating disruption semio-chemicals within orchard
- ii. Better Codling Moth Granulosis Virus (CMGV): better UV resistance
- iii. Bats: prey on oriental fruit moth and codling moth

2. Systems approach for disease management

a. Scab

- i. Resistant cultivars that consumers want; have improved storability
- ii. Effective, reduced sulfur/copper programs (if intensive sulfur program, should have beneficial phytoseiid mites with tolerance to sulfur)

iii. Calcium effects on disease

iv. Genomics to identify genes with resistance to insects/diseases

b. Fire blight

c. Brown rot-peach/cherry

d. Cherry leaf spot and mildew

e. Peach leaf curl

i. Resistant varieties: e.g., 'Curlfree'

ii. Copper at bud break, but copper is under increased scrutiny

iii. Botanicals as fungicides: English ivy, Artemisia (active ingredients from these)

iv. Compost tea: standardization, effectiveness

3. Marketing strategies

a. Role of niche markets and collective markets

b. Determine driving forces behind consumer demand

i. Investigate potential for additional eco- and social labels

c. Maximizing local marketing

i. Case studies of successful enterprises

d. Alternative uses for products

e. Determine total costs of production

i. Evaluate potential profitability and cost comparisons of the Midwest to other regions

ii. Pricing models

iii. Cost of organic-compliant products (e.g., vinegar as sanitizer)

iv. Studies on quality—shelf life, flavor, nutrition

f. Use of farm tours and other educational activities to educate consumers

4. Cultural management of organic fruit trees

a. Exploring the "healthy trees = pest-resistant trees" concept

i. Measuring stress responses and attractiveness to pests through biochemical content of leaves

ii. Auditory disruption/attraction

b. Postharvest treatments, esp. for mold on cherries

c. Management of crop load: Post-bloom thinning strategies

d. Fertilization and nutrient cycling

i. Appropriate ground covers that do not increase pest load

ii. Guidelines/standards for manure from animals in orchard

e. Rootstocks for organic systems

5. Managing for organic pesticide non-target effects

a. Entrust™ management (and natural enemy effects)

b. Sulfur on beneficial insects

6. Extension/education needs

a. Organic spray guides

b. Effective/legal tank mixes

c. Area-wide/meso-scale management plans

Potential Funders for Organic Tree Fruit Systems Research
IOP, NRI Managed Ecosystems: Diana Jerkins, National and Regional IPM Programs, Reduced Risk: Bob Noworski (CSREES), Risk Management Agency, OFRF ó

Research Symposium....From page three

Evaluation of a New Soil Health Indicator in Cherry Orchards: Particulate Organic Matter by Jennifer Moore Kucera, Oregon State University

Value-Added Issues: A Discussion

Fields to Kitchens: Opportunities and Sustainability for Processing Organic Fruits by Dan Kelly, Blue Heron Orchard, Canton, MO

The Evolution of a Michigan Organic Apple Grower: Cautions and Considerations for the Future of Eastern Organic Apple Growing by Jim Koan, Al-Mar Orchards, MI

Tree Fruit Networks and Networking by Deirdre Birmingham, Upper Midwest Organic Tree Fruit Growers Network

Joint Development and Marketing of Juice, Apples, and Fermented Products by Dennis Mackey, Northern Natural Organics, MI

Farm Marketing Strategies by Zach Koan, Grand Blanc Farmers' Market, MI

Posters

Organic Apple Project Spray Program 2004-2006 by Denise Ruwersma and Phil Schwallier, Clarksville Horticulture Experiment Station, MI

Acoustical Properties of Soil Aggregates Associated with Alternative Management and Natural Ecosystems: With Special Reference to Compost. by Quintanilla, M., Smucker, A., Gage, S. and Bird, G. . Michigan State University

Organic Control of Broadleaf Weed Seed Germination and Establishment by Suzanne Lang, Muralee Nair, Tara Valentino, Ron Calhoun, John Rogers, and Thomas Nikolai

Plum Curculio Suppression in Organic Orchards with Insect Pathogenic Fungus by Renee Pereaault and Mark Whalon, Michigan State University

Mites as Ecological Indicators in Michigan Tree Fruit by Andrea Biasi Coombs, Mark E. Whalon, Brian A. Croft, Danielle McEachin, and Daniel Nortman, MSU

Analysis of Southern Strain Plum Curculio (*Conotrachelus nenuphar*) Female Reproductive Development by Eric J. Hoffmann, Curtis Howard, Mark E. Whalon, MSU

Plum Curculio Control Strategies for Apple and Tart Cherry by Mark Whalon, Andrea Coombs, Eric Hoffman, Kevin Mcalvey, Jim Labauch, Romain Lalone, Jim Koan, Gene Garthe, Alan and Cheryl Kobernik, and Bruce Walton, MSU and Michigan organic growers.

Did You Know?

AGR-Lite Crop Insurance Expands to 10 Additional States

USDA has expanded its Adjusted Gross Revenue-Lite (AGR-Lite) plan of insurance, into more states including MN, MT, and WI for the 2007 insurance year. This is a particularly useful risk management tool for small, diversified operations. It is based on individual farm revenue, so producers are offered a lot of flexibility in how they manage their farm or ranch operations. Most farm-raised crops, animals, and animal products are eligible for protection. The plan uses a producer's 5-year historical farm average revenue as a basis to provide a level of guaranteed revenue for the insurance period. A USDA fact sheet on the AGR-Lite program is available via the MOSES website. Also MOSES has produced a fact sheet on insurance for organic cropping systems.

Make use of pest management websites and programs in your state or region.

Many are listed under IPM programs. They have helpful pictures of insect pests, beneficial insects, disease symptoms, and more. They describe insect and disease life cycles, periods of most vulnerability for controlling them, how to track insect pests using degree-day models, guidelines for trapping insect pests for monitoring or control purposes, use of dataloggers and software for predicting disease infection periods, and more. Here are two to try: <http://www.public.iastate.edu/~appleipm/appleIPMMod/> ; <http://www.mda.state.mn.us/IPM/applefg/default.htm> .

Thank you to Harry Hoch and David Sliwa for their Conference session on organic tree fruit production. Over 200 attended and kept them busy with questions afterwards.

The Spring of the Vanishing Bee

By Eric Mader, Midori Horticultural Services

Note: This is the first of a series of articles on pollinator management in orchard settings. In this issue I address habitat conservation for wild pollinators as a response to the current honey bee crisis.

Many of you have probably seen the recent reports of mass honey bee deaths, referred to as “colony collapse disorder” or “fall dwindle disease.” The exact cause of this phenomenon is still unknown. Climate change, pesticides, disease, and transgenic crops have all been implicated in the disorder, which began in the U. S., but is now being reported worldwide.

This new crisis falls on the heels of various other problems plaguing managed honey bees—including two species of parasitic mites and several devastating diseases. Since 1971 nearly half of all managed honey bee colonies in the U.S. have vanished, and fruit and nut growers in other states are importing bees from as far away as Australia. Managed hives are increasingly expensive and some growers cannot obtain them at any price.

As fruit growers, we depend on large populations of pollinators for proper fruit set and development. And for growers without managed honey bees, yields are often pollinator-limited—resulting in small or misshapen fruit. With the declining availability of managed bees, alternative pollinators are now becoming essential for many growers.

Non-Apis Bees

Bees are not the only animal pollinators, but they are the most efficient. North America has more than 3,500 native bee species, the majority of which nest below ground and lead solitary lives. These native bees are often called “non-Apis” bees to distinguish them from the imported European honey bee (*Apis mellifera*).

A growing body of research has established the effectiveness of these non-Apis bees as crop pollinators. In many instances, these native bees are more efficient than honey bees. This is especially true during cool, wet weather—typical of the cherry, apple, and pear bloom periods in the upper Midwest. For example current research suggests that as few as 250 female mason bees (*Osmia lignaria*) are capable of effectively pollinating an acre of apples. This is in sharp contrast to the typical stocking rate of one hon-

ey bee hive per acre (which may contain thousands of bees).

While several types of non-Apis bees are commercially available, there can be severe ecological consequences associated with importing non-local bees. More practically, non-local bees often do not develop in synch with local conditions, and often fail to thrive in their new environment.

For most small growers, the best way to insure adequate numbers of pollinators is through bee habitat conservation.

Bee Conservation in Orchard Settings

Protecting bees begins with whole farm planning. Most wild bees for instance only forage a short distance from their nest—often less than 200 yards. If the distances between nest habitat and the crops you need pollinated are farther than this, you may not have optimal fruit set.

An ideal orchard setting for pollinator conservation consists of trees in small numbers of rows separated by areas of naturalized habitat. Pollinators use these habitat corridors to disperse from high population areas to low population areas. These corridors allow mating between otherwise isolated groups. In general, the more diverse the habitat, the more likely it is to support diverse pollinators.

Orchard settings typically need supplemental food for wild pollinators. Early spring floral sources are essential for emerging bees, and late blooming plants provide energy reserves for overwintering. Flowering cover crops on the orchard floor, such as clover, can be of tremendous value in this respect. Similarly, restored or naturalized areas on the farm should consist of plants that have overlapping bloom times so that flowers are present throughout the growing season.

Pollinators also need appropriate nesting habitat. Two-thirds of all native bee species nest underground. Because of this, ground disturbance should be minimized wherever possible. Extensive tillage in particular can be extremely destructive. The use of landscape fabric should also be avoided. Mowing should likewise be reduced where possible.

Continued on page 12

Pruning Clinic a Success

By Kath Kramer & Deirdre Birmingham

Bob Johnson and Jamie Bjornsen hosted about 20 Orchardists and would-be orchardists for a pruning clinic at Countryside Orchard in northeast Iowa on Saturday, March 10. The pruning clinic evolved from numerous requests for information that Bob had received and from concerns about the availability or quality of workshops out there. He called the Network Coordinator in mid-February to suggest announcing a date during the Network meeting on Feb. 23 at the Upper Midwest Organic Farming Conference. The clinic was later publicized via the list-serv.

Participants 'endured' a beautiful sunny spring-like day to learn from Bob in the orchard on training and pruning for a central leader system. The clinic started informally around a long table in the Countryside Orchard sales area where Bob discussed and demonstrated basic pruning tools. The group moved outside to the orchard, walking atop 12 inches of snow, to learn from Bob some pruning basics. As he discussed principles and techniques, Bob mentioned that a problem with trying to follow printed pruning guides was that real trees never look like the ones in the guides. He demonstrated pruning on real trees, none of which looked like the ones in the guides, while taking suggestions from the group on what to cut.

The best way to learn is to do. So with pruning shears in hand and advice from the other participants, a few brave souls pruned some of Jamie's trees. Jamie was inside preparing lunch at this point. Countryside Orchard is about two acres planted with a variety of apple species, now 3 to 5-years old, and primarily on M7, M9, and M26 rootstock. This section had been pruned regularly. Folks would gather around a tree

and anyone could give their opinion on what should be cut. Bob would then say "let's take it out and see how that looks", shocking many who thought, "well, if we don't like how it looks, we can't put it back." But Bob has an intuitive knowledge based on his years of experience for what will work and what won't.

After a free lunch (and you heard there is no such thing...) prepared by Jamie (amazing all with her culinary skills and generosity), Bob presented a slide show, primarily from his years at Turkey Ridge Organic Orchard. He covered more than just pruning, showing tree staking and training, interesting attempts to control orchard pests, and a variety of other projects initiated at Turkey Ridge. Following the slide show there was an "advanced" pruning session in another part of the orchard. Many of the trees in this section had endured severe hail damage and had not been pruned while they were recovering. Deciding how to prune these trees was a little more challenging for the beginning pruner, but the basic principles were the same ... just a few more branches to navigate.

Basics of pruning? Determine the leader. Walk around the tree. Think ... how do you want the tree to grow, how can you balance the tree, how can you get the most light onto each fruiting branch. Cut out branches that don't fit with the plan. And remember, you can probably fix it next year.

We thank Bob and Jamie for taking the initiative to organize and host this clinic, (and without charge). This was a great opportunity to learn from their experience and to meet and exchange ideas with other orchardists. ó

Apple Storage Survey

Jack Knight is leading a project to produce information for Network participants and their consumers to use on the storage qualities of different apple varieties. Before refrigeration there was a vast body of knowledge about the storing (and ripening) characteristics of apples. Each month of November through May certain varieties reach their peak eating quality. This info will be compiled and along with a basic narrative on handling and root cellaring and made available to our group.

Included in this newsletter is a survey for you to complete and return to him. He has also sent this to the list-serv and it will be posted on our website if you prefer to complete an electronic version. Of particular interest are the root cellaring qualities of scab-resistant, newer and antique varieties in zones 3, 4, and 5. Other storage info is welcome, but the emphasis is information not readily available. (We all know how Macs and Reds store in the cooler.) Feel free to contact Jack at jackorganick@yahoo.com or 563-568-3308.

Please see the survey on the back, page 14.

The World of New Zealand Organic Apples Chapter Two: The Price of Perfection

by Kathleen Delate, Associate Professor, Iowa State University

See "Just Picked" Fall 2006 issue for Chapter One.

My silver wedding ring has turned copper-colored from all the sulfur-tinged apples we've inspected (a little baking soda brought it back to its original luster). We've been researching how much damage organic apples can take from the bronze beetle, and, by my rough estimate, I calculate we've examined over 3,000 apples.

A Haven for Organic Apple Production. Sulfur sprays are part and parcel of the organic regime here in Hawke's Bay, New Zealand, where approximately 25% of the apple growers practice organic techniques, one of the highest concentrations of organic apple producers in the world. Nationally, between 5 and 10% of the entire New Zealand apple crop is organic, the fourth largest organic apple crop in the world. As a global food exporter, New Zealand's growth in organic is expected to exceed NZ\$500 million in 2006. This development occurred with minimal governmental support—in contrast to the E.U. and U.S. organic sector. Certified organic production of kiwifruit and apple crops has increased dramatically over the last decade and accounts for 71% of organic exports from New Zealand. Exports of organic apples averaged 800,000 cartons in 2005.

NZ Systems Approach to Pest Management. In a country driven by an export economy, New Zealand organic growers have developed a sophisticated systems approach to tackle insect and disease problems in order to produce high-quality apples for export. Similar to midwestern organic apple growers, New Zealand growers must systematically manage several key pests, notably scab (called blackspot here) and codling moth. Because the weather in Hawke's Bay, NZ, area is considered to be a maritime climate, with rainfall averaging 28 inches per year, scab management is considered an essential component in organic apple orchards. Summer and mild winter temperatures also favor apple scab infections. While we were there, tropical cyclone Wati stirred up swells off the east coast. Organic apple grower-surfers finished work and went skittering on their boards across the rocky shore of Clifton beach.

As mentioned in my first chapter, (Fall 2006 issue of Just Picked) Kiwi growers are successfully producing organic apples. They are spraying sulfur for scab and Madex™ codling moth granulosis virus, for the number one pest, codling moth, in addition to Entrust™ and Bacillus thuringiensis for leafrollers—the dreaded export-stopping pest.

Unlike the midwestern U.S., the use of scab-resistant cultivars is not prevalent in the Hawke's Bay area for two reasons: putative management of scab with a sulfur spraying regime, and the reported poor shipping potential of scab-resistant cultivars. Recently, however, a renewed focus on

the negative impacts of sulfur on tree and human health has led to the development of scab-resistant cultivars that maintain shelf life throughout the export market chain. In addition, the combined use of pheromone monitoring traps and rigorous organic spray programs has been enacted to increase market access.

NZ Insect Pests. In addition to the common U.S. pests, woolly apple aphid, *Eriosoma lanigerum* (Hausmann), and leafrollers are controlled as quarantined pests. Their presence can halt shipments to one of the most lucrative overseas markets, the U.S. For most organic growers, the leafroller species found in their orchards (brownheaded leafrollers, *Ctenopseustis obliquana* and *C. hereana*, and greenheaded leafrollers, *Planotortrix octo* and *P. excelsana*) are indistinguishable. Yet it is the light-brown apple moth, *Epiphyas postvittana* (Walker), that can restrict their access to U.S. markets, as this pest is not found in the U.S. Several tactics are employed to limit insect pest populations, such as encouraging parasitic wasps and predators in the orchard system by planting flowering strips between tree rows to provide pollen and nectar for the natural enemies of these pests.

The woolly apple aphid, (WAA), found in the state of Washington but not in midwestern states, impacts yield to a lesser degree than codling moth. But it proves to be an aesthetic pest, as it is difficult to remove from its secure location in the apple stem end. In addition, WAA is a quarantined pest for California-bound apples.

Beginning in 2000, NZ growers reported significant bronze beetle damage in their organic blocks. A native insect found in forest trees, the bronze beetle had primarily been a minor pest on apples, managed by insecticides commonly used in integrated fruit production (IFP) programs. Once larger blocks of organic apples were planted, however, bronze beetle populations began to increase within organic orchards and are now considered the most important pest in the organic apple sector. Because bronze beetle feeding scars can render an apple completely unsalable, an estimated \$16 million loss to the organic apple producers is anticipated in 2006 from bronze beetle damage. In 2006, some orchards were found to contain up to 80% bronze-beetle-damaged fruit. The insecticides commonly used in organic production (pyrethrum and neem-based formulations) have not proven to be sufficiently efficacious against bronze beetle.

Special programs have been developed for the quarantined Australian leafroller or light-brown apple moth, which is not found in the U.S. These programs include the use of pheromone-baited sticky traps to monitor leafroller populations in the orchard; *Bacillus thuringiensis* early in the season; Entrust™ (an organic insecticide released in

2003, developed from a soil-dwelling fungus, spinosad) later in the season; and a rigorous selection of non-infested apples at picking, field packing and in the packinghouse line. Spinosad was hailed as a major breakthrough in organic fruit insect pest management when first introduced in 2003, but the effect of this insecticide on non-target organisms, such as beneficial predators and parasitic wasps that attack WAA populations, has been reported. In 2005, approximately 50% growers reported using ≥ 3 Entrust™ sprays per season. Post-harvest strategies for leafroller management include CA storage using 2% O₂ and 2% CO₂ at temperatures of 0.5 °C.

'Braeburn' Excellent organic apple yields have been obtained in New Zealand. Using 'Braeburn' as an example, in 2005, average yields were 58941 kg ha⁻¹ in the Hawke's Bay area. Conventional 'Braeburn' yields were 27% higher than organic, but there is a 41% higher premium price paid for organic 'Braeburn' apples. Organic 'Braeburn' apple fruit size has been generally smaller than conventional, averaging a 116-apple carton (18.5 kg) compared to a 105-apple carton for conventional 'Braeburn.'

Keys to Success. Commonalities among the most successful organic orchards included improvements in canopy and crop managements, possibly from greater tree/soil health inputs, including compost, solid and foliar (averaging \$636 ha⁻¹), with foliar N levels averaging 2.4%, but characteristically low in manganese, zinc and boron (18, 16, 35); the use of 2% lime sulfur for thinning with hand-thinning costs averaging \$6.33/tree; fewer fungicides overall (total organic average sulfur rate: 60 kg ha⁻¹ and copper at 2.1 kg ha⁻¹), including less late-season sulfur applications and low scab infection at harvest; and more growers opting for CA storage.

Taste is the Test. Fruit quality and taste are of critical importance to NZ organic apple growers. We spent a considerable amount of lab time, evaluating the scab resistant cultivars for over ten attributes, including defects and sweetness. Tartness is a key asset here— a land where 'Red Delicious' is considered disgustingly sweet. Our hopes lie with 'Pinkie' (mentioned in Chapter One)—a scab-resistant cultivar we will import this year. Because all apple budwood is placed under quarantine when imported to the U.S., we will expect to test 'Pinkie' in midwestern orchards in spring 2008. 'Pinkie' is round like a 'Fuji' and reminiscent of the color of daffodils and tulips in the spring. The best part: minimal scab!

Work Hard/Play Hard: Fishing Tales and Russell Crowe. As I mentioned in Chapter One, the Kiwis' love of play is not to be ignored. A typical organic grower in Hawke's Bay engaged in at least one of the following activities while we were there: fishing, concert-going, and skiing (starting in July).

One day when the harvest was nearly done, we woke up at 4 AM to the four main stars of the Southern Cross constellation. Volume 3, Issue 2

lation blazing down at us from the cerebral sky of Hawke's Bay. We wanted to get an early start on the brown trout that were we were "meant to catch" that day. Mark Whalon, visiting from Michigan State University, and Jim Walker, Kiwi entomologist, taught us the fine art of selecting and "baiting the line" with the intricate lures, made to resemble dragonfly nymphs (tiny, delicate babies complete with feathery antennae made from sheep's wool). Then came the wading into the frigid 65°F waters of the Mohaka River, a mighty river near Wairoa—20 miles downstream—but fortunately for us, a shimmering, babbling trout stream 60 yards wide with pools reaching 20 feet at the deepest points: iridescent blue waters, rippling eddies round the granite stones, white-stucco Tudor home on hillside covered with kelly-green trees of *Pinus radiata* and local rimu wood. Along the river, pale yellowing leaves of supplicant willows littered the shore, while we wove our lines back and forth in a ballet of sorts—one with the current of the river. We watched as schools of the great browns swam past us—taunting us to catch them—lazily hiding under the willow branches ahead of us. They were all around us but none would be had for our supper that night. They're a wily bunch, we had been warned, and of course, by now, I knew this to be true—having watched with shocked face, the smart-alecky rainbow trout who spit the hook on my line out of his mouth and jump back into Lake Taupo a month earlier. The next fish I caught, however, was a shimmering white and blue-crowned kingfish in the Bay of Islands out of the Whangaroa Harbour aboard the 35-foot sloop "Snow Cloud" on our way to the shores of the deserted Mahutika Island. There we snorkeled amidst Neptune's necklaces and collected ferrous-red beach rocks left over from 120 million years ago when New Zealand was part of the original continent—Gondwanaland.

Concerts were another part of life for the organic grower. On a rainy April night, actor Russell Crowe and his home-boy garage band, called "The Ordinary Fear of God," hailing from Australia, New Zealand, Wales, Ireland and Trenton, New Jersey (the piano player), appeared like a mirage on the dimly lit stage of the Illot Theatre in Wellington, his birthplace of 38 years ago. "I was poached by the Aussies," he told the quiet crowd—the Kiwis—never ones to be impressed by Hollywood. Themes of class struggle dominated in his songs, like "The land of a second chance" about life in the new lands of Australasia, away from Mother England and the class assignments you were given at birth. Before launching into "Of all the things I missed this year, I missed my mind the most," he asked us: "If you recall, I did a few things last year that everyone heard about..." to soft chuckles from the audience. By the end, you felt like you were in a Russell Crowe movie rather than a concert. All for \$NZ60, the equivalent of \$45 U.S. dollars.

So while the airline ticket is expensive (8,000 miles for \$800 to \$1,200—depending on the season), the inexpensive and absolutely free charms and beauty of New Zealand will keep me, for one, hoping to return, again and again. ó

Integrating Benefits of Organic Pork and Apple Production

Congratulations to Jim Koan of Al-Mar Orchard (Flushing, Michigan) and David Epstein of Michigan State University, IPM Program Tree Fruit Integrator, on their grant award from the very competitive Integrated Organic Program of the USDA to look at integrating organic pork and organic apple production systems. Can't you just picture that roasted, whole organic hog on a platter with an organic apple in its mouth? Well, apparently Jim Koan did.

Jim is always into novel ways to address "the dreaded plum curculio" in organic orchards. A few years ago he had a grant from the Organic Farming Research Foundation to try guinea fowl to control plum curculio (PC). He had successfully

used guinea fowl to help keep ticks from getting onto his reindeer, so the orchard seemed next. Several issues, however, including serious raptor predation of the guinea hens, pushed Jim to continue his quest of alternative PC control strategies.

His new project with David Epstein and that of MSU swine specialist, Dale Rozeboom, is to look at the role of pigs to impact "the dreaded plum curculio."

Jim got his first three Berkshire sows and, importantly, one boar, last year. By the time you read this, his three sows should have farrowed to dramatically increase his swine herd.

David Epstein's summary of the project follows. *This project will investigate the opportunities for developing and delivering an organic farming system that integrates organic pork and apple production to address pest and pest-related problems, and that enhances opportunities for increased profitability and environmental sustainability. Peer-reviewed scientific research into rotational grazing of hogs in apple orchards is scant. Some very basic questions regarding the effects of hog grazing on pest management and swine health must first be answered prior to developing an integrated approach that optimizes potential benefits. In particular, this project will investigate the abilities of rotationally grazed hogs to manage the insect pest, plum curculio, through consumption of dropped apples on the orchard floor, while meeting swine nutritional requirements for growth and health. Organic pork production requires specific rearing practices in*



addition to feeding organic foodstuffs. Much effort and time is required to achieve compliance with the animal health and well-being requirements of the National Organic Program. This is particularly challenging in an outdoor grazing setting, with nutrition partially dependent on foodstuffs available with the seasonality of orchard grazing. Records of compliance must be kept and individual animal ID maintained before and after harvest. Originally envisioned as a four-year project, this project is instead requesting one year's funding to answer these basic questions in preparation for a proposal in year two that fully develops, delivers, and evaluates an integrated apple-swine production system for organic producers.

The basic questions that the first year's research will address are:

- ó Determine plum curculio larval survival with swine ingestion
- ó Determine percent of June drop apples eaten by rotationally grazed hogs.

The project will also:

- ó Monitor the reproduction and health of orchard-raised swine.
- ó Monitor the growth and carcass attributes of orchard-raised swine.
- ó Try to achieve organic pork production status.

Jim and David will be busy with the following protocol and more.

The experimental design will be a direct comparison of grazing vs. no grazing, with the eight-acre orchard divided into six 1.3-acre plots. Each plot will be randomly assigned one of 2 treatments, 3 plots where hogs will annually be rotated in during the "June drop" period where PC-infested apples abort from trees, and 3 untreated control plots. Jim will install electric fencing around the perimeters of each plot for control of the hogs. PC adult populations will be monitored weekly from the apple bloom period through harvest using modified PC pyramid traps baited with fruit volatiles (4 traps/treatment from Great Lakes IPM, Vestaburg, MI). Fruit damage assessments (600 fruit/treatment) will be conducted two times per growing season in June and pre-harvest. Dropped apples remaining on the orchard floor will be quantified once per season in August to assess the effectiveness of hogs in consuming dropped apples.

continued on page 13

Michigan Organic Tree Fruit Research Discussion

reported by Mark Whalon, Michigan State University

This meeting was held March 30, 2007 from 9 am-12 Noon followed by an afternoon session addressing the Gerber Organic Tree Fruit Project. This is the son or daughter of the ever-expanding Sail Inn Organic Research Meeting. We had 20 folks show up. The AM portion was dedicated to updating folks with the information we captured last year.

The afternoon focused on Gerber's desire to facilitate the development of more organic pome fruit acreage in the upper Midwest, starting with MI and expanding as needed. As I understand it, Gerber made a decision to source their peaches in the SE (their Arkansas plant and growers in Michigan lost their contracts) and their Tender Harvest Organic label pome fruit at the Fremont, Michigan plant. Yet more supply is needed in the upper Midwest to sustain these changes; hence, the effort to expand certified organic production. Gerber will apparently facilitate some purchases of supplies (traps, kairomone, pheromone, virus, maybe fungi and nematodes) to cooperating and/or transitioning growers. (No one knows right now how much injury Gerber will tolerate, but one presumes that if Gerber helps they will also want to source product at those farms.)

Apparently, Gerber would like to have specific work on worms and PC in apples and pears. They are pretty confident about disease, but can't take the insect parts (contamination) and meet their high standards. But I am presuming this; Gerber has not said anything like this officially. Thus the emphasis on bugs right now; not to the exclusion of disease in the future, but primarily bugs now. They are talking a three-year program.

I think last season Gerber thought that the company could perhaps source all the apples and pears they needed, but other processors, retailers, wholesalers, packer-shippers and local markets also wanted organic supplies and competition was intense. (Peeler apples went for over \$.45 last week here in Michigan!) Juice apples went to organic buyers at up to \$.12 this fall. Growers are pleased, very pleased! "Hey, I could almost make a living at these prices," one organic producer quipped. For my part, it is great to see organic growing and a market demanding more production!

So Gerber wants more growers, which means more supply which may mean lower prices....depending on demand, (which is very high right now). Many of the growers sincerely appreciated Gerber's efforts in this process, as do I. My bottom line? It is a great opportunity for organic transition and currently certified producers.

The afternoon session focused quite a bit of time talking about a grower organization, various support processes and the future of the organic industry in Michigan and the upper Midwest. One emerging option? An organic-grower-based, password-gated web chat room to talk market-presence this fall. Presumably, this would be a grower organized (talk to Jim Koan) and not necessarily a Gerber fostered process.

Personally, I would like to see organic tree fruit producers and processors be able to put their kids through college; so I'm all for it too. As I understood this development, the purpose of growers organizing in this manner is so that they have a chance to keep a steady growth of the organic industry while maintaining a fair price at the farm gate. I applaud their efforts because without organic growers, there is no organic produce from the Great Lakes for the public, and there are no organic processors in the upper Midwest either. ó

Contact Mark at whalon@msu.edu; 517-353-9425

**Organic Apple Project,
Whalon Lab Update, Michigan State University**
by Dan Nortman, M.S. candidate;
nortmand@msu.edu

Three varieties are grown at the Clarksville Organic Apple Orchard: Gala, Goldrush and Smoothie Golden. The north and south blocks represent a crop managed with the intent of harvesting, and the satellite block is a minimally treated control block. The rootstock block is a low intensity management block of Gala trees of different dwarfing rootstocks to see how they each responded to three weed control treatments: propane flaming, Swiss sandwich tilling and mulching. That analysis is not reported here, but was given at the 4th Organic Tree fruit Research Symposium on March 5 in East Lansing, MI.

In 2004, we experienced an extreme amount of rainfall during the key primary scab control period. We found nearly 80% scab damage in the Gala variety and only 18-30% of the Gala fruit having less than 5% damage. Even the Goldrush variety had some scab, even though it is a "scab resistant" variety. This stresses the importance of resistance management in scab resistant varieties.

Due to decreases in funding for this project, a full codling moth control strategy was not carried out in 2005. This resulted in a 7-16% increase in damage levels from 2004 to 2005. We also lacked the resources for codling moth control in 2006, and initial damage estimates are in the 15-25% range. ó

Pink

From Michael Phillips' "Seasonal Checklist for the Apple Grower" provided at the Upper Midwest Organic Farming Conference, 2006.

- ó Apple an organic fertilizer blend to non-bearing trees in order to grow a strong framework of branches quickly.
- ó Spray with Bt if buds reveal a significant presence of moth larvae. Always include seaweed in every tank mix through the entire season. Use liquid fish emulsion on weaker bearing varieties Solubor and foliar zinc are applied now for best effect.
- ó Alternative spray could include garlic extracts and pure neem oil (if not using sulfur for disease control) for moth incursions. Continue with compost tea applications; trial herbal immune stimulants over the next several weeks.
- ó Primary scab season has begun. Protecting against infection now will prevent secondary infections throughout the summer. The first application of micronized sulfur should be made immediately before the next predicted rain. Repeat these applications during bloom time at the tail end of a significant daytime rain (that causes the leaves to be wet six hours or more). Learn to be a minimalist with sulfur!

As he can make time for it, Michael posts updates to his Research Pages on his website HerbsAndApples.com. He is encouraging growers to take a more systemic approach to fungal disease control and to share their results with others. ó

Bees....From page six

Non-ground nesting bees may use borer infested trees, piles of stone or brush, and discarded farm equipment as nest sites. Cavity nesting bees are often found in the walls of abandoned barns and sheds. Even hay bales are sometimes used as nest sites by bumble bees. Purposefully constructing artificial nests is usually not necessary.

Many readers have no doubt seen for sale small mason bee blocks, or wooden bumble bee hives. While in the short-term these nests may encourage and even increase the number of wild bees in the landscape, in the long run they can do more harm than good. Mason bee nests in particular—unless they are intensively managed—can become infested with parasites and diseases. And because wild bees are continually attracted to used nests, even as the resident population declines, unattended nests can become a lethal fixture in the landscape.

My standard advice to people is to either keep bees, or don't. There aren't any short-cuts, and there aren't any in-betweens. The best thing a non-beekeeper can do to encourage wild bees is to plant lots of flowers.

Next Issue: So how bad can things get? Imagine pollinating thousands of hectares of apples...by hand. It happens every year in China, where the battle for pollinator conservation has already been lost. Plus, specific pollinator-friendly ground covers for Midwest orchards. Contact Eric at 608-445-3572, Info@MidoriHorticultural.com ó

Network List-Serv

When the Network first started in February 2004, the first thing we did was start a list-serv. That list-serv of about 18 addresses has mushroomed to 230. It is a great vehicle to continue the networking when we cannot actually meet together. We use it to share questions and answers, share information and ideas, post event announcements, and more.

One note of caution: While we don't pay for the list-serv, we pay for it by the free advertising that is attached to some of our emails in the form of links. Please ignore these. It is ironic because of the rules of etiquette on a list-serv is that participants don't advertise products or services.

If you wish to join the list-serv, please email the Network Coordinator. Include your name and email address in the message. If you joined since the Winter (January) issue of Just Picked, the topics discussed since then are listed below. Once you join the list-serv, you receive instructions from Yahoogroups that includes how to review previous postings. So you could go back and read the emails on any of these topics and more that interest you. If you wish to try out the list-serv, feel free to do so. It is easy to unsubscribe.

Topics recently discussed: Weed management; Grafting and pruning classes; Pollinators – Colony Collapse Disorder, advantages of different pollinators; Growing figs in zone 4; Freeze damage and how to assess it; Cedar apple rust – tree species that host it; Plum curculio- experimental ways to control it; Specific replant disease of cherries; Identifying and history of old apple varieties in WI; Deer fencing; Root cellaring of apples; Tree protectors; Dormant oil sprays; Disease resistant apple varieties; Local sources for OMRI-Approved materials; Symposium summary and discussion of research priorities; Buffalo tree hopper solutions; Individual member introductions. ó

Site- Specific Apple Insect Control Through A Web Based Application

By Dan Kelly

As many of us know, orchards throughout the North Central Region need better access to more accurate information for controlling apple insect pests. Lack of accurate data and ignorance of degree-day models for orchard pests can frustrate the grower and can accelerate the use of pesticides. The objective of the project will be to give orchard operations, of any size, a simplified tool that uses existing Integrated Pest Management (IPM) information to accurately control the most economically threatening apple pests.

Each grower will maintain a weather station for recording and uploading local temperatures. They will also maintain a variety of apple insect trapping devices; i.e. pheromone traps, visual traps, baited traps, etc. and record insect captures in a log designed for the project. The group will meet four times to verify that all of the objectives of the proposal are on track.

Growers will record all activities in the orchard through the orchard season. Each grower will carry out its insect control regime based on the computer model and insect captures in various traps. Since good early season insect control translates into good second and third generation insect control, the monitoring of subsequent insect generations with traps and visual inspections of fruit and foliage will determine the success of the project.

Expectations are that the grower using the program will experience better fruit quality, with less insect damage and fewer over-wintering apple pests in the orchard for the next growing season. More accurately targeted insect control programs will reduce pesticide usage and that can enhance the quality of life, especially in areas that rely on chemical pesticides. This in turn could allow a transition to more socially responsible farming practices that do not adversely affect the natural environment.

So much of apple growing has moved away from the greater portion of the North Central Region (NCR) to the coasts and far away countries. Consequently, much of the research and outreach goes to those places. This project is an attempt to bring this cultural knowledge back into the NCR and to make an informed apple insect control system available to anyone with access to a computer. ó

Dan Kelly can be contacted at blueheronorchard@centurytel.net, 573-655-4291

New on our Webpages!

Under INFORMATION:

Plum curculio is an important insect pest of stone fruits. It is important to be able to identify this pest and distinguish from other similar looking beetles. http://whalonlab.msu.edu/curculio/Comparison_Webpage/Plum_Curculio_and_Look-alike_Beetles.htm

"The Community Orchardist"; the newsletter of Michael Phillips. "This newsletter is written for commercial orchardists who ponder the healthiest ways to grow good fruit for their local community." To be on the e-mailing list contact Michael@HerbsAndApples.com

On the RESEACH page:

"Sweet Cherries: High Tunnels Change Just About Everything". This is a poster presented by Gregory Lang, Ph.D. of Michigan State University on his continuing research on sweet cherry production. The findings suggest a potential role for high tunnels to aid in organically producing sweet cherries. More research is needed. http://www.hrt.msu.edu/faculty/langg/Cherry_PP/Tunnel%20Poster%202006_2.pdf Prof. Lang's webpage www.hrt.msu.edu/faculty/langg.

Proceedings of the 3rd National Organic Tree Fruit Research Symposium, Chelan, Washington, June 6-8, 2005. 81 pp.

"Apple orchard productivity and fruit quality under organic, conventional, and integrated management," by G.M. Peck, P.K. Andrews, J.P. Reganold, and J.K. Fellman (2006) *HortScience* 41, no. 1:99-107. [NAL Call # SB1 H6].

Multi-level Comparisons of Organic and Integrated Fruit Production Systems for 'Liberty' Apple in a New York Orchard – by Gregory Peck, Doctoral candidate at Cornell University. ó

Pork and Apples....From page eight

An annual fall field day will be conducted at Al-Mar Orchards to highlight the research on rotational hog grazing in the apple orchard and the potential for supplemental income, while discussing the compatibility of the two systems. Roundtable discussions with growers into present and future plans related to adoption of the proposed system will be conducted. A newsletter highlighting project results will be produced and mailed to members of the Upper Midwest Organic Tree Fruit Growers Network. ó

Apple Storage Survey for the Upper Midwest Organic Tree Fruit Growers Network

Please write in varieties chronologically starting with earliest date of harvest

Suggested Comments: ripens well in storage, shrinks/ shrivels, picks up odors, colors up, needs to be sorted...

Date of Harvest	Variety	Type of storage	Best date to take out of storage	Latest date with palatable fruit	Comments

Please return completed forms to jackorganick@yahoo.com
 Jack Knight, 603 Maple Rd., Luana, IA 52156; phone: 563-568-3308

The Mission of the Upper Midwest Organic Tree Fruit Growers Network:

To share information and encourage research to improve the organic production and marketing of tree fruits in the Midwest, and to represent the interests of growers engaged in such.

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. This newsletter is produced by MOSES, layout by Jody Padgham.

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