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THE OHIO STATE UNIVERSITY Newsletter Extension

Fruit ICM News

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Calendar

March 5-6: Michigan State Organic Fruit School, see article below for details.

March 10: Ohio Berry Growers School, OSU Piketon Research and Extension Center, Piketon, Ohio. Presenters for this year's school include Dr. Barclay Poling (North Carolina State University), Dr. Fumiomi Takeda (USDA Appalachian Fruit Research Station), and Peter Bierman and Brad Bergefurd (OSU Piketon). For more information call Brad Bergefurd at (740) 289-3727 or e-mail at bergefurd.1@osu.edu.

June 30: Ohio Fruit Growers Society Summer Tour and Meeting, Patterson Fruit Farm, Chesterland. For more information, contact John Wargowsky at (614) 249-2424, or e-mail at jwargows@ofbf.org.

Fruit Notes from the 2001 Ohio Fruit & Vegetable Congress Awards Breakfast

Professor Emeritus Fred O. Hartman was honored with the establishment and gift to the Ohio Fruit Growers Society Fred O. Hartman Endowment Fund. It was a sentimental time as many in the audience had been in Professor Hartman's classes.

Mitch Lynd was honored with the OFGS Distinguished Service Award for his many contributions to Ohio apples. Mitch continues to give leadership to the Midwest Apple Improvement Association as well as being called upon by many out- of-state groups to share his experience and insights. The American Fruit Grower magazine named Mitch the Apple Grower of the Year in 1995. He continues to serve The Ohio State University by membership on the Master Plan Lead Committee for the College of Food, Agricultural, and Environmental Science.

Moore Orchards were recognized for having the Grand Prize entry in the Ohio Cider Contest. Their cider was judged to excel in taste and visual characteristics. The Moores received a plaque to display at their place of business. Next September a local news release will be distributed to inform consumers of the Moores' award-winning cider. Jim Moore is Chairman of the Ohio Apple Operating Committee.

Two Ohio State Faculty Honored at OFGS Berry Growers Luncheon in Toledo

Source: Richard C. Funt Ohio Small Fruit Team

On February 8, two Ohio State faculty were honored for their dedicated service to the Ohio Berry Industry. Both have served in various capacities in field research, at extension grower meetings, and as educational speakers. They have also worked with vegetable crops.

The first honoree is Dr. Winston D. Bash. Winston has established himself as a cutting-edge, food safety educator to the general public, the learned, and the illiterate. He is the OSU Director of the Food Industry Center, where he conducts research and installs and repairs machinery for the testing of food processing procedures. With assistance from growers and the Ohio Department of Agriculture, Winston is there to build and preserve the Ohio cider industry.

Since the early 1990's Dr. Bash has participated in creating the Ohio Berry Strategic Plan and worked with the mechanical berry harvester trials and the ellagic acid content of Ohio berries. From field to the laboratory, he has conducted research on the post-harvest of black raspberries. He has acquired a freeze dryer for the purpose of testing hundreds of samples of berries to understand their role in reducing the risk of cancer. He has a rare talent for transferring the laboratory knowledge to the industry in a practical and understandable manner. He enjoys traveling and visiting cider producers, growers, and processors, helping to solve their problems. Winston is highly regarded no matter where he travels.

Peter M. Bierman, Research and Extension Associate in water quality and water management, has been a faculty member at the Centers at Piketon since 1994. He has researched the very complex aspects of soil quality and soil water management (irrigation, fertigation, nitrogen utilization, etc) as they relate to southern Ohio small fruit and vegetable production.

In one of the most difficult disciplines in agriculture, Peter has demonstrated a knowledge and understanding of the physical properties and chemical and biological qualities of soil. He has related this information to county agents, growers, and researchers. Peter became involved with small fruits, particularly with the long-term studies of raised beds and fertigation of high bush blueberries and the utilization of vermicompost in strawberry plastic high tunnel production and in black raspberry field production.

Some of these projects are to be completed in the coming years. His work in the utilization of compost for strawberry production has been highly received in the US, Europe, and Asia.

Both of these educators have worked quietly behind the scenes without the need for glitter and glory. They knew what was necessary to complete the task and did so with high quality results. The Ohio Small Fruit Team and the Ohio Small Fruit Industry have received "a full measure of devotion" and are grateful to have worked with and alongside them. As they depart from the university, we will welcome and honor their presence whenever they choose to walk in those hallowed halls.

Clarification of Eligibility for Special Apple Loan Program and Apple Market Loss Assistance Program

Apple growers who attended the Thursday morning tree fruit session at the Congress were informed by the State Office of the Farm Service Agency (FSA) that farmers could not receive both the Apple Loan and the Apple Market Loss Assistance. **That policy is still subject to interpretation. In other words, until a final decision is made, you should make application for either OR BOTH if you have the need**. At the very least, your applications will be on file and ready for the approval process.

Application for the Apple Market Loss Assistance Program should be through your local county FSA office. Application for the Special Apple Loan Program should be made at one of the 15 Ohio FSA Farm Loan Program Team Offices. Those offices (with phone numbers) as well as the counties served are as follows:

Bellefontaine: Champaign, Delaware, Hardin, Logan, Marion, Union, Wyandot (937) 599-5159

Celina: Allen, Auglaize, Mercer, Shelby, Van Wert (419) 586-3149

Defiance: Defiance, Fulton, Henry, Paulding, Putnam, Williams (419) 782-4781

Eaton: Butler, Darke, Hamilton, Miami, Montgomery, Preble (937) 456-4211

Georgetown: Adams, Brown, Clermont, Highland, Pike, Scioto (937) 378-6175

Jackson: Galia, Jackson, Lawrence, Meigs, Ross, Vinton (740) 286-5208

Lancaster: Athens, Fairfield, Franklin, Hocking, Licking, Pickaway (740) 653-4012

Mt. Vernon: Coshocton, Holmes, Knox, Morrow (740) 392-0801

New Philadelphia: Belmont, Carroll, Guernsey, Harrison, Jefferson, Tuscarawas (330) 339-4791

Norwalk: Ashland, Crawford, Cuyahoga, Erie, Huron, Lorain, Medina, Richland, Wayne (419) 668-3351

Ravenna: Ashtabula, Columbiana, Geauga, Lake, Mahoning, Portage, Stark, Summit, Trumbull (330) 297-7210

Tiffin: Hancock, Lucas, Ottawa, Sandusky, Seneca, Wood (419) 447-4687

Washington C. H.: Fayette, Madison (740) 335-0890

Xenia: Clark, Clinton, Greene, Warren (937) 372-4479

Zanesville: Monroe, Morgan, Muskingum, Noble, Perry, Washington (740) 454-2824

Tribute to Dr. Harold R. Willson

Source: Crop Observation & Recommendation Network (C.O.R.N.) 2001-3

Dr. Harold (Hal) Willson was involved in Integrated Pest Management for field crops as State Entomologist for The Ohio State University since 1983. Dr. Willson died January 23 at St. Luke's Hospital in Maumee from complications of a stroke at age 59. Hal had an active research and extension program to benefit Ohio's farmers in corn, soybean, wheat, and alfalfa insect control techniques as well as stored grain pest management. He loved to get into the fields and get his hands dirty. In addition, Hal was a great advocate for tree fruit IPM. This newsletter and the editor's Extension career in fruit are a direct result of his interest and support.

Dr. Willson was born in California and had degrees from University of California in Riverside, University of California at Davis and Humboldt State University. His interest in international work began by serving in the Peace Corps in India during the 1960's. He met his wife Sally during his Peace Corps service.

They had two children. His international work extended into his career at OSU and took him to places as diverse as South Africa, Switzerland, Columbia, Germany, Eritrea, Uganda, and the Ukraine. Prior to coming to OSU he was at Cornell University in Ithaca and the NY State Agricultural Experiment Station.

Hal got a great deal of pleasure working with farmers, whether they were from Ohio or Uganda. He had a great love of international work, and thus a memorial has been established to send his collection of entomology journals to Kampala, Uganda. Contributions can be made "H.R. Willson-Uganda Fund" c/o Steinhaus Financial Group, 7650 Rivers Edge Drive, Columbus, OH 43235.

Learn from Experts at MSU Organic Fruit School

Source: Susan Smalley smalley@msue.msu.edu

Michigan State University will offer its first Organic Fruit School **March 5-6, 2001**. Over a dozen individuals with extensive training and experience in producing and marketing organic fruit will come together to share their tips for success.

Topics for the two full days of instruction include building soil quality, certification guidelines, marketing, economics, organic transition, varieties to consider, pest management, ecology, nutrition, and

ground floor management.

A $200 registration includes instruction, a large resource notebook, lunches, breaks, and one dinner. Registration is open until Friday, February 23, 2001. Please contact Sandy Allen by phone at (517) 355-8362, fax at (517) 353-0890 or e-mail at allens@msu.edu for details and to register. Information is also available on line at http://www.hrt.msu.edu/organicfruitschol.htm.

Dr. Franco Weibel comes to MSU's Organic Fruit School from the Institute of Organic Farming in Frick, Switzerland. He will teach segments on organic transition, weed and groundcover management as well as discuss European experiences with organic fruit. Dr. Weibel's main projects include apple and cherry variety testing, nutrition, fruit thinning, soil management, root stock testing, plant protection, marketing concepts for organic fruit, quality assessment and method evaluation and development.

Dr. John Biernbaum, professor of horticulture at Michigan State University, will teach the segment on fundamantals of ecology and plant nutrition. For the past three years he has focused research efforts on greenhouse organic crop production, including nutrient management, with certified organic fertilizers and compost, and biological pest control with predators and parasites.

Dr. Fred Magdoff is professor of soils in the University of Vermont's Department of Plant and Soil Science. He will teach the soil quality segment of the organic fruit school. Dr. Magdoff has worked on problems of acid soils, use of manures and sewage sludges, phosphorus soil tests, and nutrient cycling. He earned a Bachelor's degree from Oberlin College (1963) and graduate degrees in soil science from Cornell University (1969).

Dr. Charles (Charlie) Edson is associate professor in Michigan State University's Department of Horticulture. He will discuss small fruit varieties for organic production. His current interests focus on the design, evaluation, and implementation of integrated crop management systems for tree fruit and vineyards. Dr. Edson received three degrees in horticulture from MSU.

Dr. Amy Iezzoni is the cherry breeder and geneticist at MSU. She will discuss cherry varieties for organic production. Dr. Iezzoni is the only tart cherry breeder in the US and has spent an extensive amount of time in Eastern Europe collecting germplasm for the breeding program. Drs. Edson and Iezzoni are also co- owners and Dr. Edson the general manager of a family vineyard and winery operation, Bel Lago Vineyards and Winery, in Leelanau County, Michigan. Integrated pest and vineyard management strategies, trellis systems, rootstocks and spray application technology are some of the current vineyard experiments.

Dr. Richard Harwood will teach a segment on managing organic matter inputs. A New Hampshire native, he was raised on dairy and vegetable farms. He holds degrees in vegetable crops and vegetable breeding from Cornell and Michigan State University. Dr. Harwood has provided leadership in research, teaching and extension of sustainable systems for Michigan's agriculture. Ongoing research includes the contribution of cover crops to soil biological activity and to nutrient flow.

Mrs. Pat Whetham, who will participate in the organic certification panel, has served on the Board of Directors of Michigan Organic Food and Farm Alliance (MOFFA) since 1992. An organic farm inspector, Mrs. Whetham has inspected for Organic Growers of Michigan for many years and for the Organic Crop Improvement Association (OCIA) since 1998. The farm that she and her husband Clarke own has been certified organic since 1988.

Dr. Scott Woody will discuss diseases and their management. He earned his Ph.D. in Genetics at the

University of Iowa, studying the molecular mechanisms in viruses and bacteria. He is currently working in the Department of Plant Pathology at the University of Wisconsin-Madison, where they are developing and implementing sustainable disease control strategies for managing scab and the fungal pathogens responsible for Sooty Blotch and Fly Speck disease in apples.

Mr. Jeffrey Moyer will provide a farm manager's perspective on putting together all the pieces. His educational background includes civil engineering, construction technology, and forestry/surveying. He is farm manager at the Rodale Institute in Kutztown, Pennsylvania.

Dr. Kathleen Kelley, who will discuss marketing, processing and economics, is a postdoctoral research associate in MSU's Department of Horticulture. Dr. Kelley earned simultaneous Ph.D. degrees in horticulture and botany & plant pathology at MSU.

Other resource persons for MSU's Organic Fruit School include Dr. George Bird, Brian Hackert, Dr. Eric Hanson, Amy Irish-Brown, Calvin Lutz, Dr. Ron Perry, Deepa Ramsnghani, Joe Scrimger, Dr. Mark Whalon.

Back Issues and Other Internet Resources

Back issues of the Ohio Fruit ICM News are available at http://www.ag.ohio-state.edu/~ipm/fruit/index.html. Issues for 1999, 2000, and 2001 are available, as well as indexes. This service is provided through the fine efforts of Bruce Eisley, Research Associate with the Ohio State University Department of Entomology.

Main Fruit IM News Web Page Menu

- Current Newsletter Issue
- Previous Newsletter Issues
- 2000 Fruit ICM Newsletter Index
- 2000 Fruit Pest Trapping Summary
- 1999 Fruit ICM Newsletter Index
- 1999 Fruit Pest Trapping Summary
- Ohio Fruit & Berry Acreage by County
- (Ohio Census of Agriculture, 1997)

(The indexes are created and maintained by Cathy Weilnau, Huron County IPM-ICM Program Assistant.)

Left-hand Menu Selections of interest to fruit growers from same webpage:

- IPM Elements for Ohio Tree Fruit
- Crop Profiles for apple, grape, & strawberry

Other Internet Resources: Crop budgets and production information for berry crops are available at: http://www.ag.ohio-state.edu/~nedoanr/sfnf/crops/berries.html.

The Strawberry IPM Update News from Dr. Mark Gleason, Iowa State Dept. Of Plant Pathology: http://www.exnet.iastate.edu/Pages/plantpath/strawber.html.

Crop budgets and production information for tree fruit crops are available at: http://www.ag.ohio-state.edu/~nedoanr/sfnf/crops/fruit.html.

Blueberry Cultivar Trial Results

Source: Dwight Wolfe, Horticultural Research Specialist and Jerry Brown, Extension Fruit Specialist Emeritus; Kentucky Fruit Facts, February 2001

The blueberry is a fruit crop that is native to North America. At present, Kentucky has a small established commercial blueberry market and an excellent potential for local sales, U-pick, and home use. This report updates earlier results reported in the previous issues of Fruit Facts on the blueberry cultivar trial established in the spring of 1993, at the UK College of Agriculture Research and Education Center, Princeton, KY.

This plot consists of eight cultivars spaced 4 feet apart within each row and 14 feet between rows. The pH was reduced from above 6 to 5.4 with elemental sulfur prior to planting. The planting is mulched yearly with sawdust and is trickle-irrigated with 1 gph vortex emitters. During the last week of May the planting is covered with netting and fruit is harvested from the first week of June through the first week of July. Shown in Table 1 are cumulative yield from 1995 thru 2000, the 2000 yield, and average percent fruit ripe by the end of the 2nd and 4th week of June, for the years 1995 though 2000. Duke and Sierra have produced the most fruit to date. Duke has also been the earliest ripening cultivar in our planting with 23.4% of Duke's fruit ripening during the first week of June. Sunrise also ripens early with 16.0% of its fruit ripening during the first week of June. Relatively little harvest is done for the other cultivars until the 2nd week of June. Harvest is completed for all cultivars by the end of the 4th week of June. The one exception is Nelson, which is picked through the first week of July.

These results can be useful to growers in selecting blueberry cultivars. Labor peaks and harvest periods that conflict with production and/or harvest of other crops may have to be evaluated with respect to cultivar yields. Another factor one may also want to consider in selecting a cultivar is berry size (Table 1). Berry size may vary from the size of a pea to the size of a cherry. Small berries are often preferred for cooking, while large ones are typically preferred for fresh use. Finally, one may also wish to consider how easy or difficult it is to pick a particular cultivar. Harvesters at Princeton rated the cultivars from easiest to hardest to pick as: Toro, Duke, Sierra, Sunrise, Bluecrop, Bluegold, Nelson, and Patriot. This article describes the results from the first five harvests from this planting and will be updated periodically.

Table 1. Blueberry Cultivar Trial[1]
UK Research & Education Center, Princeton, KY

Cultivar	Cumulative yield (lbs/bush)	2000 yield (lbs/bush)	Average % ripe fruit at end of week in June, for years 1995-2000		Berry Size (grams/berry)[2]
			2nd week	4th week	
Duke	43.9	11.4	61.7	94.8	2.2
Sierra	42.6	13.8	36.2	92.5	2.1
Nelson	37.9	15.7	12.1	66.8	2.3

Toro	37.4	14.4	31.7	80.1	2.6
BlueGold	36.0	11.3	38.1	81.8	1.9
Bluecrop	35.9	11.2	32.0	81.3	2.1
Sunrise	25.4	7.6	59.7	96.0	2.1
Patriot	21.6	5.4	54.1	94.1	2.2
Lsd (0.05)	4.2	1.9	5.4	2.4	0.1

[1] The planting was established in April, 1993. Plant spacing is 4 feet between bushes in rows 14 feet apart. There are three bushes per cultivar-rep combination.
[2] There are 28.3 grams per ounce.

Managing Strobilurin Fungicide Resistance in Fruit Crops

Source: John Hartman, Extension Plant Pathologist; Kentucky Fruit Facts, February 2001

Fruit growers in Kentucky are beginning to use a new class of fungicides to manage a variety of fungal diseases. These fungicides, called strobilurins can be effective and long-lasting tools for crop production, provided fungal pathogens do not develop resistance to the fungicides.

Origin and impact of strobilurin fungicides:

Strobilurins are derived from a natural anti- fungal compound that occurs in a small mushroom, Strobilurus tenacellus, which grows on fallen pine cones in Europe. The original compound has been modified in different ways to make it more stable and more effective as a fungicide. They have very low toxicity to birds, earthworms, beneficial insects, predaceous mites, and mammals (including humans). They break down quickly in soil but have good residual activity on foliage and fruit. Consequently, strobilurins are considered reduced-risk fungicides.

Examples of strobilurin fungicides:

There are three strobilurins labeled for fruit crop use: azoxystrobin, trifloxystrobin, and kresoxym-methyl. These products are listed in the Ohio Commercial Fruit Spray Guides (506A2 and 506B2). Strobilurin crop uses are expanding, so this list will likely grow to include stone fruits and other crops by the next growing season. More strobilurins (e.g.,pyraclostrobin) are being developed. Growers need to be aware that the efficacy of strobilurin fungicides against certain fungi varies from one crop to another. Sometimes different species of the same fungus or related fungi are insensitive to strobilurins; this should not be confused with fungicide resistance.

Mode of action of strobilurin fungicides:

Strobilurins are active against a wide array of plant pathogenic fungi, generally at fairly low rates. They work by inhibiting a single biochemical pathway involved in mitochondrial respiration in fungal cells. Mitochondria are the energy-producing units within cells, so disrupting mitochondrial function results in death of the fungal cells as they run out of energy. Strobilurins are excellent protectant fungicides

because they inhibit spore germination. The strobilurins are powerful antisporulants. If applied too late to protect, they allow lesions to develop, but few secondary spores form on these lesions. This is significant for diseases such as powdery mildew and apple scab, where the most damage is caused by infections from secondary spores that develop from previously infected leaves. They have strong protectant and antisporulant activities because they are primarily retained in the waxy plant surface cuticle. This means that they are more rainfast than traditional protectants and, although they don't redistribute very well from leaf to leaf in rainwater, they do redistribute well within the waxy layers of a given leaf (or fruit).

Strobilurins have trans-laminar activity. A few days after spraying, enough fungicide diffuses from the sprayed leaf to the unsprayed side to provide protection against fungal plant pathogens. This pattern of fungicide movement is unique to the strobilurins, and different manufacturers have devised their own trademarked names to describe it, e.g., "surface systemic" and "mesosystemic." Nevertheless, in the early season, as new growth is developing, repeated fungicide applications are still required because of the need to cover new tissues as they emerge.

The strobilurins generally are not as effective in a "kickback" or "curative" mode as are compounds with a higher degree of systemic activity, such as sterol inhibitors like Nova and Rubigan. Apple scab, however, may be an exception to this general rule because the apple scab fungus grows just beneath the cuticle. Just enough fungicide may actually "leak through" the underside of the cuticle to do the job.

Managing strobilurin fungicide resistance:

Because strobilurins inhibit a single biochemical step, resistant pathogen strains will develop when the fungi use a new pathway that bypasses the step blocked by strobilurins. Resistance to strobilurins already exists in powdery mildew in Europe and Asia, as well as in Botrytis of greenhouse crops. When fungi develop resistance, resistant isolates are virtually immune to the strobilurins. They multiply rapidly unless stopped by another fungicide. A strain resistant to one strobilurin will be resistant to all. Growers must incorporate resistance management into plans for using strobilurin fungicides. Fungicide use directions printed on the manufacturersí labels incorporate fungicide resistance management principles. For example, for most crops, no more than four sprays of any strobilurin may be used per season. A strobilurin fungicide can be used no more than three times in a row (two would be better). If two or three sequential applications are made, an unrelated fungicide must be used in the next two applications before strobilurin use can resume. Note that tank-mix combinations are not part of the anti-resistance strategy. Use of reduced rates, common in tank mixes, increases the possibility of fungicide resistance.

The recommended resistance management strategy minimizes the selection of resistant strains by limiting the number of selection events (sprays) and it limits the opportunity for resistant strains to multiply by using unrelated fungicides in rotation. It is important that fruit growers pay heed to the possible buildup of resistant fungus strains.

Be aware of potential phytotoxicity:

Strobilurin fungicides can be phytotoxic to some fruit crops. For example, azoxystrobin is phytotoxic to certain apple varieties (e.g., MacIntosh, those with MacIntosh parentage, and Gala), even at very low concentrations resulting from drift or spray tank residue. Kresoxym-methyl is phytotoxic to a few sweet cherry varieties i.e., all of the foliage on some varieties can be killed if trees are sprayed directly with the chemical. Trifloxystrobin is phytotoxic to Concord grapes when applied directly, and is specifically not labeled for use on that variety. Thus, each of these strobilurins has a problem with phytotoxicity to a few

varieties of one specific crop. In Kentucky many fruit growers also grow some vegetables or ornamentals and may be using the same sprayers for both. Growers need to be alert to potential phytotoxicity problems.

Chemical	Trade Names	Crop Usage	Diseases Managed
azoxystrobin	Abound	grapes	several fungi, see spray guide
	Heritage	turf and ornamentals (greenhouse, outdoors)	downy and powdery mildews, Botrytis, several root rots
	Quadris	tomatoes, potatoes, selected cucurbits	several fungi, see vegetable spray guide
trifloxystrobin	Compass	ornamentals (greenhouse, interiorscapes, nurseries)	rust, scab, powdery and downy mildews, Botrytis
	Flint	apples, grapes, selected cucurbits	multiple fungi, see spray guide
kresoxym-methyl	Cygnus	ornamentals (greenhouse)	powdery mildew
	Sovran	apples, grapes	multiple fungi, see spray guide

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