



# Newsletter Extension

## Fruit ICM News

Volume 8, No. 13  
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## Calendar

**May 6: Cider HACCP Training**, Fisher Auditorium, South Exhibit Area, OARDC, Wooster, 10 am to 1 pm. Sponsored by Ohio Department of Agriculture. For more information contact Duane Murray at 614-728-6348.

**May 10-12: Ohio Wine Competition**, Fisher Auditorium, North Exhibit Area and Conference Room, OARDC, Wooster, 2 pm to 6:30 pm. For more information contact Todd Steiner, 330-263-3881.

## Dave Ferree Retires

*Source: Tom Sachs, Executive Director, Ohio Fruit Growers Society*

Dave Ferree, Professor, Ohio Agricultural Research and Development Center in Wooster has retired after more than 30 years in OSU's Horticulture and Crop Science Department. His area of expertise is in fruit trees, grapes, pruning, training, rootstocks, and thinning. He has also focused on management systems for intensive orchards, with rootstock evaluation being a major emphasis. Other research concerned spring cooling to delay bloom, summer pruning, and root pruning. Dave also conducted research on grapes and apples regarding the influence of soil compaction on plant growth and fruiting.

He received his Bachelor's degree from Penn State University and Master's degree and Doctorate from the University of Maryland. Upon finishing a tour in the U.S. Army as a Captain, he joined Ohio State University in the department of horticulture in 1971. He conducted research in tree fruit with emphasis

on training systems, canopy light management, rootstocks, and various aspects of pruning and training. In 1994, viticulture was added to his assignment and a series of studies with emphasis on cultural practices to improve wine quality were initiated. He served as advisor to nine doctorate and ten masters students and through a team effort they published 204 refereed papers and 203 technical and trade journal articles and made 93 presentations at scientific meetings.

The Ohio Fruit Growers Society (OFGS) honored Dave at the 2004 Ohio Fruit & Vegetable Growers Congress with a special recognition dinner. Many past OFGS presidents were present to thank him for outstanding service to their industry and awarded him a plaque with the inscription "In recognition of many years of service to the Ohio fruit industry in striving to refine new technologies and techniques as well as his devotion to Ohio fruit growers as researcher, leader, and friend." Dave and his wife Sandy are retiring to their native Pennsylvania.

## 2003 Summer Red Raspberry Yield and Evaluation

Source: Shawn R. Wright, Al Welch, Lynn Miller, Thom Harker, Brad Bergefurd, and Richard C. Funt  
[http://southcenters.osu.edu/hort/data/2003/summer\\_reds03.pdf](http://southcenters.osu.edu/hort/data/2003/summer_reds03.pdf)

Eight varieties of summer red raspberries, PCS-1, PCS-2, OAM-W2, PCA-B4, MDJ-W4, NAN-5, Emily (JAM-2), and Lauren, were planted May 26, 2000 at the Van Meter Farm in the Scioto River Valley. Soils at the site are predominantly Huntington silt loam.

Plants were spaced 2 feet apart and plots were replicated 4 times. Recommended pest control measures were followed to control weeds, insects, and disease. The main broadleaf weed problem encountered was Canada thistle, which was pulled by hand.

Primary insect problems were Japanese Beetles <http://ohioline.osu.edu/hyg-fact/2000/2504.html>, sap beetles <http://ohioline.osu.edu/hyg-fact/2000/2047.html>, and yellow jackets. Diseases were not a significant issue.

### Results

Variety	Total lbs/acre	Coef. Variable	Gross \$/Acre*	Mean Wgt. (g)	Wgt. Range (g)
PCS-1	3686	19.2	5260.68	2.27	1.04-5.44
PCS-2	567	16.4	788.58	3.60	1.55-7.19
OAM-W2	3969	17.3	5883.25	3.41	1.37-6.42
PCA-B4	1701	26.9	2521.39	2.59	1.03-5.76
MDJ-W4	851	35.9	1136.18	4.12	1.47-5.05
NAN-5	2835	17.1	3994.80	3.68	1.44-8.02
Emily	284	53.3	363.16	3.91	0.66-6.75
Lauren	284	39.1	311.28	3.39	1.42-7.22

\*Assume average price of \$1.83/lb for red raspberries from the USDA NASS February 2002 report on Ohio raspberries. Gross return/acre is based on marketable harvest, which ranged from 60-81%. The labeling of Switch for control of Botrytis fruit rot (gray mold) will help us increase our percentage of marketable fruit in the future.

PCS-1 and OAM-W2 began producing the first week in June, followed by PCA-B4 the second week, and the remainder of the varieties the start of the third week in June. Harvest was completed by the 2nd week in July, with all varieties declining except PCS-2. The beetle pressure was severe at this time and made PCS-2 unfit for harvest.

### **Conclusions:**

It is important to note that gross sales do not include any costs of production, harvest, or packaging. Further evaluation of these varieties will continue for a number of years to determine the role they have in raspberry production systems in southern Ohio; however, Emily and Lauren are no longer replicated and are for observation only. While these varieties have shown promise in other areas and may be suitable in other locations, they did not perform up to expectations at this site.

## **Nitrogen Applications to Mature Blueberry Plants in Ohio**

*Source: Richard C. Funt, Department of Horticulture and Crop Science, Ohio State University*

Mature blueberry plants on upland soils in Ohio require annual nitrogen applications in the spring. Nitrogen applied annually is needed for high consistent yields from year to year. Ammonium sulfate (21%N) is the material of choice when the pH is 4.8 to 5.2. As with any nitrogen source, the best uptake of nitrogen is when soil temperatures approach 50F in the upper 2 to 4 inches. Research indicates that a four- to six-week period is needed for nitrogen fertilizer to become available in cold/wet soils. Secondly, nitrogen aids in flowering and fruit set. Most vigorous plants have sufficient nitrogen from the previous season before bloom for fruit set. Blueberry bloom (90% open) occurs in early May in central Ohio.

The standard Ohio nitrogen recommendation for mature blueberries is to apply 2 oz. of ammonium sulfate per plant on each of the following dates: April 15, May 15 and June 15. No applications of nitrogen should be made in July or August. Applications can be made to an acre of blueberries with most of the fertilizer broadcast into the drip line of the plant. Adjustments to this rate are based on recently applied green sawdust, leaf analysis done in late summer of the previous year, and/or in consultation with OSU Bulletin 861, Chapter 6.

Research in Ohio is being conducted as to the amount and timing of ammonium sulfate (dry) and soluble ammonium sulfate applied through a drip irrigation system. In general, the first application in April is at the full rate of 2 oz. as a dry application. However, the second and third applications could possibly be reduced by half when applied in irrigation (fertigation). Conclusions from OSU research are in the final stages.

Manure can be used in mature plantings. Fresh sheep and poultry manure at 1% nitrogen would be best applied and worked into the soil at 5,000 to 7,000 pounds per acre. In the first year, a second application would be necessary since only 50% of the N is available in any one year. The conversion of N continues throughout the year.

Composted animal manures are readily available in Ohio. While no research has been conducted with composted animal manures on blueberries, some are sold to corn growers for applications at 1,500 pounds per acre. Rates should be lowered by 50% if side dressed into the row and incorporated into the top 3 to 4 inches of soil. Since N conversion can continue over several years, rates applied in the second or consecutive years require leaf analysis as a basis for decisions.

Growers need to be aware that immature composts can 'burn' plants, hinder plant growth, or kill plants

outright. Therefore, growers need to carefully select compost.

## **U.S. Department of Labor Announces Agricultural Enforcement Plans for Ohio**

*Source: John Wargowsky, Executive Director, Mid American Ag and Hort Services*

Numerous agricultural employers, farm labor contractors, and migrant housing providers in Ohio received a reminder about the importance of compliance with the Fair Labor Standards Act (FLSA) and Migrant and Seasonal Agricultural Worker Protection Act (MSPA) from the Wage and Hour Division (WHD) of the U.S. Department of Labor.

I recently met with WHD officials to discuss their enforcement initiative for Ohio. They intend to target agricultural employers subject to MSPA with a particular emphasis on housing and transportation standards. WHD officials wish to assist employers in understanding their requirements. This article is adapted from WHD's notification to those employers they have on record.

The FLSA requires payment of at least the minimum wage, currently \$5.15 per hour. Most farm operations are exempt from the FLSA overtime provisions, but commercial packers, food processors, canneries, and landscapers are not considered farm operations under FLSA. Employees of these non-farm operations are entitled to overtime pay when they work more than 40 hours per week.

The FLSA also contains child labor requirements for both agricultural and non-agricultural operations. The child labor standards in non-agricultural operations such as commercial packers, food processors, canneries, and landscapers are more stringent than for farm operations. The FLSA also requires keeping specific time and payroll records for all covered employees.

MSPA applies to covered agricultural employers, associations, farm labor contractors, and providers of migrant worker housing. Agricultural employers include anyone who owns or operates a farm, ranch, processing plant, cannery, gin packing shed, or nursery, anyone who produces or conditions seed, or who either recruits, solicits, hires, employs, furnishes, or transports any migrant or seasonal agricultural worker. Farm labor contractors and their employers must be licensed to furnish, solicit, hire, employ, recruit, transport, or house migrant or seasonal workers. Agricultural employers are required to verify the licensed status of any farm labor contractor. You can ask to see the license and make a copy or you may call 1-866-487-9243 to verify the licensing.

Under MSPA, all persons who own or operate or control property used to house migrant agricultural workers must ensure that housing safety and health standards are met and that the property is inspected and licensed prior to occupancy. Any person who transports or causes the transportation of migrant and seasonal agricultural workers must comply with licensing, vehicle insurance, and vehicle safety requirements. MSPA also has record keeping, posting, and employee notification requirements.

Under joint employment principles that apply to both FLSA and MSPA, persons who use the services of farm labor contractors are almost always joint employers of the workers, and both parties are responsible for compliance. If either party fails to comply with the legal requirements, the other party is liable.

WHD encourages employers to visit the website <http://www.wagehour.dol.gov> or call the office at 614-469-5678 for questions or to receive the following list of publications. Fax requests for information may be sent to 614-469-5428.

- FLSA Handy Reference Guide
- Poster, FLSA, agriculture - English
- Poster, FLSA, agriculture - Spanish
- Child Labor rules in agriculture
- FLSA Record Keeping
- Poster, MSPA
- Fact Sheet #35, Joint Employment
- Poster, FLSA, non-agriculture - English
- Poster, FLSA, non-agriculture - Spanish
- Child Labor rules in non-agriculture
- FLSA Overtime rules non-agriculture
- MSPA Regulations Part 500
- General Agriculture packet that includes FLSA Posters (agriculture), MSPA posters, MSPA disclosure forms, Child Labor in agriculture rules, Record Keeping Fact Sheet #21, Joint Employment Fact Sheet #35, MSPA Regulations Part 500, Field Sanitation Fact Sheet

Mid American Ag and Hort Services stands ready to assist its members in complying with these regulations. All are welcome to visit <http://www.midamservices.org> for more information or to contact the organization at 614-246-8286 or e-mail [labor@ofbf.org](mailto:labor@ofbf.org) to learn more about becoming a member.

## **Planning for Prevention: Fresh Produce Safety from Pre-planting through Production**

*Source: Shari L. Plimpton, Ph.D., Food Safety Educator - Ohio Specialty Crop Food Safety Initiative via John Wargowsky, Executive Director, Mid American Ag and Hort Services*

In my travels around Ohio as a food safety educator, I enjoy the privilege of visiting a variety of fresh produce farm operations from orchards to muck crop growers. Occasionally I am greeted by a grower who wants to focus our consultation on the packinghouse. Most growers have reason to be proud of their efforts to handle produce safely postharvest.

While it is true many elements of a safe produce growing operation originate within the packing house, we are missing some of our best opportunities to prevent foodborne illness if we ignore pre-plant and production practices.

When food safety educators present Good Agricultural Practices and Good Handling Practices (GAPs and GHPs) we all emphasize and repeat (to the point of boring the audience) that fresh produce food

safety is based on Prevention, Reduction, and Education. I like to emphasize prevention based simply on common sense: the less likely microorganisms and other hazards are present on the produce, the less likely they will be able to slip through defenses in the packinghouse.

When looking for opportunities to reduce your risk from pre-planting through production, look hard at the following potential risk areas:

- Manure/fertilizer use
- Water (including spray and irrigation methods)
- Worker Health and Hygiene
- Pesticide Management
- Animal and Pest Control.

Consider each of these basic areas in terms of potential for contamination as you review your pre-planting and production practices. Pathogenic microorganisms (the ones that can make people sick) tend to come from soil, fecal (animal or human) contamination, humans, rodents, or insects. Also, keep things in perspective and recognize that we are looking for practical ways to minimize risk. Total elimination of the risk is not practical; therefore, it is not our goal.

Manure can be a source of contamination, although it is obviously not a concern for all growers. If you are using manure, recognize that you are handling a potential source of contamination which, when managed properly, will pose little risk to fresh produce. Composting, incorporation, and timing are the keys to using manure safely. Composting is preferred, since high temperatures and aerobic conditions will kill most pathogenic microorganisms. Preferably, apply manure in the fall or at least two weeks before planting. At the minimum, allow 120 days from the time manure is applied to the date of harvest.

If you don't use manure, do not assume your risk from fertilizer use is non-existent. Be aware of whether the fertilizer you are using includes any form of municipal biosolids. If so, get certification of the treatment process and a statement of guarantee that the waste has been processed in such a way as to eliminate the potential for pathogenic contamination.

Water is one of the more important potential vectors for contamination of fresh produce. First consider your source of water and the water quality. Surface water sources (lakes, ponds, streams, rivers, etc.) are a particular concern, as are reservoirs of rainwater. Wells should be evaluated for potential leaks that may result in siphoning and backflow, as well as the potential for surface water contamination.

Testing water for coliforms (recommend <100 cfu/ml) and E. coli (recommend negative) as indicators of pathogenic contamination is an option to consider. Also, consider the risks that may be associated with fertilizers or sprays as a result of mixing with water. Back flow valves are critical to preventing chemical and microbial contamination and maintaining the quality of your water source. Treatment of the water with chlorine or another type of sanitation method should be considered if you detect the risk of microbial contamination.

The other area of evaluation I like to emphasize is worker health and hygiene, including the use of sanitary facilities. Human contamination is a possibility, usually through sprays workers have inadvertently contaminated or unsanitary practices in the field. Encourage workers to report health problems and have alternative work available for those who are sick and could come in contact with the produce in the field. Also, make clean, sanitary facilities available very near the field and include some way for workers to wash their hands and provide single use towels.

Training and education are our most powerful tools for preventing contamination from workers. Free worker training videos are available for Ohio growers via the Ohio Specialty Crop Risk Management Initiative. This Initiative is being cooperatively managed by Mid American Ag and Hort Services (MAAHS), the Center for Innovative Food Technology, and OSU Extension ABE Center, in partnership with the USDA's Risk Management Agency.

Supervisory emphasis on sanitary worker practices and the use of posters as reminders help to reinforce food safety training. Free laminated posters about proper hand washing and field sanitation are also available for Ohio growers by contacting MAAHS.

Finally, a few words about pesticide management and pest control. Following the requirements for use and documenting pesticide use are generally adequate for managing pesticides safely. It is important to remember that pesticides are a potential hazard and should be carefully managed to avoid contamination. Excluding animals and pests from the field is critical toward your bottom line, just as it is for food safety. Animals and insects are both potential carriers of foodborne illnesses.

Once again, we are recommending managing for preventing and reducing the risk as much as is practically possible. Each operation is unique and should be reviewed to determine the potential risks for foodborne illness in each of the critical areas discussed above. Ohio growers can get help with the evaluation process and develop their own food safety program by contacting MAAHS and requesting a free on-farm consultation.

Order forms for free videos, posters, and more are also available. Contact MAAHS at 614-246-8286, fax at 614-246-8686, e-mail at [maahs@ofbf.org](mailto:maahs@ofbf.org), or visit <http://www.midamservices.org> and click on "Projects."

## **McDonald's Announces *Go Active!* Healthy Initiatives**

*Source: Patricia Henderson, Director of Education and Communications, USApple and The Wall Street Journal Online*

McDonald's announced its new balanced lifestyle initiatives yesterday at a press conference in Washington, D.C. Department of Health and Human Services Secretary Tommy Thompson was in attendance to lend his support to McDonald's for being an industry leader in making healthy alternatives available to consumers. He encouraged other restaurants and fast food chains to adopt a healthier, balanced approach to menu selection.

McDonald's new focus on health and fitness issues includes a June launch of fresh sliced apples (protected against oxidation with vitamin C) as an alternative for french fries in children's Happy Meals. The restaurant is also adding apple juice to its national menu selection.

## **Return of Mothra: OFM Management Options**

*Source: Art Agnello and Harvey Reissig, Entomology, Geneva, Cornell University, NY*

In recent years a number of management programs incorporated the use of such tactics as pheromone trapping, tracking of insect development, and tighter spray schedules that additionally may have included pheromone disruption, higher pesticide rates, and rotation of active ingredients to combat any latent resistance in the local internal worm populations. This being said, it should be noted that the

unfavorable (to insects) weather was also on our side last year, and added significantly to the success rate in the region; in fact, control failures were down significantly across the northeast.

With the new season under way, it's worthwhile to reflect on the strategies that were used last year, how they came out, and the prospects for keeping on top of this potential problem in 2004. Despite the documented occurrence of at least 3 species in the "NY internal worm club", it seems clear that the most problematic one for most growers is oriental fruit moth (OFM), which is due to start the first of its three annual flights sometime between the end of April and early May, considering the relatively slow progression of the spring events thus far. Harvey Reissig, Jan Nyrop, Debbie Breth, and I were involved in a number of field trials to assess OFM control strategies last year, so we thought it would be of use to recap the work done in 2003 and describe what we hope to achieve this season. Several seasonal programs were compared in large plots in 4 commercial orchards last year: an organophosphate insecticide (Imidan) standard, a synthetic pyrethroid (Warrior), a selective insecticide (Avaunt), a sprayable formulation of OFM pheromone, and Avaunt augmented with sprayable pheromone applications. A phenology model developed in Pennsylvania was used to time the insecticide treatments after the OFM biofix.

Early in the season after petal fall, initial observations indicated that this model was not accurately predicting the seasonal activity of this pest during the 2003 growing season. Therefore, initial sprays of all programs including pheromones were applied about 175-200 DD (base 45F), after trap catch increases in the plots suggested that the flight of OFM had begun. Two pheromone traps were set out in the center of each insecticide plot and in the center of each half of the 10A pheromone treatments during the first week in July prior to the beginning of the second flight. These traps were checked twice weekly throughout the season. A total of 600 fruits per plot was sampled on the trees throughout each block weekly from the last week in June until the last week in August. At harvest, 600 fruits were harvested from each plot (20 fruit on each of 30 trees), and cut to determine if any infestations of larvae were present.

Infestation levels in the weekly fruit samples in all of the treatments in most blocks remained very low from the end of July until the last sample was taken in August, and there was no particular pattern of increasing or decreasing damage in any of the treatments. The highest damage observed prior to harvest occurred in the last samples taken on August 24. Most of the fruit damage observed at harvest occurred between Labor Day and early October, and was presumably due to late season OFM activity. However, even though some infested fruit was observed in most of the treatments except in the Warrior plots, control was generally commercially acceptable (<2%) except in one Imidan plot (ca. 16%), and in the plots receiving only early sprayable pheromone treatments on two of the farms (2.8-4.4%). Warrior was the most effective insecticide treatment in the combined data for all orchards, followed by Avaunt and Imidan. The integrated program of Imidan and sprayable pheromones was slightly more effective in protecting fruit than the programs using pheromones alone during the early part of the season. For this year's trials, we are setting up plots with 10 grower cooperators across the Lake Ontario region. To get a clearer picture of the effectiveness of the treatments being tested, these plots have been selected so that about half of these farms would be classified as "high risk" for OFM problems, and the rest are assumed to be "low-to-moderate risk" based on field history. Four main treatment strategies will be evaluated in non-replicated large plots (5A or more) at each farm:

### **Preventive Pesticide Standard:**

Added to the grower's normal pesticide spray program for other direct pests (e.g., plum curculio, apple maggot, leafrollers) will be 3 special sprays directed at the newly hatching larvae of each OFM brood during the year. The first will be at pink, the second in early July, and the third between late July and early August, at a timing based on a developmental model (i.e., estimated first hatch at 175-200 DD base



45F after biofix). These sprays will consist of whatever material is elected by each respective grower, and can be an OP, a pyrethroid, or a selective newer material such as Avaunt or (pending timely registration) Assail. Moth catch in pheromone traps will be monitored weekly and fruit damage will be assessed bi-weekly starting in mid-July.

**Preventive/As-Needed Pesticide Program:**

One special spray at pink will be added to the grower's normal spray program, against the 1st brood larvae. Additional special sprays against the later broods will be made only if a) pheromone trap catches in the block exceed a threshold of 10 moths/trap per week, or b) bi-weekly fruit inspections (up to 1000 fruits per session) reveal larval feeding damage.

**Pheromone/As-Needed Pesticide Program:**

Long-life (Isomate M Rosso) pheromone ties will be deployed in April prior to the first brood flight to provide mating disruption for the entire season. The grower will apply a normal spray program as in the other blocks, and additional special sprays against OFM will be made only if a) any moths are caught in pheromone traps in the disrupted plot, or b) bi-weekly fruit inspections reveal larval feeding damage.

**Pheromone/As-Needed Pesticide Program:**

In cases where it is compatible with the grower's operation, a very small group (4-6) of trees will be left completely unsprayed to gauge the intrinsic OFM population pressure on the farm.

## Fruit Observations & Trap Reports

<b>Insect Key</b>	
AM:	apple maggot
CM:	codling moth
ESBM:	eye-spotted budmoth
LAW:	lesser apple worm
LPTB:	lesser peachtree borer
OBLR:	obliquebanded leafroller
OFM:	oriental fruit moth
PTB:	peachtree borer
RBLR:	redbanded leafroller
SJS:	San Jose scale
STLM:	spotted tentiform leafminer
TABM:	tufted apple budmoth
VLR:	variegated leafroller

**Site: Waterman Lab, Columbus**

Dr. Celeste Welty, OSU Extension Entomologist

<b>Apple:</b> 4/7 to 4/14/04 Bloom stage on 4/14/04	
Redbanded leafroller	45 up from 16
Spotted tentiform leafminer	432 up from 241
San Jose scale	0 first report

Codling moth	0 first report
Lesser appleworm	0 first report
Tufted apple budmoth	0 first report

**Site: Medina, Wayne, and Holmes Counties**

Ron Becker, IPM Program Assistant

<b>Apple:</b> 4/7 to 4/14/04	
Redbanded leafroller	Holmes: 51 first report
	Wayne: 34 first report
	Medina: 16 first report
Spotted tentiform leafminer	Holmes: 1200 first report
	Wayne: 5 first report
	Medina: 500 first report
Oriental fruit moth	Holmes: 0 first report
	Wayne: 0 first report
	Medina: 0 first report
Codling Moth	Holmes: trap set
	Wayne: trap set
	Medina: trap set

**Site: Sandusky County**

Ted Gastier, OSU Agent

<b>Peach:</b> 4/6 to 4/21/04	
Oriental fruit moth	0.7 (up from 0)

**Site: Erie County**

Dave O'Brien, Great Lakes UAP

<b>Peach:</b> 4/1 to 4/20/04	
Redbanded leafroller	0 first report
Oriental fruit moth	0 first report

**Pest Phenology**

Coming Events	Degree Day Accum. Base 50F
Spotted tentiform leafminer 1 <sup>st</sup>	17 - 251

catch	
Tarnished plant bug active	34 - 299
Oriental fruit moth 1 <sup>st</sup> adult catch	44 - 338
Rosy apple aphid nymphs present - 1 <sup>st</sup> egg hatch	45 - 148
Lesser appleworm 1 <sup>st</sup> flight	49 - 377
Pear thrips in pear buds	54 - 101
Green apple aphids present	54 - 156
Pear psylla 1 <sup>st</sup> egg hatch - nymphs	55 - 208

Thanks to *Scaffolds Fruit Journal* (Art Agnello)

## Degree Day Accumulations for Ohio Sites April 21, 2004

Ohio Location	Degree Day Accumulations Base 50	
	Actual	Normal*
Akron-Canton	112	98
Cincinnati	207	193
Cleveland	114	93
Columbus	172	134
Dayton	177	135
Kingsville	98	57
Mansfield	111	96
Norwalk	124	84
Piketon	209	210
Toledo	107	79
Wooster	132	85
Youngstown	109	85

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