



# Newsletter

Extension

## Fruit ICM News

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## Calendar

**September 16-18: Farm Science Review**, Molly Caren Agricultural Center, London, Ohio. See 2,100 acres showcasing a dynamic Ohio agricultural industry. For information contact Craig Fendrick, 614-292-4278 or email at [fendrick.1@osu.edu](mailto:fendrick.1@osu.edu). Web site: <http://fsr.osu.edu/>

## Ohio's Vintage Apple Crop Connects with Good Nutrition

*Source: Ohio Apple Marketing Program, Tom Sachs, Promotions Coordinator*

According to George Lawrence of Marion, President of the Ohio Fruit Growers' Society (OFGS), "Ohio's apple crop promises to be exceptional, maybe even a vintage crop! This year we've had plenty of rain and sunshine with moderate temperatures. Most growers I've talked to are expecting plenty of apples with excellent size, flavor, and color."

Ohio's wholesale and retail apple growers are gearing up to market this classic crop. Dano Simmons, Peace Valley Orchard in Rogers, Ohio, retails apples through his farm market but also wholesales many of his apples through Fruit Growers Marketing Association (FGMA), a grower-owned marketing cooperative in Newcomerstown, Ohio. Dano, an FGMA board member, explained that the cooperative sells to small independent grocery stores as well as to larger grocery chain stores. He encourages consumers who want to buy locally-grown apples to check the bag for their brand of "Autumn Pride" or if private label, see if the apples were packed by FGMA or simply ask the produce manager for Ohio apples.

Apples are becoming increasingly important to consumers interested in improving their nutrition through a better diet. The United States Department of Agriculture's Food Guide Pyramid recommends

that people eat a minimum of five servings of fruits and vegetables per day, including at least two servings of fruit. Preliminary studies have shown that eating apples and apple products may provide a range of potential benefits, including promotion of heart, lung, colon, liver, and prostate health.

In addition to better nutrition, apples may have some cosmetic benefits. According to Jeff Golub-Evans, DDS, a cosmetic dentist at New York University, "The mildly acidic nature and astringent quality of apples, combined with their rough, fiber-rich flesh, makes them the ideal food for cleansing and brightening teeth." Eating apples will have a toothbrush effect, and over time, help scrub away obstinate tooth stain. And most people choosing low-carbohydrate chocolates through the Atkins diet "would be better off nutritionally snacking on an 80-calorie apple," according to Leslie Bonci, a registered dietitian at the University of Pittsburgh and a spokeswoman for the American Dietetic Association.

Ohio has many farm and farmers' markets to supply consumers with fresh, just-picked apples. Apple growers are continuously harvesting apples from August to early November, according to weather conditions and crop volume. Ohio apple growers usually sell over 20 different varieties in their farm market or have a pick-your-own option for those who want to get closer to nature and gain first hand apple harvest knowledge.

These farm markets may be located by consulting the OFGS web site at <http://www.ohiofruit.org> or the Ohio Apple Marketing Program (OAMP) web site at <http://www.ohioapples.org>. The OAMP site also has more apple information addressing apple education, recipes, media events, festivals, etc. With all this information, consumers can locate new and exciting market outlets to enjoy Ohio's ready-for-harvest apple crop.

## **Worker Hygiene Keeps Produce Clean**

*Source: Shari L. Plimpton, Ph.D., Food Safety Educator, Ohio Specialty Crop Food Safety Initiative*

Few topics are so disliked, yet so critically important. Time after time, in presentations and training sessions I have conducted with growers; I watch with dismay as grim expressions stare back at me and eyes begin to gloss over. I can almost hear the groans. Whether it is disliked because everyone believes they already know about hygiene and it is reminiscent of being incessantly reminded by our parents to wash our hands before a meal, or because it brings to mind behaviors we have observed that make us shudder, is open for debate. What I do know is that worker hygiene can make all of the difference between a safe and successful operation, and one on the brink of disaster.

The good news for all of us from the USDA is that fruit and vegetable consumption per capita increased 24% between 1970 and 1997. The frequency of foodborne outbreaks associated with fresh produce has remained fairly constant as demonstrated by the Center for Disease Control (CDC) Passive Survey Data that shows the number of outbreaks hovering between 2% and 4% since 1983.

However, the CDC also reports that the number of reported cases of foodborne illness from fresh produce increased from 4% during 1983 to 1987 to 14% during 1993 to 1997. We can ascribe this increase in part to the increased consumption of fresh produce, changes in handling and distribution practices to accommodate that increase, and adaptation by the infective agents that make them more resistant to our sanitation procedures.

When we talk about Good Agricultural Practices (GAP) and Good Handling Practices (GHP), we describe the potential sources of contamination such as soil, manure, irrigation water, animals, wash water, equipment, and transport containers to name a few. We always include inadequate worker

hygiene as one of those sources, and rightfully so. However, one can argue that worker hygiene and sanitation is often the doorway for the other sources of contamination to reach the consumer.

*E. coli* O157:H7, Salmonella, Shigella, Campylobacter, Hepatitis A, and other viruses and parasites reside in human and animal intestines and find their way to human hands. It isn't difficult to imagine that *Listeria monocytogenes*, *acillus cereus*, and Clostridia bacteria, which are common in soil, can also find their way onto fresh produce via human contact. Workers who pick, package, and/or handle produce can transfer pathogens they have picked up via their hands or gloves and are the last human contact before produce reaches the consumer.

Our focus with agricultural workers is three-fold: Hand washing, Health and Hygiene. For **hand washing**, we focus on training with understanding to assure frequent and effective hand washing. As simple as it sounds, many people either simply don't wash their hands every time they have been potentially contaminated, or they fail to do a thorough job. The principles of hand washing that we teach in the GAP program are as follows:

- Wet hands with clean, warm water (where available), apply soap, and work up a lather.
- Rub hands together for at least twenty seconds (sing Happy Birthday to yourself twice; that takes about 20 seconds).
- Clean under the nails and between the fingers. Rub fingertips of each hand in suds on palm of opposite hand.
- Rinse under clean, running water.
- Dry hands with a single use towel.

**Worker health** is another key area to manage and promote. Watch for ill workers and don't let them handle produce. Also watch for open or infected wounds which could be a source of microbial contamination. Workers are unlikely to share their condition with you if they are afraid of losing a day's wages. If they are healthy enough and can safely do so, assign them to jobs that do not involve contacting produce or produce handling equipment. Provide adequate bandages and clean gloves for those with wounds. You will get a lot more cooperation in avoiding serious health risks if they are given reasonable options to work.

The third part of our strategy, **hygiene**, encompasses training (including hand washing), and supports worker health. Training to use sanitary facilities at all times, encouraging clean attire, and supporting the reporting of illness and injury with practical options all contribute to minimizing the risk of spreading pathogens. Educators strive to live up to our responsibility and present worker hygiene information in a useful and engaging manner. Fortunately, we are finding that workers are responding positively. We have observed, however, that the enthusiasm of focused training does drop off after about one month and requires continuous supervisory encouragement, as well as retraining to keep worker hygiene at safer levels throughout the season. And document any training you have done including the date and the workers' names. This establishes the seriousness of the training and provides the grower with a record of the effort made to grow, harvest, and pack produce safely.

Worker training is available in both English and Spanish in Ohio via the Ohio Specialty Crop Food Safety Initiative, a cooperative effort managed in partnership by Mid American Ag and Hort Services, The Ohio State University Extension Service ABE Center, and CIFT/EISC, Inc., the Center for Innovative Food Technology. Our goal is to support the healthier eating choice consumers make when they eat more fruit and vegetables by doing everything possible to decrease the risk of foodborne illness. Worker hygiene on the farm is the cornerstone to significantly reducing those risks.

The Ohio Specialty Crop Food Safety Initiative is financed in part or totally through a grant from the Ohio Department of Agriculture, the State of Ohio, and the United States Department of Agriculture under the provisions of the Specialty Crop Grant. For more information on the Ohio Specialty Crop Food Safety Initiative, contact John Wargowsky at 614-246-8286 or [jwargows@ofbf.org](mailto:jwargows@ofbf.org), or Mary Donnell at 419-354- 6916 or [donnell.8@osu.edu](mailto:donnell.8@osu.edu) or visit <http://www.midamservices.org> and click on "projects."

## Supporting Information

Source: <http://www.cdc.gov/mmwr/PDF/ss/ss4901.pdf>

Since 1973, CDC has maintained a collaborative surveillance program for collection and periodic reporting of data on the occurrence and causes of foodborne-disease outbreaks (FBDOs) in the United States.

During 1993-1997 a total of 2,751 outbreaks of foodborne disease were reported (489 in 1993, 653 in 1994, 628 in 1995, 477 in 1996, and 504 in 1997). These outbreaks caused a reported 86,058 persons to become ill. Among outbreaks for which the etiology was determined, bacterial pathogens caused the largest percentage of outbreaks (75%) and the largest percentage of cases (86%). *Salmonella* serotype Enteritidis accounted for the largest number of outbreaks, cases, and deaths; most of these outbreaks were attributed to eating eggs. Chemical agents caused 17% of outbreaks and 1% of cases; viruses, 6% of outbreaks and 8% of cases; and parasites, 2% of outbreaks and 5% of cases.

Of those cases involving fruits and vegetables during this time period, an average of 13 outbreaks occurred each year. However, these 13 outbreaks affected 2,471 persons and involved 2 deaths.

## SmartFresh™ The Smart Choice for Apples

Source: <http://www.fruitgrowersnews.com> and <http://www.smartfresh.com> and SmartFresh product information

SmartFresh , a relatively new storage tool for apple growers, is considered a breakthrough in apple storage technology. The AgroFresh, Inc. product is used in apple storage facilities to maintain the crunch, juiciness, and taste of apples during and after storage.

To understand the role of SmartFresh, it is helpful to understand how fruits and vegetables ripen, age, and eventually spoil. The key is the fruit's own internal production of a naturally occurring plant substance called ethylene, and the fruit's sensitivity to outside sources of ethylene, such as cars, cigarette smoke, and other ethylene-producing fruits. This continuing cycle of ethylene in the air has made storage, shipping, and quality of fresh produce a delicate balancing act.

Successful use of SmartFresh depends on an airtight room so that the active ingredient does not leak out and compromise the application. Room inspections and modifications must occur before the SmartFresh application begins.

- ALL entrances and openings must be closed off
- ALL cracks and seams must be covered with duct tape or sealant
- NO airflow should be felt along any seam

The AgroFresh company has tested many non-CA rooms and have found there is a wide range of airtightness, and not all are satisfactory. AgroFresh has developed a proprietary evaluation method to indicate whether an application of SmartFresh will be successful in a refrigerated storage room, tractor trailer, or sea container. If a storage room fails the test, it may be possible to make improvements that would bring the room to an acceptable level for an application. A computerized evaluation involves 6 hours of data collection, followed by data processing at AgroFresh facilities. This can only be done before the apple harvest begins. There is a fee for the evaluation and the room validation is good for one use season of SmartFresh. Rooms that are used for CA do not require testing.

There must be no equipment running during the application that would destroy SmartFresh.

**OK:** Refrigeration

Lime for CO<sub>2</sub> control

**Not OK:** Ethylene Control

Ozone Generators

Scrubbers (CO<sub>2</sub>)

### Specific Varietal Recommendations for SmartFresh

Variety	Starch Index*		Firmness	Harvest to Treatment with SmartFresh Intervals (days)	
	Scale 1-6	Scale 1-8	Pounds	Minimum	Maximum
Fuji	1.5-4.5	2.0-6.0	16.0 min	10	21
Gala	2.5-4.5	3.0-6.0	16.0 min		7
G. Delicious	2.5-5.0	3.0-6.5	15.0 min		10
Honeycrisp	-	6.0-7.5	14.0 min		7
McIntosh	-	4.0-6.0	15.0 min		3
Mutsu	-	3.5-5.5	16.0 min		10
R. Delicious	1.5-3.5	2.0-4.5	16.0 min		7

\*Starch Index: Scale 1-6 = WA, Scale 1-8 - Cornell

### Degree Day Accumulations for Ohio Sites August 27, 2003

Ohio Location	Degree Day Accumulations			
	Base 45° F		Base 50° F	
	Actual	Normal	Actual	Normal
Akron/Canton	2871	2930	2133	2227
Cincinnati	3377	3680	2599	2889
Cleveland	2955	2876	2238	2187
Columbus	3284	3235	2515	2497

Dayton	3146	3314	2387	2575
Kingsville	2547	2677	1864	2023
Mansfield	2723	2905	1991	2206
Norwalk	2841	2874	2124	2189
Piketon*	3423	3603	2612	2811
Toledo	2854	2859	2139	2179
Wooster	2981	2761	2231	2071
Youngstown	2610	2705	1890	2024

\* Piketon data partially missing, Jackson data substituted

## Pest Phenology

Coming Event	Degree Day Accum. Base 50° F
Apple maggot flight subsides	1904 - 2573
Obliquebanded leafroller 2 <sup>nd</sup> flight subsides	1930 - 2573
Redbanded leafroller 3 <sup>rd</sup> flight subsides	2013 - 2402
Oriental fruit moth 3 <sup>rd</sup> flight subsides	2018 - 2377
Spotted tentiform leafminer 3 <sup>rd</sup> flight subsides	2228 - 2472

Thanks to Art Agnello, Scaffolds Fruit Journal

## Fruit Observations & Trap Reports

Insect Key	
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

Heavy rains were reported at Waterman Lab in Columbus yesterday, delaying trap survey. Complete report will appear in next week's newsletter.

**Apple:** 8/20 to 8/27/03

CM: 18.0 (down from 50.0)

LAW: 3 (same as last week)

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

Ron Becker, IPM Program Assistant

**Apple:** 8/13 to 8/20/03

RBLR:	Holmes: 5.3 (up from 2.3)
	Medina: 11.3 (up from 2.8)
	Wayne: 4 (up from 1)
CM:	Holmes: 7.1 (down from 9.2)
	Medina: 1.9 (down from 3)
	Wayne: 12.8 (down from 13.6)
AM: (average of the sum of 3 traps per block)	Holmes: 11.7 (up from 2)
	Medina: 3.5 (down from 5.3)
	Wayne: 1.0 (down from 6.3)

**Peach:** 8/13 to 8/20/03

LPTB:	Holmes: 3 (up from 1)
	Medina: 0 (same as last week)
	Wayne: 0 (down from 3)
OFM:	Holmes: 0 (same as last week)
	Medina: 0 (same as last week)
	Wayne: 0 (same as last week)
PTB:	Holmes: 0 (down from 3)
	Medina: 0 (same as last week)
	Wayne: 0 (down from 5)

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

Ron Becker, IPM Program Assistant

**Apple:** 8/20 to 8/27/03

RBLR:	Holmes: 23.7 (up from 5.3)
	Medina: 22.5 (up from 11.3)
	Wayne: 10.5 (up from 4)
CM:	Holmes: 3.4 (down from 7.1)
	Medina: 2.4 (up from 1.9)
	Wayne: 13.3 (up from 12.8)
AM: (average of the sum of 3 traps per block)	Holmes: 6.7 (down from 11.7)
	Medina: 6.3 (up from 3.5)
	Wayne: 4.0 (up from 1)

**Peach:** 8/20 to 8/27/03

LPTB:	Holmes: 1 (down from 3)
	Medina: 0 (same as last week)
	Wayne: 4 (up from 0)
OFM:	Holmes: 0 (same as last week)
	Medina: 0 (same as last week)
	Wayne: 0 (same as last week)
PTB:	Holmes: 5 (up from 0)
	Medina: 0 (same as last week)
	Wayne: 12 (up from 0)

**Site: East District: Erie & Lorain Counties**

Jim Mutchler, IPM Scout

**Apple:** 8/19 to 8/26/03

AM:	1.3 (up from 1.1)
CM:	10.8 (up from 9.3)
LAW:	25.3 (up from 21.8)
OFM:	2.9 (down from 3.5)



RBLR: 22.0 (up from 5.2)

SJS: 0.0 (down from 98)

Other apple pests: white apple leafhopper, Japanese beetle, and green apple aphid

Beneficials: green lacewing, native lady beetle, *Stethorus* lady beetle, and brown lacewing

**Peach:** 8/19 to 8/26/03

LPTB: 18.0 (up from 10.5)

OFM: 7.0 (up from 6.3)

PTB: 4.3 (up from 3.2)

RBLR: 16.3 (up from 8.0)

Other peach pests: OFM strikes, lilac borer

Beneficials: green lacewing and brown lacewing

**Site: West District: Huron, Ottawa, Richland, & Sandusky Counties** - Gene Horner, IPM Scout

**Apple:** 8/19 to 8/26/03

AM: 1.2 (down from 4.3)

CM: 3.3 (down from 6.9)

LAW: 0.1 (down from 1.8)

OFM: 2.4 (up from 2.1)

RBLR: 24.1 (up from 23.9)

SJS: 9.1 (down from 0.7)

STLM: 61.7 (down from 658)

Other apple pests: eyespotted bud moth

Beneficials: green lacewing, orange maggot, brown lacewing, and banded thrips

**Peach:** 8/19 to 8/26/03

LPTB: 11.0 (up from 8.6)

OFM: 0.9 (down from 1.0)

PTB: 1.5 (down from 3.3)

RBLR: 23.3 (up from 10.2)

Other peach pests: European red mite, dogwood borer, green peach aphid, and lilac borer

Beneficials: green lacewing, brown lacewing, orange maggot, banded thrips

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