



Ohio Fruit ICM News



Editor: Ted W. Gastier, Extension Educator, Agriculture
Ohio State University Extension, Huron County
180 Milan Avenue, Norwalk, OH 44857 419-668-8219
FAX: (419) 663-4233 E-mail: gastier.1@osu.edu

Volume 9, No. 21

June 9, 2005

In This Issue

Calendar
Ohio Fruit Growers Summer Tour
Vineyard Fertilization
Fire Blight - What Now?
Orange Rust: A Colorful Nemesis of Brambles
Cancer Fighting Berry Research
New Health Risk Information for Applicators
Soybean Rust Management Could Affect Apples
Degree Day Accumulations for Ohio Sites
Pest Phenology
Fruit Observations and Trap Reports

June 28: Ohio Apple Marketing Program Board Meeting, Burnham Orchards, Berlin Heights, OH, 8:00 to 9:30 p.m. Contact Tom Sachs at 614-246-8290 or e-mail Tsachs@ofbf.org or Kathy Lutz at 614-246-8292 or e-mail growohio@ofbf.org.

June 29: Ohio Fruit Growers Society Summer Tour, Burnham Orchards, Berlin Heights, OH, 8:00 a.m. to 3:00 p.m. Check out <http://www.ohiofruit.org/ofgs/> (click on 2005 Summer Tour). Burnham's website is <http://www.burnhamorchards.com>.

Ohio Fruit Growers Summer Tour is in Berlin Heights

Source: Tom Sachs, by Randi Espinoza, Ohio Fruit Growers Society

Pick the Ohio Fruit Growers Society (OFGS) Summer Fruit Tour, Wednesday, June 29, in Berlin Heights, for the latest resources on disease control, increased production, and technological advances that will help you improve crop yield and quality. Sponsored by OFGS, the Ohio Agricultural Research and Development Center (OARDC), and Ohio State University Extension, the annual event runs from 7 a.m. to 2 p.m. at Burnham Orchards, 8019 State Route 113, Berlin Heights.

Cost is \$15 for OFGS members, \$20 for members' families, \$20 for non-OFGS members, and \$25 for non-OFGS members' families. Lunch will be provided by Ag Credit. Registration begins at 7 a.m. Orchard tours start at 8 a.m. and run every half hour. Tour presentations include "A Brief History of Burnham Orchards" by owner Joe Burnham, who will also talk about the different training systems for apple growth used in his operation.

Calendar

June 16: Organic Apple Orchard Tour: MSU and the Organic Apple Team invite you to visit the Clarksville Horticulture Experiment Station Organic Apple Orchard on Thursday, June 16, 2005 from 1:00 to 4:00 p.m. The five acre site, with over 2500 trees, is in its fifth growing season. We will review the ground floor management, soil biology/fertility, and pest management strategies and answer questions about organic certification and marketing. Please RSVP to Sandy Allen by Monday, June 13, 2005. Let us know if you are a first time or a return participant. Phone 517-355-5191 ext. 1339, email: allens@msu.edu, or register online at: <http://www.hrt.msu.edu/Registrations/OrganicApple.htm>. For additional program information call CHES at 616-693-2193 or email the station at: stewar28@msu.edu.

June 28: Ohio Fruit Growers Society Board Meeting, Burnham Orchards, Berlin Heights, OH, 6:30 to 8:00 p.m. Contact Tom Sachs at 614-246-8290 or e-mail Tsachs@ofbf.org or Kathy Lutz at 614-246-8292 or e-mail growohio@ofbf.org.

Other presentations are “Apple Scab Control” by Mike Ellis, plant pathologist with OARDC and OSU Extension; “High-Value Apple Varieties” by Bill Gammie, Quarry Hill Orchards, Berlin Heights; and “Integrated Pest Management (IPM) Scouting” by Ted Gastier, OSU Extension, Huron County office.

“In addition to the orchard tours, we will tour Burham’s brand-new, 14,000-square-foot apple-packing facility, which was built to increase the efficiency of the packing operation and to increase work space around the apple packing line,” said OFGS Executive Director Tom Sachs. “Attendees will be able to tour the dry refrigerated storage area, which includes three loading docks that allow the fruit to be cooled immediately after packing and keep it cool until it’s loaded onto the shipping trucks.”

During the packing facility tour, participants can witness an educational food-safety audit conducted by Shari Plimpton, Center for Innovative Food Technology and food safety educator with the Ohio and Indiana Specialty Crop Food Safety Initiative. The tours will be followed by lunch from 11 a.m. to 1 p.m. and the OFGS business meeting beginning at 1 p.m.

The summer tour will also gather more than 30 suppliers that support the fruit industry. “Interaction with these exhibitors will allow participants the unique opportunity to network with industry professionals and discuss and learn about products and technology essential to growing and marketing better fruit,” Sachs said.

A tour of The Berlin Fruit Box Company, a long-standing local basket manufacturer, is scheduled at 2 p.m. For more information, contact Sachs at 614- 246-8290, tsachs@ofbf.org, or Kathy Lutz at 614- 246-8292, klutz@ofbf.org.

Vineyard Fertilization

Source: Dave Scurlock and Imed Dami, OARDC, Ohio Grape Electronic Newsletter, June 3, 2005 It is nearing time to start applying fertilizer if you have not done so already. In the past we would apply fertilizer in early spring before bud break because we had some time before spring work really got started. We had finished pruning, tightened the wires, tied up the vines, replanted missing vines, and removed our hills on the vinifera. **Now what?** Let’s throw on some fertilizer and get that done so we can go on to some other operation.

Is timing of fertilization really that important?

The following excerpts are from an earlier report out of the *Vineyard Vantage*. A report by Eric Hansen indicated that multiple applications of nitrogen may be needed to maintain sufficient nitrogen in the root zone over the extended period of peak demand, particularly on sandy soils. Efficiency of nitrogen uptake may also be affected by fertilization placement and rate. Greatest absorption may be achieved when fertilizer is applied over the soil containing the most grapevine roots, which is normally the herbicide strip immediately under the trellis. This is most important in younger vineyards, where the root system is not as extensive.

As a general rule, the percentage of fertilizer nitrogen absorbed decreases as the rate of nitrogen increases. Although some growers apply high rates of nitrogen in a single application, greater efficiency of nitrogen uptake may occur from multiple applications banded beneath the vine when the vine demand is high.

Studies have shown that application of nitrogen while grapes are dormant is inefficient because a high percentage of the applied nitrogen is leached from the soil before uptake by the vine. Vines absorb nitrogen relatively slowly between budburst and bloom, most rapidly between bloom and veraison, and then slow down between veraison and harvest. Thus, the most efficient time to apply nitrogen would be shortly after bloom when the vines are growing rapidly.

Application Rate

Generally we apply approximately 50 pounds of actual nitrogen per acre each year to juice grapes, with lower rates (30 pounds) applied to wine grapes.

The **actual nitrogen** that you apply is calculated by taking the form of nitrogen that you are applying such as ammonium nitrate, which is 33% nitrogen, and multiplying the weight of a 50-pound bag of ammonium nitrate, which will give you 16.5 pounds of **actual N** that you are applying per bag. Approximately three 50-pound bags will give you 50 pounds of actual N per acre if applied at 0.27 pounds of ammonium nitrate per vine at an 8 foot by 10 foot spacing (545 vines/acre).

Example 2: Urea (45% N) x 50 lb bag of Urea = 22.5 lbs of **actual N/bag**. If you are going for 50 lbs of **actual N** per acre, then:

50 lbs/acre divided by 22.5 lbs of **actual N** = 2.22 bags per acre using Urea at the 50 lb per acre rate.

Training systems that permit large vines such as **Geneva Double Curtain (GDC)** require higher application rates of 75-100 pounds of actual N per acre. Larger amounts are best applied as split; half rate applied by bloom and the second half by veraison. Younger vineyards require less nitrogen usually in the 15 to 20 pounds of actual nitrogen per acre. Nitrogen is readily available between the pH values of 6.0 and 8.0, but is less available at lower or higher pH levels.

We would like to see pH values around 6.0 to 6.5. The American varieties can tolerate lower pH values of 5.5 better than vinifera type grapes. Liming should be done after you have tested your soil and determined a need, and the absolute best time to lime is well in advance of planting so that you can incorporate the lime into the soil 8 to 12 inches deep.

The pH is much more difficult to correct after the planting because of the slow movement of the lime through the soil. Lime can also increase the availability of other elements such as phosphorus, calcium, magnesium, and molybdenum.

Dolomitic lime can be used to raise the magnesium content in the soil and pH, and a calcitic lime can be used to raise the calcium content as well as the pH in the soil. If the soil pH was not corrected before planting, the pH may be raised over time with multiple applications of lime of 2 to 2.5 tons per acre twice a year.

Can potassium additions help?

Next to nitrogen, we have to consider potassium as one of the next most important elements to maintain good vine health and sugar development. Application rates should be based on vine vigor, soil tests, and petiole analysis. For soil applications 100 to 400 pounds per acre of 0-0-60 is recommended. The number of applications may be higher in clay and sandy soil if the pH is above 6.5. Apply potassium in 2-foot bands under the trellis to assure that the major portion of the material will be available for root uptake. Potassium can be applied anytime, but the maximum uptake will be between bud break and veraison and again immediately after fruit harvest.

Organic fertilizer?

Anytime you can add organic material to the fields it is going to help the health of the soil and tilth. An organic material may vary greatly in composition, depending on its source. When such a material is applied as a fertilizer, an unknown quantity of nitrogen, phosphorus, potassium, or other elements are applied, unless it has been analyzed. Cost to obtain and spread and amounts are usually higher unless a readily available source is part of the operation. Observations of growth and petiole analysis can tell you if you are getting enough nutrients to the vines. Organic materials, such as mulches, can have a detrimental effect of tying up nitrogen that is used by microorganisms to break down the mulch into a usable form for the vine. Additional nitrogen to feed both the vine and microbes will alleviate this problem.

What about fertilizing vines that were winter injured?

The rule here is wait and see. We are definitely going to want to reduce the normal application rates of nitrogen to vines that are showing signs of winter injury. That is delayed bud break or uneven bud break and shoot growth. If you are unsure about your crop, it might be advisable to split the nitrogen application this year and apply a half-rate at bloom (two thirds of nitrogen goes to vegetative growth, one third to fruit). If you have very few shoots, this may not be a year to apply nitrogen. Watch for nitrogen deficiency symptoms (thin weak growth, light green foliage). If symptoms develop, apply a foliar spray of urea around veraison. Foliar sprays can be a corrective for deficiency symptoms, but are not a permanent solution to vineyard fertility problems.

Fire Blight - What Now?

Source: John Hartman, UK Extension Plant Pathologist, Kentucky Fruit Facts, June 2005

Fire blight symptoms are appearing in commercial apple orchards and in backyard apple trees throughout Kentucky. The plant disease diagnostic laboratories have been reporting high numbers of fire blight samples from apples and pears for the last several weeks. Many growers wonder why the disease is widespread and yet sporadic this year.

- Fire blight is widespread because, for several distinct times this spring, conditions were ideal for infections, especially during bloom, when primary infections take place. Depending on the location, if apples or pears were in flower around April 11 & 12 or on April 22, conditions were good for fire blight infections. Frost in some areas may also have played a role.
- The disease is sporadic because not all trees faced ideal fire blight conditions this spring. Small differences in microclimate, based on tree location or exposure, can make a critical difference in disease potential. In addition, timing of bloom in relation to the weather affected whether or not fire blight would be a problem.
- Fire blight has been a threat over an extended period because cool weather interspersed with the disease-favorable warm weather slowed tree development this spring and because some trees may produce many "trailing blooms".
- Growers and gardeners with infected trees are often tempted to remove infected branches as soon as they see them. In many cases, this would be the wrong strategy, because removing branches can encourage new shoots to develop and these new shoots would also be susceptible to new infections. If fire blight strikes are discovered early, before leaves have turned completely brown, timely removal of infected shoots can help slow the spread of the disease. However, most growers do not discover the disease early enough for this to be helpful. So what is to be done with infected trees now?
- Growers should just let the disease run its course, allowing the tree defenses to stop fire blight spread within the tree. Dead shoots and branches should be removed in winter when there is little chance of spreading the disease.
- Some growers may feel compelled to cut out fire blight infections, possibly for cosmetic or aesthetic reasons. What then? If pruning is begun after obvious symptoms appear, cut back in the direction of a healthy internode of at least two-year-old wood, leaving a stub several inches long. Rely on the tree's natural defenses to prevent further movement into the branch. If needed, paint the stub with bright paint to make it more obvious. This stub can then be safely removed in the winter. Leaving infected stubs rather than pruning all the way back to the main branch reduces the chances for development of undesirable water sprouts in response to pruning.
- The reason not to prune infected branches back to a spur or crotch in summer is because it may not be noticed in winter and could be overlooked. It should not be necessary to sterilize cutting tools between cuts if only blighted shoots are being removed.
- Do not engage in normal summer pruning and training at the same time, as fire blight removal without wiping the cutters with sterilizing solutions like Lysol, 70% alcohol, or 10% bleach. Don't forget to remove the infected stubs along with dead shoots and cankers next winter.
- Do not apply chemical controls such as streptomycin. They are only effective if used during the normal bloom period.
- Remove trailing blooms to prevent late spring and summer infections.

Orange Rust: a Colorful Nemesis of Brambles

Source: Annemiek Schilder, MSUE Plant Pathology, Fruit Crop Advisory Team Alert, Vol. 20, No. 9, June 7, 2005

Symptoms and Biology

The main rust disease that affects blackberries, dewberries, and black raspberries is orange rust. Red raspberries are immune to the disease. Characteristic symptoms are bright orange, powdery blisters on the undersides of leaves (link to photo

<http://www.ipm.msu.edu/CAT05_ft/F06-07-05orangerust.htm>). Before the blisters burst open, they look waxy or shiny, as if covered with lacquer. Young shoots are often spindly and clustered, new leaves are misshapen and pale green to yellowish. On black raspberries, the rusted leaves start to wither and drop in late spring to early summer. New leaves produced towards the tips of canes may appear normal, giving the impression that the plant has “grown out” of the disease. However, such canes will remain infected and will produce a mass of spindly shoots with no blossoms the following spring. The plant becomes systemically infected and remains so for the rest of its life. Orange rust is not known to kill plants, but it can significantly reduce vegetative growth and yield. The disease can be caused by either of two closely related fungi, *Arthuriomyces peckianus* and *Gymnoconia nitens*.

The orange aeciospores are spread by wind and can infect leaves of healthy plants with long periods of leaf wetness provided by rain or dew. Orange rust is favored by relatively low temperatures (50 to 70°F).

The fungi overwinter and survive in the crown and roots of infected plants, leading to the production of new infected canes every year.

Cultural Control

While there were no chemical control options for this disease up until recently, we now have several excellent fungicide options. This does not mean that we should abandon cultural practices, such as establishing new plantings from disease-free nursery stock, which will also help in avoiding virus diseases. If any plants show signs of the disease during the spring in which they were set out, this means they were already infected at the time of

planting.

Upon inspection of plants each spring, any infected plants (which are economically worthless) should be dug up and destroyed promptly, before rust pustules mature and spores are liberated. The location of those plants should be clearly marked, and any new suckers arising from root pieces left in the ground should be removed and sprayed with an approved systemic herbicide. It is also prudent to remove infected wild brambles in nearby wooded areas and fence rows. Management practices that improve air circulation, such as thinning out canes within the row, pruning out floricanes immediately after harvest, and effective weed control aid in disease control by reducing leaf wetness duration. Some blackberry cultivars (e.g., Eldorado, Raven, and Ebony King) are reported to show resistance to orange rust, but no black raspberry cultivars are known to be resistant.

Fungicide Options

The best fungicide options are Nova (myclobutanol), Pristine (pyraclostrobin + boscalid), and Cabrio (pyraclostrobin). While Abound (azoxystrobin) is labeled for use on brambles, it does not have orange rust (or any other rust for that matter) on the label. Nova may have a bit better curative activity than the others because of its greater systemicity, which would make it the material of choice during or after a rainy period with inoculum already being present. Each of the above-mentioned fungicides will also control various other cane, leaf, and fruit diseases.

Since Pristine has two active ingredients, it has the broadest spectrum of activity. None of these fungicides will cure an already infected plant.

However, they can prevent healthy plants from becoming infected. Since infected plants will continue to be sources of inoculum over their lifetime, it is best to remove and destroy them altogether and replace them with healthy plant material from a reputable nursery. Apply fungicides upon first discovery of the blisters, preferably before they burst open and release the spores. If the field has a history of the disease, sprays may be initiated before blisters appear. Since infections can also originate from wild brambles near the field, one should keep an eye on these as well.

'Cancer-Fighting Berries' Research

Source: Steve Schwartz, Joe Scheerens, and Gary Stoner, Ohio State University researchers, written by Mauricio Espinoza

If you have any doubts that "five a day" are good for you, here's some fruit for thought: berries could save your life. An interdisciplinary team of Ohio State University food, agricultural, and medical researchers are studying berries to determine if they can stop or slow some of the biological processes that contribute to the development or spread of certain types of cancer. The second-leading cause of death in the United States, cancer is responsible for one in every four deaths in the country, according to the American Cancer Society's 2005 Cancer Facts and Figures report.

This promising research has garnered attention from Congress. Last month, the project received \$750,000 in federal funds from U.S. Rep. David Hobson (Ohio's 7th District) and U.S. Rep. Deborah Pryce (Ohio's 15th District). Hobson and Pryce have contributed an additional \$1.64 million in funding for the project during the past two years.

"The berry research funding will allow The Ohio State University to continue its work that could potentially help thousands of cancer patients," Hobson said. "These studies are not only beneficial to the medical research community, but they will also support Ohio farmers in the berry production industry."

This "crop-to-clinic" research project - which has brought together experts from the College of Food, Agricultural, and Environmental Sciences, the College of Medicine and Public Health, the College of Pharmacy, and the College of Dentistry - is looking at the nutraceutical, or disease prevention, value of different berries in fighting oral, esophageal, and colon cancers. Several human trials are already underway.

"We are again indebted to Representatives Deborah Pryce and David Hobson for procuring these funds for our ongoing and planned clinical trials with berries," said Gary Stoner, director of the

Cancer Chemoprevention Program in Ohio State's Comprehensive Cancer Center and leader of the team. "These funds will be used to evaluate the potential protective effects of berries on cancers of the cervix and skin - two major sites for cancer in the state of Ohio."

In laboratory studies, Stoner and his colleagues have found that berries inhibited the development of oral, esophageal, and colon cancers in rodents that ate enough of the fruit - rats fed diets mixed with 10 percent freeze-dried black raspberries had 80 percent fewer malignant colon tumors compared to rats who ate no berries. The berries were freeze-dried to remove water (berries contain up to 90 percent water), which concentrated the active components by as much as tenfold. The result was a berry powder that was fed to the animals. "Berries prevent carcinogens from being converted into forms that cause DNA damage," Stoner said. "They also slow down the growth of pre-malignant cells."

So what's in berries that makes them such promising cancer-fighters? These tiny fruits contain a number of compounds that have been shown to have anti-carcinogenic properties, said Joe Scheerens, an associate professor with the Department of Horticulture and Crop Science based at the Ohio Agricultural Research and Development Center's (OARDC) Wooster campus. Compounds include vitamins A, C, E, and folic acid; selenium; calcium; polyphenols such as ellagic, ferulic, and coumaric acids; quercetin; anthocyanins (which give berries their color); and phytosterols such as beta-sitosterol.

Scheerens and a group of researchers led by Steve Schwartz, professor and holder of the Carl E. Haas endowed chair in the Department of Food Science and Technology in Columbus, are unraveling the complex chemistry of berries to find out which compound, or combination of compounds, is responsible for protecting cells against becoming cancerous or stopping their growth once they are cancerous.

Researchers from Ohio State's Mansfield campus, University of Akron, Lorain County Community College, and South Dakota State University are also involved in this project.

"We are currently using state-of-the-art analytical techniques such as coupled liquid chromatography tandem mass spectrometry to help us measure the components present in berries that are absorbed into cells and tissues," Schwartz said. "Once we identify the compounds and their metabolites, we can better understand the molecular mechanisms responsible for the biological activity of berries to inhibit growth of cancer cells."

Berries being researched include black and red raspberries, blackberries, strawberries, and elderberries. The team is also interested in two new fruits -- autumnberry, which grows wild on the East Coast and has a high lycopene content, and cornelian cherry, which is eaten in Europe.

In addition to the chemical properties of the berries, researchers study differences among varieties and cultivars, the effects of environmental factors and processing methods on chemical composition, and the differences in nutrient availability during the different stages of ripening.

"The goal of this work is to determine which management practices and varieties produce berries with the maximum cancer-fighting benefits," Scheerens said.

Also involved in the berry research project are The Ohio State University South Centers, part of OARDC and OSU Extension. The South Centers have been promoting berries as an alternative high-value crop for southern Ohio farmers and educating consumers on the health benefits.

"The promising results of the berry cancer trials are already creating increased demand and interest within the farming community in Ohio," said Brad Bergfeld, a horticulture Extension educator.

The Centers' contributions to the project include providing fruit for chemical studies, conducting research and demonstration trials to improve crop productivity and quality, and developing plans to market berries as great fruits both to grow and to eat. "There isn't enough supply to meet berry demand in Ohio, especially for crops such as raspberries that have shown great promise for cancer treatment," said Sandy Kuhn, South Centers Berry Coordinator. "Our vision is to continue increasing berry acreage and production through efficiency to get more out of the land. We also want to establish connections between the grower and the consumer."

Clinical trials include a study of patients with early-stage colon cancer who are candidates for surgery. Over two to four weeks, they are fed 20 grams of freeze-dried black raspberries daily -- equivalent to about 2 1/2 cups of fresh berries per day and, according to Stoner, the human equivalent of the amount found beneficial in animal models.

To find out whether or not the berries work, patients undergo a colonoscopy before starting the treatment so doctors can ascertain the size and position of the tumors; tissue is also extracted to measure several biological and genetic factors that may be linked to tumor growth. Over the course of the trial, study coordinators collect blood and urine samples to assess how fast biochemical or molecular changes may be occurring. Finally, during surgery, surgeons will remove a second piece of tumor and researchers will repeat the same measures taken earlier to see if the berries made any difference in cell growth and death rates, degree of inflammation, activity of certain genes, and the extent of new blood vessel growth at the tumor sites.

Other studies underway are examining the effect of black raspberries in liquid form to treat patients with esophageal cancer. Researchers in another trial are evaluating the berries in a chewy, lozenge form in patients with oral cancers. Down the road, researchers are planning to use a newly developed raspberry bio-adhesive gel to treat people with pre-cancerous lesions in their mouths.

New Health Risk Information for Applicators of Selected Disease-Control Chemicals

Source: Paul Vincelli, UK Extension Plant Pathologist, Kentucky Fruit Facts, June 2005

A long-term study involving several federal agencies was begun in 1993 to address questions about the health of the agricultural community. The Agricultural Health Study is looking at lifestyle habits, genetic factors, and agricultural exposures at work and in the environment that affect the risk of disease. Since this is a long-term, ongoing study, only early findings are available at this time. However, several of the early findings reported in a series of fact sheets are relevant to plant disease control and are summarized here.

Retinal Degeneration Linked to Fungicide Use

Degeneration of the retina, the light-sensitive lining of the inner eyeball, is the most common cause of blindness in older adults. There are some animal studies suggesting that pesticides may play a role in retinal degeneration. Researchers in this study compared 154 pesticide applicators who reported having been diagnosed with retinal degeneration to 17,804 applicators that did not.

The applicators who reported retinal degeneration were twice as likely to have used fungicides. Significantly, they found an increasing risk of retinal degeneration with increasing days of fungicide use.

The researchers found evidence of this trend for five fungicides: benomyl, captan, chlorothalonil, maneb and metalaxyl. The applicators reporting retinal degeneration were more likely to work in orchards, where fungicide use typically is intensive.

They were also more likely to have used application methods that have high applicator exposure, such as hand spray guns, backpack sprayers, mist blowers, and foggers.

Prostate Cancer Risk Greater in Frequent Methyl Bromide Users

Prostate cancer is the only cancer thus far associated with increased incidence in study participants as compared to the general population. Of 45 pesticides evaluated in the study, only one --

methyl bromide -- was associated with increased risk of prostate cancer with increasing exposure in pesticide applicators. Those with the highest exposure levels had a 3.5-fold higher risk of prostate cancer.

Significance

Pesticides provide substantial benefits in terms of agricultural production. However, each poses potential risks to human health at some dose. The same can be said of sodium chloride, commonly known as table salt, or any other chemical. Nevertheless, these findings serve as a reminder to be respectful of the potential risks that pesticides pose, and to use pesticides in ways that minimize exposure of workers and applicators. Although I have always advocated care when working with pesticides, given the results reported here, I urge particular caution for those applicators working with crops that often receive intensive fungicide use in Kentucky, such as golf courses, several fruit and vegetable crops, and tobacco. Applications to high-yield wheat crops could also be a concern, and with the advent of Asian soybean rust, so could applications to the soybean crop.

Methyl bromide is in the final year of the phase-out under the Montreal Protocol on Substances

That Deplete the Ozone Layer (the Montreal Protocol), and only existing stocks can be used. However, the U.S. has secured critical use exemptions to allow extended production and import for use on a number of crops. Most of these exemptions apply to states, but those that apply to Kentucky include use on:

- industry-certified sod by producers who are members of Turfgrass Producers International (interestingly, these uses were considered "critical")
- golf courses for a number of uses (ditto from above)
- government-owned nurseries for production of forest seedlings

Applicators of methyl bromide in these circumstances should be sure to protect themselves from exposure to this gas. More information on the Agricultural Health Study can be found at <<http://www.aghealth.org>>

Apples Could Be Affected by Soybean Rust Management

Source: John Hartman, UK Extension Plant Pathologist, Kentucky Fruit Facts, June 2005

Apple orchards growing near rust-infected soybean fields could be at risk of phytotoxicity from one of the fungicides proposed for soybean rust disease management. The fungicide azoxystrobin, labeled as Quadris for Asian soybean rust control, is phytotoxic to McIntosh and McIntosh-derived varieties of apples. Besides Quadris, azoxystrobin is also sold under the trade names Abound and Heritage. Azoxystrobin is registered on grapes, several tree nuts, stone fruit, cucurbits, and other horticultural crops, but not on apples.

Phytotoxic symptoms on apple trees include leaf and twig necrosis (dead tissue), leaf drop, and fruit drop. Conditions favorable for drift have caused problems to apples elsewhere, e.g., azoxystrobin used in grape vineyards adjacent to apple orchards. The current label warns about spray drift and prohibits sprayers used with azoxystrobin for subsequent spraying of apple trees. Use of Quadris for soybean rust management could cause problems for apple orchards or backyard trees adjacent to soybean fields, especially under unanticipated conditions favorable for drift.

Apple varieties known to be adversely affected are Akane, Asahi, Bramley, Courtland, Cox's Orange Pippin, Cox, Delbarestival, Discovery, Fortune, Gala, Galaxy, Grimes, Imperial Gala, Kent, Kizashi, Lurared, McCoun, McIntosh, Molly Delicious, Mondial Gala, Ontario, Queen Cox, Royal Gala, Spartan, Stark Gala, Starkpur Mac, Summared, Summer Treat, Warabi, Worcester, and Pearmain.

Apple growers are urged to communicate with neighboring soybean farmers about plans for soybean rust management. Fortunately, soybean growers have many other fungicide options to choose from, many of them less expensive than azoxystrobin. Thus, with good planning, soybean rust can be managed effectively with little risk to nearby apple crops.

Information for this article was adapted from the April 20, 2005 edition of the Kansas State University Extension Plant Pathology Plant Disease Alert newsletter, written by Doug Jardine.

Degree Day Accumulations for Ohio Sites

June 8, 2005

Ohio Location	Degree Day Accumulations Base 50°	
	Actual	Normal
Akron-Canton	468	566
Cincinnati	784	864
Cleveland	472	538
Columbus	671	685
Dayton	607	708
Kingsville	383	471
Mansfield	464	553
Norwalk	504	535
Piketon	708	868
Toledo	514	528
Wooster	507	514
Youngstown	403	498

Pest Phenology

Coming Events	Degree Day Accum. Base 50°F
Redbanded leafroller 1 st flight subsides	255 - 716
Obliquebanded leafroller pupae present	330 - 509
Codling moth 1 st flight peak	332 - 586
Obliquebanded leafroller 1 st catch	392 - 681
Peachtree borer 1 st catch	445 - 829
Spotted tentiform leafminer 2 nd flight begins	449 - 880
Oriental fruit moth 1 st flight subsides	493 - 823
Pear psyllia 2 nd brood hatches	584 - 750
San Jose scale 1 st generation crawlers present	619 - 757
Apple maggot 1 st catch	749 - 1033

Revised thanks to *Scaffolds Fruit Journal*
(Art Agnello)

Fruit Observations and Trap Reports

Site: Waterman Lab, Columbus

Dr. Celeste Welty, OSU Extension Entomologist

Apple: 6/1 to 6/8/05	
Redbanded leafroller	0 same as last wk.
Spotted tentiform leafminer	1023 up from 117
San José scale	0 same as last wk.
Codling moth (3 trap mean)	18.7 up from 12.7
Lesser appleworm	37 up from 15
Tufted apple budmoth	6 down from 8
Variegated leafroller	5 up from 3
Obliquebanded leafroller	9 up from 0.

Site: East District; Erie and Lorain Counties

Jim Mutchler, IPM Scout/Technician

Apple: 6/1 to 6/7	
--------------------------	--

Codling moth (3 trap mean)	3.5 up from 2.8
Oriental fruit moth	4.0 down from 6.9
Redbanded leafroller	0.2 down from 0.7
San Jose scale	0.0 down from 3.1
Spotted tentiform leafminer	8.7 down from 26.8
Lesser appleworm	27.5 up from 5.7

Beneficials found: brown lacewings, native lady beetles

Peach: 6/1 to 6/7	
Redbanded leafroller	0.0 down from 1.5
Oriental fruit moth	0.1 down from 0.5
Lesser peachtree borer	3.4 down from 13.4
Peachtree borer	0.0 same as last wk.

Site: West District: Huron, Ottawa, Richland, and Sandusky Counties

Lowell Kreager, IPM Scout/Technician

Apple: 5/30 to 6/6/05	
Codling moth	1.2 up from 0.7
Oriental fruit moth	1.0 up from 0.0
Redbanded leafroller	0.3 down from 0.8
San Jose scale	0.2 up from 0.0
Spotted tentiform leafminer	13.0 down from 44.8
Lesser appleworm	7.0 up from 2.5

Beneficials found: brown lacewing, native lady beetles

Peach: 5/30 to 6/6/05	
Redbanded leafroller	0.0 down from 1.0
Oriental fruit moth	0.0 down from 0.4
Lesser peachtree borer	1.0 down from 10.1
Peachtree borer	0.0 same as last wk.