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THE OHIO STATE UNIVERSITY Newsletter Extension

Fruit ICM News

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Calendar

July 17-19: Workshop on developing and implementing HACCP for Juice and Cider Industries. Holiday Inn at the Pyramids, Indianapolis. For a brochure and program see http://www.foodsci.purdue.edu/outreach/haccpcider/02brochure.pdf or call Peter Hirst for a copy of the program.

July 23: Licking County Twilight Fruit School, Branstool Orchards. Contact Howard Siegrist at 740-349-6900 for more information.

August 7: Pumpkin Field Day, 4-6 PM, Western Branch Research Station in South Charleston. OSU researchers Mac Riedel, Bob Precheur, Celeste Welty, Jim Jasinski, and Andy Wyenandt will talk about their work at the station and help answer any questions you might have. The field day will be informal but will cover many topics, including the use of Sandea and Strategy herbicides in pumpkins, fungicide and variety plot work, giant pumpkin production, the use of Admire, perimeter trap crops, Kairomone traps to reduce cucumber beetles, and cover crops used in pumpkin production. There are nearly 8 acres of pumpkin research at the farm. This is one of the greatest concentrations of pumpkin research in the State; don't miss your chance to see it all!

Directions: The Western Branch is located on the south side of S. R. 41, between I-70 and the town of South Charleston. For more details, please contact Jim Jasinski, 937-454-5002 or email: jasinski.4@osu.edu.

Japanese Beetle Control

Source: Rick Foster, Purdue Entomologist, Facts for Fancy Fruits, 2002-09, July 10, 2002. Chart based on the 2002 Commercial Spray Guides for Tree and Small Fruits.

Japanese beetles are emerging in all areas of the state. As you all know, they are voracious feeders on almost all fruit crops. Sevin is the most effective material labeled for use on most fruit crops. The preharvest interval (PHI) is 3 days for the tree fruits, which usually does not present a problem. However, the PHI for Sevin on the small fruits is 7 days, which can present a huge problem during harvest. Imidan is moderately effective and has a 3-day PHI, which may help somewhat. Malathion has a 1-day PHI on blueberries and brambles, although it is not the most effective insecticide.

Insecticides containing pyrethrum can be used up to the day of harvest, but provide only very short-term control. Be sure to adhere to the preharvest restriction and Restricted Entry Intervals for whatever pesticide you choose to use.

Harvest and Re-entry Restrictions for Japanese Beetle Insecticides

	Days Pre-harvest Interval (PHI)					Restricted-Entry Interval (REI)
Material	**Grape**	**Blueberry**	**Brambles**	**Apples**	**Peaches**	
Imidan	14	3*	-	7	14	24 hrs
Malathion	3	1	1	3	7	12 hrs
Pyrellin	0	0	0	-	-	12 hrs
Pyrenone	0	0	0	-	-	12 hrs
Rotenone	1	1	1	-	-	12 hrs
Sevin	7	7	7	3	3	12 hrs

* no more than 2 applications per season in Ohio

Brown Rot Of Stone Fruits

Source: Paul Pecknold, PurduePlant Pathologist, Facts for Fancy Fruits, 2002-09, July 10, 2002. Chart is based on the 2002 Commercial Tree Fruit Spray Guide.

As peach harvest begins, be aware of the need for sprays to control brown rot. Warm, wet, humid weather is particularly favorable for brown rot. Pre-harvest sprays for brown rot should be started no later than 3 weeks before harvest or when fruit begins to color.

In addition to maintaining sprays for brown rot, also maintain sprays for insect pests that may injure fruit and allow brown rot to gain a foothold. Use care in the picking and handling of fruit to avoid punctures and skin abrasions. Any break in the skin of the fruit enables brown rot to more easily cause infection. (See following article.)

Brown Rot Control Materials for Peaches

Material	Rate/100 gallons	Rate/acre
Benlate 50 WP **OR** Topsin-M 70 WSB ***plus*** Captan 50 WP	4-8 oz 8 oz 1.3 lb	0.75 to 1.5 lb 1.5 lb 4 lb
OR Captan 50 WP	2.6 lb	8 lb
OR Ziram 76 DF	1.5 to 2.7 lb	4.5 to 8 lb
OR Wettable sulfur 95%	6 lb	18 lb
OR Orbit 41.8 L		4 fl oz
OR Indar 75 WSP		2 oz
OR Elite 45 DF	2 oz	8 oz

Peach Harvesting Tips

Contributed by Dr. Diane Miller, OSU Extension Fruit Horticulturalist, as adapted from the Virginia Fruit Newsletter

Peach producers spend a lot of time and money producing top quality fruit, but the quality must be maintained during and after harvest to provide a quality product to the consumer. Three major factors affecting fruit quality are fruit maturity, fruit bruising, and fruit temperature.

- **Maturity** - Peaches are usually harvested on the basis of ground color and fruit size. Fruit with inadequate ground color are immature and do not have the ability to ripen to an acceptable eating quality. Unlike apples, peaches contain little starch, and sugar levels will not increase appreciably after harvest. Picking immature fruit will reduce yield because peach size increases 2-3% per day during the final stages of fruit development. A one day delay in harvest may increase yield by 2-3%. Immature fruit also have less surface wax and are more susceptible to bruising.
- **Bruising** - There are three types of bruising found in peaches. **Impact bruising** results from falling into a hard surface either individually or within packages and may not be visible from the surface. Impact bruising can occur in the field when pickers drop fruit into picking bags or boxes. A soft peach may bruise when dropped 0.7 inches onto a hard surface, and a firm peach will bruise when dropped 1.3 inches. **Compression bruising** can occur if pickers try to grasp too many fruits or if soft-sided picking bags are pressed against limbs and ladder rungs. This type of bruising is usually visible. **Vibration bruising** occurs when fruits are free to move within containers, and when fruits rub against each other or against the sides of crates. Other precautions to prevent bruising include repairing rough roads and preventing rough handling by forklift or in transit.
- **Temperature** - Research results indicate that warm fruits bruise more easily than fruit at 40 to 60

F. Harvest as early in the day as possible when fruits are coolest. During the middle of the day, do not let fruit sit in the sun. Covering harvested fruit with shade cloth may reduce fruit temperature. Cool fruit below 40 F as soon as possible. Peach fruit respiration is nearly 3 times greater at 50 F than at 40 F, and fruit ripens as much in a day at 70 F as they do in 7 days in a cooler at 32 F.

Thanks to the Hirsch Family

Thanks and a "tip-of-the-hat" to the Hirsch Family for hosting the 2002 Ohio Fruit Growers Society Summer Tour. Despite the moist weather conditions, the family went out of their way to accommodate the hearty souls who enjoyed the day's activities - especially the wagon tour, which afforded an impressive view. Thanks, we are most appreciative!

Necrotic Leaf Blotch On Goldens

Source: Paul Pecknold, Purdue Plant Pathologist, Facts for Fancy Fruits, 2002-09, July 10, 2002

We generally first start noticing necrotic leaf blotch (NLB) on Golden Delicious in late June or July,

when the weather becomes hot and sticky. Symptoms of NLB are leaf yellowing and drop; often patches of brown blotches develop along with leaf yellowing. Symptoms develop suddenly, almost overnight, and in waves, generally from June through August. The cause of NLB is not known; however, the disorder is thought to be related to air temperature, light intensity, and soil moisture. It is most severe when a cool, rainy period of 4-5 days precedes several hot, sunny days. Although it appears NLB is not fungal caused, the disease is reduced when ziram is included in the cover sprays.

Control of Japanese Beetle Adults in Blueberries

Source: Rufus Isaacs and John Wise, MSUE Entomology, Fruit Crop Advisory Team Alert, Vol. 8, No. 13, July 9, 2002

Japanese beetles have emerged from the soil in the past few weeks. Emergence is well underway in Berrien and Van Buren counties, with beetles just starting to be seen further north on bushes in Ottawa County. As emergence begins and blueberry harvest gets underway in the earliest varieties, this article provides information on insecticide options based on recent tests conducted at the Trevor Nichols Research Complex and at growers' farms.

Broad-spectrum options: The organophosphates Guthion and Imidan provide excellent lethal activity on adult beetles, although it can take some time for their effects on Japanese beetles to be seen. They provide 10 to 14 days of activity with seven and three days pre-harvest intervals (PHI), respectively. The pyrethroid Asana gives instant knockdown and mortality of adult beetles, with seven to ten days of activity. Toward the end of the residual activity of this product, beetles may also be repelled from treated bushes. Asana has a 14-day PHI and so it has to be scheduled carefully within the harvest period. The carbamates Sevin and Lannate provide some immediate lethal activity against beetles, but are also

stomach poisons, where ingestion of treated foliage is required for maximum effect. Lannate has a short residual activity of a few days, whereas Sevin provides a week of protection. They both have a three-day PHI.

Selective insecticides: The recent Section 18 (Michigan) label for Provado provides a selective option for Japanese beetle management. Provado provides two to three days of lethal activity from the surface residues before it is absorbed into the foliage. Thereafter, beetles must eat treated foliage to get a dose of the insecticide. During this period, however, Provado provides significant sub-lethal effects of repellency and knockdown activity with little direct mortality from the residues. This neonicotinoid is labeled for Japanese beetle but will also control aphids and leafhoppers. It has a three-day PHI for use in blueberries.

Another formulation of imidacloprid, called Admire, is also labeled in blueberry, but it is a soil-applied formulation that is for control of larvae. It therefore provides control of next year's adults by killing newly emerging larvae this year. It should be applied now if its full effectiveness is to be realized. Once larvae pass beyond the first stage of growth, they become more and more resistant. Since egg laying has already started, Admire should be applied immediately and watered in following label recommendations.

Immediately before harvest, some selective insecticides with zero-day PHI's can provide a tool to repel beetles and help achieve beetle-free fruit. Some natural pyrethrums and neem-based products such as Ecozin have a fit in this part of the season.

Use of all these products against Japanese beetle should be tailored to the harvest schedule, pest pressure, and the presence of additional pests that require control.

Control of Botrytis Gray Mold in Brambles

Source: Annemiek Schilder, MSUE Plant Pathology, Fruit Crop Advisory Team Alert, Vol. 8, No. 13, July 9, 2002

Botrytis gray mold is the most serious and common fruit rot disease of raspberries and blackberries. It is caused by the fungus *Botrytis cinerea*, which also infects numerous other crops, including strawberries, grapes, and ornamentals. It is especially severe during prolonged rainy and cloudy periods just before and during harvest. Typically, fall raspberries are more prone to gray mold because of the cool, wet conditions prevailing during fruit development and ripening. Fruit infections also tend to be more severe in the interior parts of the canopy and on fruit clusters close to the ground, due to the higher humidity and reduced airflow.

The fungus overwinters as minute black bodies (sclerotia) in plant debris, including old canes and leaves. In spring, the sclerotia produce large numbers of microscopic spores, which are spread by wind to susceptible plant parts. The spores infect young blossoms, berries, and even leaves and canes when there is sufficient moisture. Only a few hours of moisture, provided by rain, dew, or irrigation water, are needed for infection under optimal conditions (70-80ºF). The fungus usually enters the fruit through the flower parts where it remains inactive (latent) within the tissues of the infected green fruit. As the fruit matures, the fungus becomes active and rots the fruit. So while infection occurs at bloom, symptoms are not usually observed until harvest. Symptoms are rapidly enlarging, light-brown areas on the fruit. Infected berries become covered with gray, dusty growth of the fungus containing millions of spores, hence the name "gray mold." Healthy berries can also become infected by contact with diseased berries. For instance, one sporulating berry in a cluster can infect the entire cluster. Wounds can also predispose

berries to infection. Under favorable conditions for disease development, healthy berries may become a rotted mass in 48 hours.

Cultural methods are very important for control of botrytis gray mold. Choosing a site with good airflow can considerably reduce humidity in the canopy. Low-density plantings and narrow rows and trellising can also reduce a buildup of humidity. Good weed control and moderate fertilizer to avoid lush growth are also important. Selecting a resistant cultivar or, at the minimum, avoiding highly susceptible cultivars will help to reduce the need for control measures. During picking, avoid handling infected berries, since spores can be transferred to healthy berries. Timely harvesting and rapid post-harvest cooling can also help to reduce losses to botrytis gray mold.

Several fungicides are labeled for control of botrytis in raspberries. Fungicide sprays during bloom are important to prevent pre-harvest infections, while post-harvest infections can be reduced by sprays closer to harvest. Elevate is a relatively new, reduced-risk, protectant fungicide with a zero-day PHI that provides good control of pre- and post-harvest gray mold. Since only four applications may be made per season (and only two consecutively) because of the risk of resistance development, Elevate should be alternated with fungicides with a different mode of action, e.g., Captan. My recommendation is to save Elevate for critical sprays, for example, during wet periods at bloom and for sprays closer to harvest. Other fungicides that may be used in the spray program are Benlate (if any stocks are left, tank-mixed with Captan), which has a three-day PHI; Rovral, which has a zero-day PHI; or Nova, which has a zero-day PHI. Some growers have experienced poor control with Rovral, which may indicate that Rovral-resistant Botrytis strains are present in their fields. Nova was found to significantly reduce post-harvest gray mold and Cladosporium rot (green-looking fuzzies) in a small plot raspberry trial in Michigan.

Pest Phenology

Coming Events	Degree Day Accum. Base 50F
Peachtree borer flight peaks	506-1494
Apple maggot adult 1st catch	629- 1297
Redbanded leafroller 2nd flight begins	656-1381
Codling moth 1st flight subsides	673-1412
Spotted tentiform leafminer 2nd flight peak	701-1355
Oriental fruit moth 2nd flight begins	772-1215
San Jose scale 2nd flight begins	893-1407
Codling moth 2nd flight peak	931-1698

Thanks to *Scaffolds Fruit Journal* (Art Agnello)

Degree Day Accumulations for Ohio Sites July 10, 2002

Location	Degree Day Accumulation Base 50F	
	Actual	Normal
Akron-Canton	1223	1189
Cincinnati	1581	1636
Cleveland	1256	1152
Columbus	1548	1371
Dayton	1477	1422
Kingsville Grape Branch	1108	1135
Mansfield	1224	1171
Norwalk	1213	1156
Piketon	1571	1596
Toledo	1365	1150
Wooster	1299	1097
Youngstown	1171	1063

SkyBit® Sooty Blotch Prediction for North-Central Ohio

Observed:
July 1-10: active, but no infection

Predictions based on weather forecasts:
July 11-20: active, but no infection

SkyBit® Fire Blight Prediction for North-Central Ohio

Observed:
July 1-8: not active
July 9-10: possible infection & damage

Predictions based on weather forecasts:
July 11-12: not active
July 13: active but no infection
July 14-20: possible infection & damage

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

Apple: 7/3 to 7/10/02

RBLR: 48 (down from 18)
STLM: 66 (up from 32)
CM (mean of 3 traps): 2.7 (same as last week)
TABM: 1 (down from 2)
SJS: 18 (up from 11)
VLR: 0 (same as last week)
OBLR: 2 (up from 0)
AM (sum of 3 traps): 7 (up from 6)

Peach: 7/3 to 7/10/02

OFM: 7 (down from 8)
LPTB: 2 (down from 6)
PTB: 0 (down from 5)

Site: Wayne County
Source: Ron Becker, IPM Program Assistant

Apple: 7/3 to 7/10/02

STLM: 478 (down from 735)
CM (mean of 3 traps): 0.5 (down from 2.1)
RBLR: 9.6 (down from 16.8)

Peach: 7/3 to 7/10/02

OFM: 0 (same as last week)
LPTB: 0.5 (down from 0.8)
PTB: 2.0 (up from 0.8)

Notes: Both green peach and wooly apple aphid populations continue to increase in the apples. Red mite reached threshold in 1 of 11 blocks. Other blocks remain low. Other pests: white apple leafhopper, potato leafhopper, two spotted spider mite, tarnished plant bug (in peaches) and Japanese beetle. Several fruit were also found to have codling moth damage. A grid of 20 traps for CM had only 2 moths during this

past week.

Site: East District: Erie & Lorain Counties
Source: Jim Mutchler, IPM Scout

Apple: 7/2 to 7/9/02
CM (mean of 3 traps): 1.1 (down from 5.5)
STLM: 625 (down from 919)
SJS: 0 (same as last week)
AM (sum of 3 traps): 0.3 (first report)
OFM: 1.0 (same as last week)
RBLR: 18.8 (down from 41.9)
ERM (infested leaves per 25 leaf sample): 1.8 (up from 0.3)
OBLR: 1.2 (down from 5.2)

Peach: 7/2 to 7/9/02
OFM: 2.0 (up from 1.3)
RBLR: 14.3 (down from 27.7)
LPTP: 7.7 (down from 18.7)
PTB: 3.7 (same as last week)

Beneficials present - native lady beetles, green lacewing eggs and adults, orange maggots, white maggots

Site: West District: Huron, Ottawa, Sandusky Co.
Source: Gene Horner, IPM Scout

Apple: 7/2 to 7/9/02
CM (mean of 3 traps): 1.7 (down from 5.2)
STLM: 23.0 (down from 26.8)
SJS: 0 (same as last week)
AM (sum of 3 traps): 0.8 (up from 0.4)
OFM: 6.6 (up from 5.9)
RBLR: 22.8 (down from 39.1)
OBLR: 0.4 (down from 2.0)
ERM (infested leaves per 25 leaf sample): 2.8 (down from 2.9)

Peach: 7/2 to 7/9/02
OFM: 11.3 (up from 5.4)
RBLR: 29.0 (down from 69.8)
LPTB: 5.4 (down from 6.4)
PTB: 6.4 (up from 4.2)

Beneficials present - green lacewing eggs and adults, banded thrips

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