Rutgers Cooperative Extension at the New Jersey Agricultural Experiment Station

PLANT & PEST ADVISORY

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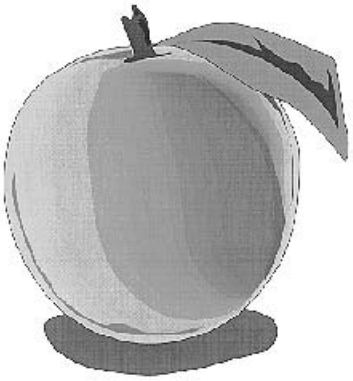

INSIDE

Fruit IPM

Dean Polk, Fruit IPM Agent and David Schmitt, Eugene Rizio and Atanas Atanassov, Ph.D., Program Associates, Tree Fruit IPM

Peach

✔ **Tufted Apple Budmoth (TABM):** Timings are updated in the following table:

Tufted Apple Budmoth Degree Day Spray Timing 2nd Brood				
	Application and Insecticide Type			
County Area	**Std Materials - AM**	**Std Materials - EM**	**Intrepid - EM**	**Bt-EM**
Southern	4th 8/15-17	2nd 8/12-15	2nd 8/12-15	2nd 8/12-15, 3rd 8/17-19
Central	3rd 8/11-13, 4th 8/18-19	2nd 8/14-17	2nd 8/14-17	2nd 8/14-17, 3rd 8/19-22
Northern	2nd 8/11-13, 3rd 8/11-13, 4th 8/19-22	1st 8/7-10, 2nd about 8/21-25	1st 8/10-12, 2nd about 8/21-25	1st 8/10-12, 2nd 8/19-22, 3rd about 8/28-30

✔ **Other Insects:** Treatments for Oriental Fruit Moth (OFM) 3rd generation are done for the season. No additional treatments are needed unless you have high populations in a late variety. We do have 3 farms in northern counties where trap counts exceed 30 moths per trap. Therefore additional treatments are needed on those sites. Overall, catfacing pressure is also low. Unless significant numbers are found in the groundcover or fresh feeding signs are seen on fruit, no additional treatments are needed for this complex in southern counties. Some additional catfacing pressure is present in northern counties.

✔ **Storm Issues:** Weekend storms damaged several orchards in southern counties in specific locations. Of course nobody likes to spend money on pesticides in damaged blocks. Decisions will have to be made on what to pick and what not to pick. If significant injury is present, and the fruit is to be left on the tree, be aware that **SIGNIFICANT BROWN ROT** will occur. Resulting mummies can be picked off in the winter, or formation of brown rot and mummies can be minimized with a couple of good quality fungicide applications. The latter choice will help prevent establishment of brown rot cankers later in this season. Over most of southern counties, **NO ADDITIONAL INSECTICIDE** applications should be made in storm damaged blocks.

Apple

✔ **Tufted Apple Budmoth (TABM):** See Peach section above.

✔ **Stink Bugs:** Stink bug damage has become more prevalent in

See IPM on page 2

IPM from page 1
apples over the past few years, particular on late maturing varieties. Like in peach, stink bug is of particular concern if the orchard is located near grain crops, hayfields, or woodlines. Pyrethroids such as Danitol and Baythroid are effective broad spectrum materials, but may cause late season mite flare ups. Intrepid or Spintor used for TABM control will not control stink bugs. Excellent materials include most pyrethroids, Lannate and Thionex. Other 'good' materials include Actara, Assail, Avaunt, Beleaf, Calypso, and diazinon. Please note that Imidan and Guthion **are not** included in this list. Higher rates are needed for Actara, Assail and Calypso.

✔ **Storm Issues:** While the disease complex is different than in peaches, insect management would be the same in heavily damaged blocks. **No additional insecticides should be applied in those plantings.**

Scouting Calendar

The following table is intended as an aid for orchard scouting. It should ***not*** be used to time pesticide applications. Median dates for pest events and crop phenology are displayed. These dates are compiled from observations made over the past 5-10 years in Gloucester County. Events in northern New Jersey should occur 7-10 days later.

Pest Event or Growth Stage	Approximate Date	2008 Observed Date
TABM - 2nd Gen DD target begins	August 07 +/- 09 days	July 28
TABM - 2nd Gen DD target ends	August 23 +/- 04 days	Not Yet Observed

Note: There is no Blueberry information this week.

Trap Counts

Tree Fruit

Southern Counties

Weekend	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
7/5	811	1	0		0	87	0	2	33	19
7/12	499	1	2	0	2	21	0	1	45	6
7/19	545	0	4		3	58	0	2	38	16
7/26	1138	2	6		1	36	1	3	8	6
8/2	819	4	8		3	50	1	5	12	6
8/9	574	3	4		2	50	1	5	18	3

Northern Counties

Weekend	STLM	TABM-A	CM	AM	DWB	OFM-P	TABM-P	LPTB	PTB	OBLR
7/5	786	7	1		3	2	4	35	2	1
7/12	791.8	1.5	0.6		1.9	2.2	3.6	23.4	1.2	0.5
7/19	615.4	0.3	0.5	0.0	0.3	1.7	0.3	24.2	0.9	0.0
7/26	952.3	0.4	1.4	0.0	0.5	1.5	0.8	14.1	0.1	1.5
8/2	607.9	1.0	2.2	0.0	0.4	3.1	0.7	6.1	1.5	2.0
8/9	517.6	1.2	1.4	0.0	0.3	6.8	0.7	5.9	2.8	2.0

Blueberry

Atlantic County

Week End	CBFW	RBLR	OBLR	SNLH	OR BEET	BBM
7/5	0.1	11.8	1.3	0.3	1008	0.41
7/12	0.3	8.2	0.7	0.3	605.4	1.24
7/19	0	1.1	0.6	0.1	295.5	0.61
7/26	0	1.2	2.0	0.1	103.2	0.27
8/2	0.0	1.1	1.8	0.1	23.3	0.55

Burlington County

Week End	CBFW	RBLR	OBLR	SNLH	OR BEET	BBM
7/5	0.1	16.9	2.2	3.7	953.0	0.33
7/12	0.0	19.5	1.0	1.1	683.6	0.63
7/19	0.0	2.5	0.5	0.9	232.7	0.75
7/26	0.0	1.1	1.2	1.3	172.7	0.55
8/2	0.0	0.6	2.0	4.7	48.7	0.47

Painless and Efficient Apple Maturity Testing

Win Cowgill, Agricultural Agent, and Jon Clements, Extension Tree Fruit Specialist, UMASS

Starch Iodine testing is among the best and easiest indicators of apple maturity that a grower can use to plan their harvest and storage regimes. But, our observation has been that few growers utilize the Starch Index (SI) method of determining harvest maturity. Perhaps SI testing is perceived as time consuming and difficult to properly judge?

Why is it important to perform SI testing? First, as mentioned, the SI method is probably the best way to judge fruit maturity without expensive equipment. The SI technique, wherein the starch to sugar ratio is measured, is correlated with ethylene evolution. In fact, ethylene synthesis occurs as fruit ripens. Therefore, the SI index is an inexpensive way to assess the degree to which fruit has converted starch to sugar, and is indicative of the onset and progress of ethylene production.

Secondly, because SI is a reliable indicator of relative fruit maturity, SI testing can help you determine if harvested fruit should be placed in early CA, late CA, or regular cold storage. Remember that, as a rule, fruit with SI readings of 3-4 are suitable for late CA, apples measuring 4-6 on the SI scale are best for early CA, and any fruit reading 6 or above should be placed in regular cold storage or marketed immediately. Of course, reliability in using the SI method for determining apple maturity is predicated on good sampling techniques, i.e.; looking at fruit that has sufficient size and color. Or, in other words, sample apples that you expect are approaching harvest readiness.

Note: Apples going into late CA (available in April-June, etc.) should not average less than 15 pounds firmness.

Guides

Cornell University has developed a universally accepted chart that is useful for all varieties. Cornell has this publication available with a maturity chart to help you use the starch-iodine test and to develop an apple maturity program. The publication also contains a laminated starch iodine chart to aid in interpreting the tests. I strongly suggest that anyone seriously interested in harvesting high quality apples with good storage potential buy a copy of this publication, "Predicting Harvest Date Windows for Apples (1992)" Information Bulletin 221.

Full-color plates show how to use and interpret the starch-iodine test for determining maturity and the best harvest dates for quality, especially important for apples going into storage. Covers McIntosh, Cortland, Empire, Delicious, Mutsu/Crispin, and Idared; dates for other varieties can be interpreted from the information presented. 20 pages.

Note: This publication can be ordered directly from Cornell University by calling 607-255-2080 and using a Master Card or VISA credit card to pay for the publication.

Specific starch charts have also been developed for Gala, Empire, and Liberty for use in the Northeast. On the West Coast they have also been developed for Fuji and Braeburn. Jon Clements and I have posted these charts on the web that can be downloaded and printed for your use at:
http://www.umass.edu/fruitadvisor/clements/articles/sitest.htm.

Wilson Irrigation located in Washington State also has Maturity Photo Charts for sale for Gala, Fuji, Braeburn, Golden Delicious, Granny Smith, and D'Anjou pear. Call 1-800-232-1174 or order from their web site at http://www.wilsonirr.com.

Testing Method

Having tested tens of thousands of apples over the years, per numerous experimental protocols, we can now suggest a simple, quick and efficient method for evaluating orchard-by-orchard or block-by-block SI apple samples. Here is our quick and simple testing technique:

- Equipment consists of a one quart hand-operated spray bottle filled with SI solution, a pocketknife, and a Starch Index chart. The most important thing is to just use the chart and begin sampling and testing the fruit two weeks before anticipated harvest to get a baseline on the maturity.
- The procedure is simple - pick a sample of apples that appear ready to harvest, based on size, color, days after full bloom, and taste. Spray the SI solution on longitudinally halved fruit, wait one to one and one-half minute and make your readings based on the SI chart. The whole process is portable, quick, simple, and saves SI solution compared to dipping individual apples in a solution-filled pan.

It is important to keep good records on your maturity determinations by cultivar and block. You will start to build a good database of harvest maturity information for your orchard.

SI Caveats

Although the SI test is a reliable gauge of many cultivars, such as McIntosh, Empire, Jonathan, Golden Delicious and Macoun, some cultivars do not respond as well to the SI test, and should be monitored using other methods. Maturity of cultivars such as Gala, Fuji and Honeycrisp should also be gauged using background color, soluble solids, and flesh firmness.

Background color is a particularly good maturity indicator on Gala and will provide the grower with an accurate maturity reading. Red skin color, flesh firmness and sugar content are not as reliable indicators of fruit maturity as background color on this cultivar. Fruit should be harvested for optimum long-term storage quality when the background color of the fruit is changing from a green to yellow color. After that, the background color changes from yellow to cream. It is at this stage that the fruit is ready for immediate sale or short-term storage. Galas will require multiple pickings for optimum fruit quality. Background color is also a good indicator of maturity for Fuji. ❑

Botrytis Infection Following Hail Damage

Peter V. Oudemans, Ph.D., Specialist in Plant Pathology

Botrytis is a common fungus that attacks wounded and damaged tissues. In light of the recent hail damage in some New Jersey vineyards, growers should be aware of the possibility of infection. Tissues such as damaged leaves, scarred, bruised and split fruit are all susceptible to infection. Once the fungus is established on a plant it can be easily transmitted from diseased to healthy tissues. After the fruit begins to rot the variety of microbes (fungi, yeasts and bacteria) on the fruit begin to multiply and may have an impact on the fermentation process following harvest. This secondary disease, also known as sour rot, can negatively impact the wine quality.

What are the best methods to control Botrytis? At this stage fungicides will provide the best method for disease control. There are a number of Botrytis materials available and these are provided below. It should be noted that some of the fungicides such as Pristine and Flint may also help suppress sour rot.

How to Make Starch Iodine Solution for Apple Maturity Testing

Win Cowgill, County Agricultural Agent and George Green, Professor Emeritus, Penn State University

A solution of iodine and potassium iodide is used to make the starch turn black and this pattern is the basis for the test.

Dr. George Chu, of the University of Guelph - Dept. of Plant Agriculture in Ontario has developed a publication on this test entitled: Evaluating Maturity of Empire, Idared and Spartan Apples (Factsheet No. 00-027.). It is available on the Web at: http://www.omafra.gov.on.ca/english/crops/facts/00-027.htm

For those wanting to make their own solution, Dr. Chu gives these instructions:

Preparing the Test Solution

Always use a freshly prepared solution at the beginning of every season. This solution is sensitive to light and should be stored in a dark container. A dark-colored bottle or a glass jar wrapped in aluminum foil will serve the purpose. Chemicals needed for this test are potassium iodide and iodine crystals. A pharmacist or a chemist can use the following recipe to make up the iodine solution.

Recipe

1. Dissolve 8.8 grams of potassium iodide in about 30 ml of warm water. Gently stir the solution until potassium iodide is properly dissolved.
2. Add 2.2 grams of iodine crystals. Shake the mixture until the crystals are thoroughly dissolved.
3. Dilute this mixture with water to make 1.0 liter of test solution. Mix them well.

Photo by Jon Clements, Extension Educator, UMASS

Warning: Iodine is a very poisonous chemical. The iodine solution should be properly labeled and kept away from children and pets. Apples used in the test should not be fed to any animals or used in composting. In case of ingestion of either iodine, or iodine treated apples, induce vomiting and consult a physician immediately.

Starch iodine can be purchased from Wilson Irrigation in Washington State at: http://www.wilsonirr.com/ or call them at 1-800-232-1174; they have an Apple Fruit Maturity Kit with charts and Iodine solution.

Note: Wilson Irrigation also has maturity charts for Gala, Fuji, Braeburn, golden and red delicious, Granny Smith, and D'Anjou pear. When you go to their website, look under the Harvesting/Quality Management link. Iodine solution can be purchased by the gallon. ❑

Fungicides labeled for Botrytis control

Name	Active Ingredient	EPA Registration	REI (hr)	PHI (days)	A.I. (%)	FRAC Code[2]	Downy Mildew	Powdery Mildew	Botrytis Rot
Abound	Azoxystrobin	100-1098	4	14	22.9	11	+++	+++	++
Elevate	fenhexamid	66330-35	12	0	50	17	0	+	+++
Endura	boscalid	7969-197	12	14	70	7	0	+++	++
Flint	trifloxystrobin	100-919	12	14	50	11	+	+++	++
Iprodione 4L	iprodione	51036-340	48	7	41.6	2	0	0	+++
Iprodione 50	iprodione	51036-341	48	1,7*	50	2	0	0	+++
Pristine	pyraclostrobin				12.8	11			
	boscalid	7969-199	24	14	25.2	7	+++	+++	+++
Rovral	iprodione	264-453	48	7	50	2	0	0	+++
Rovral 4	iprodione	264-482	24	7	41.6	2	0	0	+++
Scala SC	pyrimethanil	264-788	24	7	54.6	9	0	0	+++
Sovran	kresoxim-	7969-154	12	14	50	11	++	+++	++
Vangard WG	cyprodinil	100-828	12	7	75	9	0	+	+++

RUTGERS
New Jersey Agricultural
Experiment Station

Plant & Pest Advisory
Rutgers School of Environmental
and Biological Sciences
ASB II, 57 US Hwy. 1
New Brunswick, N.J. 08901

FIRST CLASS
POSTAGE PAID
PERMIT #576
MILLTOWN, NJ 08850

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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is reponsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

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