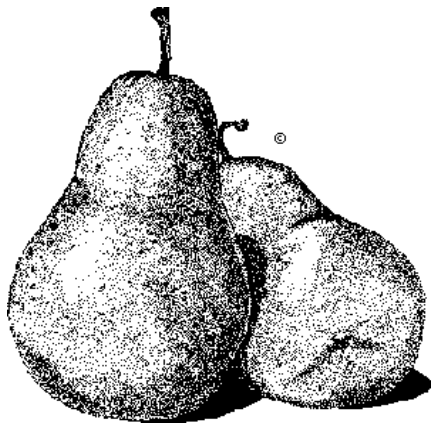
RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

FRUIT EDITION $1.50 SEPTEMBER 10, 1996



INSIDE

Pear Maturity Indices

Jerome L. Frecon, Gloucester County Agricultural Agent

New Jersey growers are producing two species of pears, **Pyrus communis**, European pears, and **Pyrus serotina** crosses and seedlings called Nashi, Oriental, Chinese, or Japanese pears. Bosc and Bartlett are the most common European pear varieties.

Indices for harvesting pears are not as reliable as apple indices and more must be learned about oriental pears including days to harvest.

◆ Flesh Firmness

Firmness measurement with a 5/16" tip on a 2 1/2 inch and up pear by removing the skin is one of the most reliable indicators of maturity on European pears. The best ranges for Bartlett are 16 to 20 pounds, D'Anjou 13-15 pounds, Bosc 14-16 pounds. Flemish Beauty is similar to D'Anjou, while Spartlett is similar to Bartlett. The firmer the fruit is harvested, the longer the keeping quality.

While I haven't stored oriental pears for long periods of time, best eating quality for most varieties is in the 7-11 pound range. Oriental pears are more coarse textured, watery and hang on the tree better and develop a better tree ripened quality. Oriental pears are very susceptible to water core. A delay in harvesting them also results in increased incidence and severity of physiological disorders and handling blemishes.

◆ Appearance

Fruit color and finish can be a good indicator of maturity. Bartletts, which most of you have harvested now, are difficult to predict by skin color. They move from deep green to lighter green and finally a yellow green. According to information from Penn State University, any pink coloration at the calyx end might indicate a premature ripening problem.

D'Anjou and Flemish Beauty change from green to a light green ground color. The same is true of Twentieth Century Shinseiki, Tsu Li, Ya Li, and Seuri.

The russeted pears like Bosc and the Oriental varieties Yoi Nashi, Kosui, Hosui, Niitaka and Shinko, go from cinammon brown to a golden brown.

Sometimes fruit finish can assist to determining maturity. Anjou and Bartlett go from a smooth waxy finish with light lenticels (dots) to a more corky or brown lenticel as the pears near harvest.

PEAR CONTINUED ON PAGE 2

Avoid Creating A Health Problem When Making Cider

Jerome L. Frecon, Gloucester County Agricultural Agent

The following article was contained in the Connecticut Department of Plant Science Fruit Growers Newsletter.

Two kinds of health problems should be of concern to makers of fresh apple cider: mycotoxins and pathogenic bacteria. Mycotoxins are toxic substances produced by fungi that can cause illness at extremely low doses. Fruit rots are produced by fungi. All fungi do not produce toxins, but a comprehensive list of which do and which don't has not been developed. Therefore, it seems prudent to minimize consumption of fungus-infected foods. Pathogenic bacteria are sometimes found in the gut of man and animals. Some strains produce very potent toxins. The bacteria can contaminate apples by way of bird droppings, or, on apples that have dropped to the ground, by contact with feces of deer or other animals. Dropped apples are more likely to harbor significant amounts of both mycotoxins and bacteria, so extra care should be given to the use of dropped fruit.

Fruits with visible rot should be discarded, rather than pressed into juice. All fruits should be washed to remove fecal contamination. Common-sense practices to keep fruit, equipment, and cider clean at all times should be a high priority in cider-making operations, large and small. Visible dirt, etc. should be removed from fruit with water and brush. Refrigeration is effective in slowing the growth of fungi and bacteria. Hypochlorite solution is effective in killing fungi and bacteria on treated surfaces of equipment, floors, etc. and whole fruits. The effective chlorine concentration for fungi and bacteria is 100-300 parts per million.

If fruit is treated with 100-300 ppm chlorine, any surface fungus or bacteria will be killed. Chlorine is inactivated by organic matter, so water that has become cloudy with use will not be effective. Time of exposure to chlorine should be up to 4 to 5 minutes. Less time is needed where fungi and bacteria are well exposed. To make a 250 ppm chlorine strength, using a 5% hypochlorite product, dilute with water at a ratio of one part in 200 parts water, or about 1 1/4 fluid ounces in 2 gallons of water. For commercial chlorine use, there are products labeled for certain fruits and vegetables, including apple, pear, and stone fruits. FMC, Lakeland, Florida (813-683-5411) has Freshguard 72 sodium hypochlorite solution; and the Decco Division of Elf Atochem, Monrovia, California (818-358-1838) has Deco Agclor 310, a sodium hypochlorite solution. Atochem also makes a fruit and vegetable cleaning solution that does not contain chlorine: Decco Fruit and Vegetable Kleen.❑

PEAR CONTINUED FROM PAGE 1

◆ Flavor or Sugar

Tasting the fruit is subjective and can be a difficult task with oriental pears. The fruit may actually lose sugar as it hangs on the tree, resulting in watery, bland tasting fruit that looks pretty but is relatively firm. Most oriental pears should be mature at 11 to 14% soluble solids measured with a refractometer. Most Bartlett pears should have 10.5% while D'Anjous and Bosc 10% minimum to begin harvest.

All of these indices should be used together. With oriental pears it is also important to know the size potential of the variety. Many varieties appear to grow rapidly near harvest and most importantly, small oriental pears do not sell. Harvest the fruit when it reaches its maximum genetic size potential.

Work is being done to develop starch iodine standards for European pears.❑

Weather Summary for the Week Ending 8am Monday 9/9/96

Keith Arnesen, Agricultural Meteorologist

Temperatures averaged much above normal. Extremes were 92 degrees at Freehold on the 4th and 53 degrees at Woodstown on the 3rd. Weekly rainfall averaged 1.24 inches north, 1.22 inches central, and 0.10 inches south. The heaviest 24 hour total was 2.69 inches at Freehold on the 8th to 9th. Estimated soil moisture, in percent of field capacity, this past week averaged 66 percent north, 54 percent central and 31 percent south. Four inch soil temperatures averaged 71 degrees north, 73 degrees central and 74 degrees south.

The following table contains meteorological information since the start of the growing season March first. The table is updated each Monday and the following is an explanation for each column.

Week=total rainfall for the previous 7 days ending Monday morning
Total=total rainfall since March 1st
Dep=departure from normal of rainfall since March 1st. A negative sign indicates below normal and no sign indicates above normal.
Mx=highest temperature for that 7 day period
Mn=lowest temperature for that 7 day period
Avg=average temperature for that 7 day period
Dep=departure from normal of the average temperature for that 7 day period
Total=total number of growing degree units since March 1st
Dep=departure from normal of growing degree units
%fc=percent of field capacity (soil moisture)❑

WEATHER CONTINUED ON PAGE 3

Ethephon For Stimulation of Coloring and Ripening of Apple

Jerome L. Frecon, Gloucester County Agricultural Agent

The following article was taken from the Spray Bulletin for Commercial Fruit Growers in Virginia and West Virginia

Ethephon (Ethrel) provides several fruit modifying effects (Table 15). Used properly, it can spread out picking time for selected parts of orchards by permitting earlier harvesting of better colored fruit.

Ethephon response is greatest under good fruit-coloring conditions and cannot substitute for conditions associated with poor color development, such as hot weather and poorly-pruned trees. Hot, dry conditions may stimulate ripening, softening, and watercore with inadequate red color, particularly on fruit treated with ethephon. Ethephon is not advised under conditions of severe water stress and high temperature.

Ethephon applied alone can cause early and severe fruit drop. Combination of NAA with ethephon will provide adequate drop control. Two sprays at 20 ppm may be needed. NAA will only prevent fruit drop for 7-10 days. Therefore, 7 days after the initial ethephon-NAA application, an additional NAA application should be used if treated fruit will not be harvested by 8-9 days after initial application. Since only two NAA applications are permitted for fruit drop control, ALL treated fruit MUST be harvested by 8-10 days after the second NAA application.

For stimulating red color on fruit to be marketed early, use a dilute spray combination of ethephon at 3/4 to 1 pt per 100 gal plus 4 oz of a surfactant plus NAA as shown on Table 15.

Use ethephon 1 to 2 weeks before normal picking time. Do not spray ethephon earlier than 3 weeks before normal harvest date because response may be limited.

Check fruit development closely, and harvest when treated fruit are ready. Do not spray more fruit than can be harvested in a 2-3 day period. Watch fruit condition because ethephon reduces starch levels, increases soluble solids, and stimulates ripening and softening of apples on the tree and after harvest. It may be possible to begin harvest earlier in some seasons, or to pick more or most fruit with better color at normal picking time.

Ethephon absorption is decreased at low temperatures. Apply when air temperature is between 60 degrees and 85 degrees F. Reduced response may be expected if application is followed by rain or excessive heat.❑

Table 15: Ethephon Timing and Stop-drop Concentration

Variety	Timing (weeks before normal picking)	Concentration (ppm) NAA(1)
Jonathan	1-2	10
Delicious	1-2	10
Golden Delicious	1	10
Rome	1	10-20
Stayman	1	10-20
Winesap	1	10
York	1	10

(1) An additional application should be made if fruit are not harvested by 8-9 days after initial application.

WEATHER CONTINUED FROM PAGE 2

WEATHER SUMMARY FOR THE WEEK ENDING 8 AM MONDAY 9/9/96

	RAINFALL			TEMPERATURE				GDD BASE50		MON
WEATHER STATIONS	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	.91	26.29	.67	90	56	74.	9	2314	-20	69
CANOE BROOK	1.91	29.23	2.36	91	59	76.	10	2696	339	90
CHARLOTTEBURG	2.70	34.17	7.03	87	56	72.	9	2316	442	100
FLEMINGTON	.83	31.54	5.75	89	59	75.	9	2505	87	68
LONG VALLEY	.71	27.87	-.04	84	59	73.	10	2270	189	71
NEWTON	.35	28.92	3.87	87	56	72.	9	2263	138	61
FREEHOLD	3.29	27.92	2.80	92	60	76.	8	2555	-2	100
LONG BRANCH	1.60	24.74	-.73	89	63	75.	7	2531	32	92
NEW BRUNSWICK	.99	31.32	5.88	89	61	75.	7	2638	-57	78
PEMBERTON	.51	32.88	7.08	91	61	78.	10	2938	312	52
TOMS RIVER	.20	27.04	1.03	91	58	76.	6	2562	66	35
TRENTON	.70	36.53	12.43	91	61	76.	7	2648	-144	59
CAPE MAY COURT HOUSE	.00	27.77	5.26	86	63	76.	5	2711	215	15
DOWNSTOWN	.11	24.68	.94	90	62	77.	8	2837	37	31
GLASSBORO	.33	30.15	5.33	90	64	78.	9	2941	163	43
HAMMONTON	.20	24.53	-.28	90	62	77.	8	2863	83	26
POMONA	.01	24.88	2.12	89	60	77.	9	2700	107	23
SEABROOK	.05	27.94	5.19	91	62	77.	8	2883	68	34
ATLANTIC CITY MARINA	.00	22.28	.41	89	61	76.	7	2566	23	19
WOODSTOWN	.20	27.05	2.64	91	53	76	NA	2978	NA	NA

Insect Trap Captures

Week Ending	6/28	7/5	7/12	7/19	7/26	8/2	8/9	8/16	8/23	8/30	9/6
Tree Fruit - Southern Counties											
RBLR	54.8	36.7	20.3	9.7	5.3	10.9	21.7	20.5	29.1	20.1	25.3
STLM	1734	1071	854	1039	1476	1341	959	756	612	343	428
TABM-A	37.4	10.7	4.8	6.7	19.1	21.0	21.3	24.5	19.3	12.9	25.1
CM	1.4	0.2	0.3	1.2	3.2	2.0	2.1	1.1	0.8	1.3	0.7
AM	0.0	0.1	0.0	0.13	0.0	0.1	0.1	0.1	0.0	0.1	0.1
OFM	8.0	3.7	2.9	5.9	5.6	3.1	3.0	4.3	9.8	9.9	14.2
TABM-P	30.0	8.6	9.7	7.7	20.0	30.6	19.6	19.6	12.0	21.7	13.5
LPTB	55.1	36.8	30.7	22.5	12.4	17.4	23.6	23.6	43.7	67.3	54.6
PTB	7.0	3.2	3.5	3.4	5.8	3.9	3.9	3.9	4.1	5.0	3.5
Tree Fruit - Northern Counties											
RBLR	25.5	19.2	8.4	0.4	17.6	1.5	1.4	8.5	5.8	23	23
STLM	932	794	627	557	620	787	1302	1393	659	1099	1340
TABM-A	25.5	10.0	3.2	1.1	1.1	0.2	1.6	2.0	0.5	5.0	14.0
CM	7.5	5.1	2.4	6.1	7.6	4.7	9.3	7.9	1.7	7.0	3.5
AM	.04	.02	0.7	0.4	0.0	0.3	0.1	0.2	0.1	0.2	0.1
OFM	6.3	4.9	4.3	3.2	3.6	3.4	7.2	4.9	3.8	3.8	7.0
TABM-P	3.7	20.0	10.0	0.0	0.0	0.0	0.2	2.2	0.8	8.0	13.0
LPTB	30.4	9.5	9.8	7.0	18.7	3.7	8.0	4.4	5.1	7.4	8.5
PTB	16.3	8.0	6.2	4.1	9.3	5.5	7.0	6.6	1.6	4.3	2.5
Blueberry - Atlantic County											
RBLR	141	6.5	45.4	16.9	8.4	6.4	5.1	5.1	3.0	7.8	11.6
OBLR	15.0	2.3	0.8	0.7	3.0	3.5	0.4	0.7	0.5	0.6	0.5
CBFW	0.02	0.08	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SNLH	2.1	1.2	0.8	0.2	0.3	0.4	0.5	0.1	0.2	0.4	1.0
BBM	0.16	0.2	0.3	0.1	0.1	0.2	0.4	0.6	0.5	0.6	0.2
OB	831	774	1451	1173	450	182	71	36	29	9.3	1.5
Burlington County											
RBLR	96	73.4	45.0	9.9	3.1	1.2	5.0	6.9	8.0	21.0	16.0
OBLR	21.4	7.0	1.0	0.3	0.9	0.6	0.5	2.0	1.3	2.8	0.5
CBFW	0.8	0.0	0.1	0.0	.08	0.0	0.0	0.0	0.0	0.0	0.0
SNLH	7.5	1.8	1.6	0.9	0.1	0.6	1.9	0.6	0.3	5.3	4.6
BBM	0.11	0.2	0.2	0.4	0.3	0.5	2.6	0.3	0.2	0.1	0.0
OB	509	449	840	663	356	112	51	37	14.6	4.9	0.2
Abandoned Fields (both counties)											
RBLR	70.0	47.0	34.0	10.0	8.0	0.5	5.0	0.8	1.5	7.0	12.3
OBLR	34.5	15.5	4.0	1.0	1.5	2.0	0.5	0.8	0.5	1.8	1.5
CBFW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SNLH	38.5	22.5	18.3	10.0	6.9	6.0	1.9	2.2	0.9	2.7	5.4
BBM	3.2	6.8	37.0	47.0	19.5	8.3	2.6	1.2	2.1	1.0	0.0
OB			435	191	122	51	51	4.0	6.0	6.0	--

Insect key: RBLR = redbanded leafroller, STLM = spotted tentiform leafminer, TABM = tufted apple bud moth, CM = codling moth, AM = apple maggot, OFM = oriental fruit moth, LPTB = lesser peachtree borer, PTB = peachtree borer, OBLR = oblique banded leafroller, CBFW = cranberry fruitworm, SNLH = sharpnosed leafhopper, BBM = blueberry maggot, OB = oriental beetle.

Insect Degree Day Accumulations as of 9/8/96							
Insect	Site & County Biofix Date plus Degree Days Since Biofix						
	Bridgeton Cumb.	Hammonton. Cam.	Hardingville Glou.	Richwood Glou.	Princeton Mercer	Oldwick Hunt.	Morristown Morris
$TABM_{45}$ 2nd Gen	5/4 - 3228 Hit 2228 Aug 4-1st trt Hit 2415 Aug 11-2nd trt Hit 2605 Aug 18-3rd trt Hit 2795 Aug 25-4th trt	5/3 - 3220 Hit 2228 Aug 4-1st trt Hit 2415 Aug 11-2nd trt Hit 2605 Aug 18-3rd trt Hit 2795 Aug 25-4th trt	5/2 - 3244 Hit 2228 Aug 4-1st trt Hit 2415 Aug 10-2nd trt Hit 2605 Aug 18-3rd trt Hit 2795 Aug 24-4th trt	5/2 - 3246 Hit 2228 Aug 4-1st trt Hit 2415 Aug 10-2nd trt Hit 2605 Aug 18-3rd trt Hit 2795 Aug 24-4th trt	5/13 - 3050 Hit 2228 Aug 10-1st trt Hit 2415 Aug 18-2nd trt Hit 2605 Aug 24-3rd trt Hit 2795 Aug 31-4th trt	5/20 - 2885 Hit 2228 Aug 16-1st trt Hit 2415 Aug 23-2nd trt Hit 2605 Aug 29-3rd trt Hit 2795 Sept 6-4th trt	5/23 - 2747 Hit 2228 Aug 21-1st trt Hit 2415 Aug 27-2nd trt Hit 2605 Sept 4-3rd trt Predict 2795 Sept 10-4th trt

All reported accumulations based on Skybit Inc. data with some ground verification. OFM base = 45, max = 90, TABM base = 45, max = 91, CM base = 50, max = 88.

Spray targets based on: OFM: 200 °D after biofix and again 200 °D later (first generation only)
TABM: (A.M. sprays) 490, 625, 763, 898 - 1st gen. and 2228, 2415, 2605, 2795 °D after biofix - 2nd gen.
CM: 250 °D after biofix + 2 - 3 weeks later; 2nd generation at 1250 - 1300 °D after biofix + another spray 14 to 21 days later.

Fruit IPM - Week Ending 9/13/96

Dean Polk, IPM Agent - Fruit

◆ Apple

✔ **White apple leafhopper (WALH) and rose leafhopper (RLH):** Leafhopper nymphs are present in a number of apple blocks. In most cases they pose no problem at this time of year, with the following exceptions: 1) Heavy infestations can lead to deposits of fecal matter on the fruit which appear as small brown flecks on the tops of the fruit. 2) Under PYO conditions some pickers may complain of high populations of 'white flies.' Carzol, Provado, Diazinon, Cygon, M-Pede, Lannate, Thiodan, Vydate, and Asana give good control. Be aware of preharvest intervals which are: Carzol-7, Provado-7, Diazinon-21, Cygon-28, M-Pede-0, Lannate-14, Thiodan-21, Vydate-14, Asana-21.

✔ **Summer rots:** Late maturing varieties will still benefit from regular fungicide applications. Captan has a 0 day PHI (unlike what I reported in the last newsletter or what is in the '96 spray guide).

◆ Peach

✔ **Lesser peachtree borer and peachtree borer (LPTB & PTB):** LPTB has two generations per year. Adults which lay eggs for the second or overwintering larval brood have recently peaked. Past research has shown that the best control of second brood larvae is obtained when insecticides are applied shortly after the flight peak. The best materials include both pyrethroids and Lorsban 4E. Applications **must be made with high volume dilute sprays applied with a handgun**. **Applications must completely cover the surface areas of Cytospora cankers**, since that is where egg laying, larval hatch and mining take place. Insecticides and rates/100 gal. are as follows: Lorsban 4E 1.5 qt., Asana 6 oz., Ambush 2EC 6.5 oz., Pounce 3.2EC 4 oz.

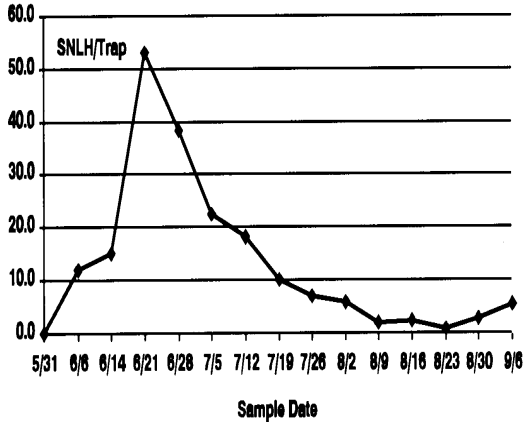
PTB has one generation per year, with most of the egg laying and hatch occurring during July and August. Applications for control of this pest are usually made once a year. Applications made during early to mid September will give better control than applications made during late September to October. PTB adults lay their eggs at the base of the trunk, including weeds and major roots one to two feet out from the trunk. **High volume dilute sprays are needed to adequately cover this area**. Spray volume needs to penetrate the soil and seep into the bark and woody tissue where young larvae are located. We have seen many blocks over the past few years which have been routinely treated with airblast sprayers. Trees were dying and heavily infested with borer larvae. **Airblast sprays do not work**.

✔ **Fusicoccum canker (constriction or Phomopsis canker):** Cankers are formed both during the spring and late summer to fall. While we do not have excellent controls for this disease, the best we have is a series of 3 applications of copper. Copper sulfate 25% @ 4lb/100 gal should be combined with lime @ 6lb/100 gal and be applied now, with 2 additional applications made at 3 week intervals.

◆ Blueberry

✔ **Sharpnosed leafhopper:** Second generation adults have increased in most areas, especially around Sheep Pen Hill and Tabernacle. Growers, especially in Burlington County, should plan on treating this pest in the next couple of weeks. See graph of abandoned site SNLH catches.❑

Blueberry - SNLH Trap Record 1996 Abandoned Sites



CONTINUED ON PAGE 4

Symposium Scheduled

Canada Goose Damage: Practical, Effective Solutions

Where: Rutgers University, Trayes Hall, Douglass Campus
When: Tuesday, November 12, 1996 8:00 am - 4:00 pm
Cost: $45 on or before November 5th (Includes Continental Breakfast & Lunch)
$55 after November 5th

For registration information, contact:
Gail DeFino (201) 379-1100

Joint Sponsors: The American Society of Landscape Architects (NJ Chapter); USDA; Animal and Plant Health Inspection Service: Animal Damage Control (APHIS, ADC); Wildlife Damage Control and Rutgers University

Rutgers Cooperative Extension - NJAES
U.S. DEPARTMENT OF AGRICULTURE
Rutgers -The State University of New Jersey

P.O. Box 231
Cook College
New Brunswick, N.J. 08903-0231

PLANT & PEST ADVISORY

FRUIT EDITION - CONTRIBUTORS

RCE Specialists
Robert Belding, Ph.D., Pomology
Joseph A. Fiola, Ph.D., Small Fruit & Viticulture
Norman Lalancette, Ph.D., Plant Pathology
Bradley A. Majek, Ph.D., Weed Science
Peter Oudemans, Ph.D., Plant Pathology
Sridhar Polavarapu, Ph.D., Entomology
Peter W. Shearer, Ph.D., Entomology
Craig A. Storlie, Ph.D. Agricultural Engineering
NJAES/Cook College
Joseph Goffreda, Ph.D., Breeding
Edward Durner, Ph.D., Plant Physiology
RCE County Agricultural Agents and Program Associates
Gloucester, Jerome L. Frecon (609-863-0110)
Hunterdon, Winfred P. Cowgill, Jr. (908-788-1338)
Morris, Peter J. Nitzsche (201-285-8300)
Warren, William H. Tietjen (908-475-6505)
Cream Ridge, Dean Polk (609-758-7311)
Ken Petersen, Program Associate (908-788-1338)
Gene Rizio, Program Associate (609-784-1001)
David Schmitt, Program Associate (609-863-0110)
Newsletter Production
Jack Rabin, Assistant Director, NJAES
Gloria A. Meyer, Editor and Designer