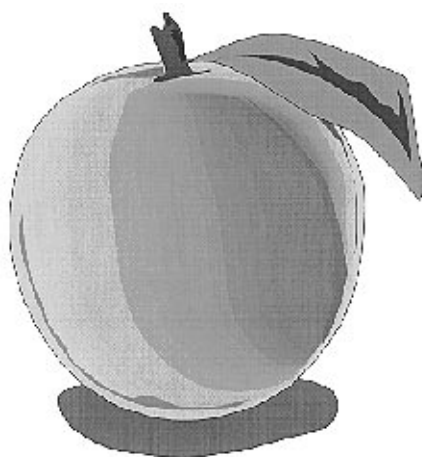


# PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

JUNE 30, 1998



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## Storage Temperatures for Stone Fruit

*Robert Belding, Ph.D., Pomology*

**H**andling stone fruit after picking is not as 'cut and dried' as you might think. Stone fruit going to large supermarkets requires longer shelf life than fruit marketed directly from the farm. Shelf life is related to variety, maturity, damage, and disease control as well as proper storage conditions.

The temperature at which stone fruit is stored is critically important. In the case of wholesale marketing, quickly reducing the respiration rate by lowering the temperature is the best method of maintaining flesh firmness. Warm temperatures, above 50°F, allow fruit to soften rapidly and develop postharvest diseases. Storage at temperatures below 50°F and above 36°F, result in fruit flesh *CHILLING INJURY*. *Damage takes the form of internal flesh breakdown* (browning), mealiness, flesh bleeding and failure to ripen normally. Mealiness is a flesh disorder where the liquids in the cells bind to the cell walls, resulting in a dry 'woolly' character. The difficulty is that the symptoms occur after the cold storage period and are usually first detected by the consumer. Consumers who experience damaged, poor quality fruit are less likely to purchase more. Fruit stored below 36°F generally do not develop chilling damage. Fruit that needs to be stored should be brought to 31-32°F as quickly as possible and not kept in a 40°F cold room.

California stone fruit marketers have determined that the volume of sales is directly tied to selling quality fruit without defects such as chilling injury. In fact, the California Tree Fruit Agreement (CTFA) has launched the "Save the Stone Fruit" program which encourages retailers and consumers to keep stone fruit *out of the refrigerator* in order to avoid internal breakdown from chilling injury. The CTFA's comparison of two retail chains, one with traditional refrigerated storage, and another with no stone fruit refrigeration showed that non-refrigerated fruit was of better quality and sold twice the volume of fruit, even at 15% higher cost. Quality does count. Two exceptions to California's program are early varieties of peaches, which naturally ripen quickly and white flesh fruit, which are not susceptible to internal breakdown. One note, California does not have the disease pressure that we have in the East.

For the direct market, if increased sales offset fruit loss to softening, as the CTFA contends, then the benefits of keeping fruit from refrigeration can be realized. In the meantime, *DO NOT* store fruit at temperatures between 36-50°F. The ideal storage for stone fruit is 31-32°F. □



## Deer Fencing Installation Seminars

**August 4, 1998  
4 PM - 8 PM**

**Rutgers University, Snyder Research  
Farm  
140 Locust Grove Road  
Pittstown, NJ 08867**

**August 5, 1998  
4 PM - 8 PM**

**Rutgers University, Agricultural  
Research and Development Center  
121 Northville Road  
Bridgeton, NJ 08302**

The New Jersey Department of Agriculture and the New Jersey Division of Fish, Game and Wildlife in a cooperative program will be awarding over 700,000 feet of deer fencing to New Jersey farmers.

The Snyder Research Farm will be hosting the above noted seminars to educate farmers and other interested parties in the proper installation procedures. Representatives from the fence manufacturer and distributor, as well as commercial installers will be on hand to demonstrate fence installation.

Call the Snyder Research Farm at 908-730-9419, ext. 11, to register for either seminar.

## The Japanese Beetle

*Peter W. Shearer, Ph.D., Tree Fruit Entomology*

**T**he Japanese beetle was introduced into New Jersey on nursery stock from Japan in 1913. Since its introduction, it has spread to most states east of the Mississippi River. It is now a seasonal pest and can cause extensive damage to many crops. The larvae feed on roots of plants and are especially damaging to turf and pasture. The adults feed on over 275 species of plants such as fruit trees, flowers, and vegetables.

Adults are about 3/8-1/2 inch long and metallic green to greenish bronze in color. They have white tufts of hair along the bronze forewing. Larvae are C-shaped white-to-cream-colored grubs with brown heads and are about 3/4-1 inch when full grown.

The Japanese beetle overwinters as a grub in the soil. In the spring, they move up towards the soil surface and feed on roots. Adults begin to emerge in late June and are active until late September. Females can lay about 50 eggs apiece, 2-6 inches deep in the soil. It takes about 2 weeks for the eggs to hatch and newly emerging larvae feed on decaying matter, then plant roots.

Adult feeding damages both leaves and fruit. Leaf damage usually takes the form of skeletonizing. Fruit feeding results in large holes in the fruit. Often when ripening fruit is attacked, controls are necessary, yet difficult, because of pre-harvest interval (PHI) limitations of effective materials. Early peach and apple varieties are most susceptible to adult attack because their time of ripening occurs during Japanese beetle emergence.

Occasional scouting is required to determine if this pest is causing damage. Carbaryl (Sevin) can be used on peaches and nectarines when adult Japanese beetle populations are high and damage can be seen. This product has a 3-day PHI for peaches and nectarines. On apple, Imidan is effective and not considered disruptive to IPM programs. Imidan has a 7-day PHI for apple. The fact that these materials do not provide quick knock-down and that new beetles invade from outside the orchard often gives the appearance that control measures are ineffective. Under high pressure, control measures should be applied more frequently. □

# Fruit Weed Control

Bradley A. Majek, Ph.D., Weed Science

## Tree Fruit

**Perennial Weed Control:** Established **perennial** weeds in orchards are evident now, when residual weed control programs have controlled the **annuals**. Control of **perennials** can be more difficult and may require special attention. Herbicide applications *must* be made at the right time of year to achieve control of the roots as well as the foliage of **perennial weeds**. Failure to apply herbicides at the right time often causes poor results. Weeds must be "actively growing" to move herbicides that are absorbed by the leaves into the roots. Do *not* treat during periods of heat, drought, or other severe stress that adversely affects growth.

**Virginia Creeper** can be controlled in late June to early July with 2,4-D. Before spraying, remove any **creeper** in the tree and carefully lay it in the row. Complete coverage is necessary for excellent control. Caution, 2,4-D can drift as fine spray particles or as a vapor and harm sensitive vegetable and ornamental crops in adjacent fields. Do *not* apply during periods of high wind to avoid spray drift. Do *not* apply when the temperature *or* the humidity is high and the air is dead calm to reduce the risk of vapor drift. Consult the Commercial Tree Fruit Production Recommendations for rates and additional information

**Canada thistle** can be controlled in June or early July, when in full bloom with Roundup 4SC. Broadcast 3.0 to 4.0 lb ai/a (3 to 4 quarts per acre) or spot treat by spraying to the point of runoff with a 2% solution in a knapsack sprayer. Treat before **thistle** sets seed and dies back later in July and August.

The most effective time to treat **Canada thistle** with Roundup is to spray fall regrowth in early October when new **fall thistle** growth is eight to ten inches tall, but before frost. Use the same rates recommended for the early summer treatment.

**Goldenrod and white heath (wild) aster** can be controlled in May or June after spring growth has reached ten to twelve inches. Broadcast 2.0 to 4.0 lb ai/a (2 to 4 quarts per acre) or spot treat by spraying to the point of runoff with a 2% solution in a knapsack sprayer. Good coverage of the foliage is necessary for effective control. Adjust spray boom height or use a boom that leans over tall weeds at the proper height for spraying.

**Poison ivy** is more difficult to control than **Virginia Creeper**. The weed must be removed from the tree and kept on the ground prior to treatment. Apply Roundup at 4.0 lb ai/a (1 gallon per acre) in July or August after the weed has bloomed and has green fruit. **Poison ivy** flowers in late June or early July. Look for flowers and fruits on older mature plants that receive full or partial direct sunlight. Do **not** allow Roundup to contact the

# Fruit Meeting Calendar

**July 23 through July 26, 1998** - New Jersey Peach Festival at the Gloucester County 4-H Fair, 4-H Fairgrounds, Mullica Hill, NJ. Contact Chris Smith at 609-881-1411 or Marsha Gaventa at 609-467-8028.

**August 4, 1998** - Deer Fencing Installation Seminar, Rutgers Snyder Research Farm, Pittstown, NJ. Call Snyder Farm at (908) 730-9419, ext. 11 to register.

**August 5, 1998** - Deer Fencing Installation Seminar, Rutgers Agricultural Research & Development Center, Bridgeton, NJ. To register, call Rutgers Snyder Research Farm at (908) 730-9419, ext. 11.

**August 18, 1998**, 6:30 p.m. - Direct Marketing Twilight Meeting, Monmouth County, Atlantic Farms, 1506 Atlantic Avenue, Wall Township (Rt. 524), NJ 08736

Located in suburbia, John Tobia and family have carved out a wonderful market, serving consumers with Jersey produce, plants, farm entertainment and agriculture education tours. A steadily growing wholesale produce business serving restaurants and other marketers has been established, further diversifying the operation. For further information, please contact Ramu Govindasamy at (732) 932-9171 ext. 25.

foliage or young green bark on new fruit tree shoots. Treatment earlier in the season or after fall colors appear are less effective.

## Small Fruit

**Strawberry:** Apply Formula 40, or other labeled 2,4-D amine formulations seven days before mowing old leaf growth if most of the **broadleaf weeds** are taller than the crop, or tank-mix with the preemergence herbicides and apply immediately after mowing if most **broadleaf weeds** are below the crop canopy. Apply Devrinol, unless the full labeled rate for the year was applied in late fall or early spring, and Sinbar. Irrigate within 2 days if rainfall does not occur after application to make the preemergence herbicides available to the emerging weed seedlings. Delay irrigation for 12 hours if postemergence herbicide(s) are applied to allow time for penetration into the leaves, or weed control may fail. Use care not to exceed the total recommended rate of any herbicide for an acre in one year. Consult the Commercial Vegetable Production Recommendations for rates and additional information. □

# Fruit IPM

Dean Polk, Agricultural Agent

## Peach

**Tarnished Plant Bug (TPB), Other Catfacing Insects and Physiological Injury:** Pressure has remained the same over the last couple of weeks. However, much of what appears to be catfacing injury on the fruit is actually a physiological problem with the fruit, manifested as internal bleeding that erupts as surface gumming or water-soaked areas that are very similar to fresh catfacing injury. If this is mistaken for catfacing injury, additional insecticides may be needlessly applied. If in doubt, cut the peach open. If there is no internal bleeding, bugs are probably to blame. If there is internal bleeding in the flesh and around the pit, and/or the pit is split, then the problem is physiological and no amount of insecticide will reduce the amount of injury present.

**Oriental Fruit Moth:** Trap catches have increased again this past week. Many farms show increased emergence in excess of our action threshold of 6-8 moths per trap. This could be the start of the third flight, although it is quite early. However, some peach varieties are also 2 to 3 weeks early in ripening. Insecticide sprays cannot be stretched during periods of adult flight, since they are also mating and laying eggs. Eggs take only a few days to hatch in warm summer weather.

**Bacterial Spot:** Infections are starting to become visible on the fruit. While infection rates are low, they may also be accompanied by considerable levels of foliar disease symptoms. Many of the visible leaf symptoms are from rains we experienced 2 weeks ago.

**Peach Scab:** Fruit infections were seen this past week on Sentry and Garnet Beauty peaches during harvest in Gloucester and Atlantic Counties. These trees had just come into bearing, and may have received only partial spray programs during the previous year. In fact, our spring samplings of overwintered scab often showed considerable levels present on 3 year old trees.

## Apple

**Spotted Tentiform Leafminer (STLM):** Adult counts show that we appear to be in the second flight peak in both northern and southern counties. Increased numbers of new sap-feeding miners have been noted in scouting samples this past week, which fits what we normally see just after the peak adult flight. Several farms had mine levels which required treating. If the combined second brood (current mines) sap-feeding count plus older (first brood empty mines) is over .5 to 1 mine per leaf, then treatment is justified. Counts on one southern county farm recently reached 6 to 10 sap-feeding mines per leaf. Provado is one of the more effective materials we have for STLM control. Vydate and multiple applications of Lannate are also effective. Lannate is not suggested until later in the season when the danger of mite flair is over, and/or it can be used for the additional control of second generation tufted apple budmoth.

**Tufted Apple Budmoth (TABM):** Some, but very little first generation injury has been seen in southern counties. Some injury has also been noted on peaches. Larvae are about half grown. Therefore, no treatments are presently needed for this pest. The next treatments will be needed towards the end of the month when adults start laying eggs for the second brood.

**Codling Moth (CM):** Trap counts of adults have increased, particularly in northern counties. Although this is very early, degree day counts indicate that sprays for the second generation will be due in southern counties around 7/8. Treatments in northern areas will fall around 7/9-10 for central counties, close to 7/10-11 in Hunterdon County, and 7/13 in Warren County. An additional spray will be required 10 days to 2 weeks later after the first spray.

**General Precipitation and Infection Conditions:** Predicted periods of precipitation and thunderstorms are likely to bring additional Scab and Fire Blight infections to many South Jersey orchards for the remainder of the week though 7/5. The most likely infection periods in northern counties may fall around 6/30 through 7/2.

SEE IPM ON PAGE 5

| Degree Day Accumulations Since Biofix and Spray Targets |  |           |              |            |  |         |           |              |
|---|--|-----------|--------------|------------|--|---------|-----------|--------------|
| June 29   |  |           |              |            |  |         |           |              |
| Insect  | Hammonton  | Bridgeton | Hardingville | CreamRidge | Princeton  | Oldwick | Pittstown | Hackettstown |
| OFM   | Done   | Done      | Done         | Done       | Done   | Done    | Done      | Done         |
| TABM  | 1395   | 1377      | 1412         | 1287       | 1278   | 1257    | 1067      | 976          |
| CM  | 1037   | 1065      | 1085         | 1003       | 983  | 960     | —         | 802          |
| Spray Targets:  |  |           |              |            |  |         |           |              |
| OFM   | 200 & 400 DD <sub>45</sub> after biofix (1 <sup>st</sup> generation).              |           |              |            |  |         |           |              |
| TABM  | 490, 625, 763, 898 DD <sub>45</sub> after biofix (1 <sup>st</sup> generation).     |           |              |            | 2228, 2415, 2605, 2795 DD <sub>45</sub> after biofix (2 <sup>nd</sup> generation).       |         |           |              |
| CM  | 250 DD <sub>50</sub> after biofix plus 14 days later (1 <sup>st</sup> generation). |           |              |            | 1250-1300 DD <sub>50</sub> after biofix plus 14 days later (2 <sup>nd</sup> generation). |         |           |              |

**Pear**

**Pear Psylla:** Eggs have been laid by the high adult populations seen during the past couple of weeks. These are now hatching and soft-shell nymphs are becoming visible. Treatments are suggested to target emerging nymphs where psylla is a potential problem.

**Blueberry**

**Aphids:** Aphids are still present in 90 to 95% of all samples taken. The average infestation level increased from the previous week from about 9% to just over 13% of shoots infested. The highest infestation rate was about 50% of shoots infested. In most cases, materials are not working the way they should. When applied with a ground 'canon', malathion has been noted to work well on the first few rows close to the sprayer, but not on rows further away from the sprayer. Aphids have rebounded quickly after insecticide application.

**Sharpnosed Leafhopper (SNLH):** The first flight of SNLH adults has peaked, but adults are still present,

particularly in Burlington County. Sprays for this insect continue to be justified if in a stunt disease area, although most growers will be covering SNLH with continued applications that target aphids and blueberry maggot.

**Cranberry Fruitworm (CBFW):** Larval presence has increased from 9% of our samples to about 20% of samples. All infestations are at low levels with 2.3% the highest level reported.

**Blueberry Maggot (BBM):** Captures of adult flies have increased on most commercial farms. High counts continue to be found in abandoned sites (close to 200 flies per trap). Most commercial farms now have at least one trap capturing one or more maggot flies per week. Boiling samples have not shown any positive results as of this date.

**Disease:** Mummy berry has been rather high on certain farms with diseased fruit found in 35% of field samples. Anthracnose and Alternaria infected fruit are also being found at a rate of 4% of samples showing some degree of infected fruit.

**Trap Captures**

**Tree Fruit – South Jersey**

| WEEK END: | RBLR  | STLM | TABM-A | CM   | AM   | OFM   | TABM-P | LPTB  | PTB  |
|-----------|-------|------|--------|------|------|-------|--------|-------|------|
| 1-May     | 0.75  | 1057 | 1.38   | 2.23 |      | 15.43 | 7.08   |       |      |
| 8-May     | 0.33  | 953  | 19.58  | 5.31 |      | 14.54 | 23.58  |       |      |
| 15-May    | 0.20  | 108  | 23.44  | 6.59 |      | 8.05  | 23.58  |       |      |
| 22-May    | 0.80  | 119  | 41.20  | 5.39 |      | 8.57  | 59.55  | 52.83 | 0.00 |
| 29-May    | 0.00  | 315  | 65.25  | 8.51 | 0.00 | 13.33 | 78.76  | 63.74 | 1.35 |
| 5-Jun     | 0.20  | 875  | 58.49  | 5.51 | 0.25 | 8.75  | 84.20  | 55.87 | 2.62 |
| 12-Jun    | 6.80  | 850  | 59.83  | 2.83 | 0.08 | 5.31  | 67.72  | 62.29 | 1.13 |
| 19-Jun    | 12.20 | 931  | 27.52  | 1.77 | 0.24 | 7.64  | 36.90  | 44.50 | 1.68 |
| 26-Jun    | 27.80 | 1054 | 38.62  | 1.96 | 0.28 | 11.81 | 52.12  | 54.37 | 7.70 |

**Tree Fruit – North Jersey**

| WEEK END: | RBLR  | STLM | TABM-A | CM    | AM | OFM   | TABM-P | LPTB  | PTB  |
|-----------|-------|------|--------|-------|----|-------|--------|-------|------|
| 1-May     | 23.53 | 803  | 0.11   | 0.11  |    | 11.27 | 0.04   |       | 0.00 |
| 8-May     | 14.02 | 346  | 0.91   | 1.56  |    | 7.04  | 0.63   | 2.00  | 0.38 |
| 15-May    | 3.20  | 79   | 2.66   | 1.69  |    | 2.46  | 1.98   | 5.72  | 0.00 |
| 22-May    | 1.64  | 71   | 11.87  | 7.52  |    | 11.94 | 11.07  | 46.47 | 0.00 |
| 29-May    | 0.41  | 203  | 24.67  | 10.11 |    | 9.64  | 26.25  | 51.39 | 0.09 |
| 5-Jun     | 0.30  | 658  | 42.30  | 10.09 |    | 8.49  | 33.14  | 53.26 | 0.00 |
| 12-Jun    | 0.61  | 429  | 23.05  | 2.65  |    | 1.87  | 21.15  | 2.53  | 0.00 |
| 19-Jun    | 5.71  | 1210 | 27.15  | 4.75  |    | 4.65  | 22.48  | 25.88 | 0.27 |
| 26-Jun    | 21.54 | 1162 | 20.07  | 7.38  |    | 8.59  | 17.41  | 38.72 | 2.04 |

**Blueberry - Atlantic Co.**

| WEEK END: | RBLR  | OBLR  | CBFW | SNLH  | BBM/HIGH | BBM/LOW |
|-----------|-------|-------|------|-------|----------|---------|
| 5/1       | 6.4   | 0.08  |      |       |          |         |
| 5/8       | 2.2   | 0     | 0.2  |       |          |         |
| 5/15      | 0.04  | 0.05  | 0.57 |       |          |         |
| 5/22      | 0     | 4.05  | 0.61 |       |          |         |
| 5/29      | 0.29  | 11.15 | 1.28 |       |          |         |
| 6/5       | 12.4  | 7.5   | 0.53 | 0     | 0        | 0.04    |
| 6/12      | 26.25 | 2.025 | 0.41 | 0     | 0.06     | 0.01    |
| 6/19      | 44.98 | 1.47  | 0.30 | 0.25  | 0.02     | 0.01    |
| 6/26      | 36.04 | 1.34  | 0.04 | 0.004 | 0.67     | 0.30    |

**Blueberry - Burlington Co.**

| WEEK END: | RBLR  | OBLR  | CBFW | SNLH | BBM/HIGH | BBM/LOW |
|-----------|-------|-------|------|------|----------|---------|
| 5/1       | 2.5   | 0     |      |      |          |         |
| 5/8       | 1.1   | 0.05  | 0    |      |          |         |
| 5/15      | 1.06  | 0.06  | 0.00 |      |          |         |
| 5/22      | 0     | 0.5   | 0.22 |      |          |         |
| 5/29      | 0.1   | 13.3  | 8.8  | 0.08 |          |         |
| 6/5       | 0.89  | 12.17 | 1.61 | 0.47 | 0        | 0       |
| 6/12      | 5.44  | 11.38 | 2.17 | 0.67 | 0        | 0.03    |
| 6/19      | 21.67 | 10.31 | 3.83 | 0.61 | 0.07     | 0.11    |
| 6/26      | 40.78 | 4.19  | 0.56 | 0.5  | 0.2      | 0.17    |

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