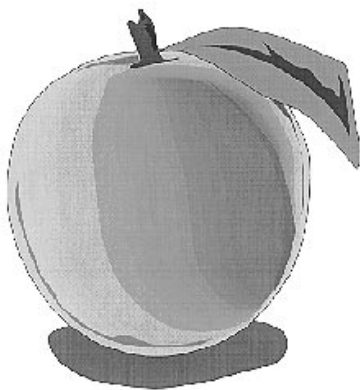


# PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

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## New Peach Sizing Regulations

*Jerome L. Frecon, Gloucester County Agricultural Agent*

As many of you know, the peach sizing regulations were changed effective October, 1995. The following is a summary of the final rule printed in the Federal Register, Vol. 60, No. 148, Regulation 39241.

Summary: This final rule revises the United States Standards for Grades of Peaches by changing the method in which peaches are sized. The revision will bring the standards into conformity with current cultural, harvesting and marketing practices by revising the definition of "diameter" from the shortest distance to the greatest distance.

The Agricultural Marketing Service (AMS), in cooperation with industry and other interested parties develops and improves standards of quality, condition, quantity, grade, and packaging in order to facilitate commerce by providing buyers, sellers, and quality assurance personnel uniform language and criteria for describing various levels of quality and condition as valued in the marketplace. The National Peach Council (NPC), with the support of the Georgia Peach Council, New Jersey Peach Promotion Council, Inc., and the South Carolina Peach Council and Promotion Board, Inc., requested that the USDA revise the United States Standards for Grades of Peaches, which were last revised in 1952.

The NPC requested that the standards be revised in order to bring them into conformity with current cultural, harvesting and marketing practices. The NPC contends that changes to the current standards are necessary due to new improved varieties. Currently, peaches are sized based on the shortest diameter, which requires the use of a caliper or slotted sizing ring. This method was adopted several years ago when most peaches were oblong and heavily sutured. Industry research has demonstrated that today's varieties are generally much more round and more uniform in shape than older varieties. The shape of peaches is similar to nectarines. Nectarines are sized by using the greatest diameter of the nectarine, which allows fruit to be sized using a sizing ring. Therefore, in order to create uniformity in the marketplace, peaches should be sized on the same basis as nectarines, by using the greatest dimension measured at right angles to a line from stem to blossom end of the fruit, using a sizing ring.

For Further Information contact: Frank O'Sullivan, Fresh Products Branch, Fruit and Vegetable Division, Agricultural Marketing Service, U.S. Department of Agriculture, P.O. Box 96456, Room 2056 South Building, Washington, DC 20090-6456, (202) 720-2185. □

## Interpreting Soil Color

Joseph R. Heckman, Ph.D., Soil Fertility

Soil color in itself has little direct impact on plant growth and productivity, however, this easily observed property can tell us many things about soils. Organic matter and iron are the two primary coloring agents in soil. Dark colors in the surface layer indicate that the soil is rich in humus. The varying shades of red, yellow, gray and blue of soils are usually related to the form and quantity of iron present.

Properties related to color include:

### ● Organic matter content

Soils high in organic matter content are black or dark-colored.

### ● Temperature

Dark-colored soils absorb more heat and tend to warm up more quickly in the spring.

### ● Drainage

Soil color is a very useful indicator of natural drainage conditions. Soil iron is either in the oxidized (rusty) or reduced state depending on drainage and aeration. Red and yellow soils are well drained while gray and blue soils are poorly drained. Soils that have mottles or splotches of gray color in the subsoil are somewhat poorly drained. They are saturated with water for some period of the year.

### ● Parent material

The rock or minerals from which the soil formed influences soil color. The Marlton soil series in New Jersey is a notable example. This soil is rich in a bluish green glauconite mineral commonly referred to as greensand. □

## Periodical Cicadas: They're Back

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

An emergence of the **periodical cicada** is expected to occur this year. This large flying insect has a very unique life-cycle because it spends most of its 17-year life underground. There are several overlapping broods that emerge in different years so that less than 17 years may elapse between appearances.

The life-cycle of this insect is straight forward. Nymphs emerge at night in the spring when the soil warms up. As many as 40,000 nymphs can emerge from under a single tree. They then crawl to vertical surfaces (trees, fence posts, etc.) where they climb up a few inches and molt to adults. Within a few days, the males start to sing to call females to mate. Following mating, female cicadas lay eggs in woody plants, preferring wood that is as thick as a pencil up to 1/2 inch in diameter. Each female can lay 400-500 eggs. The eggs hatch in about 6-7 weeks. Newly emerged nymphs then drop to the soil where they enter through cracks in the soil or at the base of plants. The nymphs then feed on tree roots for 17 years until they emerge to start the cycle all over again.

The host range of the **periodical cicada** is extensive and it will attack most types of trees. Stone fruits can be attacked but are less favored than other trees. There are three types of damage caused by the **periodical cicada**. The most serious form of injury is caused by egg-laying. The female makes slits in twigs to lay eggs in. This seriously weakens the twigs leading to limb breakage. Under heavy attack, some trees are severely damaged and can even be killed. Damage is most severe in young trees because the loss of important developing scaffold limbs can reduce productivity of the tree for years. The second form of damage is caused by the nymphs feeding on roots of trees. This leads to a decline of the tree. The third form of damage is caused when adult females feed through the bark and cause oozing of the sap.

The Pennsylvania Fruit Production Guide recommends several ways to reduce damage caused by this pest. In young orchards, it recommends delaying pruning until after the attack. This decreases the probability of damage to incipient scaffolds and gives the grower a chance to remove damaged and egg-infested wood. Pruning before egg hatch will remove the eggs and reduce root damage by preventing the **periodical cicadas** from feeding on roots for the next 17 years.

Protecting trees during emergence is very important, especially for young trees. Trees that are 4 years old or less are most susceptible to structural damage or death. During heavy attack on young trees, it is recommended to apply a registered pyrethroid insecticide. These materials have a fast knock-down and long residual. The frequency of application depends upon the severity and length of the egg laying period. Pyrethroids are not recommended for controlling periodical cicadas in older trees because of mite outbreaks that usually occur following applications of these materials. Instead, recommendations from The Pennsylvania Fruit Production Guide suggest using a mixture of methomyl and Lorsban. Sevin is not recommended because of potential thinning and mite outbreaks.

Scouting orchards is required to assess potential damage and for timing control measures. Start scouting a few days after the first **periodical cicada** is heard singing in the spring and continue scouting for egg-laying every 2-3 days. Orchards that were present during the last outbreak 17 years ago or are located near woodlots should be checked carefully because these have a high probability of being attacked. □

# Postharvest Stone Fruit Disease Control: Loss of Rovral

Norman Lalancette, Ph.D., Tree Fruit Pathology

## ◆ Rovral Label Changes

The fungicide iprodione, tradename Rovral, has been one of the most important and commonly used fungicides for control of postharvest diseases on stone fruit. Rovral is usually added to the wax spray and applied using conventional waxing equipment. When applied in this manner, Rovral provides excellent control of both **brown rot** and **rhizopus rot**.

Unfortunately, in recent action, Rhone-Poulenc Ag Company has voluntarily removed their label for use of Rovral for postharvest application. In addition, growers should note that the preharvest component of Rovral's label has been altered as well. The preharvest interval (PHI) has been increased from 1 to 7 days, and the maximum number of preharvest sprays has been decreased from 5 to 4.

The loss of Rovral has left stone fruit growers without any registered material for postharvest management of **brown rot**. And without adequate control, a greater percentage of fruit may rot at point of sale or at customer's homes prior to consumption. Both retailers and the public could lose confidence in the peach as a fruit of choice.

## ◆ Where to go from here?

Any Rovral fungicide purchased with the old label can still be applied for use in postharvest disease management. It has been estimated that there is currently enough Rovral in warehouses to last the next two seasons. Nevertheless, growers and packers should consider stocking up on Rovral now for use this and next season.

Another approach for conserving the current Rovral supply is to not use it for bloom or preharvest sprays. There are a number of other fungicides, such as Orbit, Indar, Benlate, Funginex, etc., that can and should be used for preharvest sprays. Save the Rovral for postharvest application.

For the long term, one or more fungicides need to be identified as replacements for Rovral in postharvest application. In conjunction with other key stone fruit producing states, several compounds will be evaluated through the IR-4 process. Submission of pesticide clearance requests (PCR) to the IR-4 program is currently in progress for New Jersey. □

# Fruit IPM

Week Ending 5/31/96

Dean Polk, IPM Agent - Fruit

## ◆ Apple

**Spotted tentiform leafminer (STLM):** Mine levels are low overall. A mixture of sap feeding and tissue feeding miners are present in southern counties, with mostly sap feeding larvae in northern counties. Some more recent mines were seen in Gloucester County this past week on newer leaves, indicating that an extended period of egg laying took place.

**Tufted apple budmoth (TABM):** Adults have been caught in all areas of the state. The first insecticide applications are due in southern counties during the first couple of days in June. Treatments are due in northern counties a week or 2 later, depending on location. (See degree day chart below). Alternate middle treatments are due at 490, 625, 763, and 898 °D after first moth catch (biofix). If using Pennacap as part of the TABM spray program, make sure there are no flowering weeds in the ground cover. Pennacap is very toxic to bees. Clean orchard floors make it a lot easier to use this product. If 2,4-D has not been used, and broadleaf weeds are present, then frequent mowings are advised. This eliminates the weed flowers and minimizes bee activity. TABM as mainly a problem in Gloucester, Salem, Burlington, and Cumberland Counties.

**Codling moth (CM):** Based on adult trap captures (biofix points) and degree day (°D) accumulations, the first treatments for this insect are due now and again in about 2 weeks. Treatments are due by the middle of next week in northern counties.

**Apple scab:** Active lesions continue to show up in a few areas. The wetting periods on 5/26-27 and 5/27-28 were both scab infection periods. Precipitation was light in most areas, thus not washing away fungicide protection.

## ◆ Peach

**Oriental fruit moth (OFM):** The second of the two first generation sprays was due in southern and central counties this past weekend, and will be due in Hunterdon County this Tue. to Wed., and in Morris County by this coming weekend (5/26-27).

**Catfacing insects:** Tarnished plant bug activity has increased with bugs present in both the adult and nymph stages. Only the adults will move into trees. Operations which disturb the groundcover such as raking brush, mowing or other tractor activity can encourage adult flight and increase the likelihood of fruit feeding. Orchards which have weed free aisles will have lower TPB or other catfacing insect populations. Our sampling method is to use an insect sweep net, and take 50 180° sweeps in the orchard ground cover, biased

SEE IPM ON PAGE 4

towards weedy areas or areas with grassy vegetation. TPB catches average 2 per 50 sweeps in the Burlington/Camden/Atlantic County area where there are sod middles. The catch reached 75 TPB/50 sweeps in one orchard with weedy middles. Based on previous years' data, this represents an extremely high population. In orchards such as this, weeds should be removed, and/or insecticide should be applied prior to activities that disturb the ground cover. Do not use PennCap in weedy orchards, since weed seedheads will attract bees.

**Bacterial spot:** Bacterial spot can be found in both southern and northern counties. During most years in which environmental conditions are favorable for bacterial spot, the disease shows up only in southern counties on sandy coastal plain soil. This year it can be easily seen in all counties. We have seen many black tips on last year's wood. These are cankers where the bacterial spot organism overwintered. Primary infections initiate from this inoculum source during favorable conditions (frequent rains) in the spring. Since we have had frequent wetting periods, it is not surprising to see this level of early bacterial spot. Frequent applications of TennCop @4 oz/100 gal or regular applications of Mycoshield @1 to 1.5 lb/A (depending on tree size) are

suggested. Syllit + Captan, and Ziram have also been used in the past, but are somewhat less effective.

◆ **Blueberry**

**Cranberry fruitworm (CBFW):** Adults were first captured on Monday 5/20 in Burlington County. Moths are now being caught in both counties. Trap captures range from .3 to 2 moths per trap. Egg laying will start shortly and continue over the next several weeks.

**Redbanded leafroller (RBLR), Obliquebanded leafroller (OBLR), and Green fruitworm (GFW) and Gypsy moth (GM):** Out of 75 scouted sample sites green fruitworm and/or gypsy moth activity was seen in 7% of the samples at levels considered to be above threshold. The first post pollination treatments should take care of these populations.

**Aphids:** Our protocol is one in which we are sampling the outside growing terminals of each sampled bush. We total both the number of shoots sampled and the number of sampled shoots that are infested with visible aphid colonies. This is converted to a percent and defined as the "percent infestation level." While overall levels are very low at this time, one site in the Pemberton area did reach 15% of growing shoots infested.

SEE BLUEBERRY ON PAGE 5

Insect Degree Day Accumulations as of 5/27							
Insect	Site & County Biofix Date plus Degree Days Since Biofix						
	Bridgeton Cumb.	Hammonton. Cam.	Hardingville Glou.	Richwood Glou.	Princeton Mercer	Oldwick Hunt.	Morristown Morris
OFM <sub>45</sub>	4/20 - 452 hit 200 on 5/2 hit 400 on 5/19	4/5 - 521 hit 200 on 4/27 hit 400 on 5/13	4/19 - 467 hit 200 on 5/1 hit 400 on 5/18	4/17 - 471 hit 200 on 5/1 hit 400 on 5/18	4/19 - 302 hit 200 on 5/3 hit 400 on 5/19-20	4/22 - 363 hit 200 on 5/9 hit 400 on 5/22	4/24 - 305 hit 200 on 5/14 hit 400 on 5/24
TABM <sub>45</sub>	5/4 - 389 predict 490 on 6/2-3	5/3 - 400 predict 490 on 6/2	5/2 - 416 predict 490 on 6/2	5/2 - 416 predict 490 on 6/1	5/13 - 267 predict 490 on 6/8-9	5/20 - 177 predict 490 on 6/12-14	5/23 - 69
CM <sub>50</sub>	5/8 - 247 predict 250 on 5/27-28	5/8 - 247 predict 250 on 5/28	5/8 - 249 predict 250 on 5/27-28	5/8 - 249 predict 250 on 5/27-28	5/11 - 227 predict 250 on 5/29-30	5/20 - 135 predict 250 on 6/4	5/20 - 133 predict 250 on 6/5
All reported accumulations based on Skybit Inc. data, except Hammonton. 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 and again 2 - 3 weeks later.							

**Mummy berry and other diseases:** Blueberry scorch virus is present mostly in Burlington County and has visibly increased at one location. Several low areas show cold/frost injury, especially on small plants. This should not be confused with any disease symptoms.

**◆ Insect Trap Captures**

Week Ending	4/26	5/3	5/10	5/17	5/24
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**Tree Fruit - Southern Counties**

RBLR	47.9	43.0	13.7	4.0	1.8
STLM	1282	1215	1334	744	276
TABM-A	0.0	8.4	5.9	5.8	21.5
CM	0.0	0.0	0.4	1.7	7.5
AM	—	—	—	—	—
OFM	20.7	29.0	21.4	6.6	11.9
TABM-P	0.0	0.32	2.2	7.4	48.7
LPTB	0.0	0.05	1.8	20.8	96.3
PTB	—	—	—	—	2.0

**Tree Fruit - Northern Counties**

RBLR	63.6	34.6	0.21	20.0	17.5
STLM	506	417	450	199	119
TABM-A	0.06	0.1	0.03	0.5	3.3
CM	0.0	0.2	0.21	0.3	6.1
AM	—	—	—	—	—
OFM	1.3	14	11	3.2	7.8
TABM-P	0.02	0.0	0.0	0.5	0.4
LPTB	0.0	0.0	0.0	0.4	12.4
PTB	—	—	—	—	1.9

**Blueberry - Atlantic County**

RBLR	106	79.2	24	4.1	8.6
OBLR	—	—	.02	0.4	0.4
CBFW	—	—	0.0	0.0	0.5
SNLH	—	—	—	—	—
BBM	—	—	—	—	—

**Burlington County**

RBLR	51	23.9	14.7	2.8	0.7
OBLR	—	—	0.0	0.0	0.1
CBFW	—	—	0.0	0.0	0.6
SNLH	—	—	—	—	—
BBM	—	—	—	—	—

**Abandoned Fields (both counties)**

RBLR	23.7	23.5	12	1.5	0.8
OBLR	—	—	0.0	0.0	0.0
CBFW	—	—	0.0	0.0	0.0
SNLH	—	—	—	—	—
BBM	—	—	—	—	—

## Peach Thinning

Jerome L. Frecon, Gloucester County Agricultural Agent

Many growers have started hand thinning peaches in southern New Jersey. While it is difficult to determine which peaches will drop and which will stay because of the variation in size, it is necessary to start thinning. The longer unwanted peaches remain on the tree, the greater the adverse effect. Early thinning improves fruit size, tree growth, flower bud differentiation, leaf size, tree survival, and next season's crop potential. Hand thinning is generally better than whiffle bats, rubber hoses, or mechanical limb and trunk shakers because better spacing and removal of smaller fruit sizes can be made.

Mechanical shaking devices have been shown to remove larger fruit, causing a reduction in fruit size, yield, and crop value. These devices cause a wide variation in fruit removal due to shaking intensity, limb stiffness, and tree structure. Damage to trees or limbs and availability of equipment may also be disadvantages. Mechanical aids are better than no thinning because excess fruit must be removed.

### ◆ Economic Benefits of Fruit vs. Flower Thinning

According to Dr. Ross Byers of Virginia Tech, bloom thinning peaches usually results in a 10 to 30 percent increase in fruit size and yield compared to hand thinning 40 to 50 days after bloom. The effect on the following year's crop has not been closely studied, but some increase in yield and size can be expected in the following year. This seems to be apparent in some trees that were heavily fruited in 1995 and had a good bloom in 1996, but have not set a heavy crop of peaches.

Those varieties that naturally produce smaller fruit, produce more flower buds per tree, and ripen early in the season, usually have a greater economic benefit from bloom thinning or very early fruit thinning than other varieties. These would include varieties like Encore, Harrow Beauty, Harcrest, Biscoe, Garnet Beauty, Surecrop, Early Redhaven, Redhaven and some of the Flaming Fury varieties.

According to some of Dr. Byer's work, the costs of bloom thinning by hand plus follow-up hand thinning of fruit may be similar to costs of hand thinning 40 to 50 days AFB. The crop value, however, may increase one to four times, and profits by several times, due to increases in fruit size, yield, and price of fruit (Table 1). *Our biggest problem in New Jersey is that we don't have a good chemical thinner labeled for use on peaches, and even if we did we are reluctant to take a chance on bloom thinning because of the possibility of a freeze or frost.* Some growers are effectively bloom thinning with

rope thinners, or use bowl brushes to lighten the flower load, particularly on smaller trees.

**Table 1. Price Structure of Peaches in Relation to Fruit Size and Yield/tree with Trees Spaced 20 Feet x 20 Feet**

Fruit size (inches)	Fruit number/ bushel	Bshls/tree with 500 fruit/tree	Bshls/A 108 trees/A (20 ft x 20 ft)	Price/ Bushel (\$)	Crop Value (\$)
1.75-2.00	338	1.5	162	3	486
2.00-2.25	253	2	216	6	1296
2.25-2.50	185	2.7	292	12	3504
2.50-2.75	143	3.5	378	16	6048
2.75-3.00	112	4.5	486	20	9720
3.00-3.25	85	5.9	637	24	15288

◆ **Hand Thinning**

In spite of the many benefits from hand thinning demonstrated through long years of experience, it is too often one of the most inefficiently conducted operations in peach growing. The late Dr. Stanley Johnston of Michigan gives the following reasons for growers slighting this job: (a) failure to realize at thinning time how much the young fruits will expand in size before the harvesting season. It takes twice as many peaches of two-inch size as of two and one half inch size to fill a bushel container; (b) failure to realize that it is better economy to pick the excess fruits after the June drop and throw them in the ground than to pick them at regular harvesting season with the resultant extra handling costs and lower value of small peaches; it is a monotonous job when done by hand and it is only natural to hurry through or to find excuses to do something else. Thinning crews must have constant and careful supervision for best results.

It is easier to start thinning after the June drop (5-8 weeks after full bloom). The full extent of the thinning task can be determined better at this time because peach trees generally retain to maturity practically all fruit which are attached to the tree after the June drop. When insect stings or hail marks are a problem, the damaged peaches can be seen and removed in the thinning operation. Some varieties have a great number of doubles in 1996 due to the drought of 1995. These can also be seen and removed during the hand thinning operation.

Early maturing cultivars (Redhaven & earlier) and those with heavy crops of fruit should be thinned first. To obtain the greatest benefit from thinning, the job should be completed as soon after the June drop as possible, although it has been shown that many of the medium to late maturing cultivars can be thinned later with some benefits.

Some benefits from thinning can be obtained as late as eight to ten weeks before picking. Dr. Hal Fogle,

formerly of the USDA states, "How many peaches cannot bear more than 1 to 2 bushels, only enough of the peaches that can develop to desirable size (those with a diameter of 2 1/4 to 2 inches) should be left to meet this quantity. When a tree has a uniformly heavy set of fruit, it can be thinned to a fixed spacing, such as 6 to 8 inches along the twig. Varieties that are genetically smaller or those on older or weaker trees may be thinned 8 - 10 inches apart. Usually, it is best to thin not according to a fixed spacing but according to leaf area, tree vigor, and bearing capacity. After a spring freeze, sometimes the only blossoms left alive are those at the bases of terminal shoots. When this happens, the fruits are not thinned although they touch each other, because the leaf area is sufficient for all."

Because of high labor costs, peach growers may choose to reduce the number of peaches that will be produced on their trees by pruning off a large number of shoots either before or at blossom time.

Some growers have been successful at thinning for uniform fruit size by simply leaving a definite number of peaches on the tree. Usually they have irrigation and varieties that size well. A good sized, healthy tree with these characteristics can carry 700 peaches and produce 2 inch fruit. In New Jersey under most conditions healthy trees should carry 500 to 550 peaches per tree to produce uniform sized 2 inch fruit.

About 30 to 35 averaged sized peach leaves are required to size a peach to 2 inches. If the variety is genetically smaller 40 leaves are needed to produce a fruit of this size.

The largest and best colored peaches are produced on the more vigorous new wood. The exception would be "upright poles" inside the tree. The best and most peaches should be left on the outside and top of the tree. Inside and lower branches have inferior fruit. Fruit on "hangers" should generally be removed or spaced very far apart because of limited light exposure and lack of leaf formation.

◆ **Mechanical thinning**

Trunk shakers or limb shakers are used by some growers in southern New Jersey. Generally the trunk or limbs are grasped by a cushioned arm, tightened, and the limb or tree vibrated shaking off the fruit in seconds. Particularly with the trunk shaker it is imperative to have an experienced operator to prevent overthinning. With these powerful shakers it is easy to shake too long and reduce the crop and damage the tree. Generally it is best to follow-up the shaking with some hand thinning to fine-tune the spacing and fruit numbers.

It is also best to train trees with a long straight trunk to avoid cuts and damage incurring infection of *Cytospora sp.* canker. Too many trees in southern New Jersey orchards are not trained properly to use trunk or limb shakers.

SEE THINNING ON PAGE 7

Most orchards are now using mechanical aids to thin peaches. High thinning costs have necessitated this procedure. Poles, bats, and sticks with rubber tips or heads are used to both knock off individual peaches or by tapping branches to simply loosen or knock off fruit. A thinner may do 3 to 5 times as many trees in a day. Some growers will use the mechanical aids first and then come back and hand thin based on time limitations and the climatic conditions. □

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## Peach Pointers

*Jerome L. Frecon, Gloucester County Agricultural Agent*

### ◆ Open Sutures, and Fruit Doubling of Peaches

Open Sutures, and Fruit Doubling of Peaches may be caused by water stress according to an article by Kevin Day, Tulare County Farm Advisor, and R. Scott Johnson, Extension Specialist in Pomology at the University of California Kearney Agricultural Research Center, in The July/August of [Orchard Notes](#). Water stress in mid-August can cause abnormal flower bud differentiation. This abnormal differentiation results in the formation of double flowers in the following spring. These flowers develop into double fruit which must be culled out; however, it is also common for one of these fruit to drop so that only one remains. This remaining fruit may have an open suture. The rough suture we see on some varieties in New Jersey may also be related to this stress.

According to Day and Johnson these problems seem to be more common on early and mid-season varieties in California which are not irrigated after harvest. In California late season varieties rarely experience this problem because they are regularly irrigated before harvest. They recommend a single mid-August irrigation on these early and mid-season varieties. It is important to remember in the central valleys of California there is very little natural rainfall during this period, unlike New Jersey.

The significance of this article is that during some growing seasons our mid to late season varieties receive no supplemental irrigation during the period of flower bud differentiation in June and July when there is little rainfall. Could this be a factor in the open and rough sutures as well as premature dropping in some seasons?

### ◆ Peach Waxing

Many growers wax peaches to aid in fungicide application, reduce water loss, replace natural waxes received during brushing and washing, and to improve the fruits appearance. A wax applied properly can reduce water loss 30 to 40%. If the wax is applied

incorrectly (too thick) it can injure the fruit by impeding normal respiration. When fresh peaches are brushed, the trichomes (fuzz) is removed from the skin before waxing. Trichomes are extensions of epidermal cells on the peach surface so their removal ruptures the epidermis. The barrier effect of the wax does not compensate for the injuries caused by brushing. Therefore, a waxed peach will normally lose water faster than a non-brushed, non-waxed peach.

### ◆ Irrigation and Water Needs of Peaches

The following advice is offered by Dr. Jere Brittain of Clemson University: The edible portion of a ripe peach contains about 87% water. Water, carbon dioxide, and sunlight interact in plants to form simple sugars in a process known as photosynthesis. Water deficiency may reduce photosynthesis by 40% before leaves actually show wilting.

- Water status changes in a peach tree day by day and even hour by hour. Water requirements increase with increased air temperature, increased air movement, and decreased relative humidity.
- A peach attains about 66% of its final fruit volume during the last 30 days on the tree. Water is critical during this period, partly because the evapotranspiration rate is high.
- With overhead irrigation, rainfall plus irrigation should equal about 2 inches every 10 days from pit hardening through final swell, if sufficient water is available.
- Once fruit growth and development are slowed from lack of soil moisture, the growth loss is permanent. The final swell does not produce peaches as large as when water supply is adequate all season.
- With overhead irrigation, if a grower only has 4 to 5 acre-inches of water, this probably should be saved for the final swell.
- Approximately 80-90% of fine feeder roots are in the upper foot of an undisturbed soil.
- The total water requirement for mature peach trees is about 36 inches per year.
- Experiments in arid regions showed that water application to 25% of the root system was sufficient to meet water and nutrient needs in mature peach trees.
- Irrigating one side of a peach tree will not confine the root system to that side of the tree.
- Contrary to popular opinion, withholding water does not send peach roots deeper into the soil, nor do light, frequent irrigations encourage shallow rooting.
- Over a 10 year period (wet and dry years), irrigation may reasonably be expected to increase yields by about 25%, mainly due to increased fruit size. □