

PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

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Russet symptoms. Note the clear lines of russet and that it is on the blush side of the fruit, suggesting it formed as a result of severe cold weather immediately after petal fall.

Fruit Russet

Dr. Mosbah Kushad, University of Illinois

Source: Illinois Fruit and Vegetable News (Volume 13, number 14), September 21, 2007

Fruit russet is a condition in which the peel becomes corky due to untimely divisions of the epidermal cells. It develops as a result of healing of the tissue from injury. Several factors have been shown to cause russet, including genetics, tree health, cultural practices, diseases, insects, yeasts, chemicals, and environmental conditions. Some apple varieties such as Golden Russet, Golden Delicious, Cox Orange Pippin, spur type Delicious, and Bosc pears are more prone to heavy russet. Fruits from trees on sub-dwarfing rootstocks like M.27, and P.22 and extremely vigorous trees are also more susceptible to russet than fruit from moderately growing trees. Tree health is also important in that diseased and poorly pruned trees are more likely to have russeted fruits than healthy ones. Fruit growth stage at the time of injury is also important; fruits are most susceptible to russet between petal fall and three weeks later than at any other time during development, although hail and heavy rain may cause fruit russet later in the season in some cultivars. Russet damage occurs early during the fruit growth, but symptoms may not become visible until several weeks later when the corky tissue dries out.

Other types of injuries that have been shown to cause russet include powdery mildew, mite damage, and crop protection products such as surfactants and carbamates. Sevin in particular can cause russet when used as a thinner in cold weather. Some combinations of chemicals may increase russet incidence, so read the label and try any new combinations on a small scale first. Weather is probably the most critical factor in russet development. I noticed more russet on lateral than on terminal fruits and on exposed than on shaded fruits. In 1980, L. L. Creasy from the Department of Pomology at Cornell University in New York looked at the correlation between weather conditions and russet development in Golden Delicious. He found that humidity, and to a lesser extent rainfall, correlated very well with russet development. He found that the most sensitive time is between petal fall and 16 to 20 days after full bloom. Prolonged fruit wetness in general can increase the chances of russet and for this reason it is best to spray pesticides

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Food Safety Series: Good Agricultural Practices

Wesley Kline, Ph.D., Cumberland County Agricultural Agent

As the season starts to slow down, it is time to think about and plan for food safety and third party audits for 2008. Now is the time to assess your operation and make notes about the changes you need or want to address.

Growers are asking when the Food and Drug Administration (FDA) or USDA will require third party audits. It depends on:

- 1) How many food-borne illness outbreaks occur which result in pressure to implement regulations; and
- 2) How effective the present voluntary programs are in reducing outbreaks (e.g. California Leafy Greens Agreement).

If a grower sells items through the school lunch or other federal programs, a USDA third party audit is already required.

Florida has implemented the Tomato Good Agricultural Practices (T-GAPs) for field and greenhouse tomatoes and Tomato Best Management Practices (T-BMPs) for packinghouses programs. These were initially voluntary programs established in 2006 through a grower organization. During 2007, legislation was signed by the Florida Governor to cover all tomatoes in Florida and making it a mandatory program.

Thirty-one New Jersey agricultural operations have passed the USDA third party audit during the past year. Other operations have passed audits carried out by other auditing firms. What firm you use for the audit may depend on to whom you sell. Buyers sometimes select the auditing firm they will accept.

In September 2007, USDA made changes to the audit program. Please see "Notice to the Industry" at <http://www.ams.usda.gov/fv/fpbgapghp.htm>. The main changes are (1) they may require a minimum of one unannounced audit after the initial audit; and (2) the audit results will only be posted on the USDA website when all sections audited are passed.

To help growers keep abreast of changes in food safety and the third party audit program, Cooperative Extension will be providing two educational sessions at the annual vegetable meeting in Atlantic City.

The first session is "Food Safety from the Industry's Perspective" on Wednesday, January 16 from 9:30 to 11:30 am. The program includes:

- Spinach Farming in a New Age, One Eye on the Crop, One Eye on the News
Perry Bowen (River Farm, King George, Virginia)
- The New Jersey Food Council and their Perspective on Food Safety

FRUIT RUSSET FROM PAGE 1

during times of quick drying, to avoid using wetting agents, and to use concentrate rather than dilute spray during the critical periods. Water quality may also be important in russet development. High iron and calcium water have been suspected to increase russet incidence. For this reason water quality should be monitored and also avoid spraying micronutrients during two weeks after petal fall.

In conclusion, russet can be serious in some years when the weather is bad early in the growing season or when the fruit is injured or exposed to prolonged wetting periods. Other than cosmetic appearance, russet has no effect on the quality of the fruit and it does not penetrate deep into the tissue.

Submitted by Jerome L. Frecon, Agricultural Agent. □



More russet symptoms. Note the lopsidedness of the fruit on the russeted side. This suggests that russeting occurred early in fruit development.

Linda Doherty (President, NJFC)

- Florida's Tomato Food Safety and Third Party (T-GAPs and T-BMPs) programs
Keith Schneider (University of Florida)
 - Safe Quality Food (SQF) Program and Shop Rite's Food Safety Plans
Michael Ambrosio (Wakefern Foods)
- The second session is "How to Prepare for a Third Party Audit – Workshop" on Thursday, January 17 from 2:00 to 4:00 pm. The program includes:
- Problems Observed at Third Party Audits in New Jersey & How to Prepare for an Audit
Wes Kline (Agricultural Agent, Cooperative Extension)
 - Review and Clarification of Audit Questions
Larry Hardwick (Bureau Chief, Commodity Inspection and Grading, NJDA)

Peach Marketing Season

Jerome Frecon, Agricultural Agent

While we are still shipping Jersey Fresh peaches, it appears we have had a successful season so far based on conversations with shippers and regular information published in the weekly Peach Price Report by USDA Market News.

There are some elements of the information received that demonstrate the strength of the recent efforts of the New Jersey Peach Promotion Council and by Rutgers NJAES that played a part in some of the successes in stronger prices and better movement in comparison to the past five years. I do not know if California growers and shippers have had the same success in 2007.

USDA Market News reports that as of September 21, 2007 a total of 14,041 (38,500 lb units of peaches) have been shipped, in comparison to 13,681 units that were shipped in 2006 as of this same date. This represents a 3% increase nationwide in spite of the tremendous loss of the peach crop, particularly in South Carolina (22.5% of 2006 totals) and Georgia (50% of 2006 totals). Shipments from the Appalachian area were 77% of 2006, while Michigan is up 21% over 2006.

New Jersey shipments, as of September 21, are running about 7% less than 2006.

The significant information comes from California where shipments are up 27% over 2006 at the same date. California represents 84% of all shipments reported by the USDA Market News.

The positive spin was that our shippers and marketers in New Jersey were able to market peaches at good prices with regular movement, in spite of higher volumes from California trying to fill the supply void from South Carolina, Georgia, and parts of Appalachia. Promotional efforts focusing on local use in New Jersey also played a part in being able to move peaches at reasonable prices.

The negative aspect of this is what may happen when South Carolina, Georgia, and Appalachia have a full crop and California tries to ship this volume of peaches again in future years.

We must continue to push Buy New Jersey and Buy Local efforts in order to offset the continued competition. □

Apple Maturity –End of September Update for North-Central New Jersey

Win Cowgill, County Agricultural Agent

We have had three beautiful weeks for maturing and coloring apples in North Jersey. Cool nights in the 40's and 50's continue to color fruit. Warm sunny days are maturing the fruit with good sugars. Several days of 80 degree temperatures continue to hasten fruit maturity. Some cultivars are way ahead of last year depending on location, others are right on target. Watch your maturity as it will move quickly with daytime temperatures forecast to be in the 80's for the rest of the week.

Many of you know my friend Dr. George Green, retired Penn State Pomologist, now fruit grower in Maine. He reads my newsletters more now that he is retired than when he was at Penn State! But that is a good thing. Dr. Green offered the following comments about measuring fruit flesh pressure vs. fruit firmness: "In my post harvest life I remember the debate on whether the readings from maturity are firmness or pressure. After a little debate it was decided that it should be called firmness since pressure is normally used with per square inch and there is no area associated with firmness testers." Note that in the tables below for 2007 I have changed pressure to fruit firmness.

McIntosh- almost all macs in north Jersey have been harvested. One late strain of mac in Warren has not.

Warren	Location	Date	Retain	Firmness	Brix	Starch
Hilltop Late Mac	Hackettstown	9/23	yes	14	11.8	7

Jonagold- has been slow to color and is running 2 weeks behind last years harvest dates and is ready at all locations tested.

Warren	Location	Date	Retain	Firmness	Brix	Starch
Jonagold	Hackettstown	9/23	yes	16	11.2	7

Hunterdon-	Location	Date	Retain	Firmness	Brix	Starch
Jonagold	Califon	9/23	yes	15.4	12.2	6.8

SEE APPLE MATURITY ON PAGE 4

Macoun- Macouns have excellent color this year, but the high quality flavors have been slow to develop, even through growers have been harvesting for two weeks or more in central NJ. Jon Clements, Extension Fruit Specialist UMass says “harvest when they taste good!”, but that means 5-6 on the starch chart and a brix of 13% or better.

Hunterdon-	Location	Date	Retain	Firmness	Brix	Starch	Flavor
Macoun	Califon	9/23	yes	15.6	12.2	3.6	Good Varietal Flavor

Morris	Location	Date	Retain	Firmness	Brix	Starch	Flavor
Macoun	Harding Twp	9/24	yes	16.3	11.8	4.25	Tart, starchy

Cortland is an apple that has increased in popularity with newer strains being highly colored. Cortland is usually picked one week after Macs. Cortland harvest is winding down.

Empire-Was not ready for retail sale type harvest in any sample tested. We would look for starch of 5-6, brix of 13-14%, pressure 16 lbs.

Hunterdon	Location	Date	Retain	Firmness	Brix	Starch
Empire	Snyder	9/24	no	15.8	10.8	3.5

Empire	Califon	9/24	yes	21.7	10.4	3.3
Empire	Pittstown	9/23	no	18.5	11.6	3.6

Warren	Location	Date	Retain	Firmness	Brix	Starch
Empire	Hackettstown	9/23	yes	16.6	11	3.2

Morris	Location	Date	Retain	Firmness	Brix	Starch
Empire	Harding Twp	9/24	yes	16.1	13	4.4
Empire	Myersville	9/23	yes	15.3	12.8	5.2

Red Delicious- Have matured early for some growers but not all. Reds in the northern counties are not ready for retail harvest. Sugars have been slow to develop in reds, and most are still very starchy. Reds picked immature continue to convince the consumer that they taste like napkins.

Hunterdon	Location	Date	Retain	Firmness	Brix	Starch
Oregon Spur	Snyder	9/23	no	17	9.6	2.2

Ace Spur	Snyder	9/23	no	16	10.6	3
Red Chief	Pittstown	9/23	no	16.2	10.2	3

Red Chief	Califon	9/23	yes	16.3	10	2.5
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Warren	Location	Date	Retain	Firmness	Brix	Starch
Red Chief	Hackettstown	9/23	yes	17.1	9.2	1.9

Morris	Location	Date	Retain	Firmness	Brix	Starch
Red Delicious	Myersville	9/23	no	14.7	10.6	4.8

Red Delicious	Harding Twp.	9/24	yes	16.9	11.1	2
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Early Fuji Types- have all been harvested

Golden Delicious- is maturing a bit earlier in Hunterdon and Morris

Morris	Location	Date	Retain	Firmness	Brix	Starch
Golden Delicious-Gibson	Harding Twp	9/24	yes	16.6	13	6

Northern Spy

Morris	Location	Date	Retain	Firmness	Brix	Starch
Northern Spy	Harding Twp	9/24	yes	19.2	11.8	2.3

What the numbers mean

Several growers have asked for information on what the numbers mean in our brix and starch iodine tests. The SI is a measure of how much starch has converted to sugar. The lower the number the more “immature” the fruit is. The higher the number the more “mature” the fruit is. We like to have an SI of between 5-6 to harvest for retail sales. Brix is a measure of sugar content of fruit. A brix of at least 12 percent should be present for acceptable eating quality. Fruit firmness is also an excellent indicator of maturity and the “crunch factor”. For most varieties I would like to see firmness of at least 16 lbs at harvest. The exception is Honeycrisp. It has excellent crunch at 13-14 lbs fruit firmness. Studies have shown that it has double the number of cells that give it its unique crunchy texture.

Note: This report takes approximately two days to prepare in collecting and testing samples and in preparation of the text and data. A note of thanks to all who make this report possible; Rob Sanchis, Cathy Kloetzili, and Peggy Black for assisting with sample collection and testing. Most importantly thank you to the growers for allowing me to sample their blocks. □

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