

Harvest Maturity Report #7



September 18th, 2013

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This is the seventh Apple Maturity Report for the 2013 harvest season. Reports will be sent out every week (usually Wednesday afternoons), with supplemental reports during peak season if needed.

- **Gala** – First spot-pick completed for most, into second pick for some while its starting for Retain-treated fruit- **see page 4.**
- **McIntosh** – The harvesting of early Macs strains has finished for most, including Marshall and Spur Mac. Most of the regular maturing Mac strains are entering the harvest window now. There are very few reports of preharvest drop in our region. This week internal ethylene remained fairly low on untreated samples. There was actually more detectable internal ethylene in the Retain +/- NAA treated samples. If you've had a history of preharvest drop in the past, you should **monitor Mac blocks closely.** The cooler weather patterns look to continue, as does great coloring weather, which would also lend itself to holding back ethylene and preharvest drop potential. See **pages 3-4** in this report for testing data on different strains of Macs, including how to tell the difference between push-off and drop.
- **Honeycrisp** – first pick is beginning now for a lot of blocks. The cloudy weather late last week and early this week was not conducive to finishing color. The last 2 nights should have helped. **See pages 2-3.**
- **AceyMac/Spartan** – Next week will likely start harvest of this variety. **See page 5.**
- **SnapDragon (Formerly NY1)** – Most fruit (from older trees) that I looked at this week won't be ready until at least next week. There was some starch movement and development of varietal flavor in a few of the samples I looked at, especially a sample from 3rd leaf trees. There are reports of some spot-picking already. I did not look at these fruit. They may or may not be a touch early even if they're on 2nd-3rd leaf trees and lightly cropped. **Picking too early can kill repeat sales! There is no reason not to wait if you're trying to introduce this variety to consumers! See page 6.**
- **Cortland** – Most samples I looked at have excellent color, but little starch movement and varietal flavor. Some growers will be picking them next week in early sites. **See page 5.**
- **Empire** – **See special information from Dr. Chris Watkins on page 6.** Testing next week.

Overall Maturity Issues:

If the 5-10 day weather forecast proves correct, fruit will continue through the harvest window rather quickly. Many varieties will be coming into the harvest window about the same time. Work with your marketers and field men to prioritize harvest. Growers should monitor individual blocks every 2-3 days.

Starch values seem to be falsely higher than actual maturity. The weather during the growing season may not have allowed a lot of carbohydrate buildup in the fruit. Therefore, starch movement is faster than normal, and fruit aren't as mature as starch indexes may indicate. Look at varietal flavor, firmness, and color as well.

Weather Forecast for the Western NY fruit belt, continued full sun with highs in the 70s but with lows only in the upper 50s and lower 60s at night will continue through tomorrow. Friday is shaping up to bring isolated thunderstorms (~30% chance for most) with highs in the upper 70s/low 80s and 60s at night. Saturday is should be much cooler, with highs in the mid-60s with about a 60% chance of showers, 50s for nighttime lows. More classic fall weather starting Sunday should bring highs in the 60s, lows in the upper 40s, with mix of sun and clouds, with a 10% or less chance of rain through Thursday.

Honeycrisp – first spot pick beginning this week for most

The cloudier weather of late last week and early this week really slowed down final coloring on fruit destined for first pick. But nearly all blocks I've looked at should be into first pick. While only 10-15% of fruit should be harvested in the first pick, there are reports of a lot of green fruit in the bins. Instruct your pickers to pick only the fruit with the desired full color break. Remember, this is a multiple-pick variety (plan to pick 3-4 times), but only the earlier picks tend to store best. Young trees also tend to have poor-storing fruit.

Do not pick fruit that has not developed varietal flavor and proper color. Picking under-ripe fruit will kill repeat sales! Look for color that "jumps out" when the yellow background color makes the red almost florescent or iridescent. **Once color change has happened, then an every other day walk-through is warranted to determine readiness.**

Honeycrisp is susceptible to soft scald and soggy breakdown. **The correct storage temperature is 38F** in regular atmosphere, and we recommend a delay of 7 days at around 50F before cold storage. A starch index above 7 and a pressure above 14 pounds is recommended for storage beyond a few days. Brix at 13%-14% is considered good to excellent. Consider using SmartFresh on air-stored Honeycrisp to delay greasiness and retain acid flavor components. If fruit have high bitter pit risk, however, the delay treatment will aggravate the risk of bitter pit development. It may be better to cool these fruit immediately after harvest and market them quickly. If you see bitter pit in fruit on the trees, more will show up in storage, so do not delay cooling in these cases.

Low rates of Retain (some growers are using ½, 1/3, or ¼ rate) will provide some drop control.

9 untreated Honeycrisp blocks tested in WNY on Sep 16 & 17, 2013

Index	Non-Retain September 16 & 17, 2013		Non-Retain September 9 & 10, 2013		Non-Retain Sept. 19 & 20, 2011	
	AVG. n=9	Range	AVG. n=12	Range	AVG. n=8	Range
Firmness (lb.)	14.6	14.1-15.6	16.1	14.7-18.0	15.2	13.9-16.3
Soluble Solids (%)	11.7	10.0-12.8	11.4	10.1-14.1	12.4	11.9-13.1
Starch Index	6.3	4.3-7.5	4.1	1.6-6.3	5.7	4.0-6.6

McIntosh – Harvest of Marshall & Spur Macs (first pick) mainly finished, those in the regular maturity window starting

Where color allows and varietal flavor and other maturity indices are acceptable, Rogers & Buhr Macs, your standard strains, are starting to be picked. The slightly later strains (Pioneer, Linda, Ruby, Red Max, etc.) usually follow a few days after that. CA storage guidelines have Macs at 5-6 starch index, with pressures at 16 pounds for long-term CA, 15 pounds for mid-term CA, and 14 pounds for short-term CA. A brix of 11.5-12% is desirable.

5 untreated (different strains) blocks tested in WNY on September 16 & 17, 2013

Index	Sept. 16 & 17, 2013 untreated		Sept. 9 & 10, 2013 untreated		Sept. 19 & 20, 2011 untreated		Sept. 14 & 15, 2009 untreated	
	AVG. <u>All strains n=5 samples</u>	Range	AVG. <u>All strains n=14 samples</u>	Range	AVG. <u>All strains n=14 samples</u>	Range	AVG. <u>All strains n=10 samples</u>	Range
Firmness (lb.)	14.9	14.5-15.1	15.4	14.6-16.4	14.8	13.6-17.1	15.7	14.6-17.1
Sol. Sol. (%)	11.5	10.6-12.6	11.0	10.0-12.2	11.7	9.8-13.2	11.8	10.9-12.9
Starch Index	4.9	4.6-5.1	4.2	3.1-5.0	5.0	3.6-5.8	4.0	3.1-5.6
Ethylene (ppm)	3.54	0.05-10.76	4.36	0.01-55.0	15.15	0.01-135.67	9.58	0.01-90.69
Producing > 0.5 ppm ethylene	10% (5/50)		5% (6/120)		20% (28/140)		5% (5/100)	

As a reminder, some of the newer highly-coloring Mac strains such as Linda & Ruby may be fully colored now- but they may not be mature. They actually mature slightly later than your standard Rogers/Buhr strains. Color is usually a poor indicator of maturity. Check varietal flavor development, final sizing/coloring, declining pressures, and starch movement into acceptable range for intended market.

Preharvest drop risk: Start with blocks that have a history of preharvest drop. Examine fruit already on the ground. Any fruit on the ground that has bitter bit, or major pest damage- or anything that caused the fruit to mature ahead of the rest of fruit should not be considered preharvest drop. Gently tap limbs and look for drop or push-off. **PUSH-OFF** – fruit is missing stems, has flat spots or limb creases – often occurs from large clusters of fruit bumping one another, seen this year- this is not drop, nor it is it ethylene-driven.

DROP – fruit is loose on tree, fruit has stems.

Evaluate each block for drop and storage potential on an individual basis. Consult with your marketer and storage operator if applicable

Gala- First spot-pick finished for most, starting for Retain-treated fruit

Most fruit I've looked at have excellent size, color, and flavor. Remember this is a multiple-pick variety, especially this year. With inadequate thinning on some blocks, along with extended bloom and fruit on 1 year wood, some Gala may require more picks than usual. Keep in mind it is inherent in this variety to have such variability in maturity.

In concert with acceptable flavor, Gala for long-term CA storage should be picked when the background color is changing from light green to cream. Fruit intended for short term CA or regular storage should be picked with cream to light yellow background. Fruit that are bright yellow are over-mature and should not be put in storage-i.e. market those immediately. As your block gets close to first pick, check blocks every two to three days for color and varietal flavor development.

CA storage guidelines have Galas at 3-5 starch index, with pressures at 18 pounds for long-term CA, 17 for mid-term Ca, and 16 for short-term CA. A brix of 12-13% is desirable.

Please know your different strains- a highly coloring strain is not necessarily more mature than an older, lesser coloring strain. Although color change is usually one of the best indicators for this variety, keep in mind that varietal flavor is also extremely important.

Watch for greasiness and stem-cracking on Galas, a sign of over-maturity. Do not put these fruit in the bin. Greasiness and a bit of cracking have been seen in some first pick fruit that was picked too late.

Acey Mac/Spartan- Some picking next week, Retain fruit delayed

Sizing and color looked excellent on the samples I tested this week, but flavor was lacking. However, this apple will be starting to come into the window for long-term CA next week for some growers. Work with your marketer on maturity indices and prioritize picking with other varieties that perhaps need more immediate attention. Although internal ethylene measured in most samples was quite low, and cool temperatures indicate a lower drop risk, this is a drop-susceptible variety, so monitor closely. Being drop-susceptible, many grower snow treat AceyMac/Spartan with Retain.

5 untreated blocks tested in WNY on Sep 16 & 17, 2013

Index	September 16 & 17, 2013 untreated		September 19 & 20, 2011 untreated		Sept. 14 & 15, 2009 untreated	
	Average	Range	Average	Range	Average	Range
	n=5		n=4		n=5	
Firmness (lb.)	16.5	15.4-17.2	16.2	16.1-16.3	16.9	16.1-17.5
Soluble Solids (%)	10.8	9.7-11.6	10.6	9.7-11.4	10.9	10.2-11.7
Starch Index	2.8	2.5-3.0	2.6	2.5-2.7	1.6	1.0-2.0
Ethylene (ppm)	0.17	0.05-0.34	0.98	0.05-2.29	0.63	0.04-2.45

Cortland – Picking should begin later next week for some

Color and size seem there for the better coloring strains (Redcort, Royalcort) but there has been little starch movement and varietal flavor needs to improve. Later next week could see fruit picked from earlier sites for CA. Be aware of rapid maturation; however, as Cortland can move through the suggested long-term CA starch index range of 2.5-3.5 quite quickly- but keep in mind starch levels seem falsely high this year.

Index	Sept 16 & 17, 2013		Sept 19 & 20, 2011		Sept 14 & 15, 2009	
	Average	Range	Average	Range	Average	Range
	n=6		n=12		n=5	
Firmness (lb.)	16.2	16.0-16.4	16.4	15.5-17.7	16.2	15.2-16.7
Soluble Solids (%)	11.3	10.1-12.3	11.1	9.0-12.7	11.9	11.4-12.6
Starch Index	1.2	1.1-1.6	1.3	1.1-1.6	1.1	1.0-1.2
Ethylene (ppm)	2.77	0.02-13.4	0.13	0-0.34	0.13	0.05-0.35

SnapDragon (formerly NY-1) – Varietal flavor coming on, but most fruit are still not quite ready

Keeping in mind that most of the fruit I sampled this week came from older trees, and full color break was not present, nor was final sizing and varietal flavor. However, younger trees, especially those lightly cropped, may be near ready. One such sample I looked at had a brix of 13%, a starch index of 2.4, and an average firmness of 19.7 pounds. Internal ethylene was fairly low as well. Fruit from most blocks may still need final sizing, shaping, and flavor development. We are trying to establish maturity guidelines for this variety. We are not sure if the variety will require multiple picks at this time- there are simply too few older trees out in orchards. **Remember that picking too early can kill repeat sales!**
There is no reason not to wait if fruit are destined for farm markets!

7 NY-1 samples tested in Western NY on September 16-17, 2013

Index	Sept. 16 & 17, 2013		Sept. 17 & 18, 2012		Sept. 19 & 20, 2011	
	AVG.	Range	AVG.	Range	AVG.	Range
	n=7		n=7		n=6	
Firmness (lb.)	18.4	15.8-19.7	18.9	17.3-19.9	18.2	16.8-19.9
Soluble Solids (%)	11.6	10.0-13.0	13.6	12.2-15.9	11.5	10.5-12.5
Starch Index	2.7	2.0-4.1	3.4	2.2-4.6	2.3	1.4-3.3
Ethylene (ppm)	0.98	0.02-3.78	1.09	0-3.31	0.37	0.06-1.08
Producing > 0.5 ppm ethylene	14% (10/70 apples)		17% (12/70 apples)		8% (5/60 apples)	

Empire

From Dr. Chris Watkins at Cornell – research now over several years indicates that the number 1 defense against internal flesh browning is early harvest. Last year’s data showed fruit picked a week ahead of normal harvest did show a reduction in packout; however, the fruit had very low levels of browning, even in June and July. We realize this may bump some of your Empire into an already busy harvest window, but prioritize early Empire harvest if you want to store fruit in long-term CA.

Reminders

Please follow recommended maturity indices for each variety in addition to consulting with your marketer. Make sure there is adequate varietal flavor prior to harvest. **While I realize inventories are very low and the large demand for fresh apples have marketers screaming for fruit, picking under-mature fruit will only kill repeat sales.**

Variation between individual blocks and orchards always occur. Because of this inherent variation, the average maturity index readings of several grower blocks (as developed by the regional testing program) has often provided a better guide to harvest than readings from individual orchards. **BE SURE TO CONSULT WITH YOUR MARKETER – before harvesting the block.**

Crop load effects maturity. Trees with lighter crop loads, along with stressed trees (i.e. drought and frost damage/loss) and very young trees usually mature earlier. Maturity is usually delayed in trees carrying a larger crop

Cooling fruit as soon as possible following harvest is critical in maintaining quality!

- **At the very least, shade your fruit right after harvest** – temps even in the low 80's with strong sunlight will result in fruit surface temperatures well over 100 degrees, sun-scalding fruit at the tops of bins.
- **Rapid cooling** – importance cannot be under-estimated, especially if harvest temperatures are high, in concert with higher respiration rates in fruit.

The harvest maturity report for next week (9/25) will focus on testing data of AceyMac/Spartan, Cortland, and SnapDragon (formerly NY1). Testing will be finishing next week on Honeycrisp and McIntosh. Testing will start on Macoun and Empire.

Harvest maturity report subscription reminder – tell a friend. Call or email Kim Hazel to subscribe at 585-798-4265 ext. 26, krh5@cornell.edu.

Every effort has been made to provide correct, complete, and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are still possible. These recommendations are not a substitute for pesticide labeling. Please read the label before applying any pesticide.

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