

## Harvest Maturity Report #8



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This is the eighth 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** – Second pick in progress or near finished for most, some Retain-treated fruit remains for final picking. Stem cracking and greasiness are indicators of over-maturity.
- **McIntosh** – Most McIntosh picking for mid to long term CA should be finishing. Any fruit harvested next week should be best directed to short-term shortage or quick sales.
- **Honeycrisp** – Most are into second pick. Recent weather is helping full color break. Keep in mind that later-harvested fruit are more susceptible to soft scald/soggy breakdown, and preconditioning fruit for 7 days at ~50F helps, unless you are at risk for bitter pit. **See pages 2-3.**
- **AceyMac/Spartan** – Harvest is in full swing. There are reports of preharvest drop. See page 3.
- **SnapDragon (Formerly NY1)** – Fruit from young (2<sup>nd</sup> & 3<sup>rd</sup> leaf trees) are at or very near harvest as tree-ripened fruit for farm markets, especially inland sites on gravelly soil. Most fruit from older 4<sup>th</sup> leaf trees, along with the 8<sup>th</sup>-9<sup>th</sup> leaf experimental first plantings that I looked at this week won't likely be ready (1<sup>st</sup> pick) until next week. The young trees have nearly full color on all fruit while the older trees will most likely need two picks. **See page 4 for more info.**
- **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 pages 4-5.**
- **Macoun** – Next week will be the peak for most in our territory, but fruit that are dropping prematurely will likely get harvested later this week. **See pages 5-6.**
- **Empire** – Color is excellent, but varietal flavor is still not quite there for most. Starch is high and brix is quite low in most of the samples I looked at this week. Next week will hopefully see the lion's share of Empire harvested. **See pages 6-7.**

### 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 may not be as mature as starch indexes may indicate. Look at varietal flavor, firmness, and color as well.

**Weather Forecast** for the Western NY fruit belt, the continued full sun to partly cloudy with highs in the 60s and 70s with lows in the 40s and 50s at night are forecasted to continue through Wednesday of next week. The only day with considerable cloudiness looks to be Monday, with a 30% chance for showers for most of the Orleans, Wayne, and Oswego counties. Chances for rain are under 20% the remaining days. Great weather for catching up on harvest if you are falling behind.

### Honeycrisp – Well into second pick for most

Clear sunny days and cool nights have helped advance maturity in HC. Remember, this is a multiple-pick variety (plan to pick 3-4 times), but only the earlier picks tend to store best and have fewer disorders. Later-harvested fruit is more susceptible to soft scald and soggy breakdown. 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.**

**The correct storage temperature for Honeycrisp is 38F** in regular atmosphere, and we recommend a delay of 7 days at around 50F before cold storage. Consider doing this on-farm as it may be difficult at storage facilities. If you do precondition your fruit prior to delivery to storage, be sure to notify your storage operator. 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.

5 untreated Honeycrisp blocks tested in WNY on Sep 23 & 24, 2013

Index	Non-Retain September 23 & 24, 2013 AVG. Range n=5		Non-Retain September 16 & 17, 2013 AVG. Range n=9		Non-Retain September 19 & 20, 2011 AVG. Range n=8		Non-Retain September 21 & 22, 2009 AVG. Range n=9	
	Firmness (lb.)	14.7	14.0-15.4	14.6	14.1-15.6	15.2	13.9-16.3	13.7
Soluble Solids (%)	11.2	9.3-13.5	11.7	10.0-12.8	12.4	11.9-13.1	12.8	11.0-15.6
Starch Index	6.8	5.3-7.7	6.3	4.3-7.5	5.7	4.0-6.6	6.4	5.5-7.3

**Acey Mac/Spartan-** Picking now in most of the region, prioritize if you see preharvest drop

Sizing and color looked excellent on the samples I tested this week, and flavor has improved compared to last week. Picking is occurring for long-term CA this week for some growers. Work with your marketer on maturity indices and prioritize picking with other varieties that perhaps need more immediate attention. Internal ethylene came up substantially this week, so drop can be a real risk. Being drop-susceptible, many growers now treat AceyMac/Spartan with Retain.

5 untreated blocks tested in WNY on Sep 23 & 24, 2013

Index	September 23 & 24, 2013 untreated Average Range n=5		September 16 & 17, 2013 untreated Average Range n=5		September 26 & 27, 2011 untreated Average Range n=5	
	Firmness (lb.)	16.1	14.8-17.5	16.5	15.4-17.2	15.7
Soluble Solids (%)	10.1	9.1-11.5	10.8	9.7-11.6	11.3	9.7-13.7
Starch Index	3.1	3.0-3.5	2.8	2.5-3.0	2.6	1.9-3.2
Ethylene (ppm)	2.45	0.88-4.89	0.17	0.05-0.34	8.70	5.79-14.00
Producing > 0.5 ppm ethylene	36% (18/50 apples)		8% (2/25)		46% (23/50)	

## SnapDragon (formerly NY-1) – Make sure your fruit are fully tree-ripened for farmer’s markets

95% to full color was present on most of the samples I looked at this week that were from young (2<sup>nd</sup>-3<sup>rd</sup> leaf trees. Varietal flavor was excellent. Size was good; pressures in the 17.5-19 pound range seem to be ideal. Fruit that pull off the tree quite easily seem to be a good indicator of harvest readiness as well. Less colored fruit are hard to pull off. **The sweet spot for picking tree-ripened fruit on young trees seems to be now through the next 5 days or so.** Rising internal ethylene levels would seem to indicate readiness as well. Keep in mind that SnapDragon does not seem to be prone to preharvest drop, nor does it develop greasiness in over-ripe fruit.

12 SnapDragon blocks tested in Western NY on September 23-4, 2013

Index	Sept. 23 & 24, 2013		Sept. 16 & 17, 2013		Sept. 24 & 25, 2012		Sept. 26 & 27, 2011	
	AVG. n=12	Range	AVG. n=7	Range	AVG. n=4	Range	AVG. n=6	Range
Firmness (lb.)	18.7	17.6-20.2	18.4	15.8-19.7	16.3	14.2-17.4	17.1	16.2-17.9
Soluble Solids (%)	12.8	11.1-15.2	11.6	10.0-13.0	14.1	13.2-15.0	12.5	11.1-13.9
Starch Index	3.7	2.8-4.5	2.7	2.0-4.1	4.4	3.9-5.5	4.7	3.9-5.7
Ethylene (ppm)	1.32	0.15-3.76	0.98	0.02-3.78	0.34	0.01-0.80	5.85	1.04-15.26
Producing > 0.5 ppm ethylene	36% (43/120 apples)		14% (10/70 apples)		5% (2/40 apples)		53% (32/60 apples)	

## Cortland – Picking starting now, next week will be the peak week.

Cortland are starting to move into the maturity window for CA now. Color and size are excellent, however, brix was very low and some varietal flavor development was needed on some samples I looked at this week. Recommended firmness for CA storage is above 14 pounds for short-term, 15 pounds for mid-term, and 16 pounds for long-term CA, according to Phillip Schwaller of MSU Extension. 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.

11 Cortland blocks tested in Western NY on September 23-24, 2013

Index	Sept 23 & 24, 2013		Sept 16 & 17, 2013		Sept 26 & 27, 2011		Sept 21 & 22, 2009	
	Average	Range	Average	Range	Average	Range	Average	Range
	n=11		n=6		n=12		n=8	
Firmness (lb.)	16.0	15.5-16.8	16.2	16.0-16.4	15.0	14.6-15.3	15.9	14.0-17.1
Soluble Solids (%)	11.3	8.7-13.6	11.3	10.1-12.3	12.7	10.8-14.2	11.8	9.9-12.6
Starch Index	2.5	1.3-3.8	1.2	1.1-1.6	1.8	1.0-2.7	1.3	1.0-1.6
Ethylene (ppm)	3.47	0.06-15.15	2.77	0.02-13.4	0.43	0.03-1.55	0.17	0.12-0.22

## Macoun – Harvest for CA starting later this week, into next week

5 Macoun blocks tested in WNY on Sep 23-24, 2013

Index	Sept 23-24, 2013		Sept 26-27, 2011		Sept 28-29, 2009	
	Average	Range	Average	Range	Average	Range
	n=5		n=6		n=4	
Firmness (lb.)	16.5	15.5-18.3	15.9	15.1-17.2	16.0	15.2-16.9
Soluble Solids (%)	10.6	8.6-12.1	10.8	8.4-11.8	12.3	11.9-12.8
Starch Index	3.0	3.0	3.1	3.0-3.2	2.8	2.6-2.9
Ethylene (ppm)	3.60	0.07-9.29	0.68	0.04-1.08	0.37	0.05-1.18
Producing > 0.5 ppm ethylene	24% (6/25)		12% (7/60)		5% (2/40)	

Ethylene was present in most Macoun blocks sampled this week and there are reports of some preharvest drop. In those cases make harvest a priority. Other blocks can wait until next week for harvest for CA for the most part. Most fruit I looked at were colored well but could use a few more days for starch to move more and brix/flavor development to come up. Be aware that Macoun is susceptible to moldy core, but little was seen in this week's samples.

- **Telling the difference between “PUSH-OFF” and “DROP”:**
  - PUSH-OFF – fruit is missing stems, has flat spots or limb creases
  - DROP – fruit is loose on tree, fruit has stems

**Empire** – Some CA fruit from very early sites being harvested now, next week will see the lion's share of CA fruit picked

Color, like in most varieties is excellent in the majority of Empire I looked at, but fruit are still on the starchy side and varietal flavor needs development. Brix levels are lower than expected. However, the weather patterns of the past few days and the short-term forecast should advance maturity quite rapidly.

It is time to do frequent walk-throughs and to work closely with your marketer to prioritize picking of Empire based on what type of market/storage it is destined for.

It is important to work closely with your marketer in selecting the right destination for your fruit. For instance, minimum total soluble solids (brix) for export to the UK is 12%. Fruit will usually not gain more than 0.5% brix in storage, so do not harvest fruit for export below 11.5% in this case. Please be aware that there is a lot of variability in brix and other maturity indices, from block to block, within blocks, and also from fruit to fruit. Sample the correct sized fruit from the block (or portion of the block) that you are targeting for a particular market.

Suggested guidelines for CA are starch of 4.2-4.6 (minimum 3.5, 5 is over-mature), and pressures greater than 17 pounds (14 for short, 15 for mid, and 16 for long-term CA, according to Phillip Schwallier at MSU Extension). Export pressure requirements may be higher. Overall, internal ethylene was very low on most Empires sampled this week, also suggesting harvest can wait if needed.

9 untreated Empire blocks tested in Western NY on September 23-24, 2013

Index	Sept. 23 & 24, 2013		Sept. 26 & 27, <u>2011</u>		Sept. 28 & 29, <u>2009</u>		Sept. 22 & 23, <u>2008</u>	
	untreated		untreated		untreated		untreated	
	Average	Range	Average	Range	Average	Range	Average	Range
	n=9		n=11		n=17		n=9	
Firmness (lb.)	16.9	16.1-17.5	16.6	15.3-17.5	17.0	15.4-18.6	16.9	15.6-18.1
Soluble Solids (%)	9.9	8.2-11.8	11.3	10.2-12.4	11.4	9.2-12.6	12.2	11.4-13.4
Starch Index	3.4	3.0-3.8	3.2	1.8-4.6	2.9	2.2-3.5	3.4	2.5-5.3
Ethylene (ppm)	0,05	0-0.22	0.82	0.02-3.77	0.18	0-2.23	0.31	0.01-2.40
Producing > 0.5 ppm ethylene	4% (3/80)		7% (8/110)		2% (3/170)		3% (3/90)	

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.**

**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.

**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!**

**The harvest maturity report for next week (10/2) will focus on testing data of Empire, Cortland, Macoun, and SnapDragon (formerly NY1). Testing will start on Red Delicious, Jonagold, and Golden Delicious.**

As always, your comments and suggestions are always appreciated via email or cell phone.

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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