



Healthy Fruit, Vol. 31, No. 17, September 26, 2023

Prepared by the University of Massachusetts Amherst Fruit Team

Jon Clements, Editor

Upcoming meetings

Apple maturity reports, via Zoom, Tuesday's at noon through October 10 (except October 3)

<https://umass-amherst.zoom.us/j/95275281199>

Meeting ID: 952 7528 1199

The way I see it

Jon Clements

- Apple maturity is right on track, Mac and Honeycrisp harvest should be wrapping up this week, onward with Cortand, Empire, and Macoun. Maturity seems to be right on track overall, neither early or late...
- Quality is OK but apples are large, often seedless (or poorly seeded), may not have optimum storage life?

- Apple trees showing signs of new shoot growth, might not be good if we get an early “freeze” and will likely be hardening off late with all this rainfall? But I am not too worried (yet)...
- A reminder the Natural Disaster Recovery Program (NDRP) application deadline is this Friday (September 29) at 4 PM. NDRP website [here](#) with application and instructions, webinar video [here](#), slides [here](#) (need Powerpoint), FAQ [here](#). You must have a total of 15% affected acreage (by freeze or flooding) of total producing acreage to be eligible to apply.
- Welcome back Liz!

Some of you might be interested in attending this presentation, it might be a bit scientific, but I checked with Giverson and all our welcome at the Cranberry Station, they have a beautiful new building and awesome meeting presentation room! I am not sure if they Zoom link will work for non-UMass people?

From: Giverson Mupambi <gmupambi@umass.edu>
Subject: PB Seminar, October 12 at the Cranberry Station
Date: September 25, 2023 at 10:16:05 AM EDT
To: pb-all <pb-all@groups.umass.edu>

Hi PB Community,

I am excited to host Dr. Lee Kalcsits, Associate Professor and Endowed Chair of Environmental Physiology for Tree Fruit from Washington State University, on October 12th for the Plant Biology Seminar Series. His presentation will be on: **Identifying the root causes of bitter pit in apple**. The seminar will be held from 3 - 4 PM in the Makepeace room at Cranberry Station in East Wareham. We are starting early to give folks from campus time to drive back.

Dr. Kalcsits studies the physiological interactions between environment, genetics, and horticultural management. Here is a link to his [Lab Web Page](#) and [Google Scholar Profile](#). He will have some time slots to meet with people in the afternoon prior to her seminar over Zoom (October 11th). If you are interested, please mark the [time slots](#) in this link form that would work for you.

The seminar will coincide with cranberry harvest, one of the best times to visit us. If you are planning to come, bring your waders 😊. The PB Seminar Committee is making travel arrangements for the trip.

For those who cannot make it, here is the [Zoom Link](#).













Ah, shouldn't this be setting a terminal bud by now???

Horticulture (apple maturity report)

Jon Clements

All observations from UMass Orchard, Belchertown, MA unless otherwise noted. Target maturity numbers: red color, >50%; firmness, >14 lbs.; soluble solids, >12; DA, 0.60 to 0.40 for Honeycrisp, 0.65 for Gala, 1.00 for Golden Delicious, 1.15 to 1.00 for Red Delicious (higher DA = more "green"); starch index, 4-6. All apple maturity reports [here...](#)

2023 Date	Variety	Drop	Diameter (inches)	Color (% red)	Firmness (lbs.)	Brix	Starch Index	DA Meter	Comments	Picture
9/25	Rogers Red McIntosh	yes	3.2	75	12	11.7	6.5	NA	Harvest ASAP	
9/25	Cortland (Recort?)	nil	3.4	80	15	11.3	3-4	NA	Pick over next week	
9/25	Empire (Royal?)	nil	3.2	95	15	13.2	3.5-6.5	NA	Start harvest	
9/25	Macoun	nil	3.2	60	15	12.2	3-4	NA	End of this week?	
9/25	Liberty	none	3	85	20	12.2	2-5	NA	End of this week with Macoun	

9/25	Honeycrisp	some	3.3	65	12	12.7	6-7	NA	Needs harvest this week	
9/25	Jonagold	nil	3.4	50	12	13.5	5-7	NA	Start harvest on red color	
9/25	Crimson Crisp	few	3.1	99	17	14.1	5.5-7	NA	Harvest ASAP, marssonina leaf blotch	
9/25	Golden Delicious (Golden Glory)	none	3	NA	13	10.9	4-7	NA	Heavy crop, need another week	
9/25	Ambrosia	none	3.2	55	16.5	13.4	4-5	NA	Start 1st pick?	

Guest article

Elizabeth W. Garofalo

The academic sabbatical is a hallowed tradition in which faculty and sometimes staff take paid leave from their regular duties to study and travel. Over the last year, I have been working with a small nonprofit, many of you may know- [Red Tomato](#). While not a traditional sabbatical, during this time I did indeed travel and learn about a side of the apple industry I had previously only a passing knowledge of. Supply chains and sales transactions, while a critical part of your success as growers, failed to inspire in me the same passion I feel when researching projects, sharing production oriented information and just generally tromping around in the orchard with you all. It is with great excitement that I share with you the news of my return to the Fruit Team. My first day was Monday, September 25th. Should you need to get in touch, my cell is (413) 835-1337, my email, once active will be egarofal@umass.edu and you can always find me on [Instagram](#). I look forward to working with you all again!



Cooler Fruit Prevails

Matthew Bley (mbley@umass.edu)

Pre-cooling is the practice of cooling apples from their field temperature down to an optimal temperature before packing, transporting, or storing them. Usually done during really hot harvest windows or when long-term storage facilities may be far away, pre-cooling is helpful to prolong the fruit's quality by slowing down ripening. Especially during a wet season, it is critically important to cool your apples to slow down and limit the growth of decay organisms. Most commonly in apples, pre-cooling is done by (a.) room cooling and forced air cooling, and (b.) hydro cooling.

- a. Room cooling and forced air cooling are more widespread due to their simplicity and low upkeep yet, both practices are hindered by their slow and uneven cooling. The slow cooling efficiency can be amended by increasing the airflow rates through the bin. I have attached a screenshot of different schematics you could employ to increase airflow.
- b. Hydro cooling involves showering or submerging water-tolerant fruit in cold water, leading to quick and uniform cooling but can lead to easy microbial contamination. This practice can be performed with a refrigerated CaCl₂ solution to prevent storage disorders.

More about room cooling and forced air cooling

Clearly, the organization of your pre-cooling room matters, so a rule of thumb is to not overpack bins and to keep stacked bins at least 6 inches apart from each other and 8 inches away from the wall. Without forced airflow through the bins (reaching the 'buried' apples), cooling will be extremely uneven and may be too late to prevent degradation. However, increasing airflow will also increase moisture loss, impacting the firmness of the fruit, so it is important to maintain 90-95% humidity in storage and pre-cooling facilities (a humidifier or two could do the trick).

"When should I pre-cool?"

If you are worried about the rapid softening of your fruit variety, say a Royal Gala, then pre-cooling should be done promptly post-harvest to limit ethylene production. There is evidence that delaying pre-cooling by 1 to 7 days at an ambient temperature could reduce incidences of soft scald and low-temperature injury on Honeycrisp and Ambrosia. I reckon that a delayed pre-cool, as long as apples are kept out of direct sunlight and at an ambient temperature, would be more practical and the best option for most apple varieties.

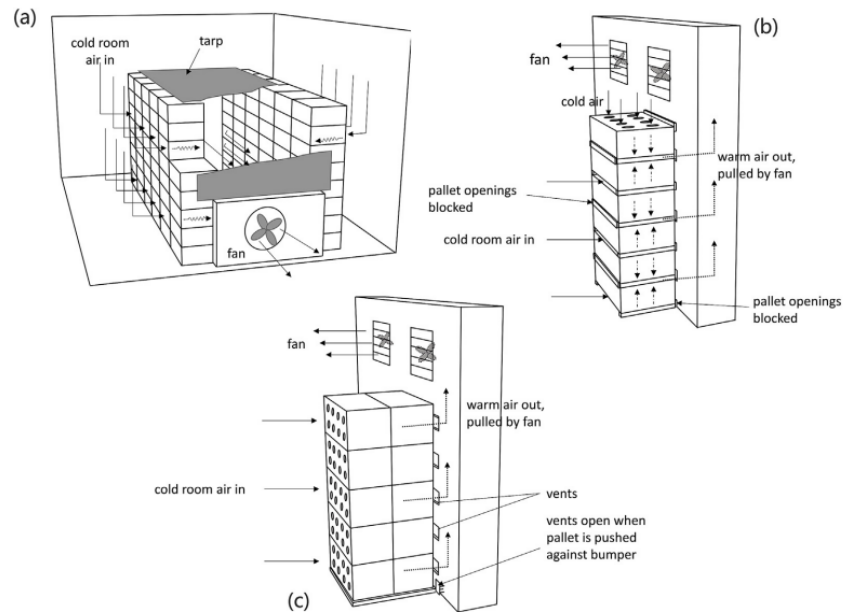


Fig. 1. Schematics of a tunnel-type forced air cooler (a), a serpentine forced air cooler (b) and a cold-wall forced air cooler (c).

Resources:

1. Factors Affecting Postharvest Quality of Fresh Fruits by M.S. Ahmad, M.W. Siddiqui, Postharvest Quality Assurance of Fruits, DOI 10.1007/978-3-319-21197-8_2.
2. Duan, Y. et. al. 2020. *Postharvest precooling of fruit and vegetables: A review*. Trends in Food Science & Technology. 100: 278-291
3. <https://content.ces.ncsu.edu/postharvest-cooling-and-handling-of-apples>

Useful links

UMass Fruit Advisor: <http://umassfruit.com>

Network for Environment and Weather Applications (NEWA): <http://newa.cornell.edu>

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[The Jentsch Lab](#) (Peter Jentsch, Poma Tech)

[Acimovic Lab](#) (Srdjan Acimovic at Virginia Tech)

[Tree Fruit Horticulture Updates](#) (Sherif Sherif at Virginia Tech)

[CCE ENYCHP Tree Fruit Blog](#)

The next Healthy Fruit (apple maturity report) will be published on or about October 10, 2023. In the meantime, feel free to contact any of the UMass Fruit Team if you have any fruit-related production questions.

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