

Late rains and soft fruit: Thoughts about preparing for storage.

R. Beaudry, A. Wallis, A. Irish-Brown, and G. Sundin.
Sept. 14, 2022

Although the harvest season is only just underway this year, there is some reason for concern regarding storability of apples. Most varieties seem to have good size, but low sugar levels, suggesting some of the late season rains have increased water content and diluted the sugars. On its own, this isn't cause for concern, but the implication is that the fruit may be less likely to store well if their final size is more determined by water content 'stretching' the cells, rather than higher cell numbers and the accumulation of dry matter. High dry matter would be an indication that the fruit has committed its resources to the production of cell walls, cell wall linkages, and other cellular components that would help keep the fruit firm and resistant to decay. In a rainy year, some varieties would be much more susceptible to decay than others as they are either thin-skinned, typically large fruit or simply have little resistance to decay and the wet conditions would have provided for the accumulation of high levels of inoculum. Among the most susceptible varieties to storage rots are Honeycrisp, Gala, McIntosh, Empire, and Jonagold, with Honeycrisp being perhaps in a league of its own.

As a precaution, we are recommending that fruit be prepared for storage with a good field-based decay control program and/or a postharvest thermofog program. The following is a summary of some field control options originally put together by Dr. George Sundin in 2021:

Fungicide	Rate per acre	Relative disease efficacy			Pre-harvest interval
		Black rot	Bitter rot	White rot	
Merivon	4-5.5 fl oz.	e¹	e	e	0 day
Luna Sensation	4-5.8 fl oz.	e	e	e	14 day
Pristine	14.5-18.5 oz.	e	e	e	0 day
Flint Extra	2.9 fl oz.	NL	g/e	--	14 day
Captan 80WDG	2.5 lbs	e	e	e	0 day

¹ Disease efficacy ratings: e, Excellent; g, Good; f, Fair; NL, not labeled.

Fungicide information:

1. Use Captan (1.5-2.5 lbs / A) for resistance management for Merivon, Luna Sensation, Pristine, and Flint Extra.
2. Maximum number of applications per season: Merivon, 4; Luna Sensation, 4; Pristine, 4; Flint Extra, 4.
3. Captan 80WDG seasonal limit is 40 lbs. Consult labels for seasonal limits for the other fungicides, and for all other information.

In years like 2022, with high temperatures, good sun, and abundant rainfall, good fruit size can result, but bigger fruit can compromise fruit firmness, as noted. Fortunately, our industry has begun harvest on the early side this year and are putting most of the fruit away at a respectable maturity level that will enable us to store the fruit effectively given the excellent tools we now have. Importantly, the widespread use of use of preharvest treatments of ReTain and Harvista in Michigan on our earlier varieties should ensure good control over fruit maturity at harvest even if harvest is interrupted by inclement weather.

Thinking ahead: As is often said, fruit only get softer, so despite fruit maturity otherwise being acceptable, the lack of firmness can lead to unacceptably soft fruit if there are failures in the handling chain. Generally, it is not common for one issue to be a major problem in and of itself. However, when there is an 'initiating' issue, as there may be this year with the low firmness of some varieties, it sets the stage for value losses if the fruit are subjected to additional stresses. In this case, if there is a second or third problem (e.g., slow cooling, poor atmosphere control, delayed marketing and sales, lack of monitoring in storage, failed or delayed 1-MCP treatments), significant losses might be anticipated. For that reason we need to emphasize that 2022 fruit should be given extra care and attention after harvest compared to other years.

It is therefore important to emphasize that these varieties need rapid and timely cooling (3-5 days to target temperatures), 1-MCP treatment where applicable (1 to 5 days after harvest and during conditioning of varieties like Honeycrisp), rapid establishment of CA (7 to 10 days after harvest) and good CA management - meaning the fruit should be monitored throughout the storage season with room samples held near the access door. As a reminder, oxygen levels should be at target levels (0.7 to 1.5%) 3 to 5 days after closing the CA room doors).