2021 Honeycrisp Playbook – Early Foliar Calcium

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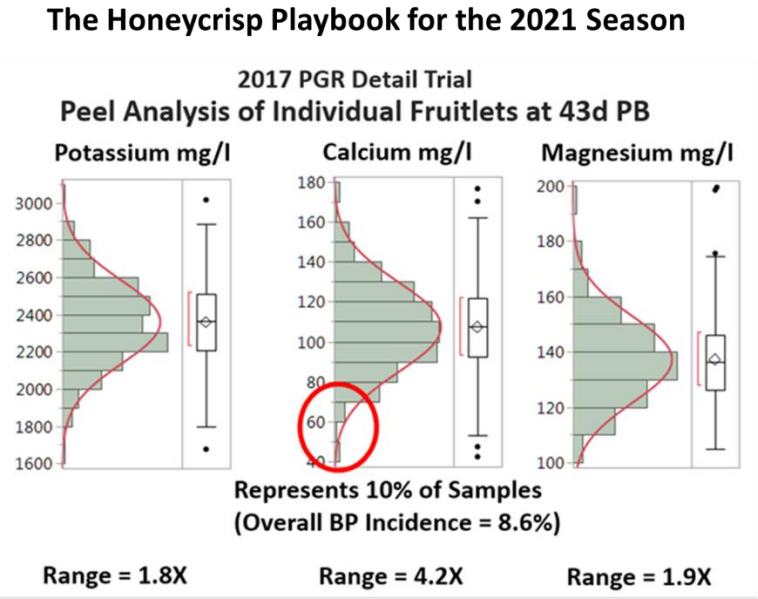
Early is where it's at: Individual Honeycrisp fruits analyzed for mineral content around the end of the cell division period of fruit development (±40 mm) have been found to be highly variable in mineral content, particularly calcium. Four years of research results in the Hudson Valley show that early season fruit calcium content can vary as much as 4.2X from a low Ca fruit to a high Ca fruit (figure 1). These finding suggest that our calcium troubles start early in the growing season and therefore should be addressed early as well. The calcium cation is not very mobile with plant tissue and doesn't move from cells with a surplus to cells in deficit. Calcium cations need to be available for cell walls and membranes locally, and when needed. Too far away and/or too late is of little help. Since calcium plays a role within the plant in hormonal signaling, the cations cannot remain "free" within cell cytoplasm or within the spaces between cells and cell walls. Free calcium cations that are not incorporated promptly into cell membranes, cell walls, and endoplasmic reticulum are quickly deactivated and made unavailable through sequestration within cell vacuoles.

Figure 1.



Efficacy of Foliar Calcium Applications: The results of research conducted in ENY since 2016 has generally supported the use of foliar calcium sprays to reduce bitter pit incidence in Honeycrisp, although the practice is not 100% reliable. Below are summaries of ENY trial results:

2016: Replicated solo backpack, 7 materials x 2 rates x 4 summer applications, 13% BP in Control, no significant treatment differences

2017: Replicated commercial airblast, POMA, 4 summer applications, 64% BP in control, 46% in the POMA treatment, significant reduction.

2017: Replicated solo backpack, POMA, 5 weekly starting at PF, 11.6% BP in control, 5.3% in the POMA treatment, significant reduction.

2018: Replicated solo backpack, POMA, 5 weekly starting at PF, 36% BP in control, 21% in the POMA treatment, significant reduction.

2019: Replicated solo backpack, 5 materials, 4 weekly starting at PF vs 4 summer applications, total loss to soft scald in storage.

2020: Grower applied airblast demo trial, season-long program, 63% BP in control, 34% Elemax, 24% CorClear. Statistical analysis not possible.

Recommendation for 2021: Your minimum Honeycrisp foliar calcium program should be **five weekly applications starting at petal fall.** This timing covers the cell division period of cell development. I've found Agro-100 *POMA* to be effective at this timing but there are other foliar calcium formulations available as well. Step up the intensity? Start at pink. Agro-K *Sysstem-Cal* has been tested and promoted by the manufacturer as being tank-mix compatible with Prohexadione-calcium products (Apogee, Kudos). Finally, if you wish to continue with calcium applications through the summer, lengthen the interval to 14 days and don't apply calcium chloride when temperatures are expected to reach 85F. Foliar calcium is only one component of an integrated bitter pit suppression program, and it may not be the most important one at that.