



The Challenges of Honeycrisp Storage:

A PACKER'S PERSPECTIVE



Maximizing Value

Not so easy

Principle Concerns

Chilling Injury



Bitter Pit



And let's not forget bruising and stem punctures...

(These pictures were associated with a rejection)



Chilling Injury

Symptoms result from cell death, thought to be caused by rapid cooling.

Includes the disorders commonly referred to as “soggy breakdown” and “soft scald”.



Main Points:

- Variable from year to year under similar storage conditions
- Over-maturity at harvest is biggest causal link
- Difficult to grade because damage is often undetectable on fruit exterior

What can be done?

- ❖ Preconditioning (5-10 days at 50°-70° F.)
- ❖ Rapid Marketing (symptoms are often delayed by weeks or months)
- ❖ Put-away strategies with respect to maturity, block history, and field temps at harvest
- ❖ Crossing your fingers (standard protocol)



And our secret weapon...



Internal Quality Sorting

Your best friend and your worst enemy

Bitter Pit

Physiological breakdown of cells beneath the surface of the skin. Generally accepted to be a symptom of calcium deficiency in the fruit.



Main Points:

- Biggest causal links are maturity at harvest and horticultural practices, specifically crop load and nutrient management
- Almost always problematic in fruit from young trees
- May be exacerbated by preconditioning
- Losses can be staggering, particularly towards the end of the marketing season

What can be done?



Not a whole lot, but we are certainly trying...

Specific challenges:

- ❖ Balancing the risks of increased chilling injury, vs. increased bitter pit (storage temps)
- ❖ Fairness concerns of targeting at-risk fruit for use in the strong, early market
- ❖ Monitoring packed inventory to avoid problems downstream
- ❖ Projecting supplies through the season and protecting pack-line efficiency when it is most important

Information is KING



Lots are determined with the utmost care according to:

GROWER

FARM

BLOCK

PICKING SEQUENCE (SP2 = SECOND PICK)

DATE OF DELIVERY

Each load is also assigned a receiving ticket number for traceability.

We use all this information, in conjunction with block history, to make a storage and marketing plan for each load. The first and most important decision is whether to precondition the fruit or to load it in a room at 38 degrees.

A general note to growers on bitter pit:

We are doing our best but we need your help!

- Bitter pit is first and foremost a field disorder. Make the effort to develop a strong calcium program!
- Bitter pit is generally a problem in fruit that is under-ripe or over-ripe. Focus on the frequency, precision, and timeliness of your picks. **We recommend no less than three picks! Four or five picks are preferred.**
- Don't over-thin! We recommend leaving pairs. Honeycrisp is a large apple. There is a strong demand for most sizes. The losses you imagine for reduced size might be nothing in comparison to losses for bitter pit.
- If you think the fruit is ripe, don't wait on color. The extra-fancy color standard for most customers is 30%. The lighter-colored fruit from later picks is more likely to be packed later in the season. **Many growers would gasp if they saw what their fruit looked like when we packed it in November!**
- Don't plant honeycrisp on vigorous rootstock, even if you feel like you must!!
- Take advantage of new materials like Harvista® to free up your labor concerns surrounding gala and concentrate more on honeycrisp.

And while you're taking notes...a few more on Calcium:

- Pay particular attention to the amount of elemental calcium that you are applying. The recommended seasonal total for foliar calcium in PA honeycrisp is as much as 23-25 Lbs./Ac. (Calcium Chloride flakes are a hefty 28% Calcium by weight).
- We have seen strong results with programs using Calcium Chloride flakes at 5 Lbs./Ac. beginning when the fruit is 20-25mm (roughly the beginning of June.) Spray weekly and increase the rate by 1 lb. each month. Spray through to the end of August.
- Chelated Calcium may be a good option from petal fall until you begin using Calcium Chloride. Liquid formulations are also recommended during this time. Though potentially more phytotoxic, the liquids would have better absorbance and deliver slightly more calcium at the recommended rates.
- Pay attention to the trees. If it is a dry summer and the trees look stressed beyond the normal level, consider backing down the Calcium Chloride.
- The fruit has already taken most of the Calcium that it will take from the tree by mid-July. The Calcium present at that time is diluted as fruit sizes. It is during this latter stage that supplemental Calcium sprays are most effective to control bitter pit.
- Take a close look at your fertilizer program for each block. Use leaf tissue analysis. Excessive N can cause excessive growth of fruit and shoots, adding serious risk for bitter pit. Excessive K can suppress Calcium. Depressed levels of Boron may inhibit movement of Calcium.
- Consider light summer pruning or Apogee® to mitigate the competitive reallocation of Calcium away from the fruit, especially in a wet year. This recommendation is only for mature trees.

Other items of note...

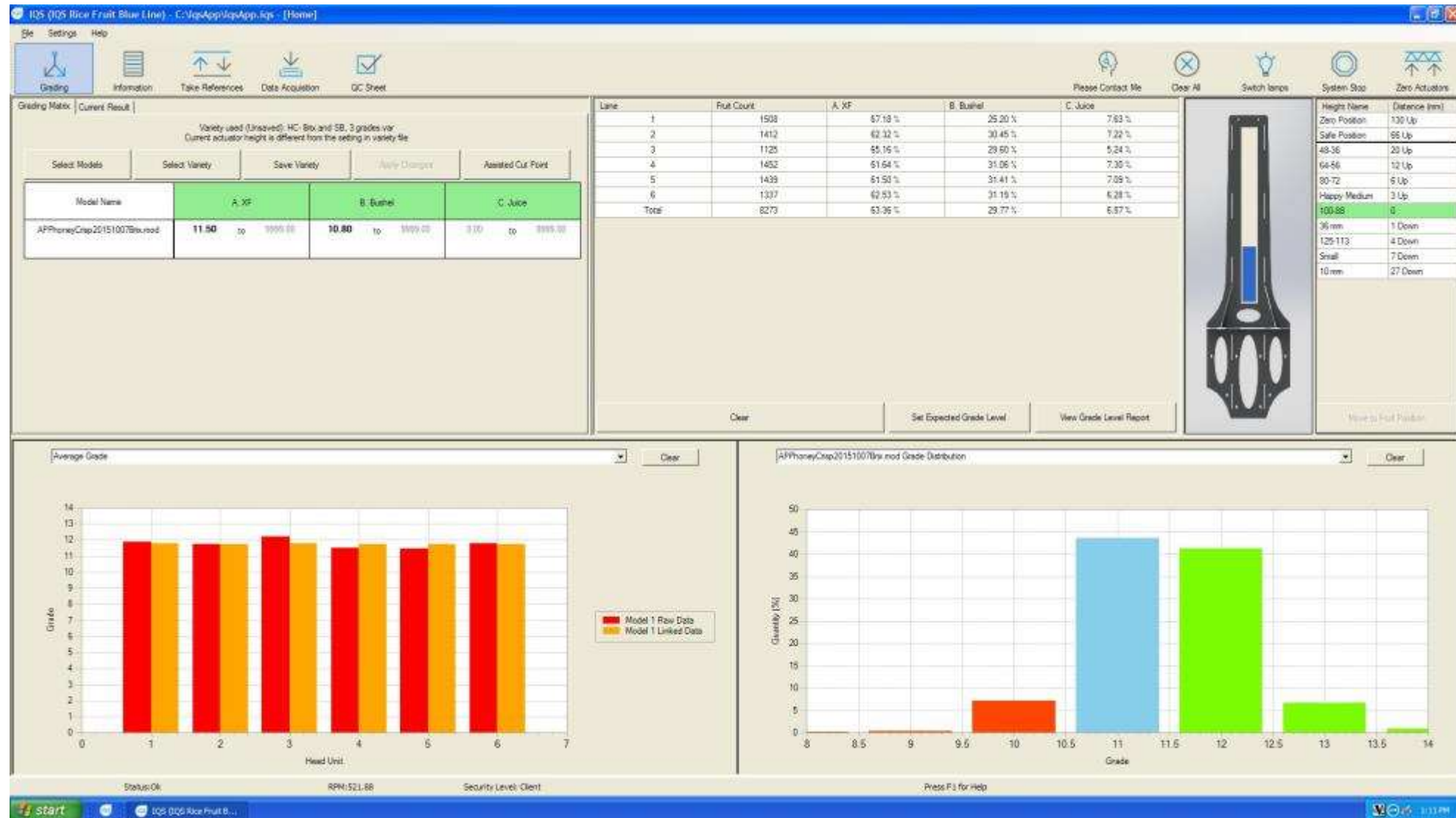
Use your Brix Meters!

Unlike some other varieties, we **do not** see brix development in unripe honeycrisp during storage (No, this is not another excuse to wait on picking).

We CAN and DO sometimes sort honeycrisp for brix (see the following slide).

We feel that a good honeycrisp should be more than 12° brix. We will downgrade apples below 11.5° brix in problem blocks.





35% of the fruit on this run was downgraded for low brix (ouch!)

And what about Stem-Clipping?



Never say never...honeycrisp is highly susceptible to stem-punctures, an injury that perpetuates rot and other storage problems. **We have seen some lots downgraded as much as 10-15% for stem punctures.** Remember that you only have one chance to pick the fruit. Make it \$worthwhile\$.

Lastly, A Few Notes about Premier® Honeycrisp:

Warning: What you are about to see
may scare you.



These are the same apples
from the previous slide
just one month later.

Do you want to see what
they looked like a few
months after that?





But of course it's
not all bad.

There's real
money to be
made.

Lots of it.



But there's no guarantee

Some of those same boxes ended up looking like this in a short amount of time. Believe it or not, what was left of them still had pleasant flavor and crunch.



Premier® honeycrisp **might very well be 21 days earlier than standard honeycrisp.** Keep an eye on it!

Use the honeycrisp starch index.

And please, please, please don't wait too long! Not for any reason!

Our overall feeling at this point is that this variety could be even more finicky than standard honeycrisp. **We are happy to have these apples but we are also worried about having too many!**

“By alchemy you may learn your livelihood;
You may wander through the universe incognito;
Make vassals of the gods; be ever youthful;
You may walk in water and live in fire;
But control of the mind is better and more difficult.”

- Sri Paramahansa Yogananda



As always, we appreciate the opportunity to market your quality fresh fruit, especially your honeycrisp;)

GOOD LUCK FOR A SMOOTH AND PROFITABLE SEASON

Special thanks to Mark Boyer from Ridgetop Orchards for his help with this presentation