

A STATUS REPORT ON HONEYCRISP APPLE MATURITY AND STORAGE FOR WASHINGTON

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Honeycrisp is likely the most challenging apple variety grown commercially in Washington State. Consumer demand has been exceptional, leading to high returns and a rapid increase in plantings. As volume increases, the necessity to increase the length of the storage season also increases.

Limited research experience on Honeycrisp grown in the Pacific Northwest has been undertaken in recent years by scientists at the Tree Fruit Research Laboratory (USDA-ARS) in Wenatchee. This research confirms the challenges facing the industry in judging maturity and storage.

This paper combines the results of this research with that of scientists in other locations where Honeycrisp has been grown and studied over a longer period of time. Due to the limited timeframe of this research, caution is advised in putting this information to play in a commercial situation. The authors recommend that storage operators set up their own trials on maturity, drenching, pre-storage conditioning and storage to gain first hand experience with this variety under different conditions.

A cautionary note: It is critical to be aware that this is a very chilling sensitive apple. The disorders that can develop from rapid cooling or excessively cold storage temperatures include Soft Scald and Soggy Breakdown. The potential for this to happen is very real and often can have serious economic repercussions.

Judging Honeycrisp Maturity

Judging maturity on Honeycrisp is not simple. Fruit firmness does not change during the maturation stage and in most locations when starch is only moderately cleared the fruit are not commercially acceptable. Most commercial experience has been to use the change in ground color from green to white to time the harvest, providing commercial red color has been reached. Typically, when maturity is judged using background color little starch remains in the fruit, thus the life of the fruit in long-term storage is shortened. Research from scientists in the eastern United States has shown that the risk of Soft Scald increases in early-harvested fruit even when caution is taken to avoid chilling after harvest.

Pre-storage Chemical Application

Honeycrisp has a high potential for decay. Therefore, the postharvest application of a fungicide drench or preharvest fungicide spray should be considered.

Researchers in the eastern United States have not found a benefit from the application of diphenylamine (DPA) and there has been no experience with it in Washington.

In research trials, the application of SmartFresh has shown to reduce acidity loss, greasiness and internal radial browning. SmartFresh has not been identified as affecting the risk of Soft Scald or Soggy Breakdown.

Pre-storage Temperature Treatment

It is critical to re-iterate that Honeycrisp is a very chilling sensitive apple. The disorders that can develop from rapid cooling or excessively cold storage temperatures include Soft Scald and Soggy Breakdown. The potential for this to happen is very real and often can have serious economic repercussions. These disorders have appeared in as little as 7 to 14 days in fruit that were placed rapidly in storage and held in low temperature (32 °F).

Research in Washington and New York has shown success when Honeycrisp is held at or about 50 °F for 7 days prior to being placed in cold storage. However, when Bitterpit susceptible fruit are held at these warm temperatures this disorder can become a big problem. Therefore, minimization of Bitterpit risk in the orchard is an important component in growing this fruit. There has been little success in increasing calcium in apples (to reduce the potential for Bitterpit) through the use of postharvest calcium drenches.

Storage Conditions

The delay in temperature reduction has shown to be effective in reducing storage disorders whether fruit are to be placed in controlled atmosphere or air storage.

Research with Washington grown Honeycrisp has shown that when the fruit have been stored in the upper 30's (°F), over time they become greasy, the skin color changes and acidity is lost. Limited storage trials at 35 to 36 °F have given a better balance of quality and reduction of storage disorders. Temperatures in the lower 30's (°F) have resulted in an increase of storage disorders.

Very limited trials in CA appear to indicate that storage at 2% oxygen with below 1% carbon dioxide at 35 °F have given good results. This apple has not easily lost firmness after harvest; but there has been little work on the effect of storage on the retention of the special characteristics of aroma, flavor and texture.

A Note on Packing

Researchers in the eastern United States report that the use of wax on Honeycrisp could have led to the development of severe internal breakdown in as little as 5 to 10 days in storage.

Additional Information

A web site on Honeycrisp Apple research results has been developed by Dr. Cindy Tong of Minnesota. The address is: <http://smfarm.cfans.umn.edu/Honeycrisp.htm>.