

# What Causes Bitter Pit In Honeycrisp Apples?



With more farmers encountering bitter pit and yield loss problems growing this notoriously finicky apple variety, the team at AEA dedicated research to discover what causes these challenges.

The Honeycrisp apple variety was bred 20 years ago by University of Minnesota scientist David Bedford. The fruit's winning combination of taste and texture has made it increasingly popular among consumers.

The apple's cells are twice the size of the cells in other varieties, which accounts for the crispness and sweetness of this popular apple.

However, orchardists throughout all the major apple growing regions have experienced problems with bitter pit in the fruit, especially after the apples have been in storage.

After doing extensive research, the AEA team theorized that what is commonly seen as a deficiency of calcium is not really a calcium deficiency at all, but rather an excess of potassium. Honeycrisp trees have a genetic predisposition to hyper-accumulate potassium, which causes the suppression of calcium uptake even though

there is calcium available in the soil system.

AEA teamed up with the crop production consulting company Agrassistance to test AEA nutritional management strategies on Honeycrisp trees on a farm in New York to see whether the hypothesis was correct.

Smith Brothers Farms in North Rose, New York, set up a split block demo plot evaluation for the 2014 harvest. After harvest, the apples were placed in refrigerated cold storage (34 degrees Fahrenheit) to assess post-harvest bitter pit development.

The results of the trial confirm the effectiveness of AEA's foliar applications. Compared to the grower's standard fertility program, the trees trialling AEA's products outperformed the control in every category.

Consumer demand is up for Honeycrisp apples. For orchards located in prime growing regions, there are large potential profits to be made by growing this popular apple. The trees will demand extra care and upkeep to grow well, but AEA's products and cultural management practices have been proven to help orchardists get the best yield and quality possible from this variety.

	Total Number of Fruit per Tree	Total Lbs. of Fruit per Tree	Calculated Yield Bu/ Acre	Fruit BRIX Levels	Fruit Firmness PSI	Relative Fruit Finish at Harvest	% Fruit Harvested with Bitter Pit	% Stored Fruit With Bitter Pit	Fruit Firmness PSI
	Sep. 19	Sep. 19	Sep. 19	Sep. 19	Sep. 19	Sep. 19	Sep. 19	Mar. 20	Mar. 20
<b>Growers Standard</b>	39.71	27.93	664.70	12.24	15.30	9.47	1.16	8.96	12.49
<b>AEA Foliar Program</b>	41.14	29.14	693.60	12.87	15.79	9.50	0.39	3.53	13.21