



# apple\_trial results\_bitter pit reduction

2017  
2018

**Póma**  
6-0-0 with 6% Ca  
FOLIAR NUTRIENT

Excerpt from *Tree Fruit News*, March 2019, vol. 7, issue 1

## Recent research on the use of calcium sprays to suppress bitter pit in Honeycrisp

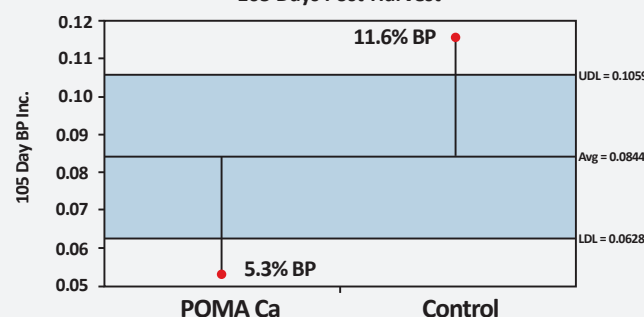
by **D. J. Donahue**, Cornell Cooperative Extension

### Hudson Valley, New York State

#### The Value of Early Season Calcium Applications

- ① Our research conducted in the Hudson Valley for 2017 and 2018 has shown that Póma 6% calcium chelate when applied in five weekly applications at 2 quarts/acre starting at petal fall to mature tall-spindle trees suppressed BP 54% in 2017 and 42% in 2018.
- ② The objective of this replicated research was “proof of concept”, that applications of foliar calcium early, during the cell division phase of fruit development, might be an efficient timing for BP suppression. Póma was the only material evaluated, future research may include other calcium formulations, but for now I have no other recommended materials.

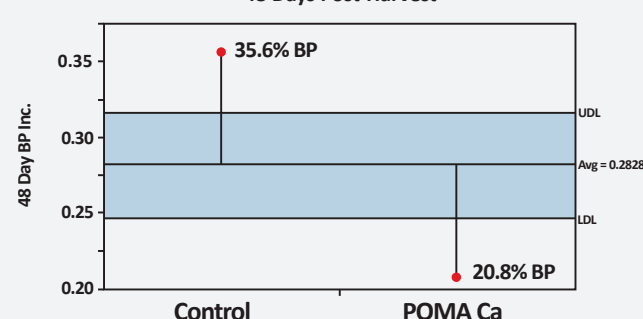
2017 PGR Detail Trial  
5 weekly Ca applications starting at PF  
105 Days Post-Harvest



$\alpha = 0.05$  JMP Analysis of Means of Proportions

- In 2017, after 105 days in regular storage, **Póma** showed a **significant 54% bitter pit reduction**

2018 PGR Detail Trial  
5 weekly Ca applications starting at PF  
48 Days Post-Harvest



$\alpha = 0.05$  JMP Analysis of Means of Proportions

- In 2018, after 48 days in regular storage, **Póma** showed a **32% reduction in bitter pit**

Source: **Cornell Cooperative Extension**

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# apple\_trial results\_sellable bushels



**Póma**  
6-0-0 with 6% Ca  
FOLIAR NUTRIENT

Hudson Valley, New York State

## Trial Objectives

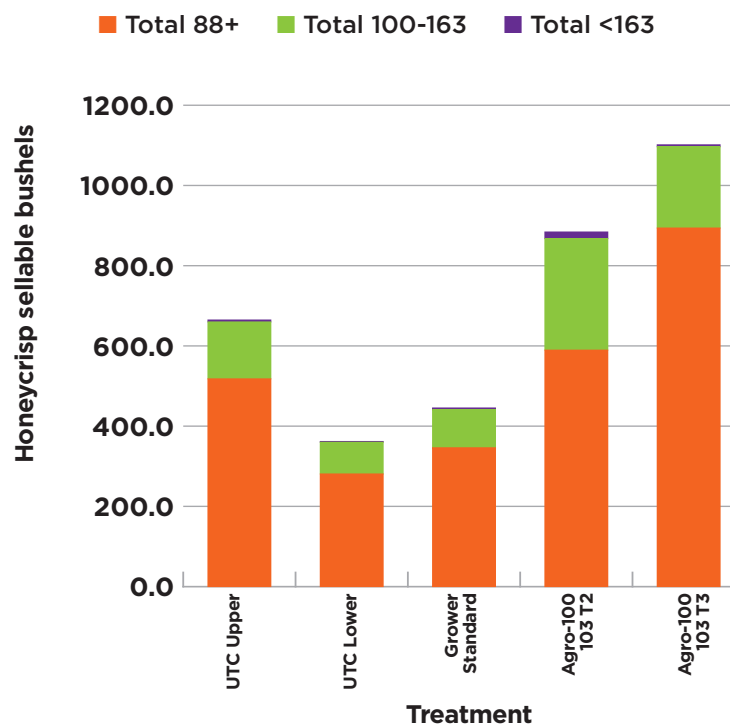
To evaluate if Póma, as an early application of foliar calcium, during the cell division phase of fruit development, might be an efficient timing for BP suppression.

## Method

Replicated reasearch. Póma 6% calcium chelate was applied in five weekly applications at 2 quarts/acre starting at petal fall to mature tall-spindle trees.

2018

## Honeycrisp sellable results



## summary results

### 2018 Honeycrisp sellable results

Average of untreated (UTC) results vs Agro-100's T2 and T3 programs

- Agro-100's **T2 program** increased sellable bushels per acre by **+370.8 sellable bushels per acre** (a **72.3% increase vs UTC**)
- Agro-100's **T3 program** increased sellable bushels per acre by **+588.2 sellable bushels per acre** (a **115% increase vs UTC**)
- In 2017, in a similar trial, the Agro-100 program increased average bushels per acre by **+177 bushels per acre** (a **23% increase vs UTC**)

**Agro-100 T2 treatment** incorporated the following Agro-100 products according to apple growth stages: Agro-Start, Agro-Zn, Agro-B, Agro-Mag, Agro-Moly, Kali-T and Póma.

**Agro-100 T3 treatment** incorporated the following Agro-100 products according to apple growth stages: Póma and Kali-T (as a finisher to improve fruit coloration).

Source: **Cornell Cooperative Extension**

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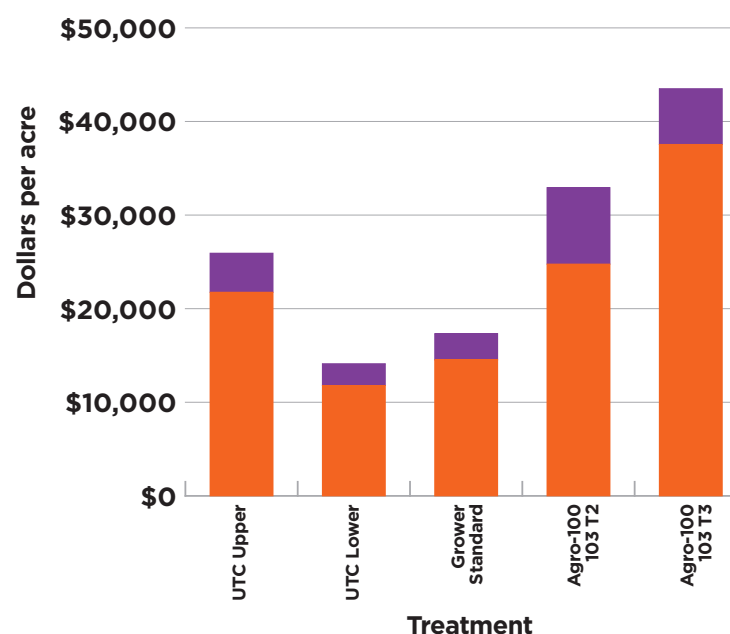


# apple\_trial results\_money made

2018

## Honeycrisp overall money made

■ Total 88+ ■ Total 100-163



## summary results

### 2018 Honeycrisp overall money made

Average of untreated (UTC) results vs Agro-100's T2 and T3 programs

- Agro-100's **T2 program** increased the overall money made by **+\$12,911.50 dollars per acre** (a **64.5% increase vs UTC**)
- Agro-100's **T3 program** increased the overall money made by **+\$23,483.13 dollars per acre** (a **117% increase vs UTC**)
- In 2017, in a similar trial, the Agro-100 program gained **\$2,743 per acre vs UTC**

**Agro-100 T2 treatment** incorporated the following Agro-100 products according to apple growth stages: Agro-Start, Agro-Zn, Agro-B, Agro-Mag, Agro-Moly, Kali-T and Póma.

**Agro-100 T3 treatment** incorporated the following Agro-100 products according to apple growth stages: Póma and Kali-T (as a finisher to improve fruit coloration).

Source: **Cornell Cooperative Extension**



**Póma**  
6-0-0 with 6% Ca  
FOLIAR NUTRIENT

Hudson Valley, New York State

### Trial Objectives

To evaluate if Póma, as an early application of foliar calcium, during the cell division phase of fruit development, might be an efficient timing for BP suppression.

### Method

Replicated reasearch. Póma 6% calcium chelate was applied in five weekly applications at 2 quarts/acre starting at petal fall to mature tall-spindle trees.

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# apple\_trial results\_defects



**Póma**  
6-0-0 with 6% Ca  
FOLIAR NUTRIENT

Hudson Valley, New York State

## Trial Objectives

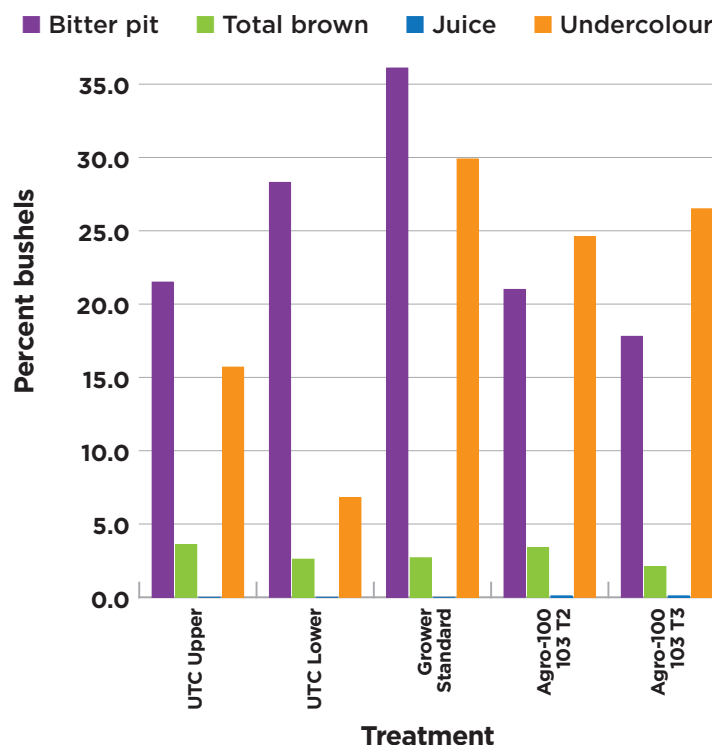
To evaluate if Póma, as an early application of foliar calcium, during the cell division phase of fruit development, might be an efficient timing for BP suppression.

## Method

Replicated reasearch. Póma 6% calcium chelate was applied in five weekly applications at 2 quarts/acre starting at petal fall to mature tall-spindle trees.

2018

## Honeycrisp breakdown of defects



## summary results

### 2018 Honeycrisp breakdown of defects

Average of untreated (UTC) results vs Agro-100's T2 and T3 programs

- Agro-100's **T2 program** reduced the incidence of bitter pit by 3.9% vs UTC
- Agro-100's **T3 program** reduced the incidence of bitter pit by 7.1% vs UTC
- In 2017, in a similar trial, the Agro-100 program reduced bitter pit by 26% at harvest and through storage of Honeycrisp in upstate NY vs UTC

**Agro-100 T2 treatment** incorporated the following Agro-100 products according to apple growth stages: Agro-Start, Agro-Zn, Agro-B, Agro-Mag, Agro-Moly, Kali-T and Póma.

**Agro-100 T3 treatment** incorporated the following Agro-100 products according to apple growth stages: Póma and Kali-T (as a finisher to improve fruit coloration).

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# apple\_trial results\_explanations



2018

## Explanations for claims in 2018 data results

### Hudson Valley, New York State

- Trial work was conducted on the largest commercial farm in the North East, performed as a large scale demo trial treating .6 acres per treatment. Trial applications were applied by the grower & over seen by an independent research company. The trial was conducted on Honeycrisp apples. Which have one of the highest prices per pack box than other apples, \$29.4 per 163-100 count with greater than 60% color with acceptable defects & \$42 for >88 count size with more than 60% color with acceptable defects. Compared to Gala which prices are drastically different than Honeycrisp. Gala prices per pack box, \$10 per 163-100 count with greater than 60% color with acceptable defects & \$20 for >88 count size with more than 60% color with acceptable defects. These were the prices at the time of when the trial was being conducted.

- The trial work was done on a farm with a large number of trees per acre (2150 trees per acre) on other progressive apple farms, trees per acre range mostly between 1100-1450 on newer planting. With having 2150 trees per acre, 1 fruit per tree = 20 Bushels per acre. So if a program can set a higher average number of fruit per tree it can greatly effect the overall bushels per acre. Which can have a large impact on profitability.
- Fruit was harvested at the same times as the grower was harvesting, fruit was also picked at the same quality parameters. Sample size was 20 bushels, with recording the number of trees it took to fill the 20 bushels of fruit at the same fruit quality parameters as the grower. That fruit was then run over a commercial packing line using an electronic eye sorter rating quantity, color, size & defects at the same parameters as used to sell commercially.
- That information was then taken and multiplied out to know what the per acre picture would look like.

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## apple\_trial results\_bitter pit



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Rougemont, Québec

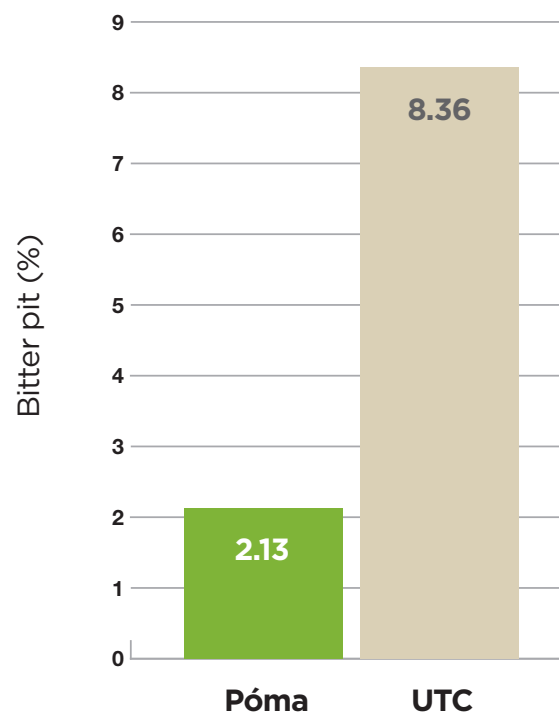
### Trial Objectives

To compare the efficacy of Póma vs untreated check on the incidence of bitter pit.

### Method

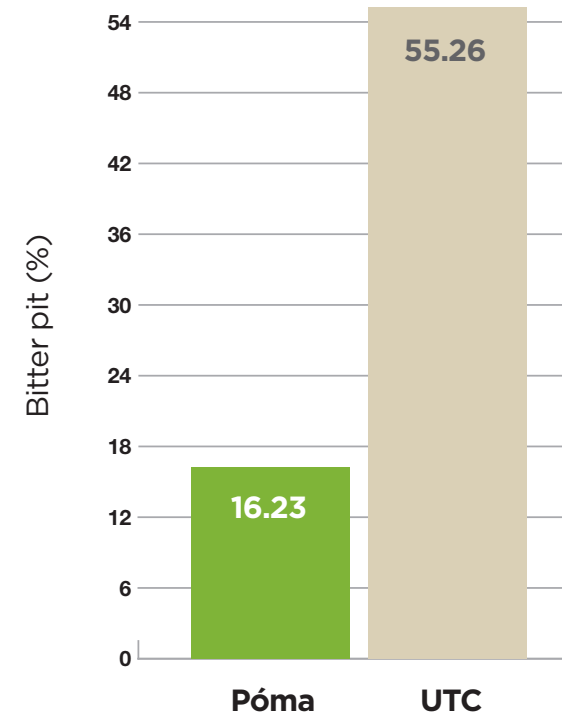
Dosage of Póma 6% calcium chelate was determined by amount of calcium applied by producer. Treatments were applied in a 500 L/ha water volume using a conventional sprayer. Bitter pit was evaluated following a period of 5 months in storage.

2014



Empire

2014



Honeycrisp

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Frelighsburg, Québec

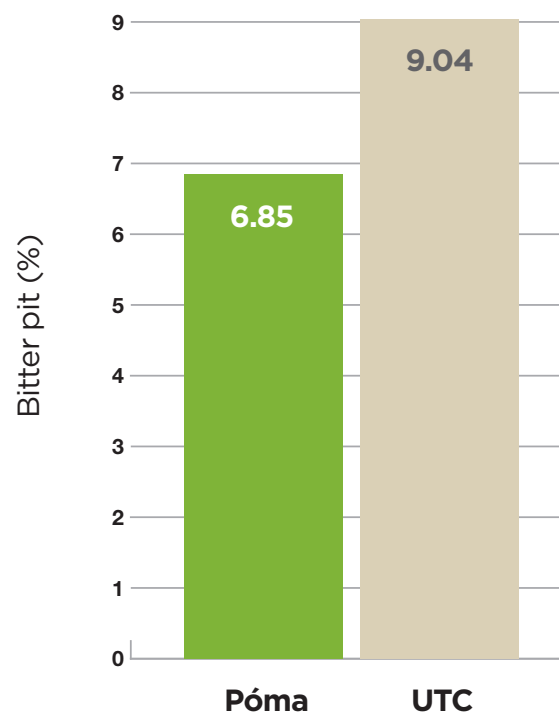
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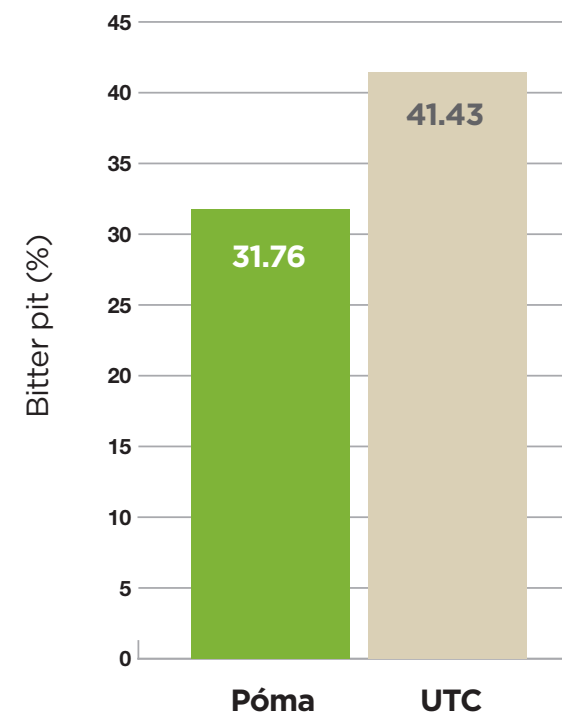
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2014



Cortland

2014



Honeycrisp

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Frelighsburg, Québec

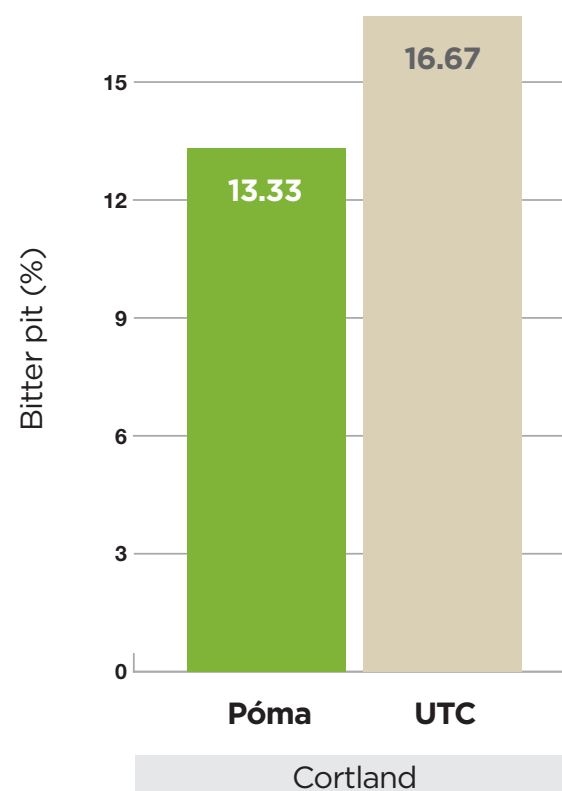
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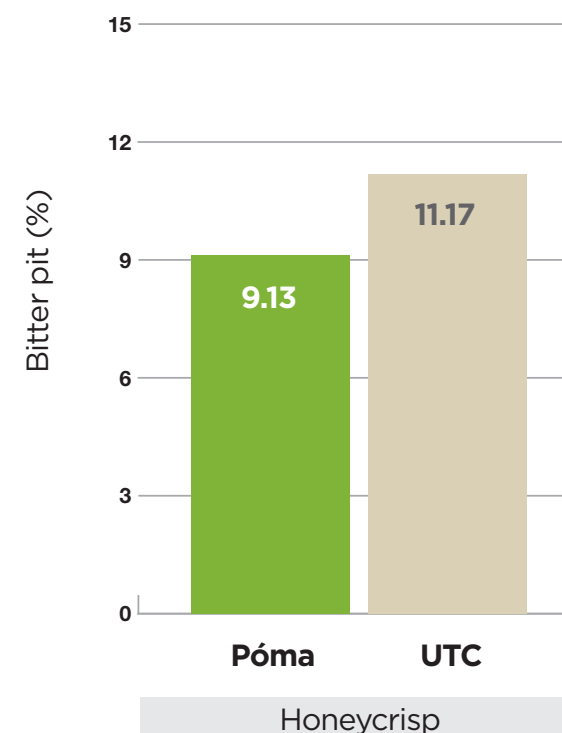
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2013



2013



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## apple\_trial results\_bitter pit



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Saint-Paul-d'Abbotsford, Québec

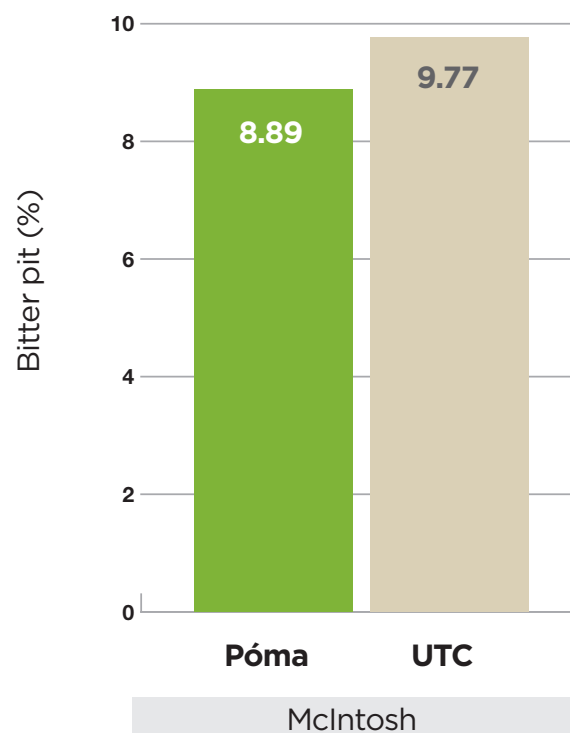
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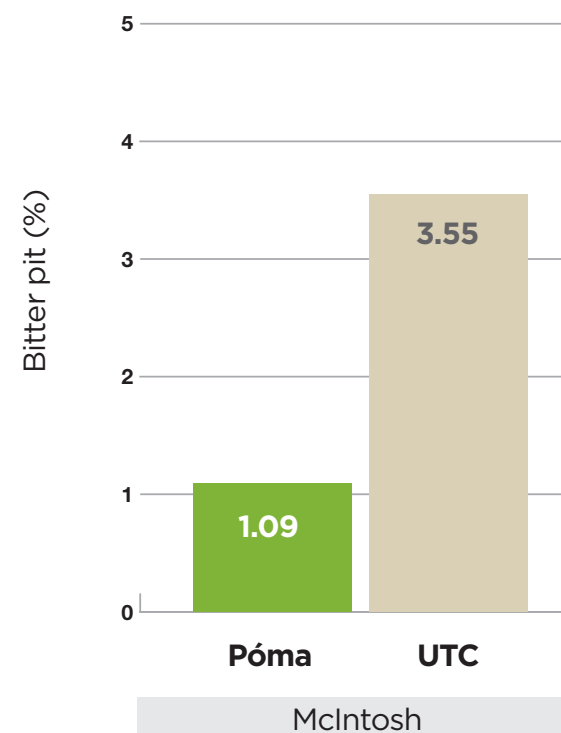
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2014



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