

## HydroCal®

### Liquid Calcium Carbonate

Liquid lime to adjust pH and deliver calcium nutrition. Micronized calcium carbonate. HydroCal's rapid reactivity corrects acid soils and calcium deficiencies. Can be used in most water run systems.

**29% Calcium, 73% Calcium Carbonate, 74% Calcium Carbonate Equivalent**

- HydroCal liquid lime is micronized through special wet milling technology
- Ultra fine grade for immediate availability
- Apply through center pivot, solid set or hand line
- Spray apply. Reach your target pH in weeks with reduced application rates and lower input cost
- Safe to handle, non-caustic, will not burn

### MICRONA™ - Prilled Lime

#### Adjust pH and provide calcium nutrition.

Calcium helps release critical nutrients, improves soil structure, and root development. Increases soil microbial activity.

**33% Calcium, 82% Calcium Carbonate, 0.6% Magnesium Carbonate, 88% Calcium Carbonate Equivalent**

- Flexible application
- Feed stock is high quality, super-fine ground, fast reaction
- Minimum binders – dissolves easily
- Uniform – blends and handles well
- Lower application rates, precision applied
- Safe to handle, non-caustic, will not burn

### MICRONA™ Prill - Gypsum

#### Calcium nutrition without pH adjustment.

Gypsum adds essential calcium and sulfur to soil. Helps leach out harmful salts, improves soil structure.

**92% Calcium Sulfate Dihydrate, 21% Calcium, 17% Sulfur**

- Flexible application
- Feed stock is high quality, super-fine ground, fast dissolution.
- Minimum binders – dissolves easily
- Uniform – blends and handles well
- Lower application rates, precision applied
- Safe to handle, non-caustic, will not burn

#### Notes:



A Division of Columbia River Carbonates  
300 N Pekin Rd., Woodland, WA 98674

(360) 225-6505

[MicronaAg.com](http://MicronaAg.com)



**HydroCal®**  
**MICRONA™ - Prilled Lime**  
**MICRONA™ Prill - Gypsum**



Management of a fruit crop requires careful consideration of many essential nutrients, including calcium. In tree fruit, calcium maintains cellular structures, is used in cellular signal transduction, delays collapse of cell walls as the fruit ripens, delays fruit ripening and reduces risk to preharvest and postharvest disorders.<sup>1</sup>

## Features and Benefits

- Strengthens fruit cell walls and improves fruit quality
- Improves resistance to stress
- Decreases preharvest and postharvest physiological disorders
- Proven acid neutralization through the soil profile
- Extends fruit storage life
- Most economical price per unit of elemental calcium.
- Safe to handle, non-caustic

## Lime study on Honeycrisp

Calcium deficiencies in apples is a common issue in the Pacific Northwest.<sup>2</sup> Bitter pit is the leading physiological disorder due to low calcium levels, followed by internal breakdown, scald, water core, and rots.<sup>3</sup>

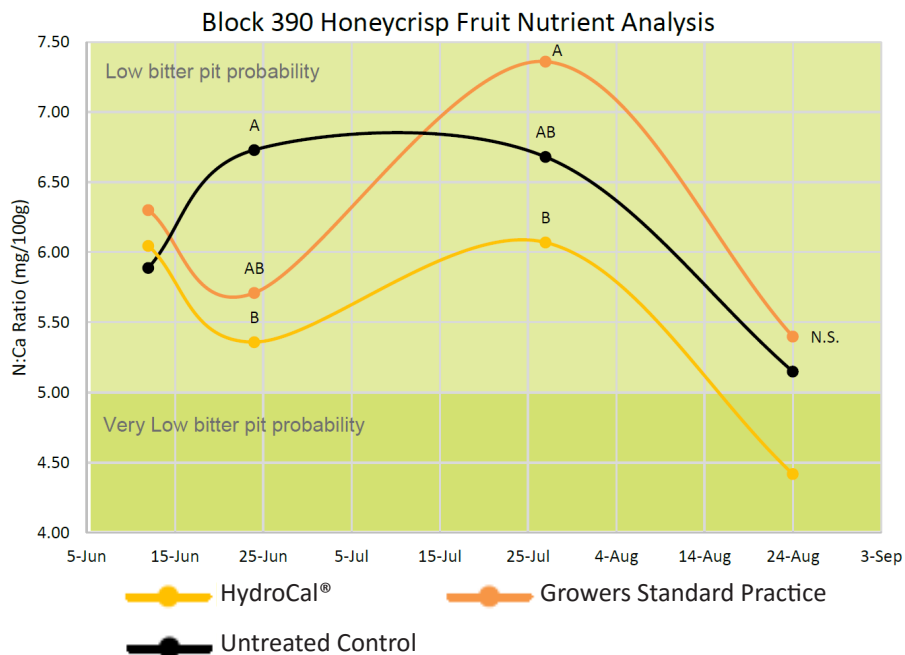
## Trial Purpose

Show that liquid lime ground application improve fruit quality and storability. HydroCal® applications give growers an economical source of calcium to reduce culls due to calcium related disorders.

## Trial Results

Nitrogen to calcium ratios have been studied to determine potential storability of apples. For bitter pit specifically, it's understood that a ratio of less than five has a very low probability of developing bitter pit.<sup>4</sup>

HydroCal® had the lowest N:Ca ratio and was the only treatment that reduced the N:Ca ratio below 5. HydroCal also increased calcium in fruit pulp significantly over growers standard practice.



Calcium in Fruit Pulp

	HydroCal®	Growers Standard Practice	Untreated Control
June 12	17.20	17.30	16.30
June 24	8.97	8.53	8.17
July 27	4.90	4.57	4.60
August 24	4.20	3.83	3.83

## Trial Management

2015 in Naches, WA. Plot design: Eight year old Honeycrisp blocks, total of 5.11 acres.

Treatments:

UTC (untreated control)	no lime
HydroCal®	at label rate
Growers Standard Practice	at label rate

<sup>1</sup>Saure, M. 2005. Calcium translocation to fleshy fruit: its mechanism and endogenous control. *Sci. Hortic.* 105: 65-89.

<sup>2</sup>Niemann, S. 2015. Ground Applications of Calcium on Honeycrisp trial summary.

<sup>3</sup>Roper, T.. 1999. Watercore of Apples. *Univ. Wis.-Ext. Cooperative Ext. (A3280):* 1-2.. & Lanauskas, J., N. Kviklienė, N. Uselis, D. Kviklys, L. Buskienė, R. Mažeik, and G. Staugaitis. 2012. The effect of calcium foliar fertilizers on cv. Ligol apples. *Plant Soil Environ.* 58(10): 465-470.

<sup>4</sup>Lanauskas, J., N. Kvikliene, N. Uselis, D. Kviklys, L. Buskiene, R. Mazeik, and G. Staugaitis. 2012. The effect of calcium foliar fertilizers on cv. Ligol apples. *Plant Soil Environ.* 58(10): 465-470.

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