



Irrigation and Fertigation Practices for High Density Honeycrisp

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Objective

- Currently, we extrapolate irrigation and fertigation recommendations from the Ridge area
 - But NW MI has different soil types, i.e. sand
- Need data on our soil type to help growers transition into high density systems



Experiment Design

- 2013 – planted Honeycrisp on Nic 29
- 870 trees at 3' x 12'
- Tall spindle
- All branches longer than 10" were tied below horizontal



Experiment Design

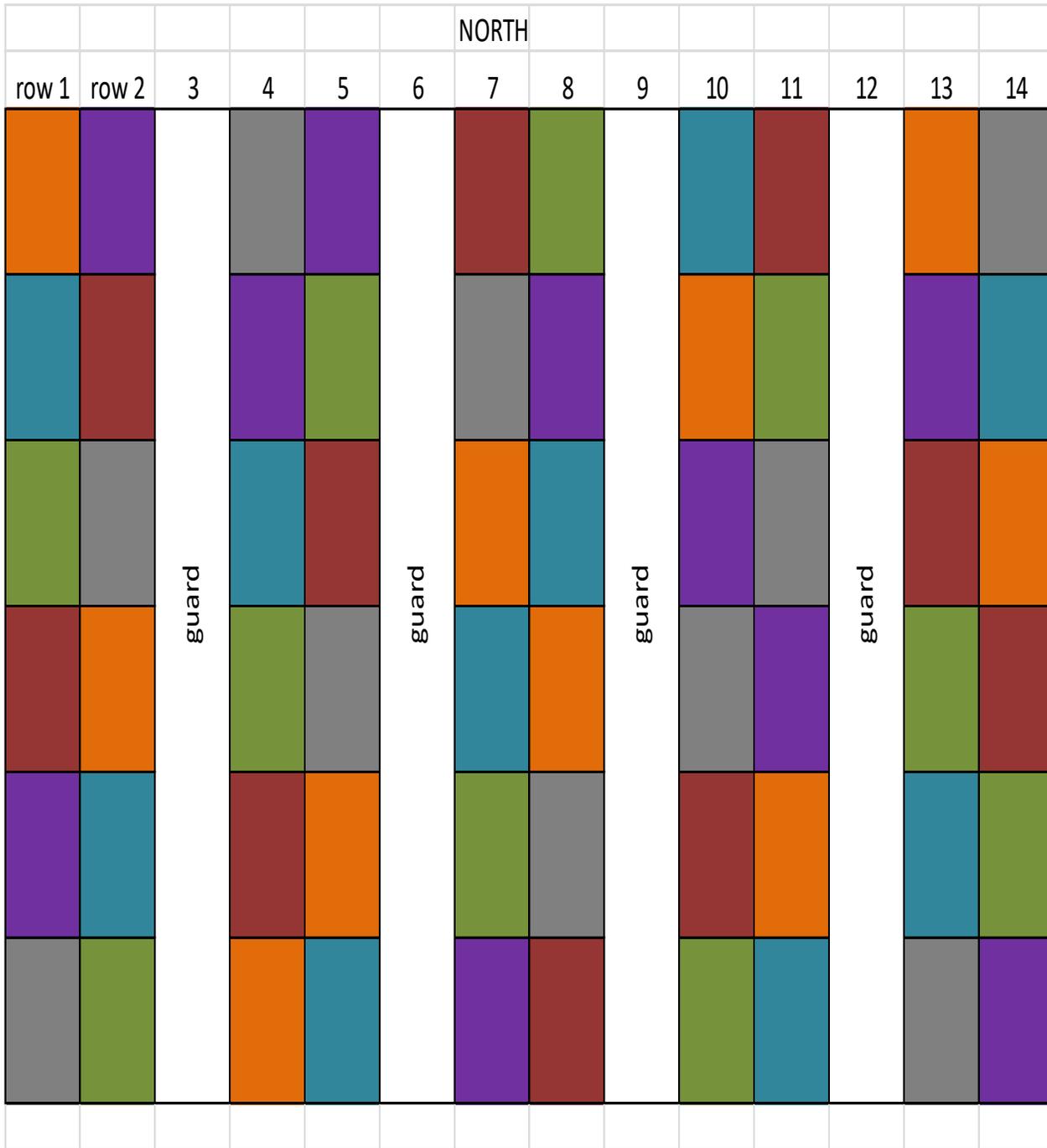
- Bamboo poles installed in August
- Tree leaders trained and tied to poles
- Irrigation and fertigation started in June 2014



Treatments

- 1) 4 oz of N/tree/year + 0.2" water/day
- 2) 8 oz of N/tree/year + 0.2" water/day
- 3) 4 oz of N/tree/year + 0.4" water/day
- 4) 8 oz of N/tree/year + 0.4" water/day
- 5) Untreated Control

Tree growth, yield , and disease and insect issues will be observed through 2019



Area 162' x 168'
 3' x 12' spacing
 14 rows with 54 trees
 9 trees per treatment, 10 reps
 Treatments:

- 1) 4oz of N/tree/year+0.2" of water
- 2) 8oz of N/tree/year+0.2" of water
- 3) 4oz of N/tree/year+0.4" of water per day
- 4) 8oz of N/tree/year+0.4" of water per day
- 5) 0.25" of water per day
- 6) UTC.



2013 – 1st Leaf
Planting Year

2nd Leaf - 2014



3rd Leaf - 2015



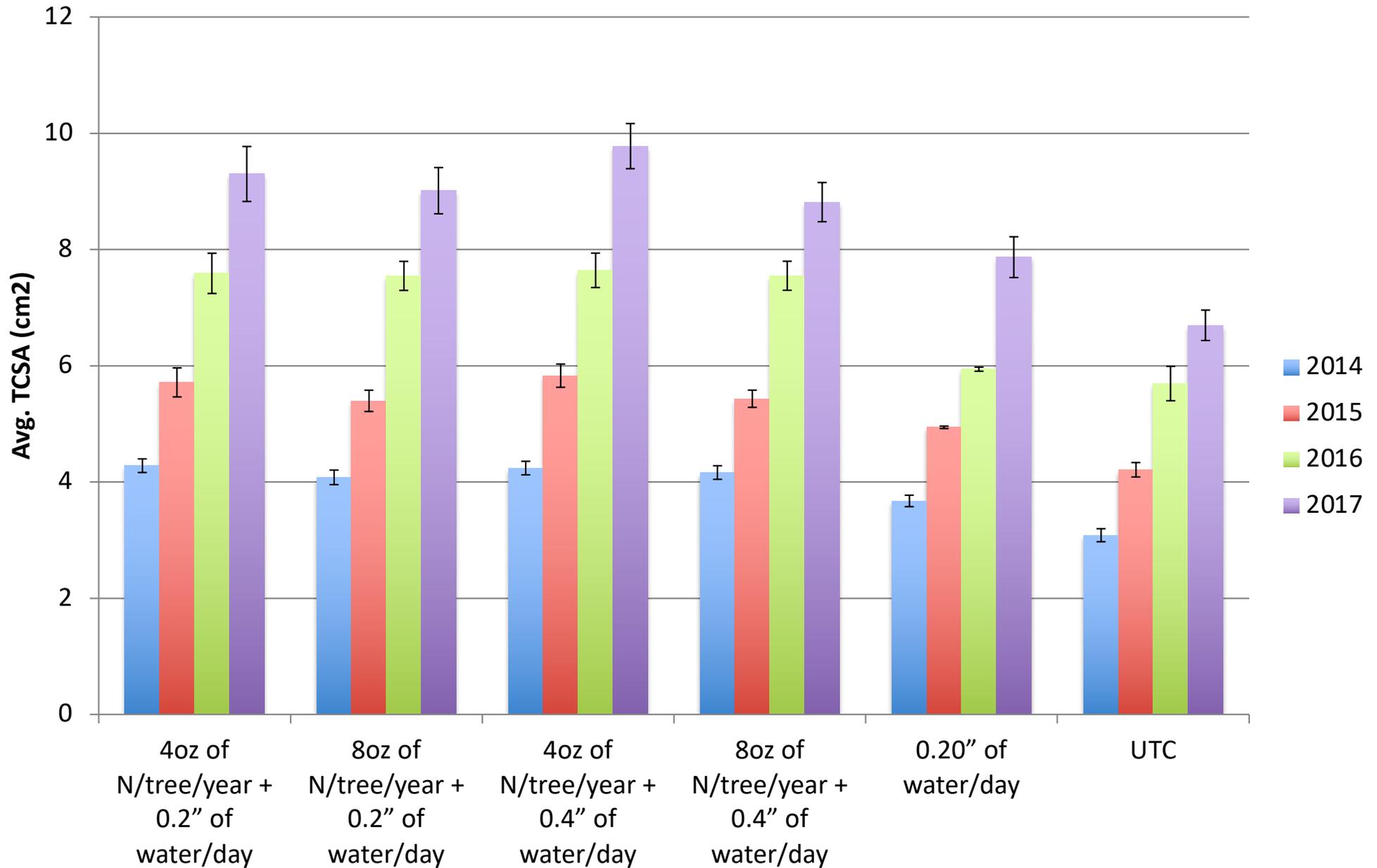
4th Leaf - 2016



5th Leaf - 2017

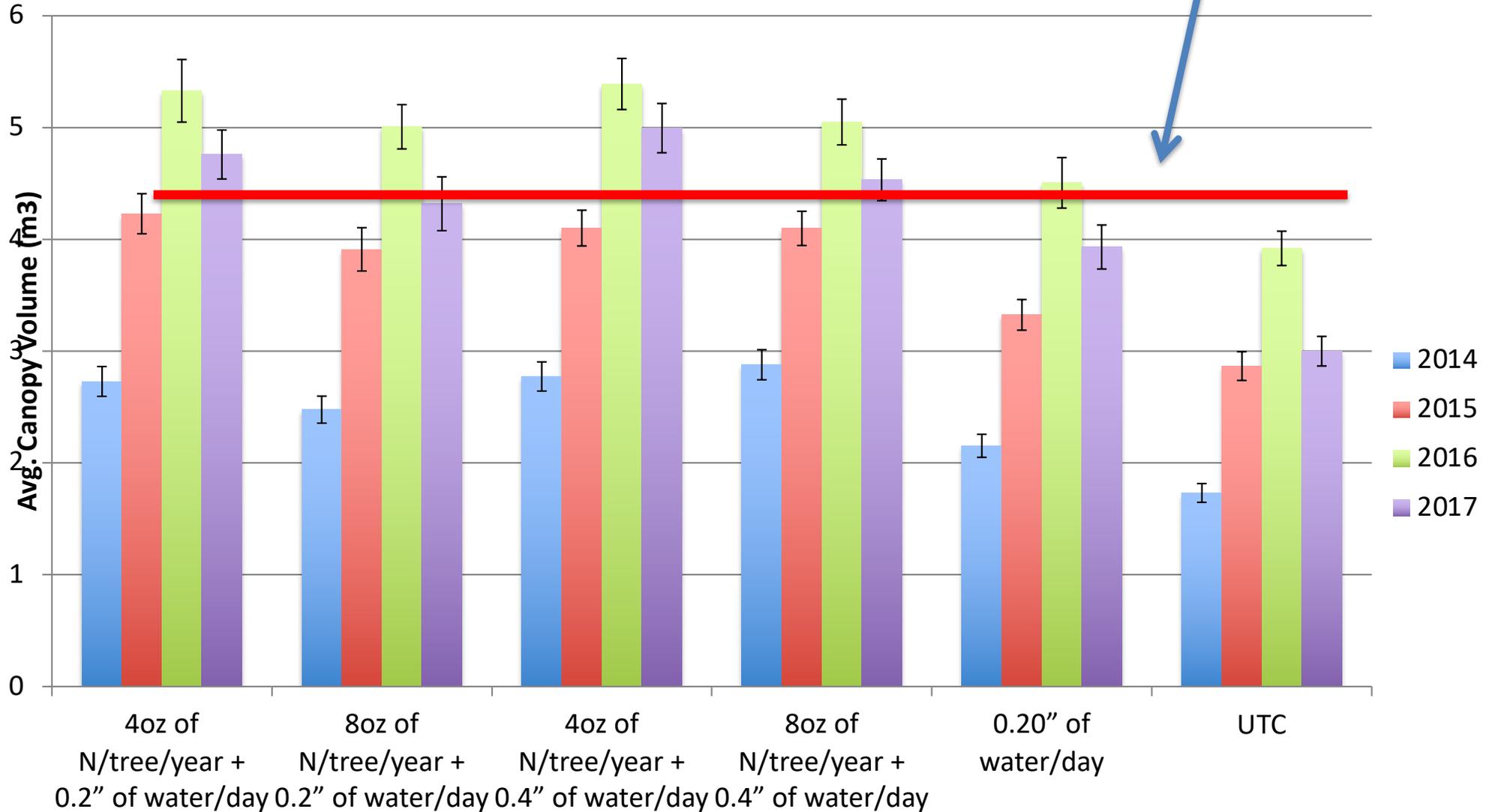


Trunk Cross-Sectional Area



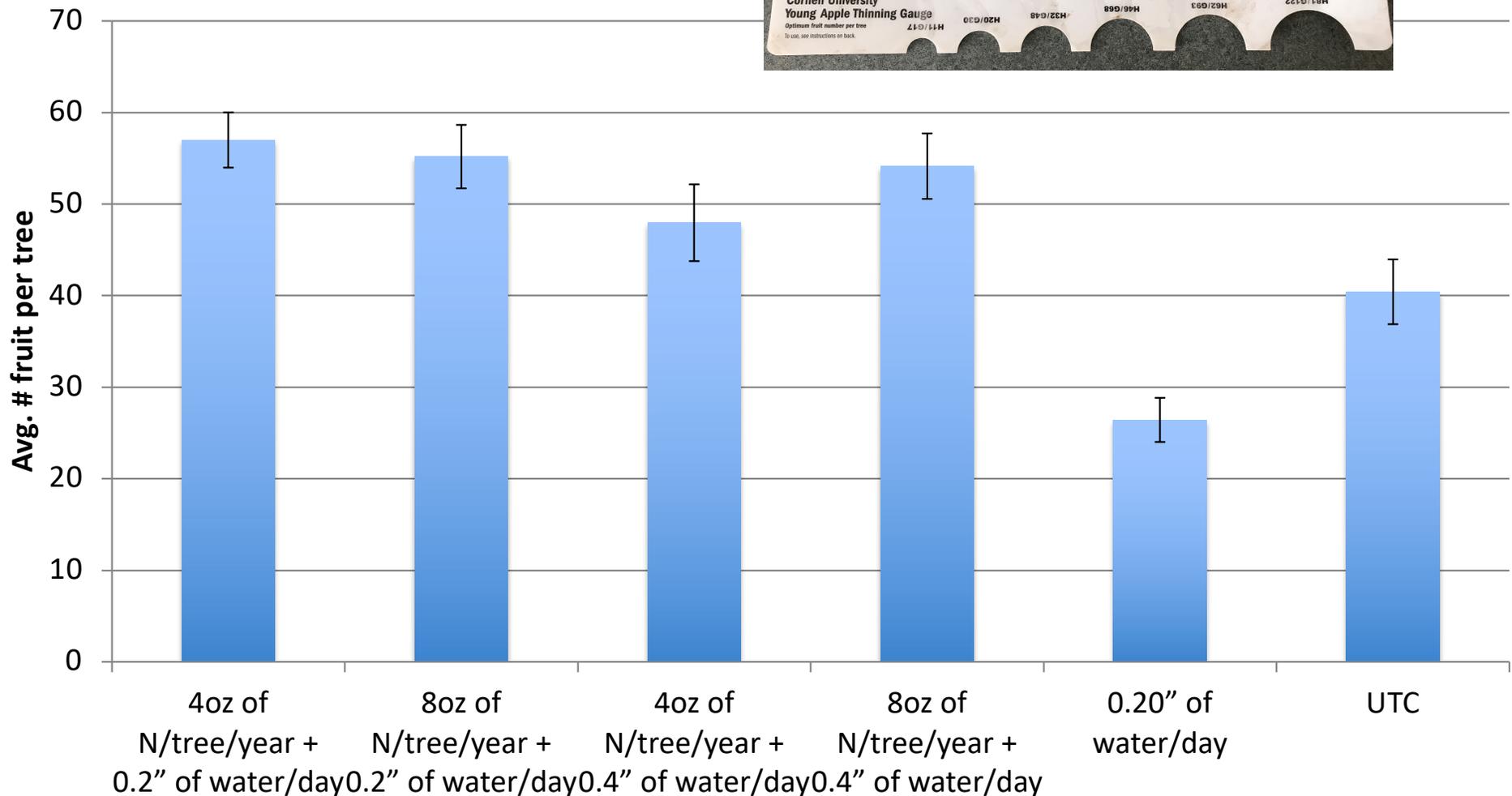
Canopy Volume

Max Volume for $11 \times 3 \times 5 = 4.6 \text{ m}^3$



Yield - # Fruit/Tree

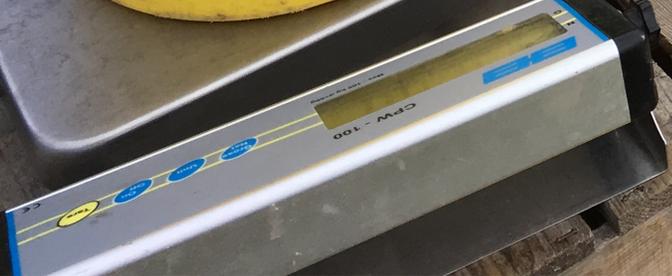
All trees were hand thinned to optimal fruit number per tree in 2017 according to the Cornell University Young Apple Thinning Gauge. Most trees had a trunk caliper in the range to carry 32 – 46 fruit/tree.



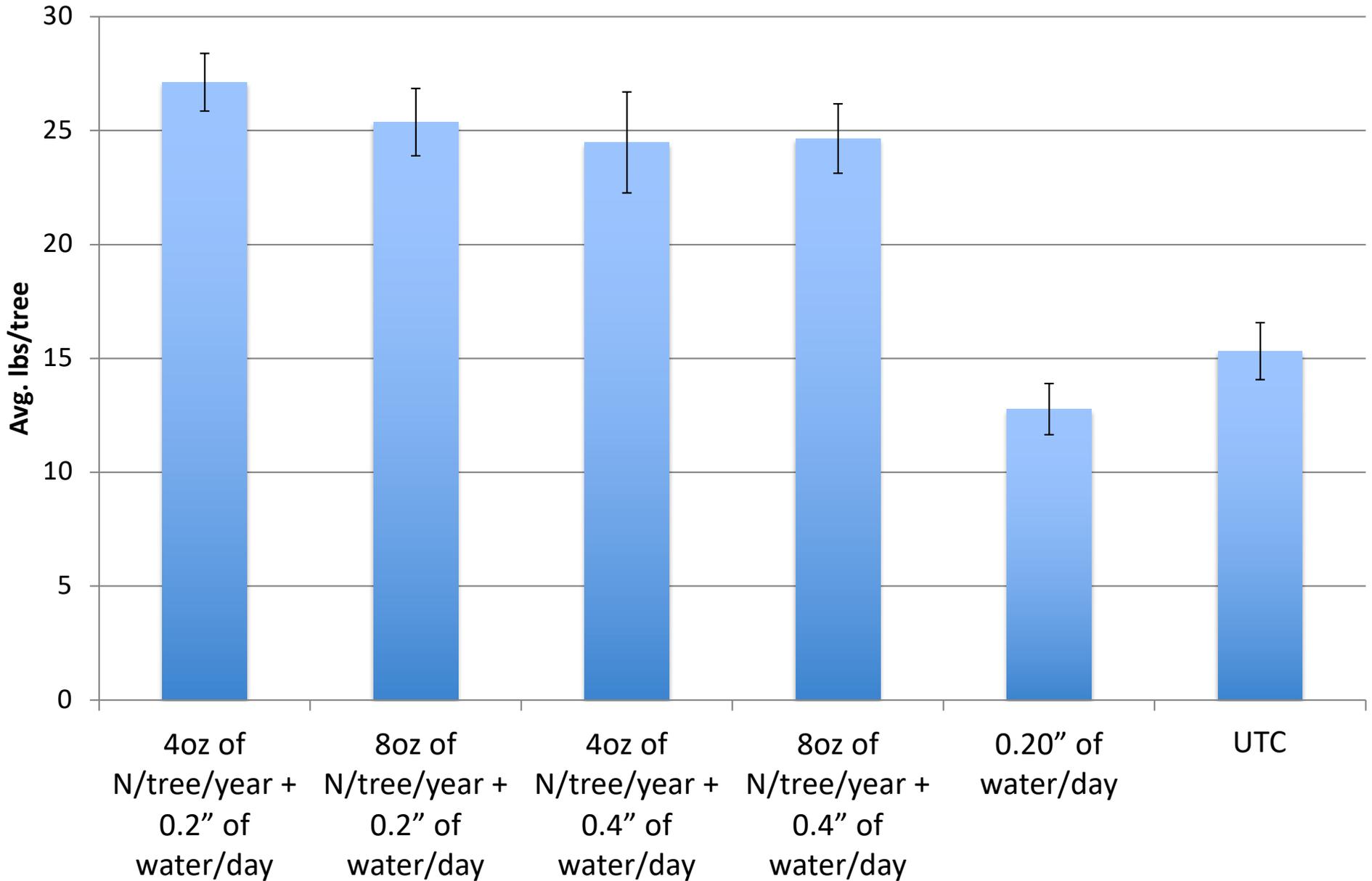


For white and
orange
• For wood and
stainless
• Apples easily
• Wash quickly to
• Rinse fruit out
• Soak wash out
• Soapy water

Late Harvest
2011
84 002 1000
TWC - ALLONS



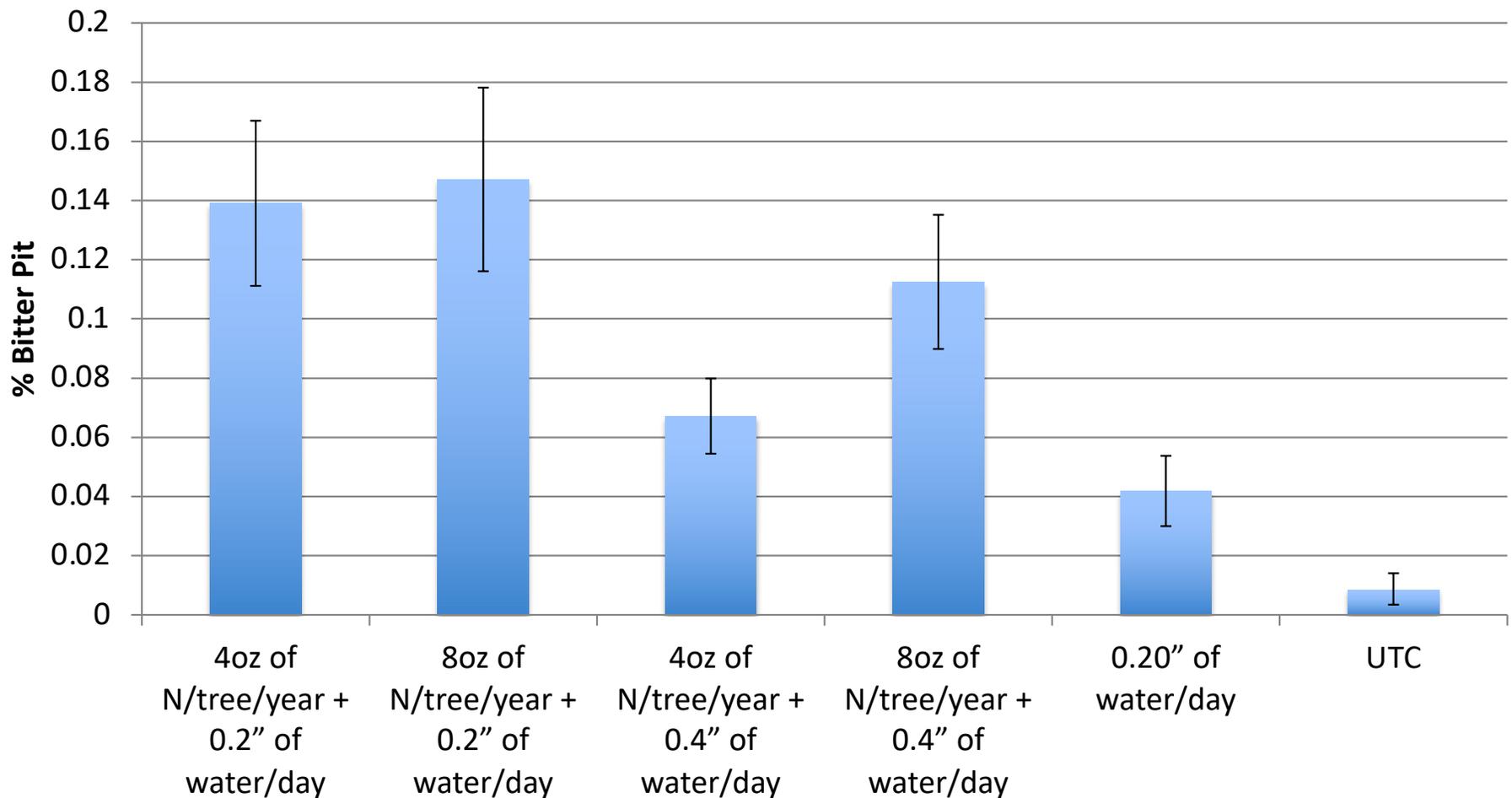
Yield/tree (lbs)



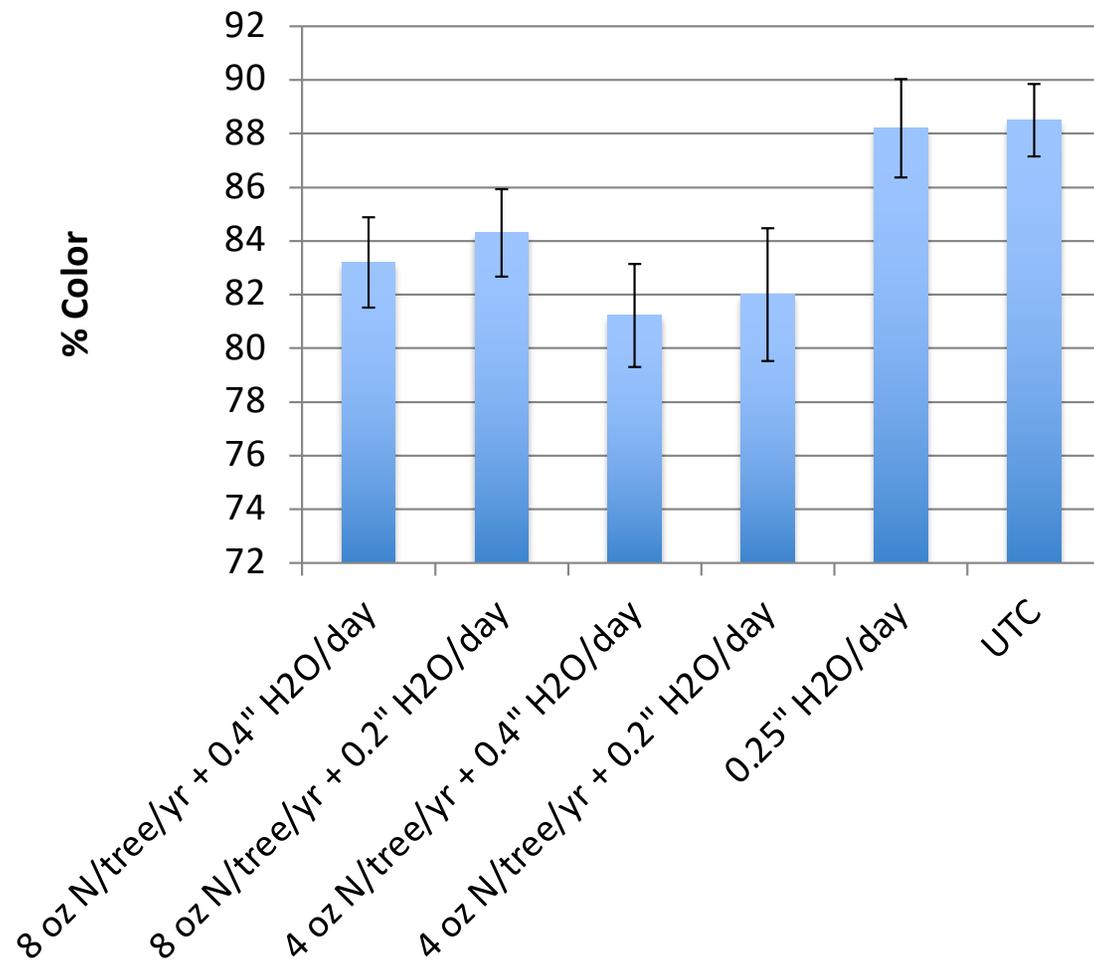


Fruit Quality – Bitter Pit

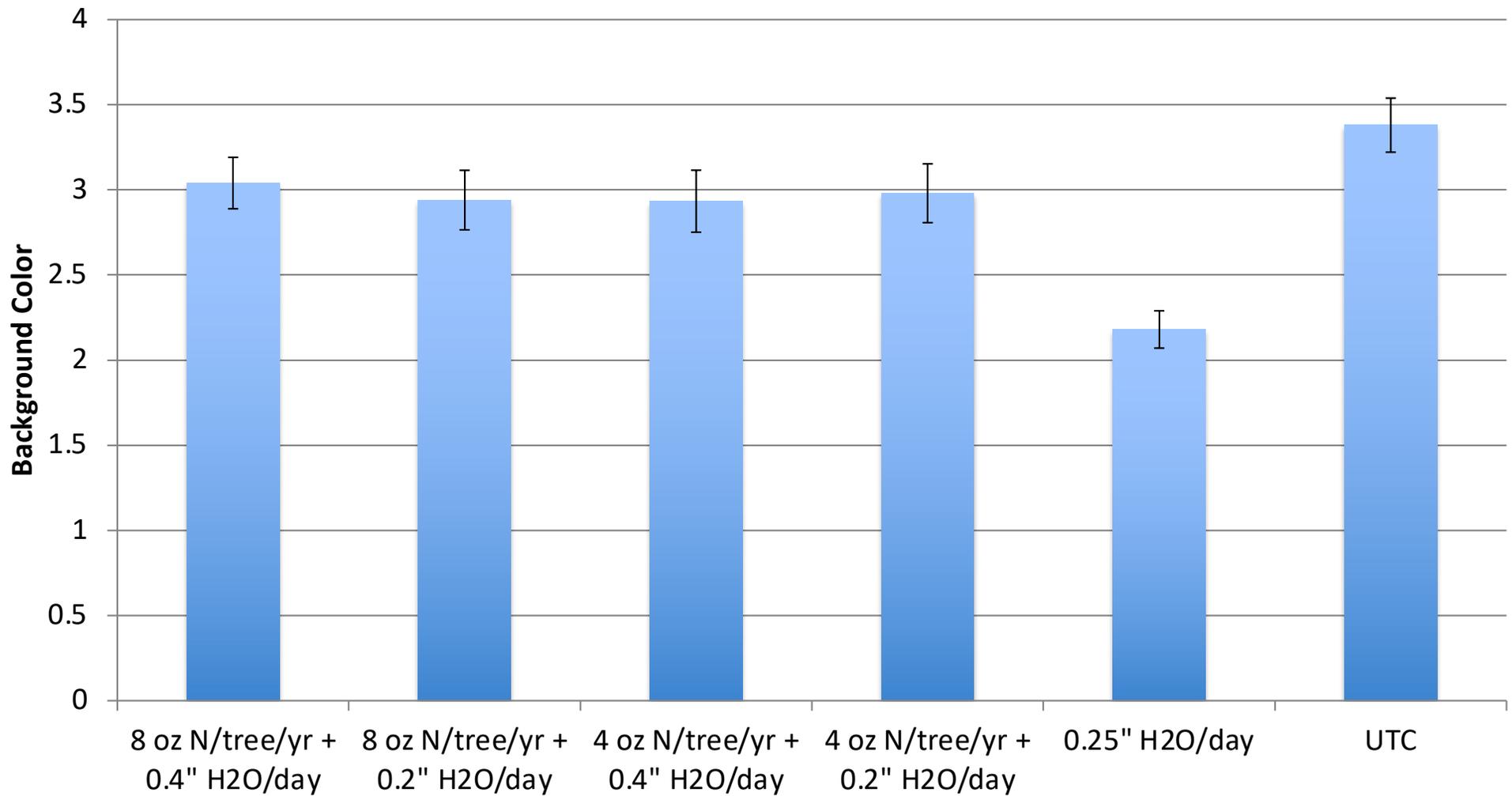
***this is 2016 data, we didn't record in 2017 due to low occurrence**



Fruit Quality - Color

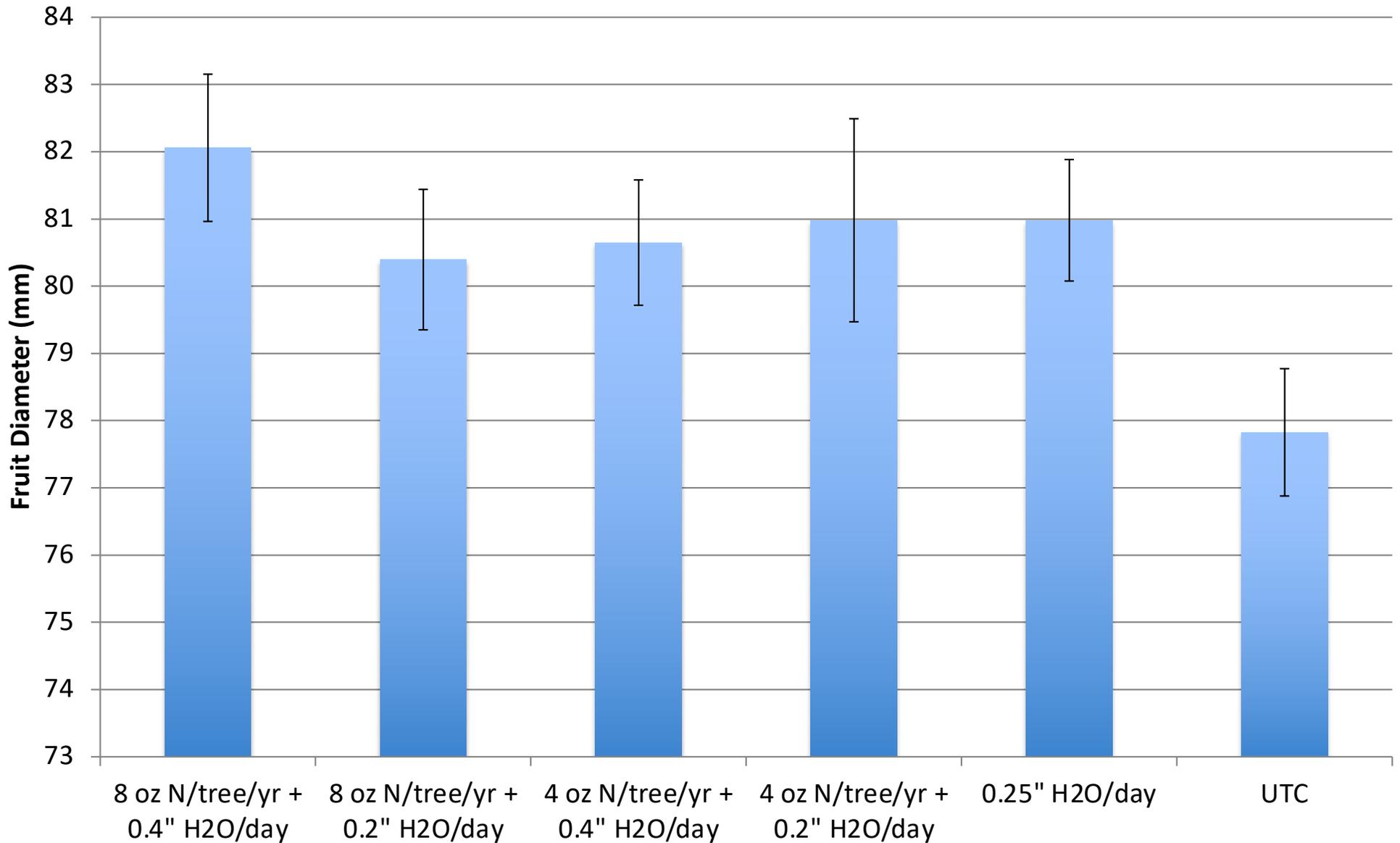


Fruit Quality – Background Color

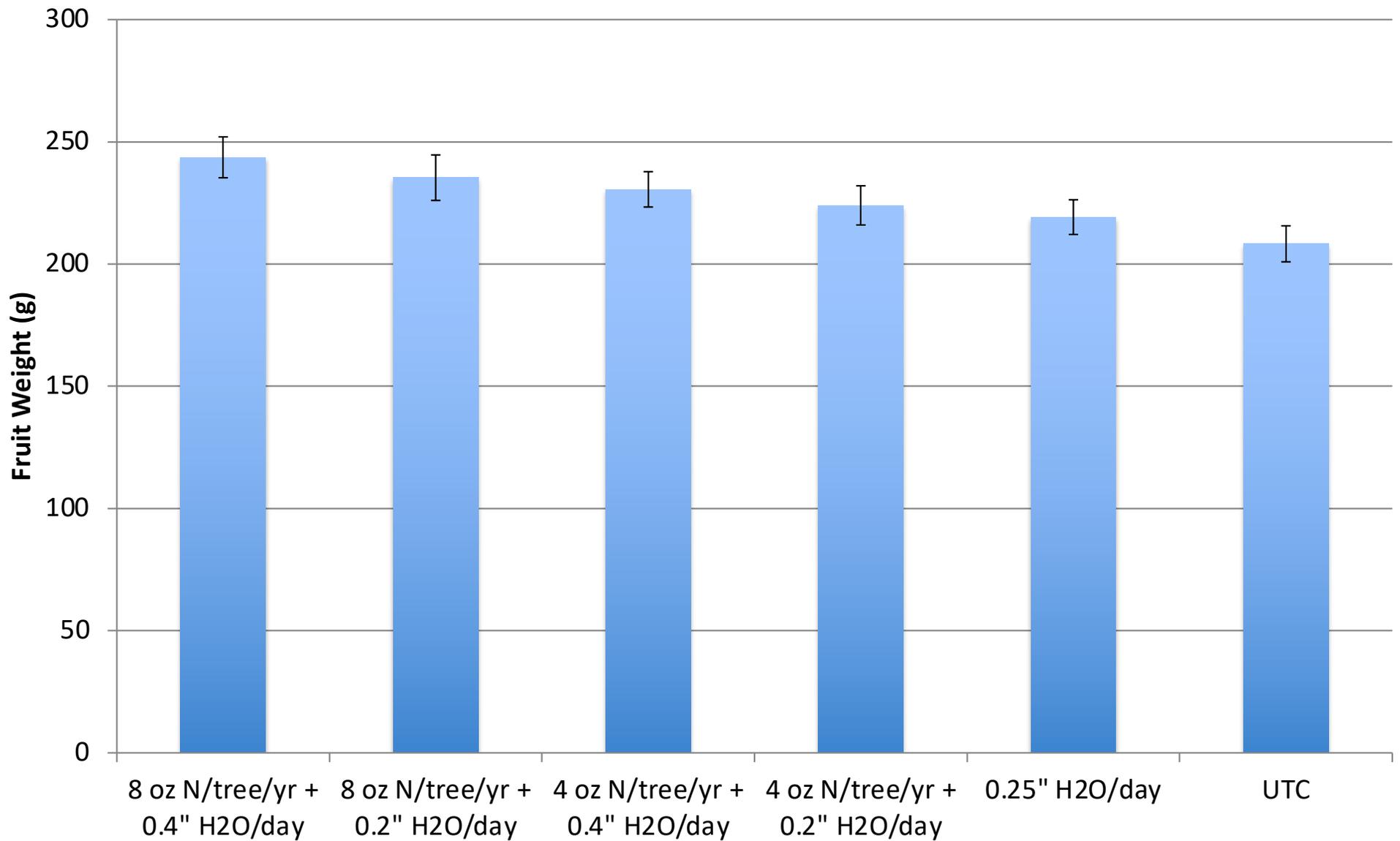


***Background Color Scale = 5 is green (immature) and 1 is yellow/white (mature)

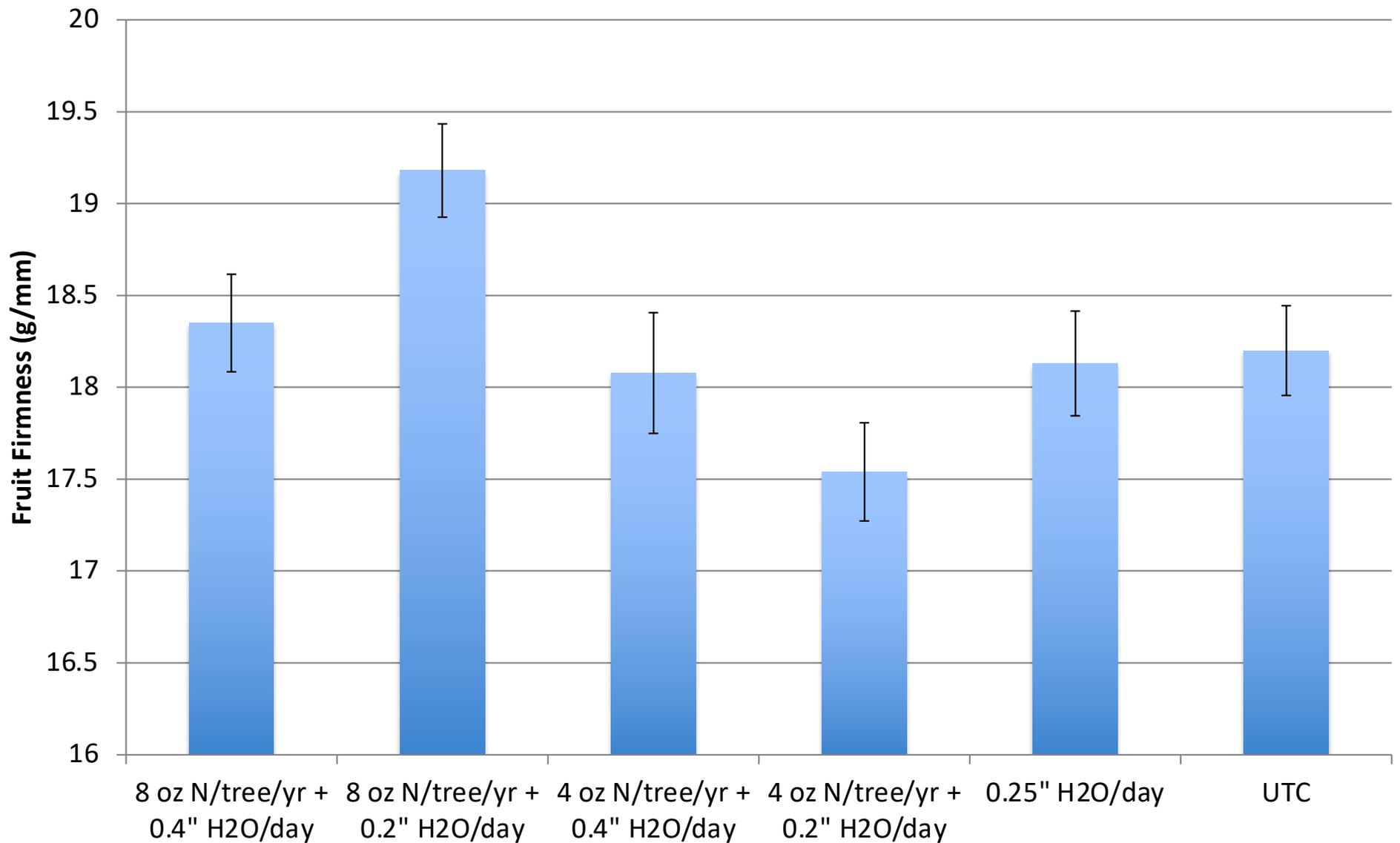
Fruit Quality - Diameter



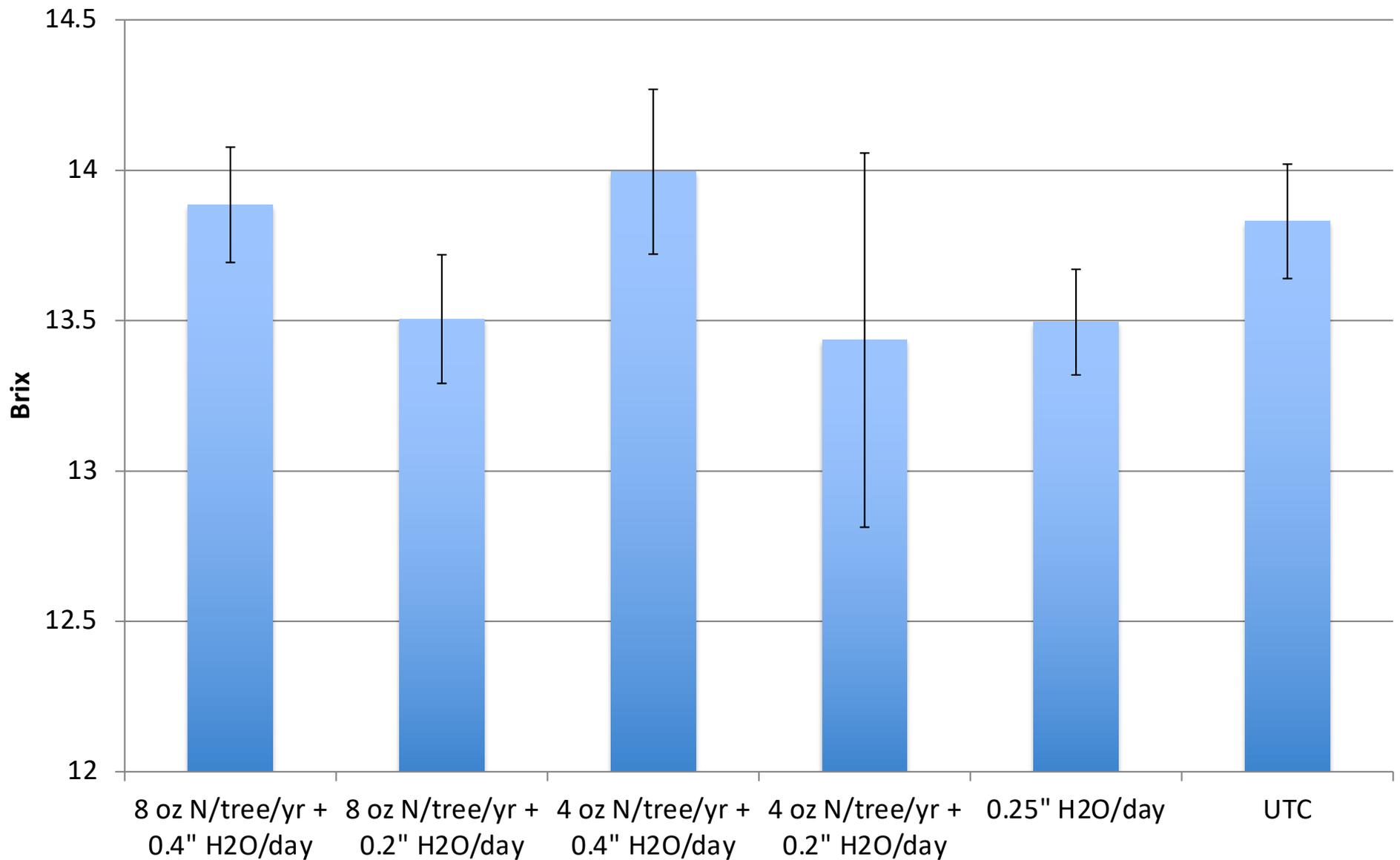
Fruit Quality – grams/apple



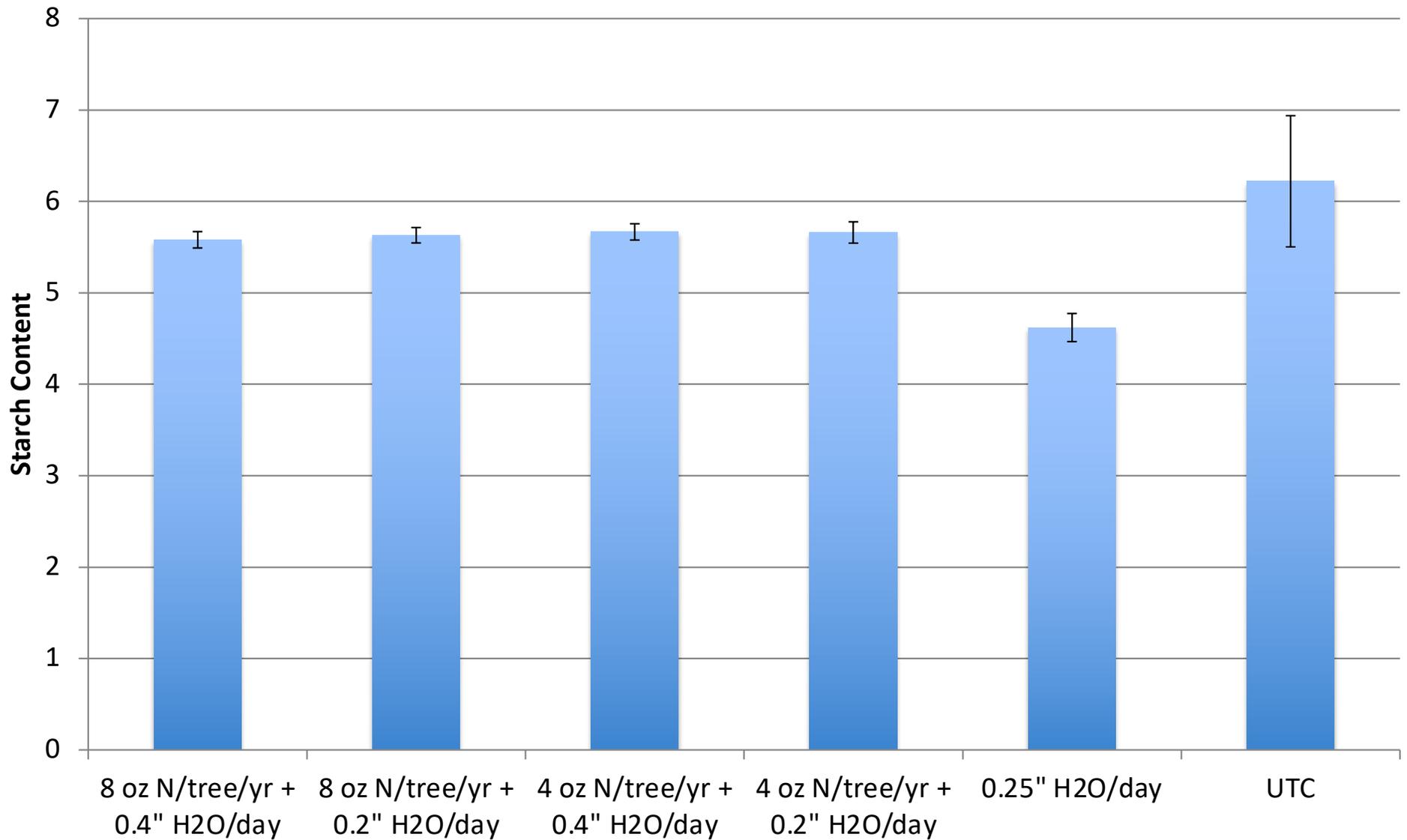
Fruit Quality - Firmness



Fruit Quality – Brix



Fruit Quality – Starch Content



Honeycrisp Fruit Samples



THANK YOU!

- NWMHRC staff: Emily, Karen, Myron, Bill, Lynn and Jenn
- Summer technician Erin Lauwers

