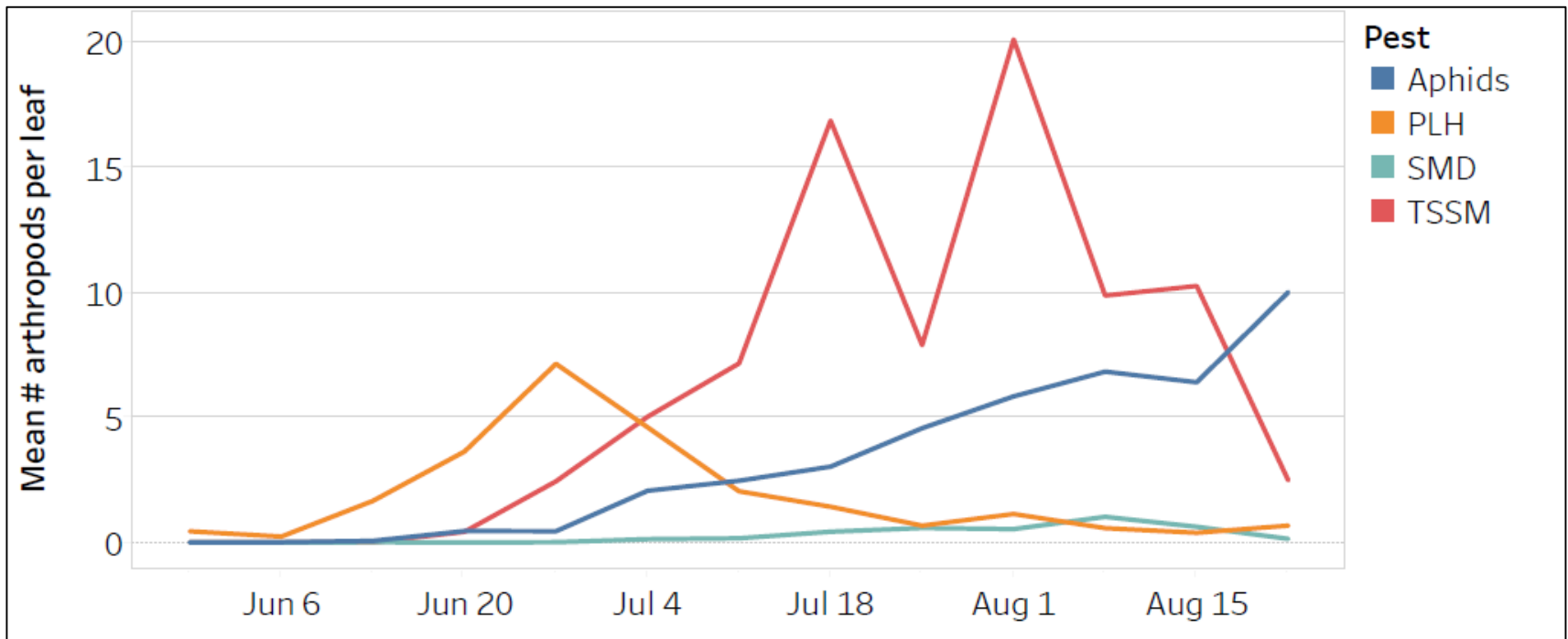




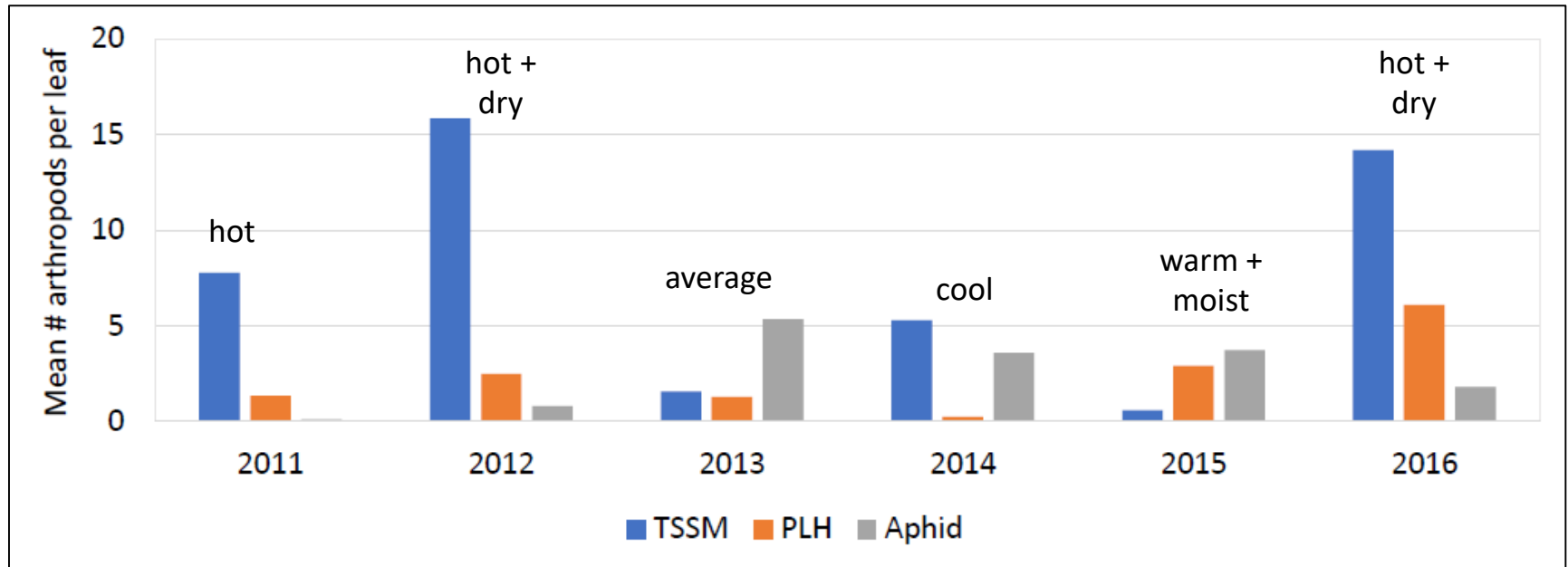
2017 UVM Research Update

Dr. Heather Darby
UVM Extension Agronomist

Pest Fluctuations by Date Over 6 Years



Average Pests Over 6 Years



Beneficial Insects



Lacewing Adult (Above)
and Egg (Below)



Minute Pirate Bug



Parasitoid Wasps



Lady Beetle Larvae and Adults

More Beneficial Insects!



Spiders



Hover Fly



Spider Mite Destroyer



Long Legged Fly



Spined Soldier Bug Eggs, Larvae, and Adult



Hop Natural Enemy Trial

- Measure the impact of physical barriers on populations of HA, TSSM, PLH in hop yards.
- Three farms selected for experiment:
- Results were recorded in a one week period to include pre and post treatment measurements during three sampling periods:
 - June, July, August

- Two vines per hill from 10 hills were chosen for both Nugget and Cascade varieties.
 - Each hill having one open string and one excluded string.
 - Open: twist tie and cotton around petiole
 - Excluded: mesh bag and cotton around petiole
- Counts taken for TSSM, HA, PLH, and MD for selected open and excluded leaves at the start of the week prior to treatments, and after the week with treatments.

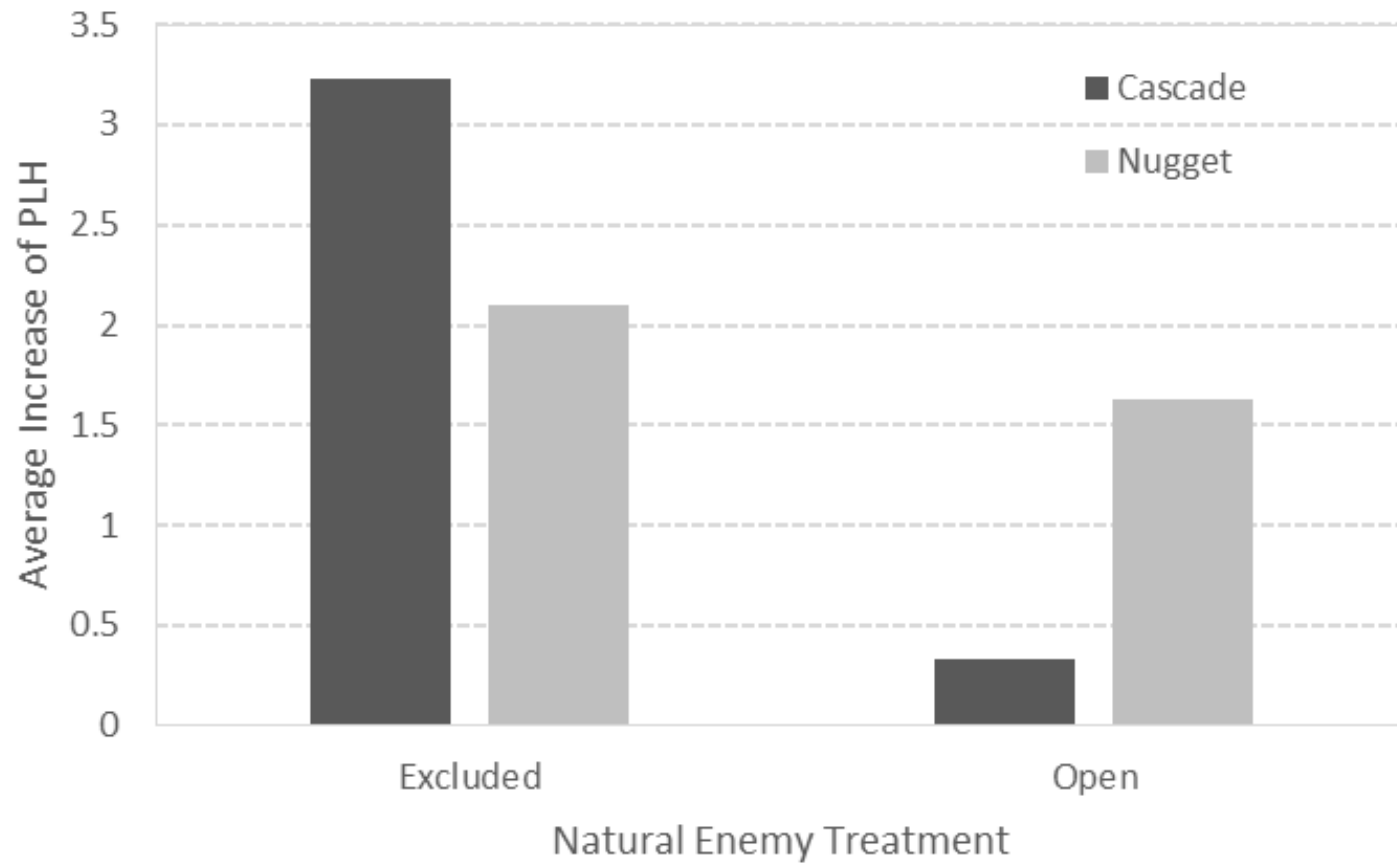


Excluded

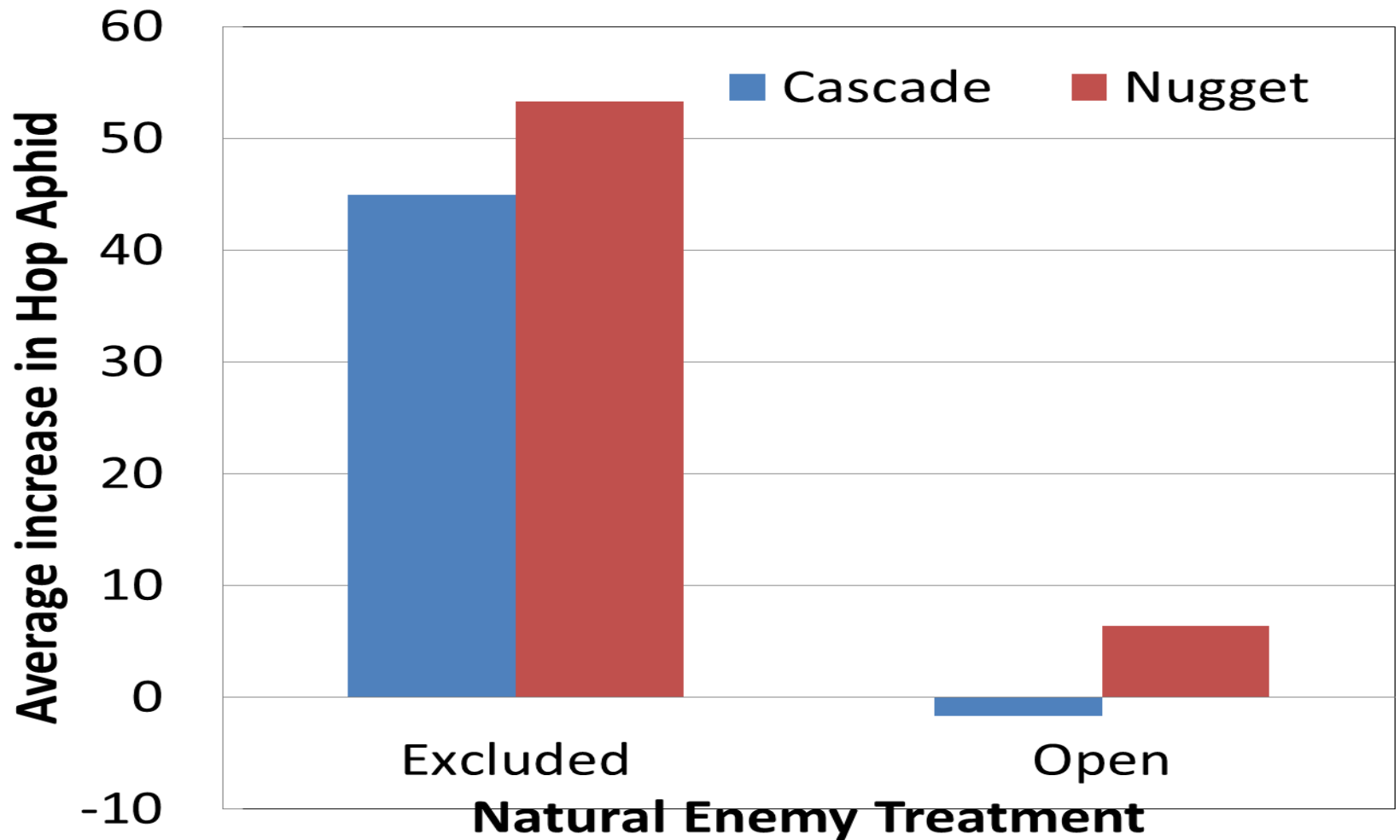


Open

Potato Leafhopper



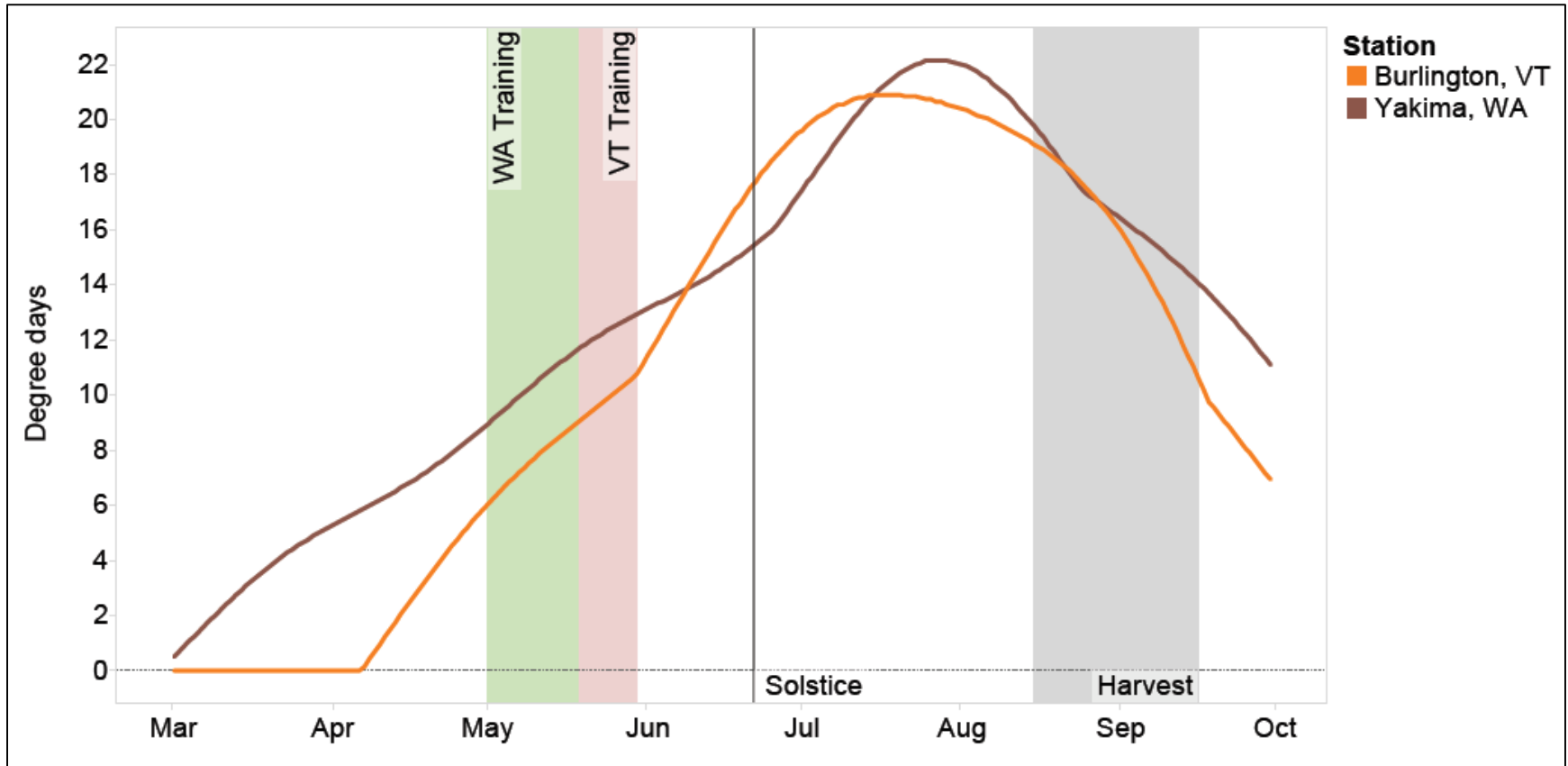
Hop Aphid

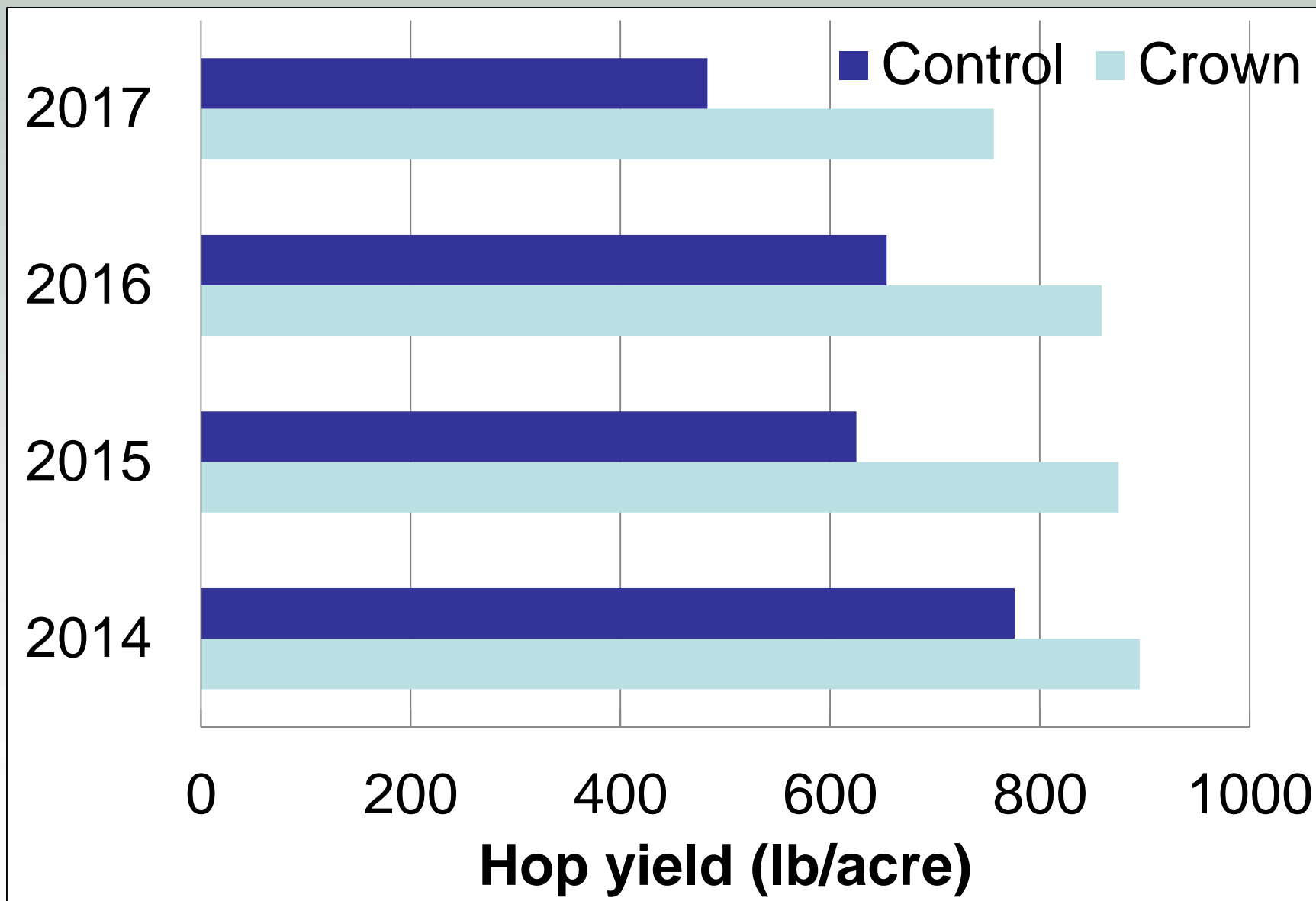


Downy Mildew



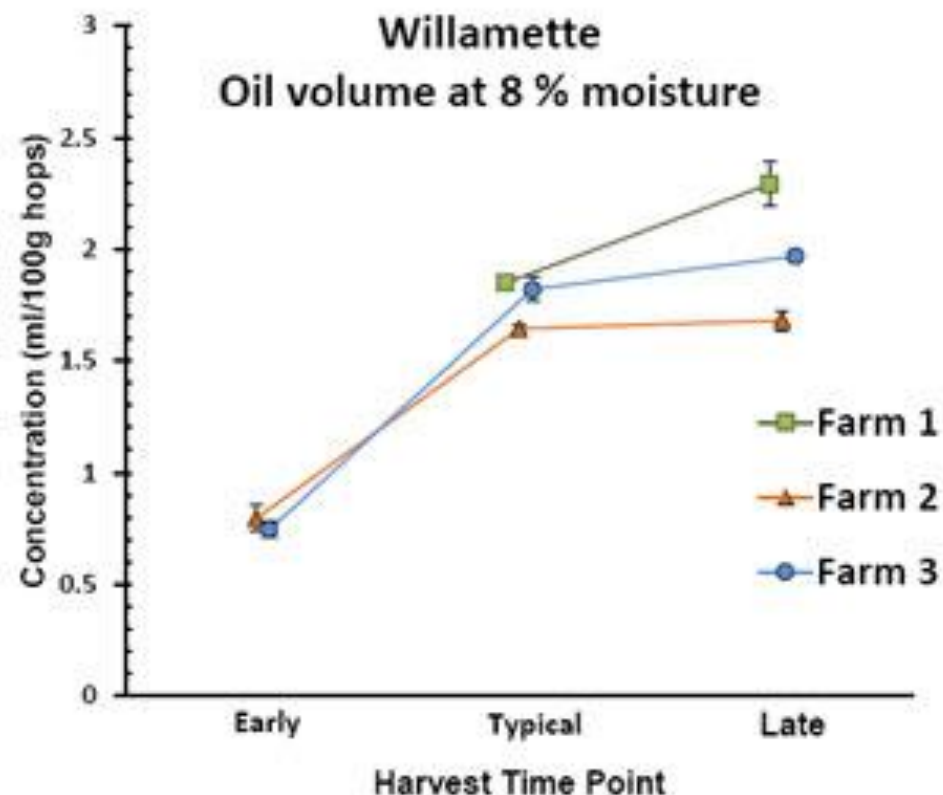
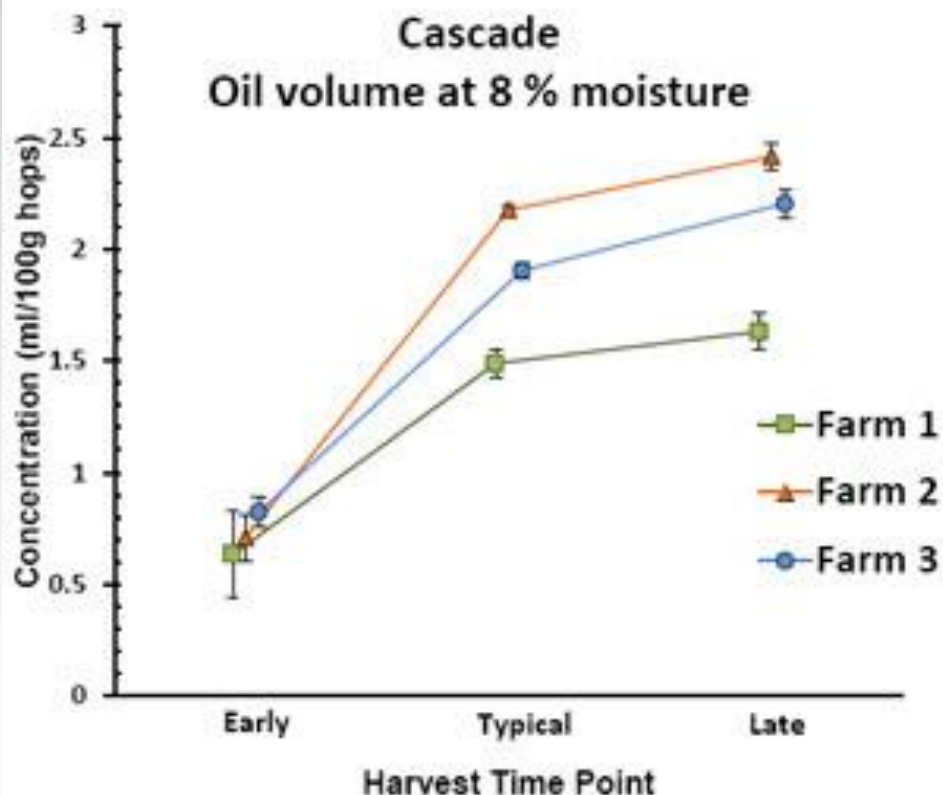
Degree Days and Training Timing





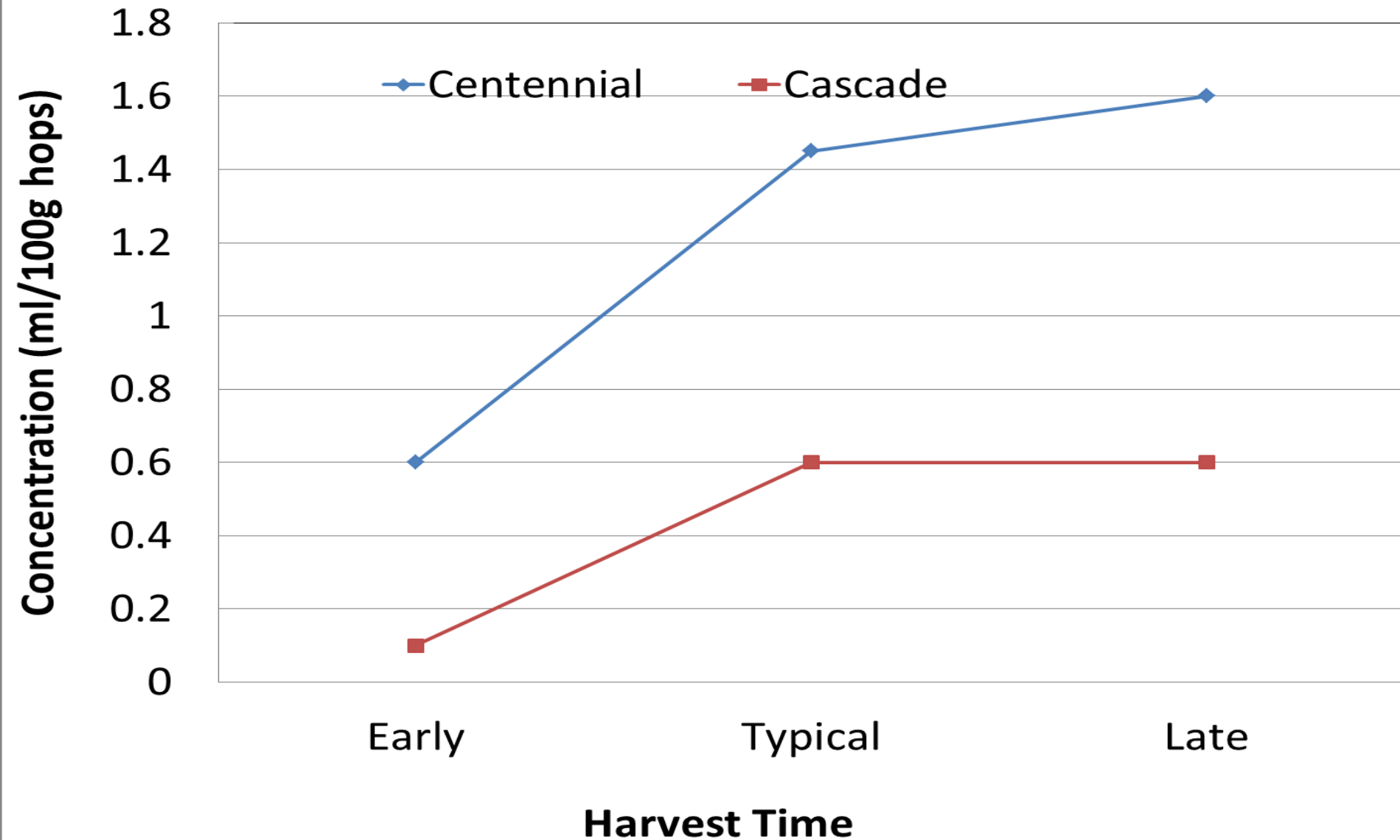


Harvest Date: Oil Content by Location 2010 Harvest

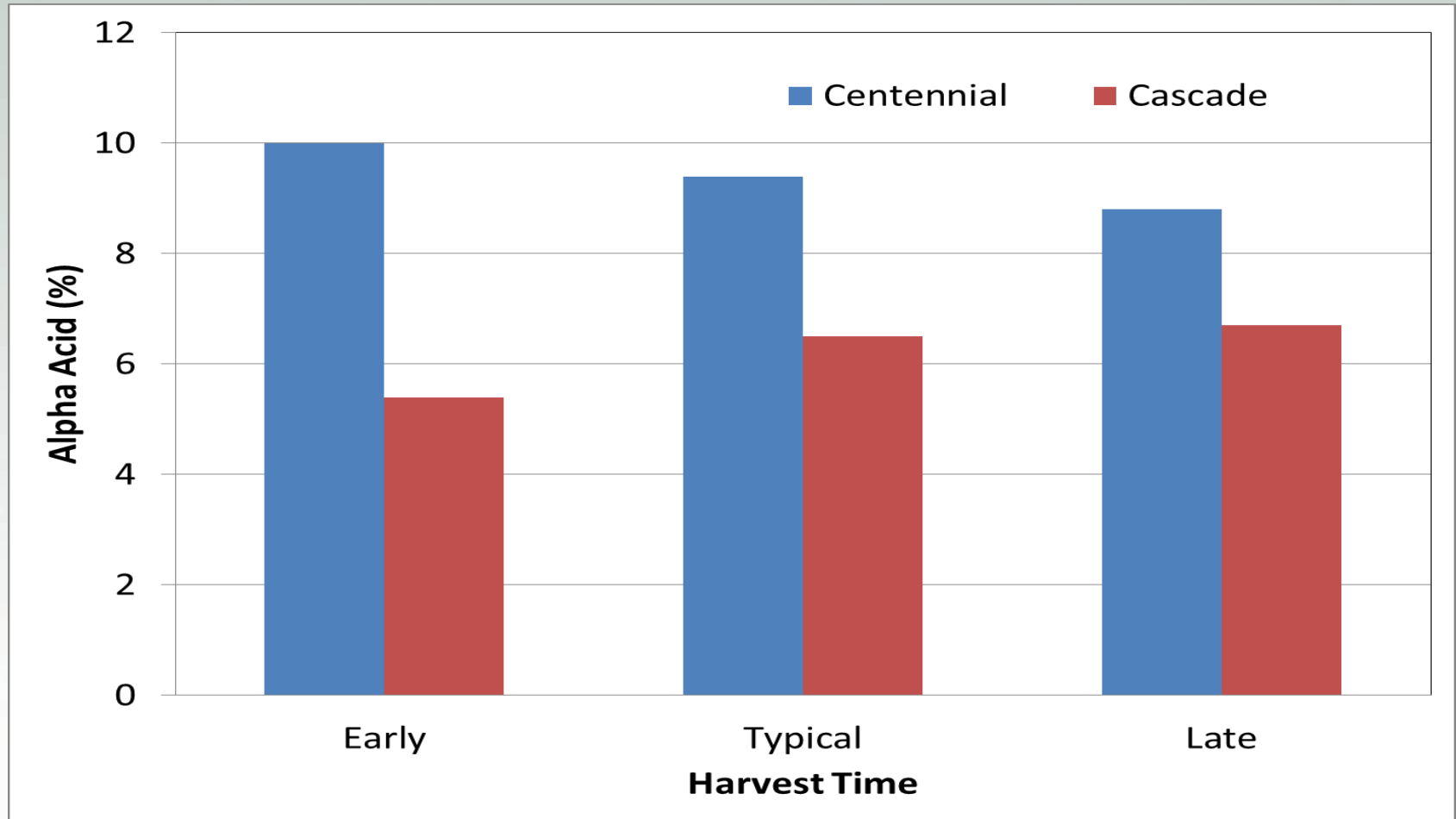


Sharp et al., 2014

Harvest Date: Oil Content



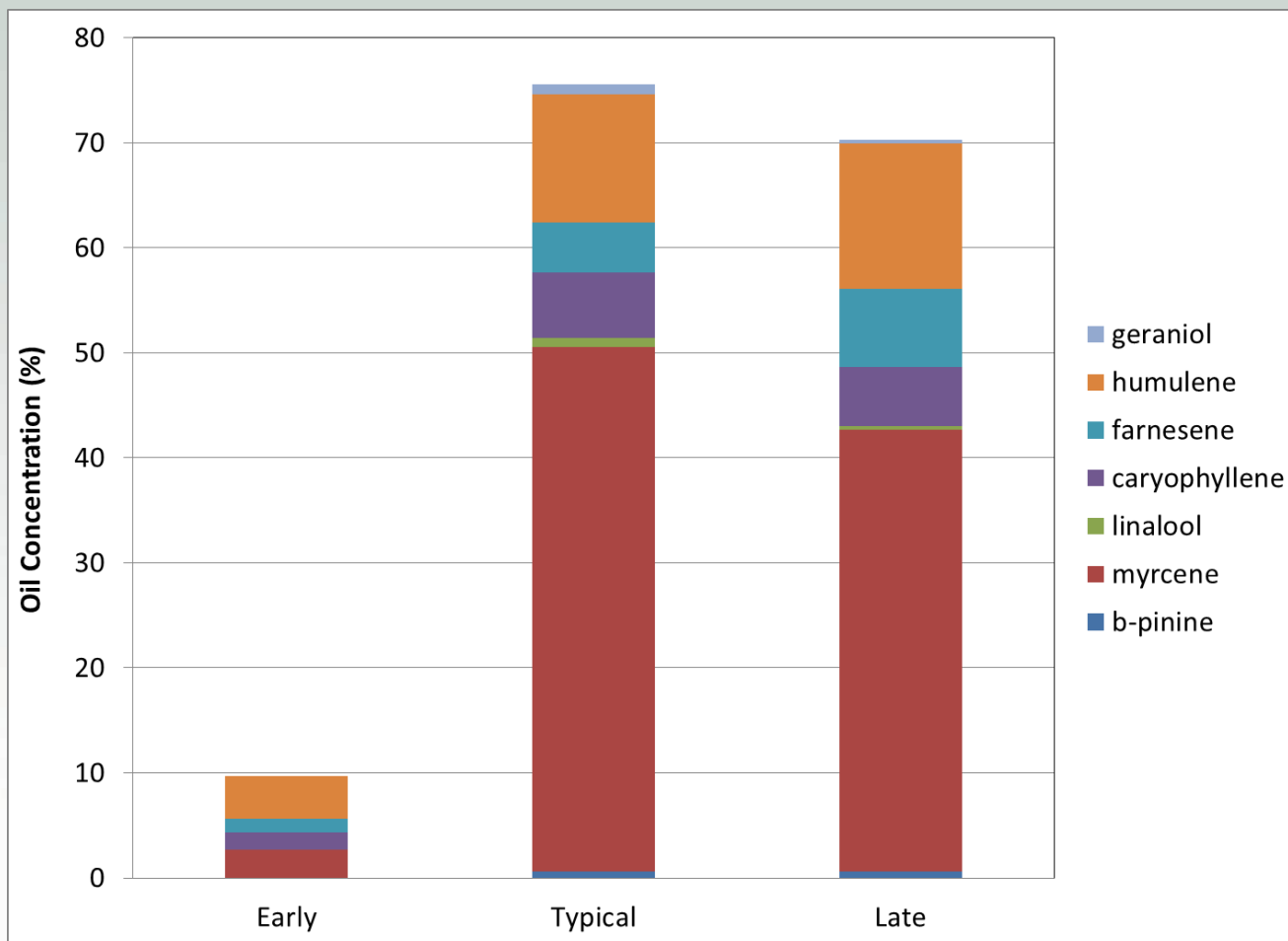
Harvest Date: Alpha Acid



Oil Characteristics

Compound Name	Odor Description
β-pinene	piney, woody
Myrcene	floral, citrus, piney, herbal
Linalool	floral, spicy, floral
Caryophyllene	woody, herbal, clove, spicy
Farnesene	woody, herbal, citrus
Humulene	woody, herbal
Geraniol	floral, citrus, fruity

Cascade: Oil Content



Cascade Hops

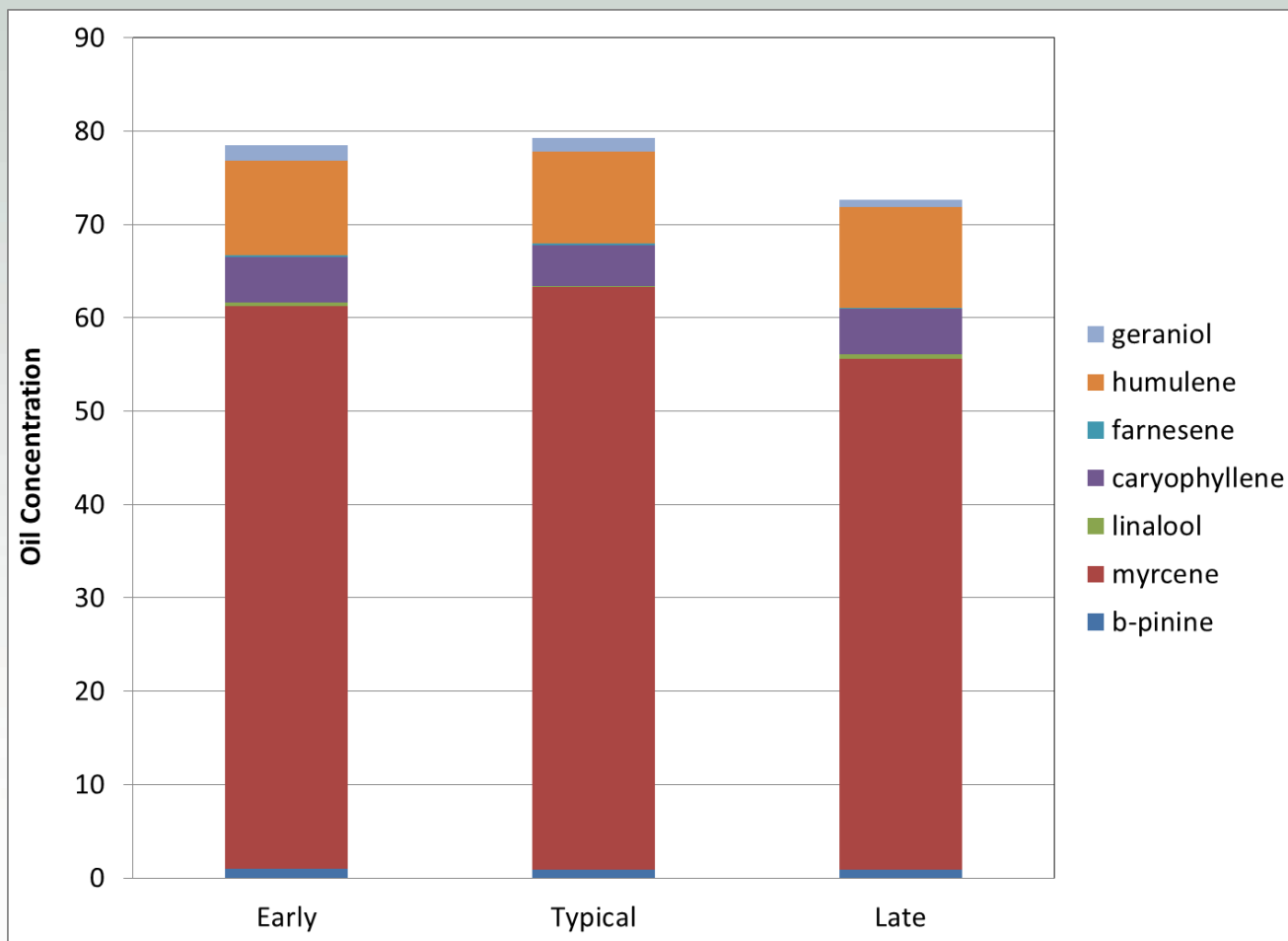
TOTAL OIL ?



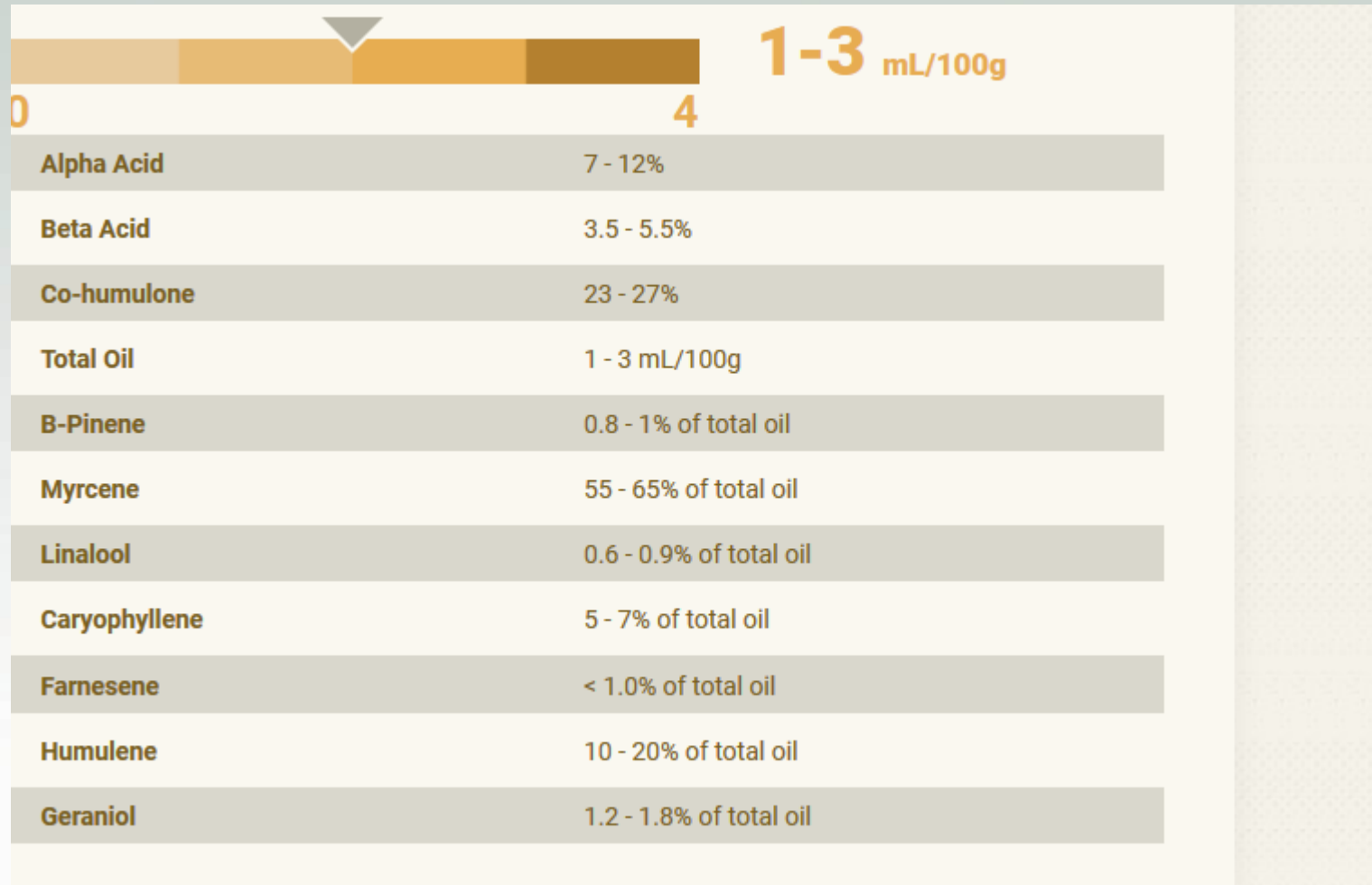
Alpha Acid	5.5 - 9%
Beta Acid	6 - 7.5%
Co-humulone	30 - 35%
Total Oil	0.8 - 2.5 mL/100g
B-Pinene	0.5 - 0.8% of total oil
Myrcene	45 - 60% of total oil
Linalool	0.3 - 0.6% of total oil
Caryophyllene	5 - 9% of total oil
Farnesene	6 - 9% of total oil
Humulene	14 - 20% of total oil
Geraniol	0.2 - 0.2% of total oil

<https://ychhops.com/varieties/cascade>

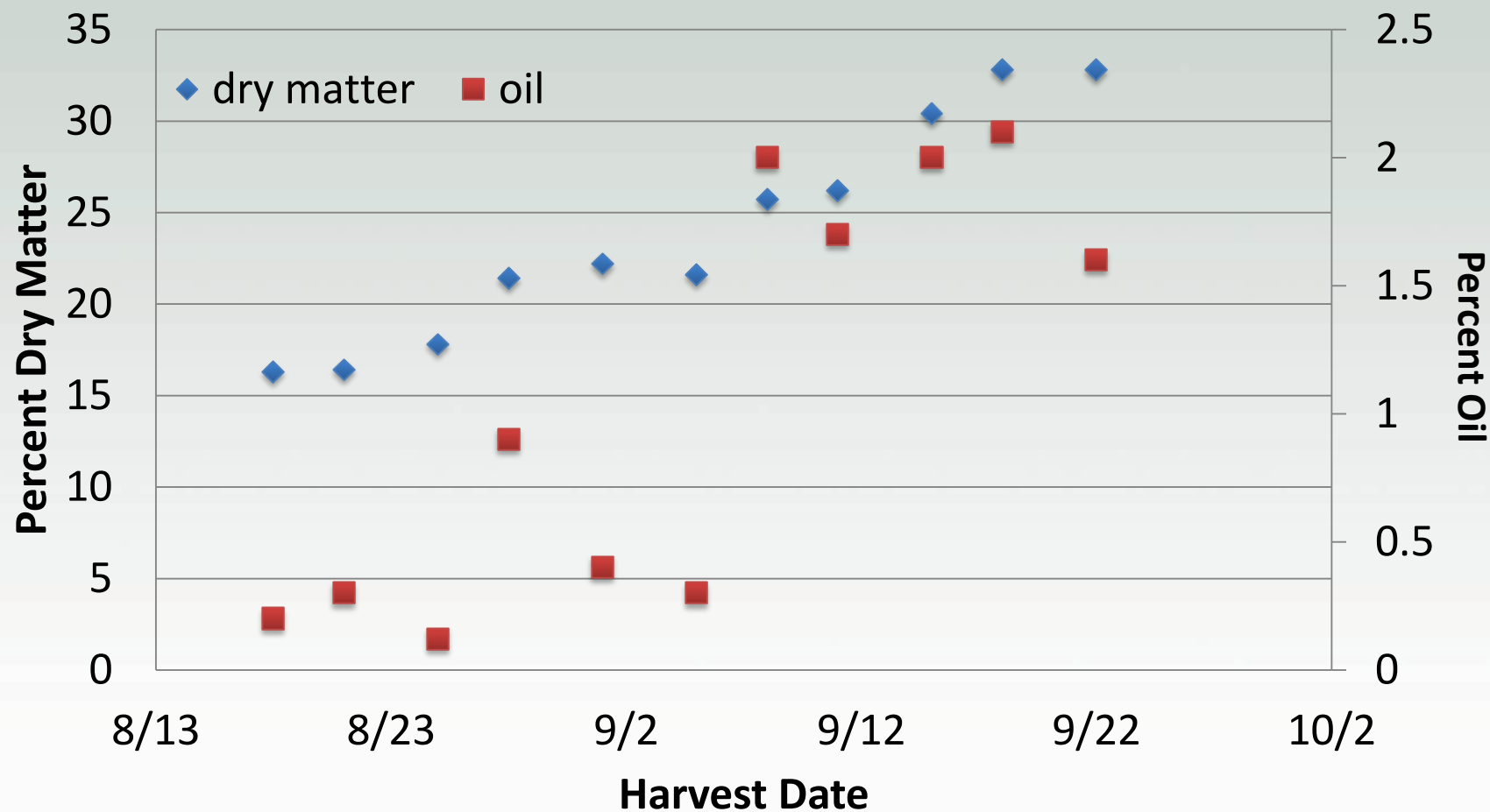
Centennial: Oil Content



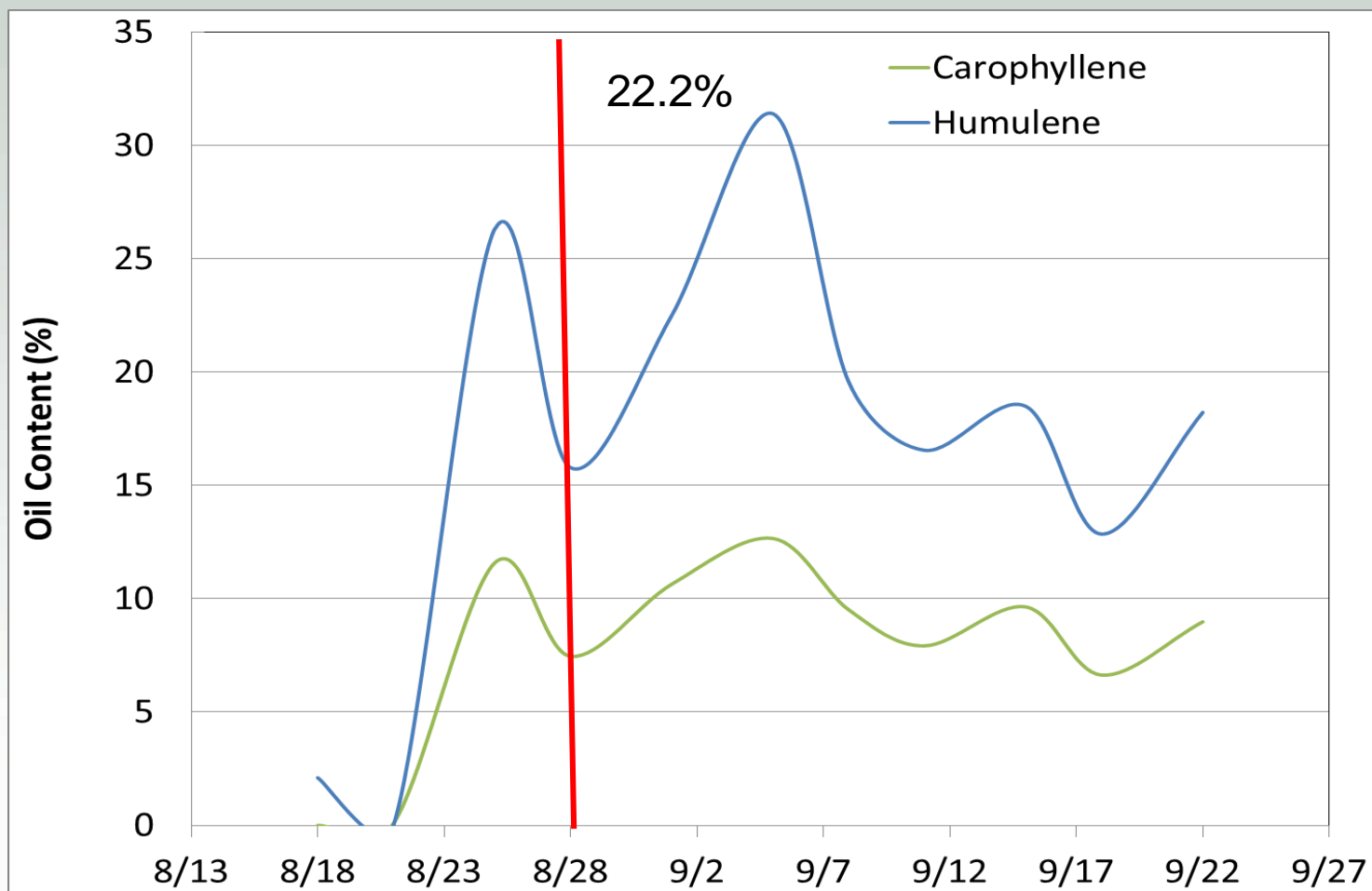
Centennial Hops



Nugget: Dry Matter and Oil

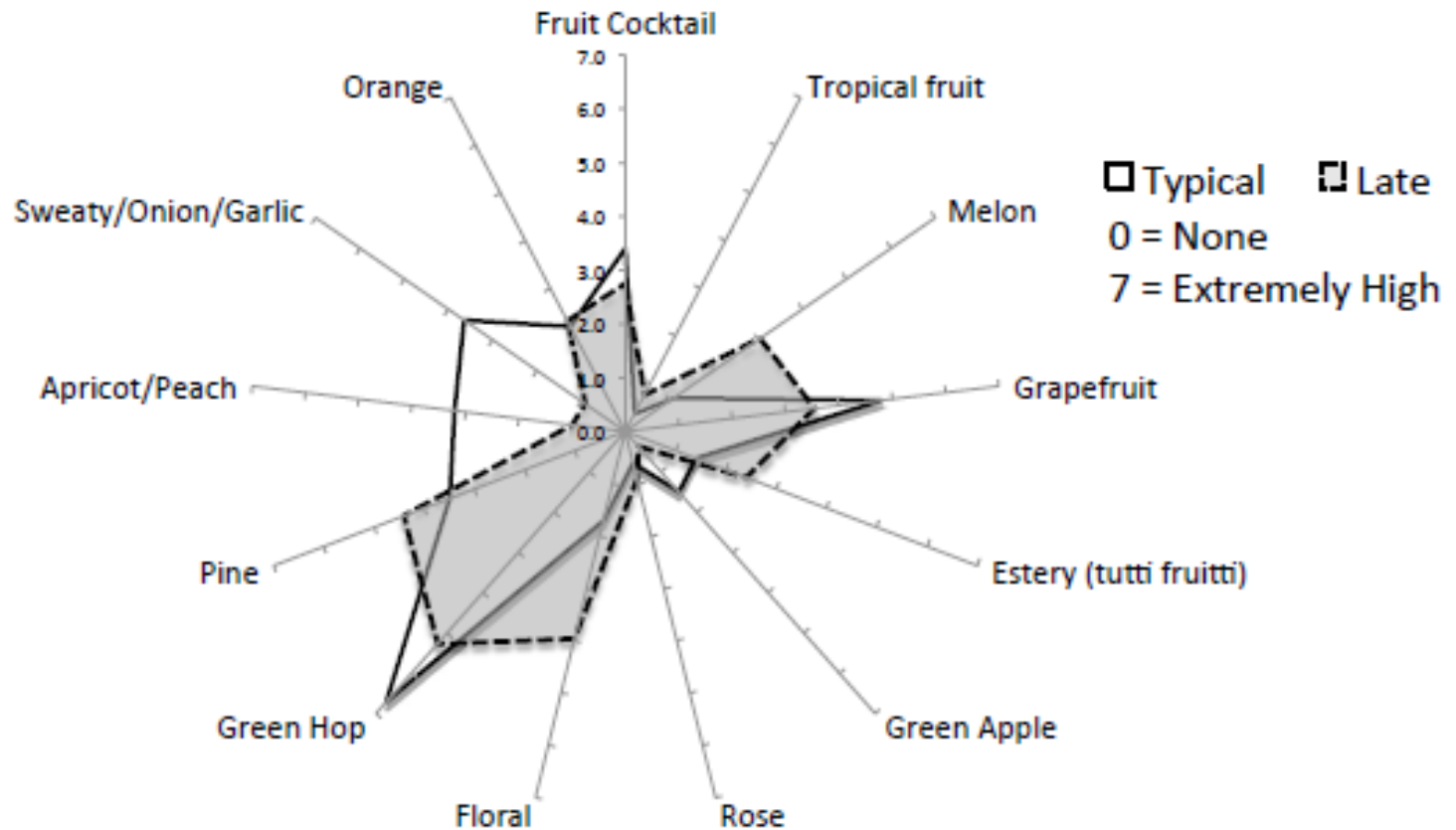


Nugget: Oil Content



Sensory Analysis

Descriptive Analysis: 2010 Cascade



Sharp et al., 2014