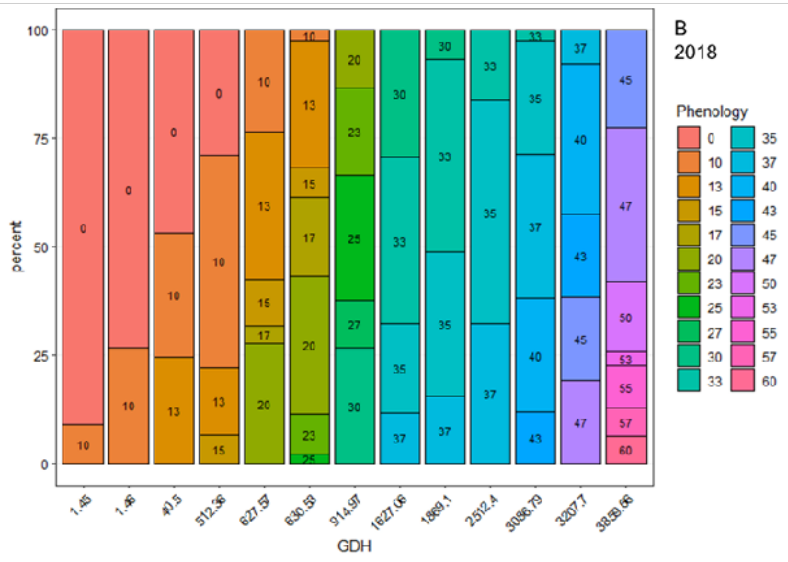
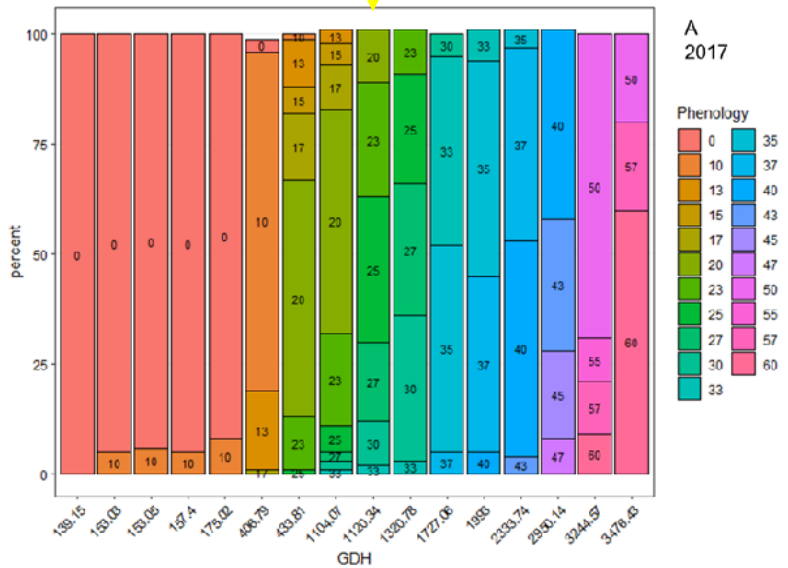
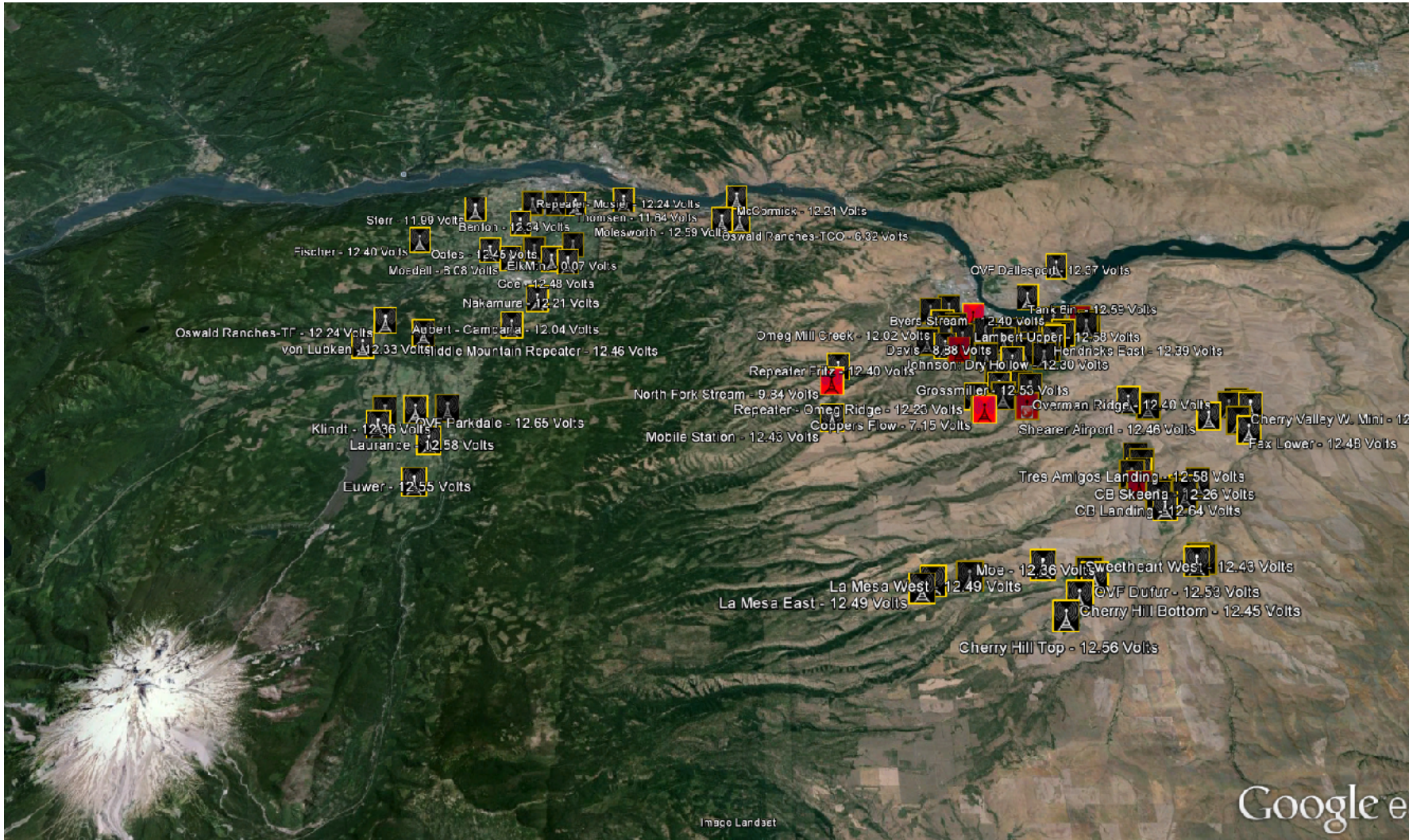


The Major Limiting Factor to predicting frost and protecting sour cherry buds is **bud variation**



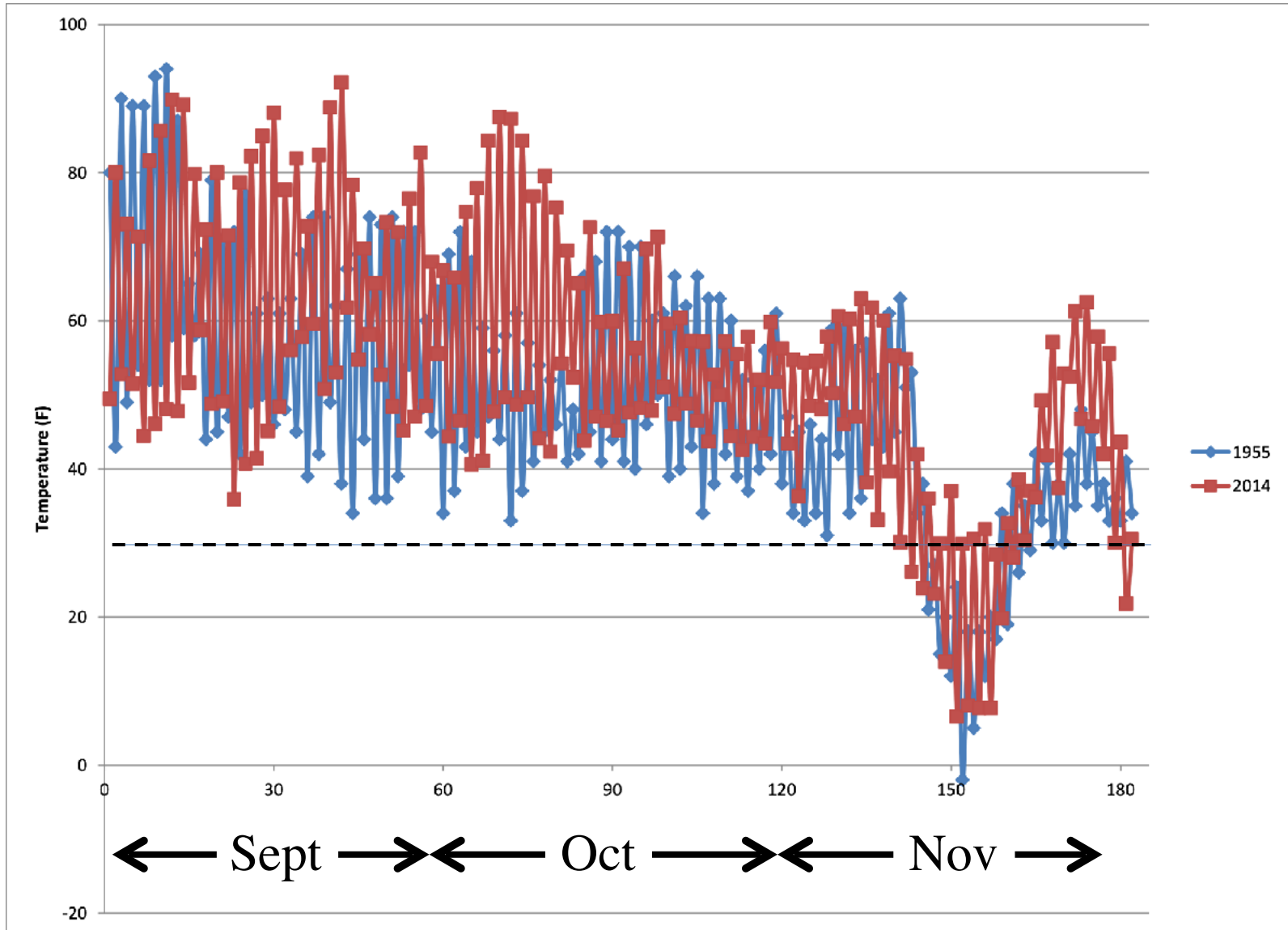
A Regional Assessment of the Nov 2014 Freeze Event



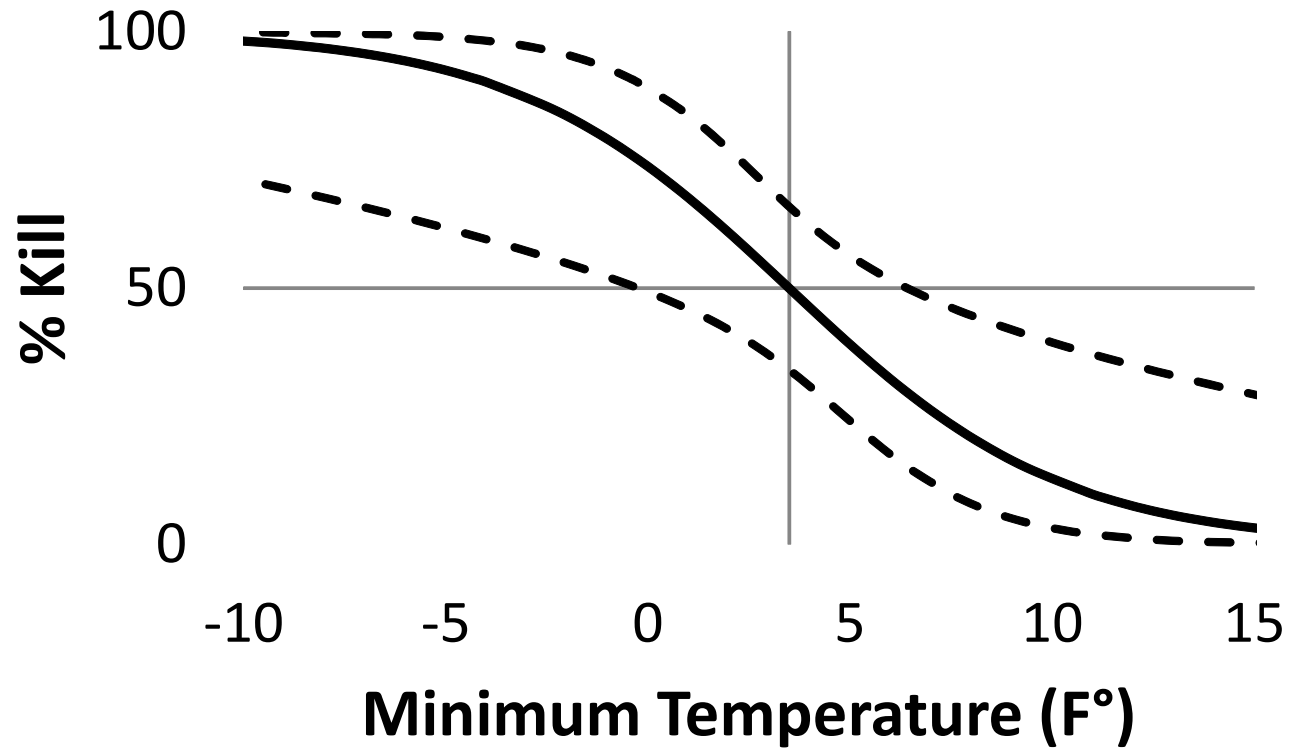
Google e

Image Landsat

Case Study: Min Temps Fall, 2014 vs. 1955 (PNW catastrophic freeze)



A Regional Assessment of Bud Kill



| Percent Kill | Lethal Temperature |
|--------------|--------------------|
| 10 | 11 |
| 50 | 4 |
| 90 | -4 |

Early Fall freeze events prior to sufficient acclimation typically result in injury to vascular tissues of shoots



**Species (Freeze of
Nov. 15, 2014)**

**Min temp
(°F)**

**Flower Kill
(%)**

Sweet Cherry

3.4

82

Pear

3.4

0

Sweet Cherry

6.0

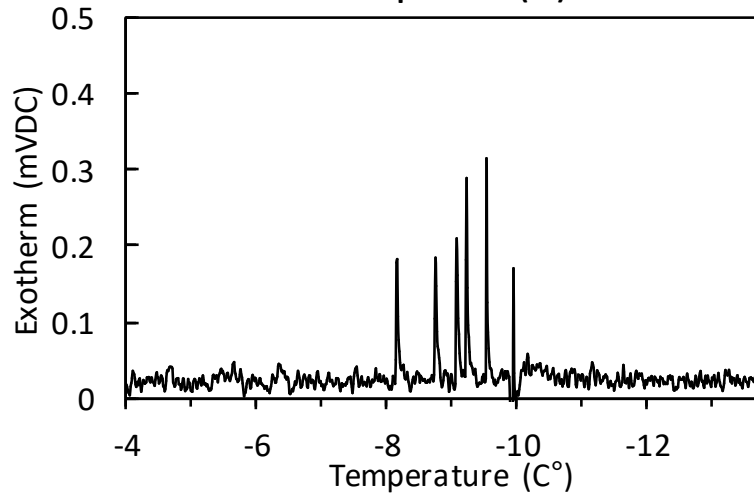
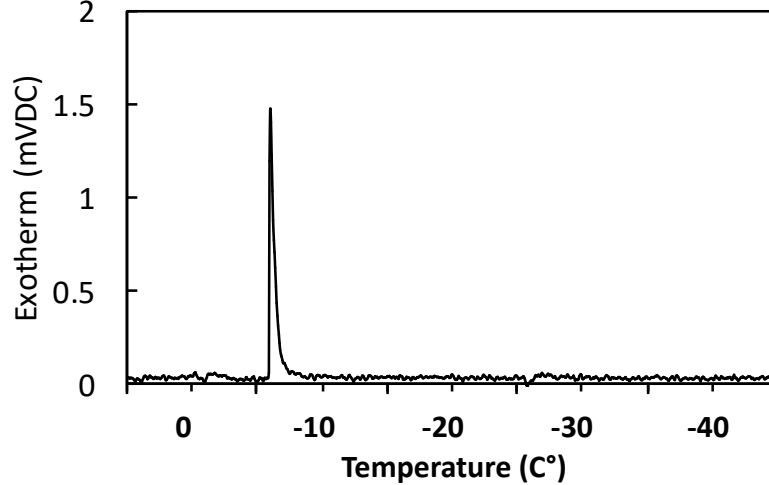
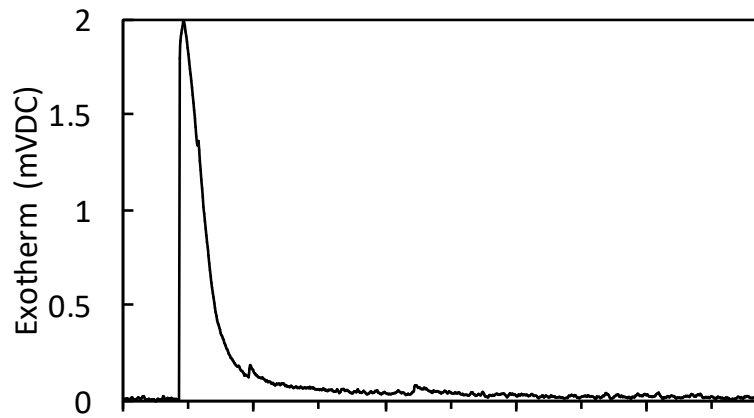
38

Pear

6.0

0

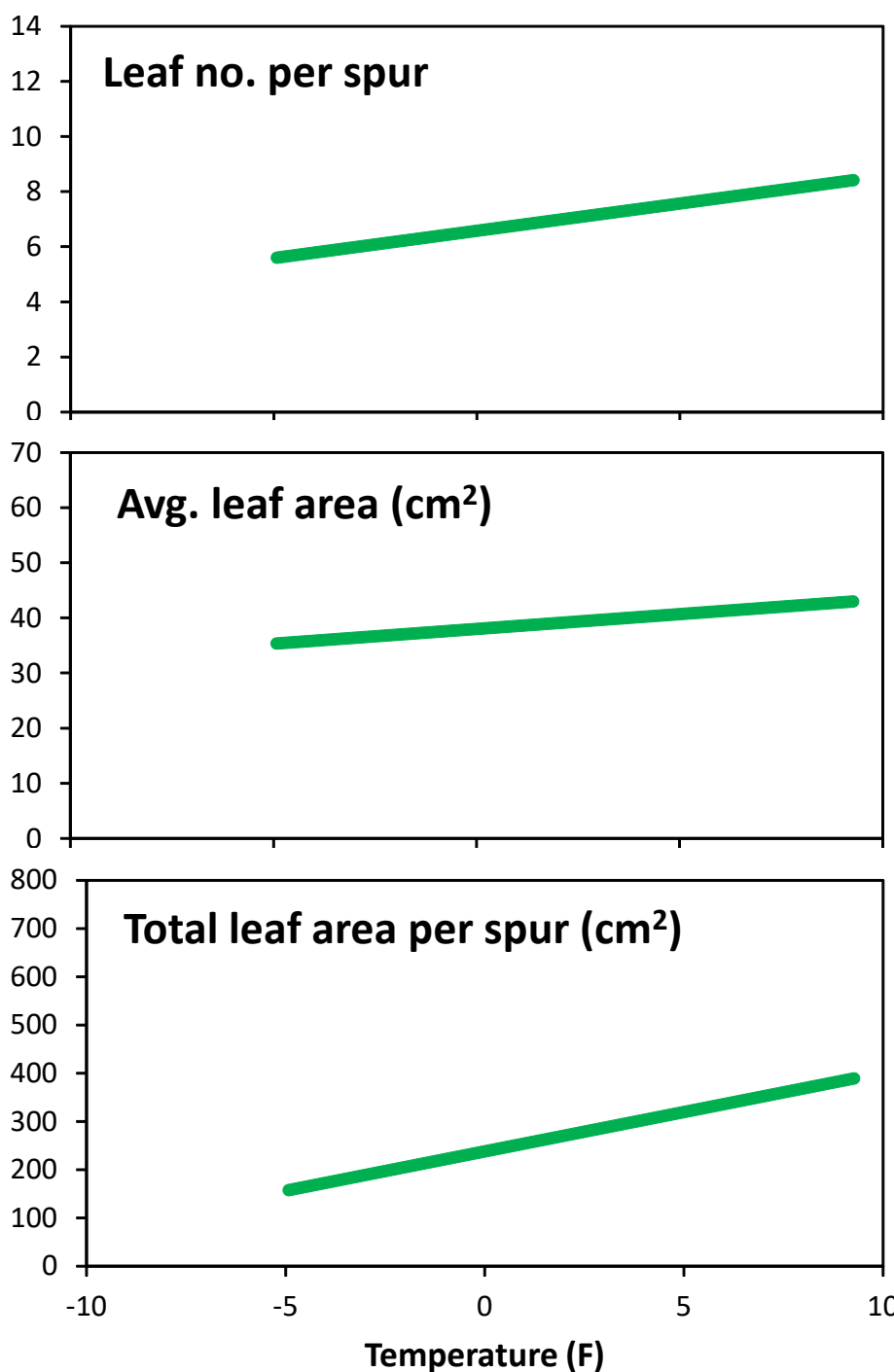
Pear: Freeze Tolerance



Migration of water from meristem to extracellular ice (lipid composition becomes unsaturated via enzymatic activity)
Lowers freeze point via reduced volume & increased [CHO];
desiccation to proteins, enzymes and organelles within cell can cause death

50+ sites

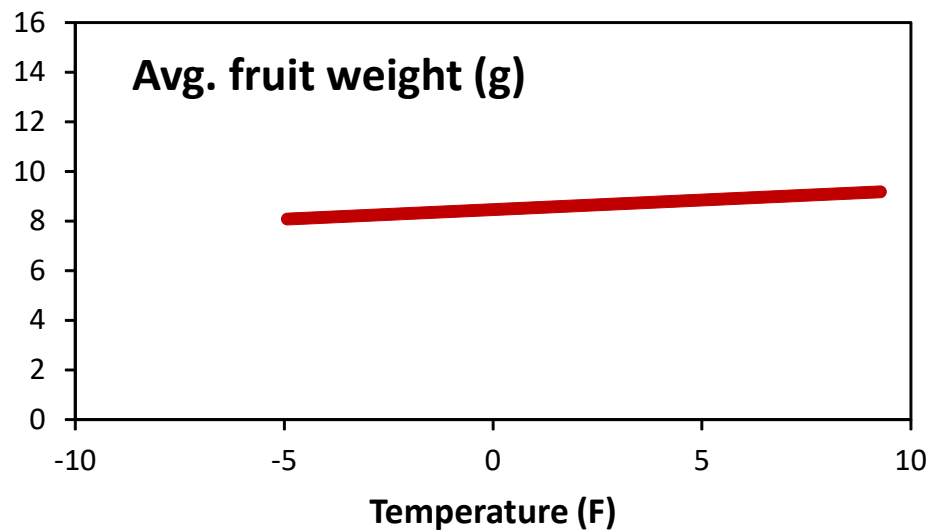
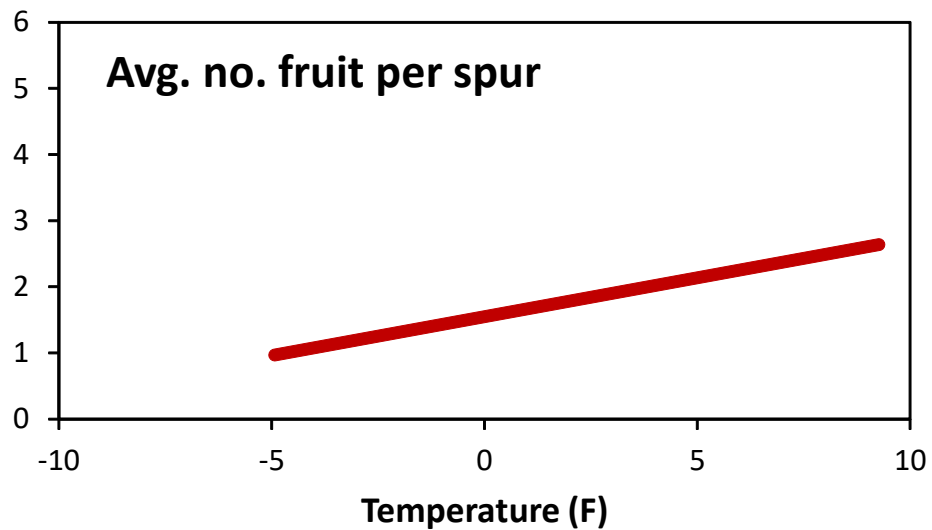
50 spur samples/site



Leaf growth & develop. were impaired by freeze-induced spur injury

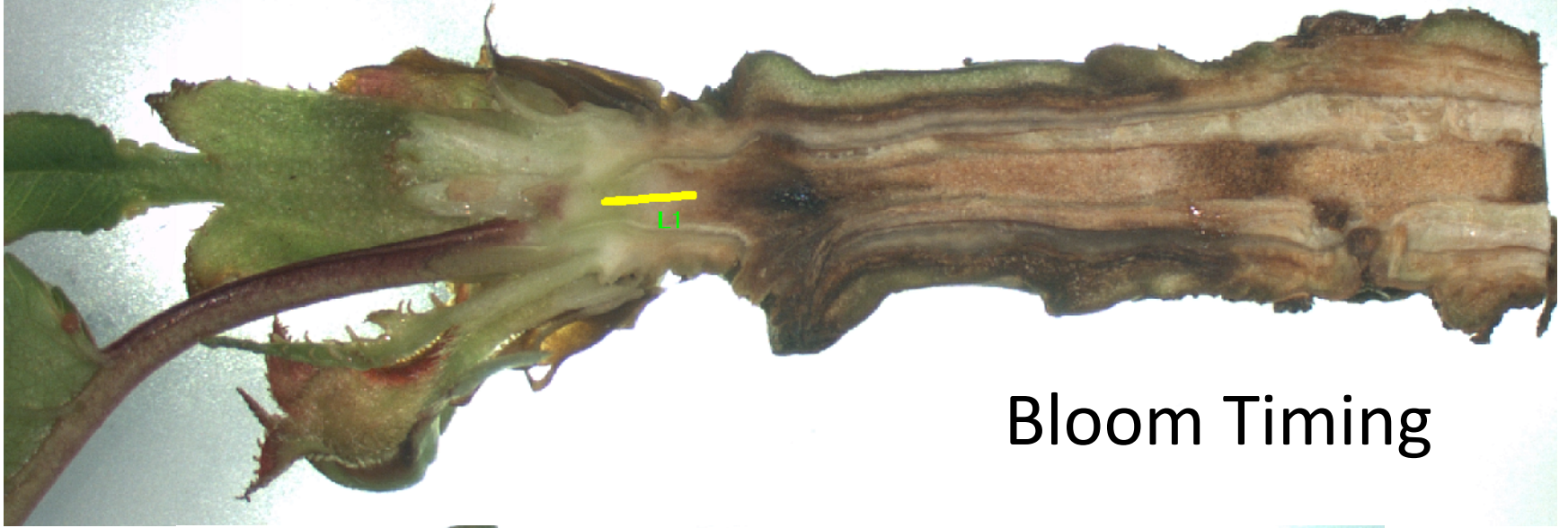
50+ sites

50 spur samples/site

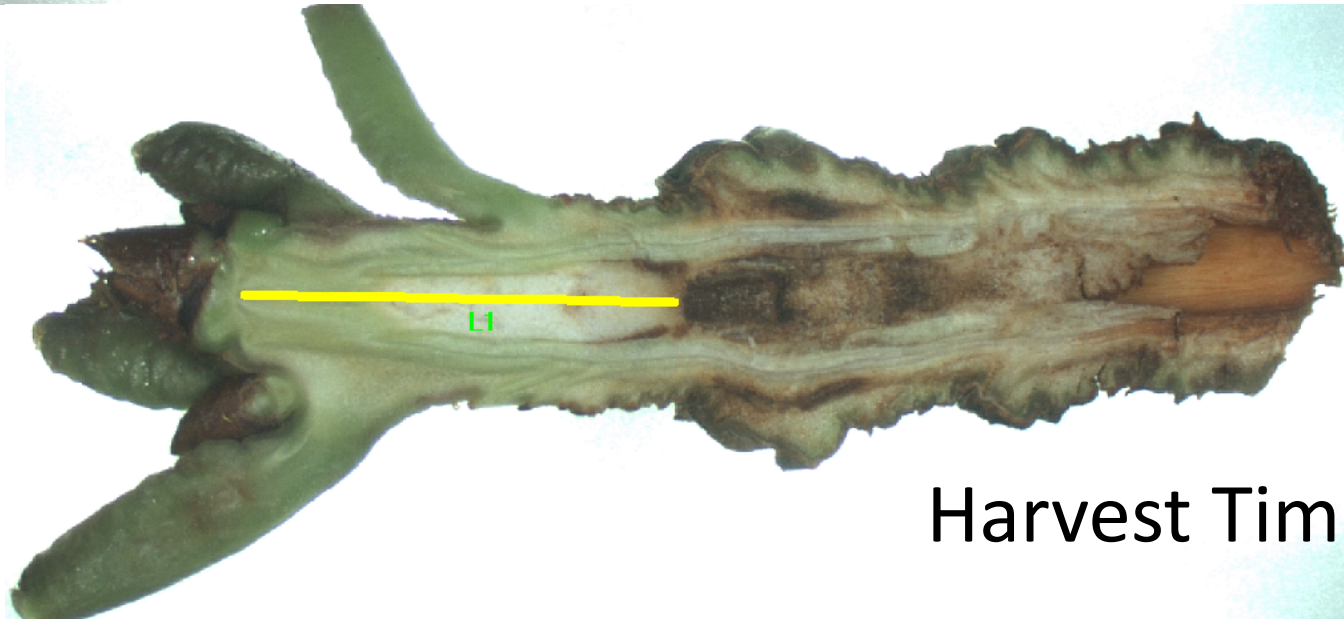


Seasonal Spur Extension Growth

50+ sites



Bloom Timing



Harvest Timing

Analysis of Spur Color (degree of browning)

50+ sites

