Results

1. Higher temperatures increased flower bud loss
   1. P=0.05 (categorical) or P=0.01 (continuous)
   2. Plot showing trend
      1. Loss barely happened at two coolest treatments
2. Thicker spurs meant flower more likely to have inflorescence and flower
   1. Logistical model
3. Middling temperatures seemed to allow for greater stem and leaf growth
   1. Mostly visual, based on plot
4. Mean budburst and leaf out dates?

Introduction

1. Viticulture
   1. Global wine market valued at 30 billion euros (Wolkovich et al 2017)
   2. 1100 commercial varieties V. vinifera(P-X Wolkovich et al 2017)
   3. 6000 varieties cultivated worldwide(P-X Wolkovich et al 2017)
   4. Climate change and impact on viticulture industry
      1. Wine regions likely to change by 0.2-0.6 degrees C per decade 2000-2049 (Schultz and Jones 2010)
      2. Concerns about loss of viticultural lands/shifts to currently conserved areas (Hannah et al 2013)
         1. Shift towards poles🡪less land for winegrowing in the Southern Hemisphere (Shcultz and jones 2010)
      3. Introduce new varieties better suited to changed climate (Wolkovich et al 2017)
         1. Need to know phenologies of other varieties to find where they would be able to thrive
2. Phenology as tool to learn to adapt
   1. Phenology very temp driven (who said this first?)
      1. Advance in timing of leafout/flowering in plant species = 4-6 days/degrees C—2-5 days per decade in last 30-40 years (Wolkovich et al 2017)
      2. Warmer temps🡪early harvests (-6 days/ degree C) (Cook and Wolkovich 2016)
   2. Differs greatly across varieties
      1. 3-6 weeks across different varieties (Wolkovich et al 2017)
      2. <= 100 varieties have phenology data beyond harvest dates (Wolkovich et al 2017)