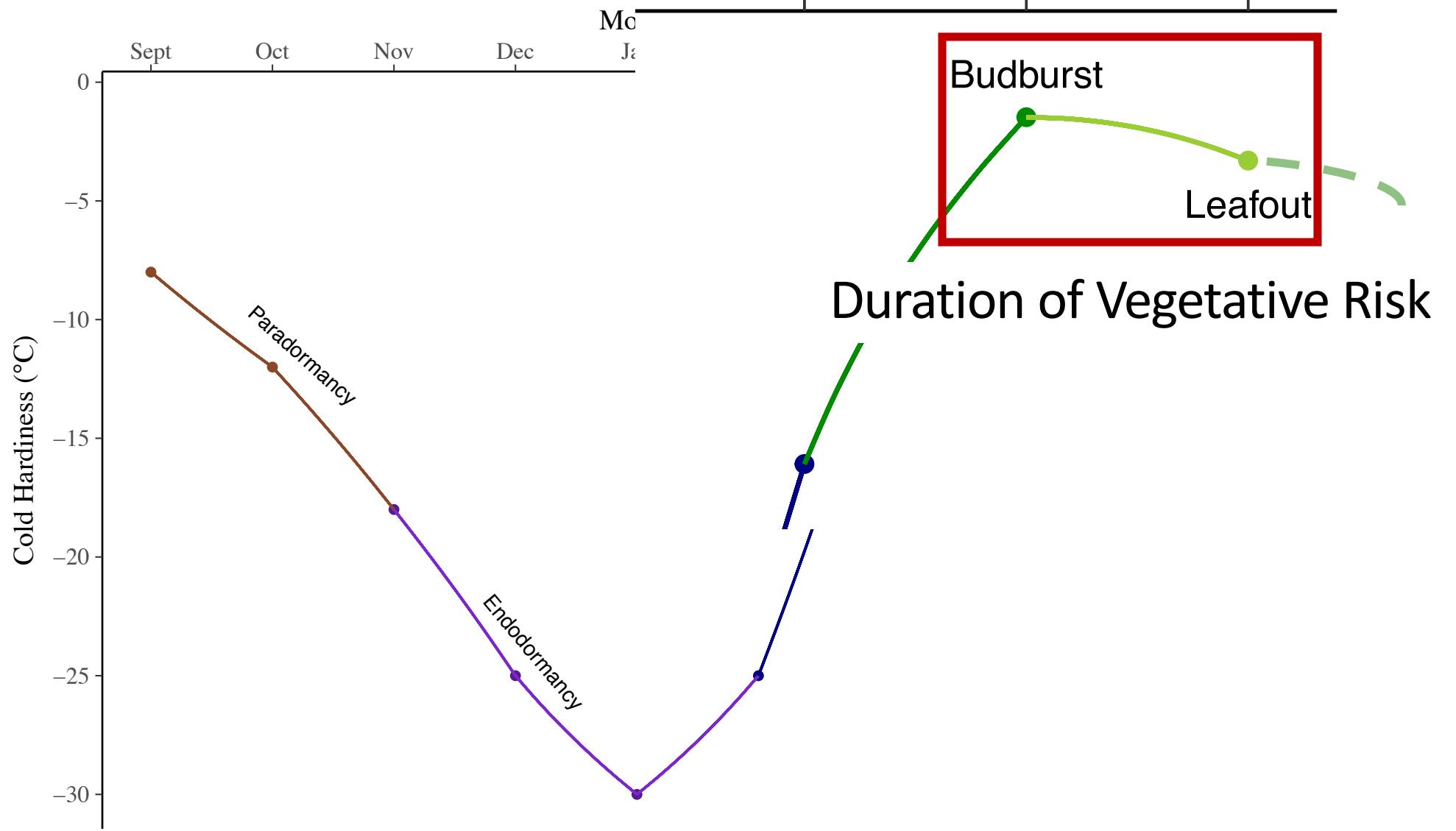


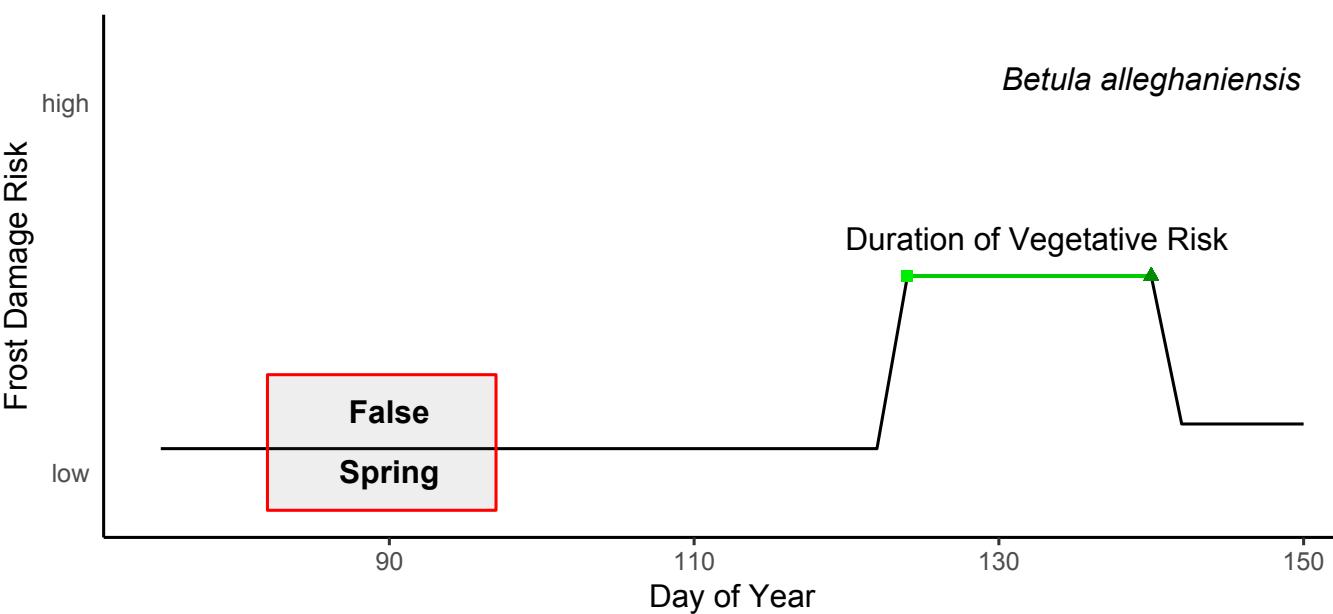
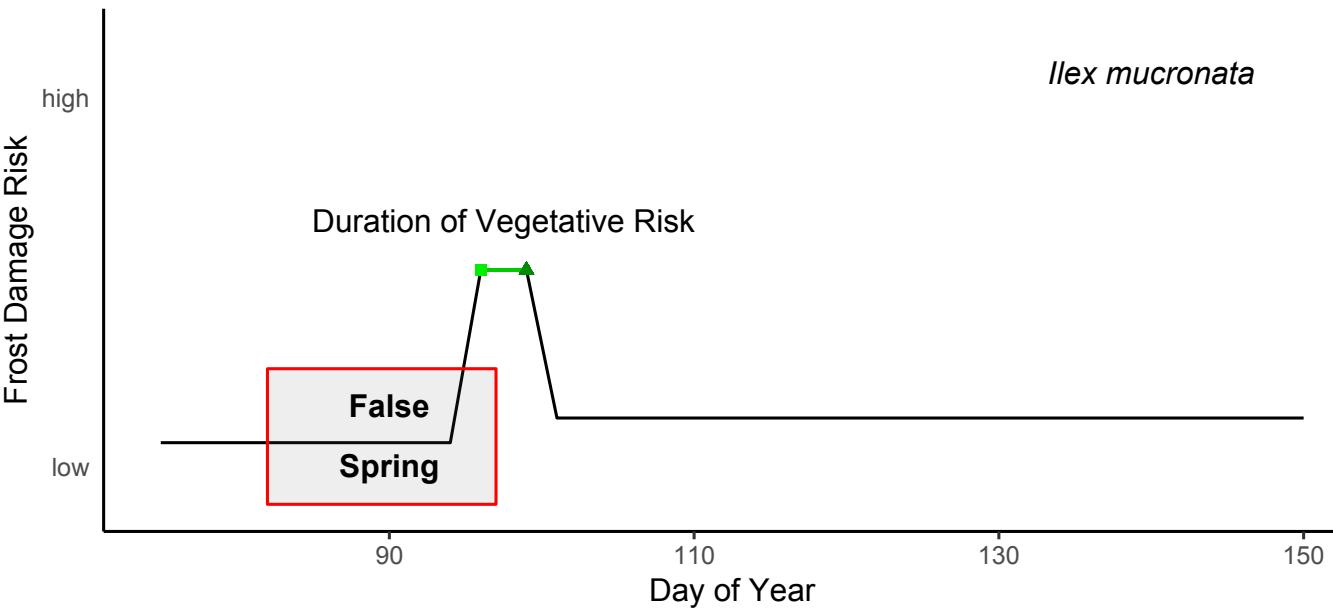


False springs in a warming world

Frost tolerance



Species differences: tolerance vs avoidance



- 10 SPECIES
- 3 LEVELS OF CHILLING (4°C)
 - 4 weeks
 - 6 weeks
 - 8 weeks
- FALSE SPRING



How bad are false springs?

Phenology:

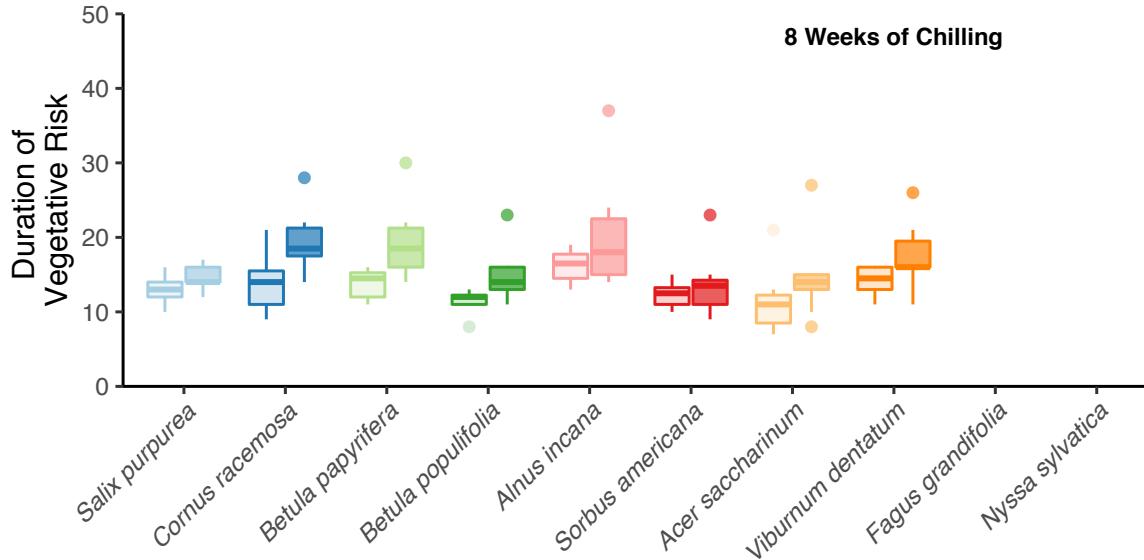
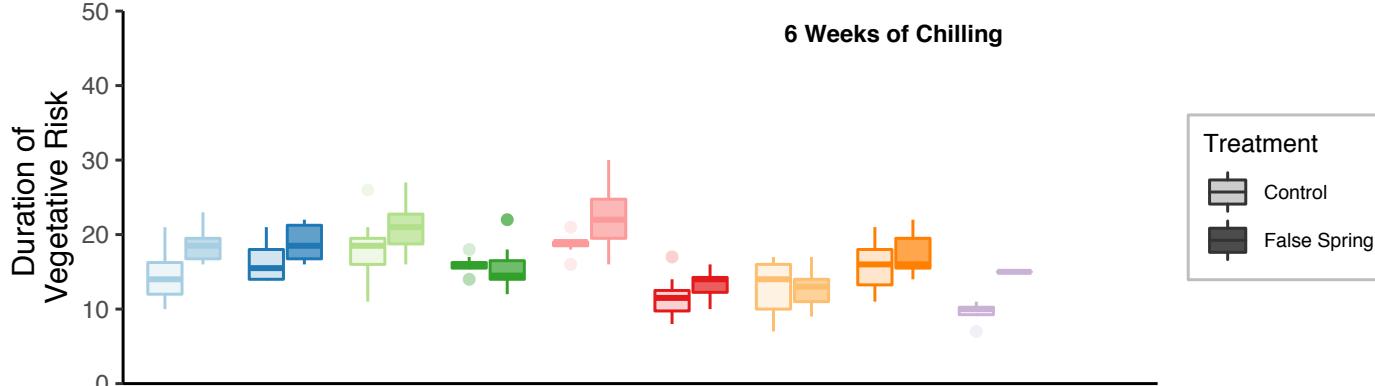
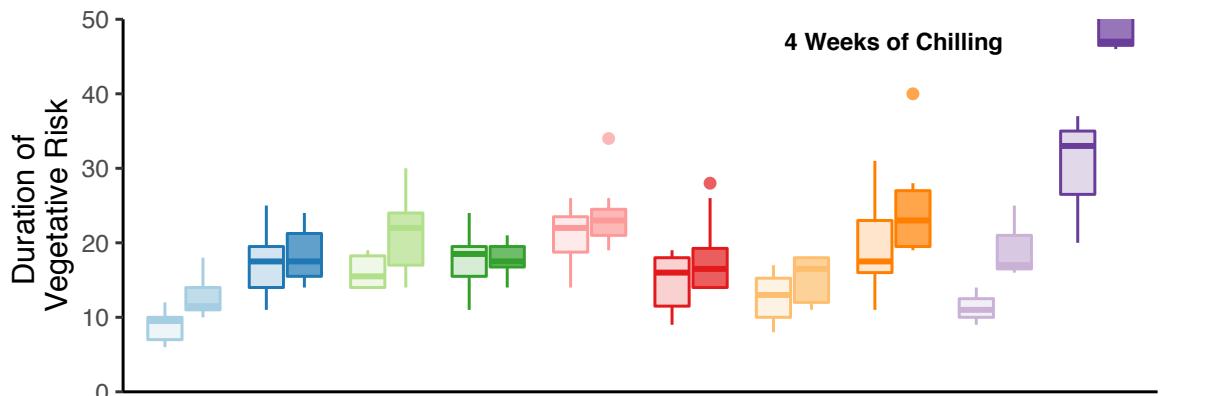
- Observe budburst to leafout
- Observe *maybe* flowers?
- Budset, leaf color and leaf drop

Growth:

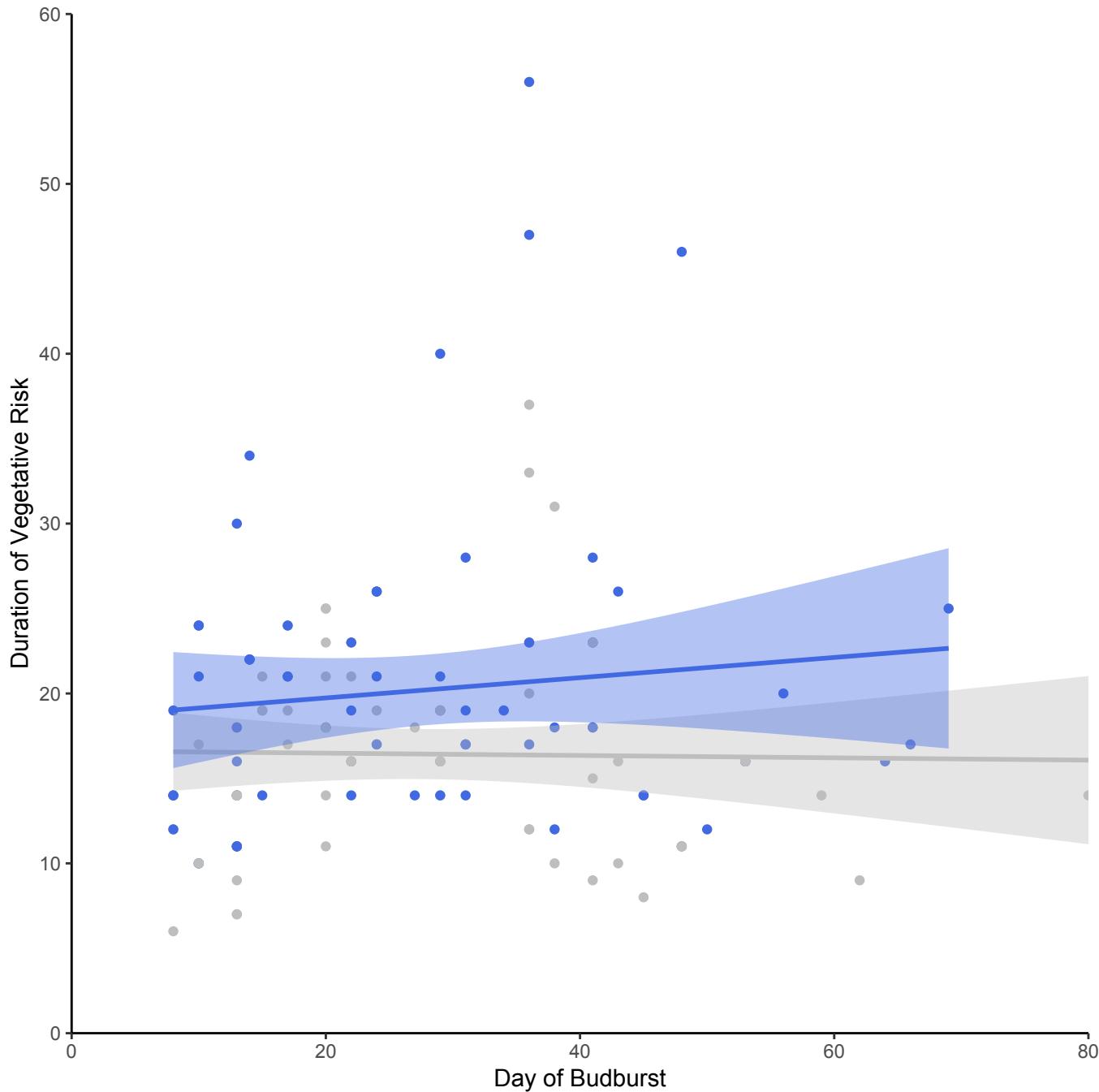
- Height at leafout
- Height before budset (2 months past leafout)
- Height after budset
- Chlorophyll content (same times as above minus at leafout)
- Below and aboveground biomass

Potential other measurements:

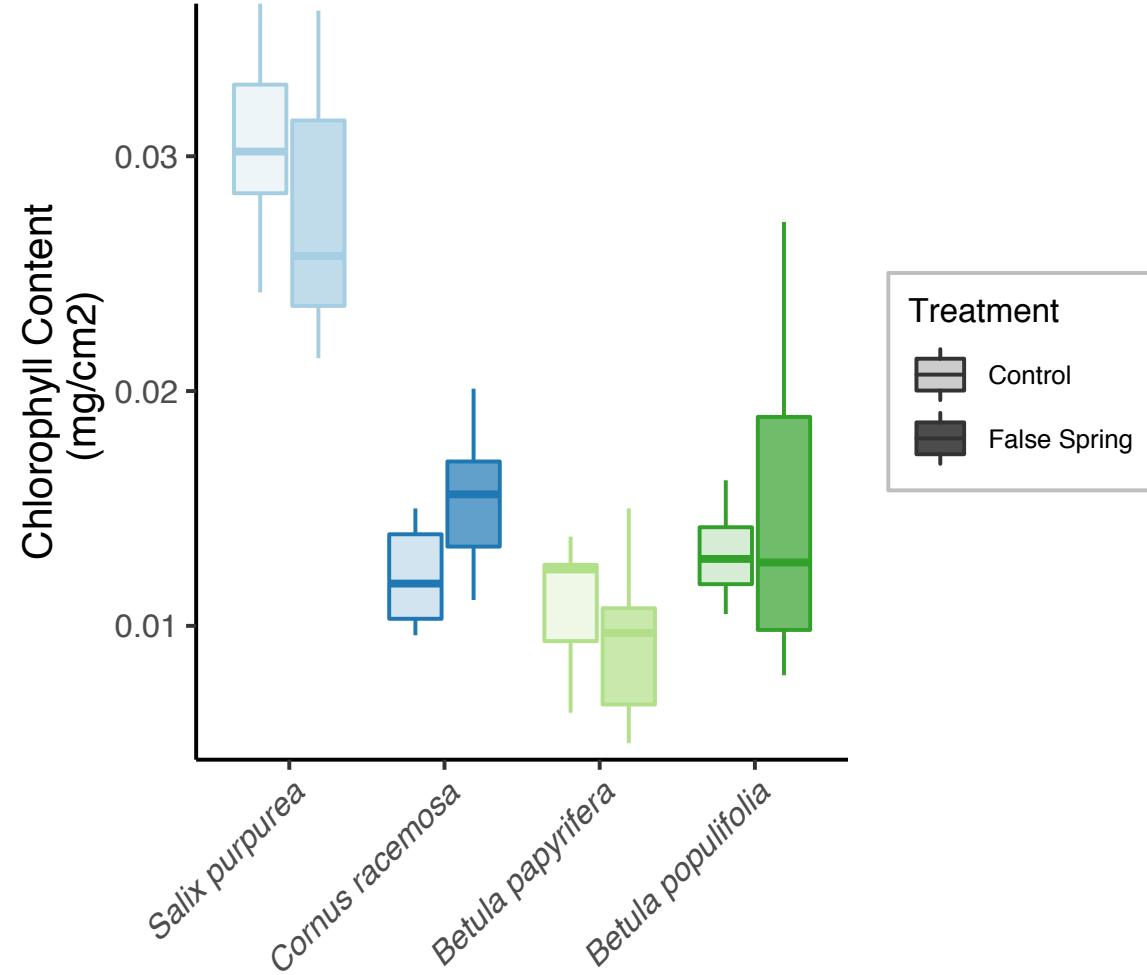
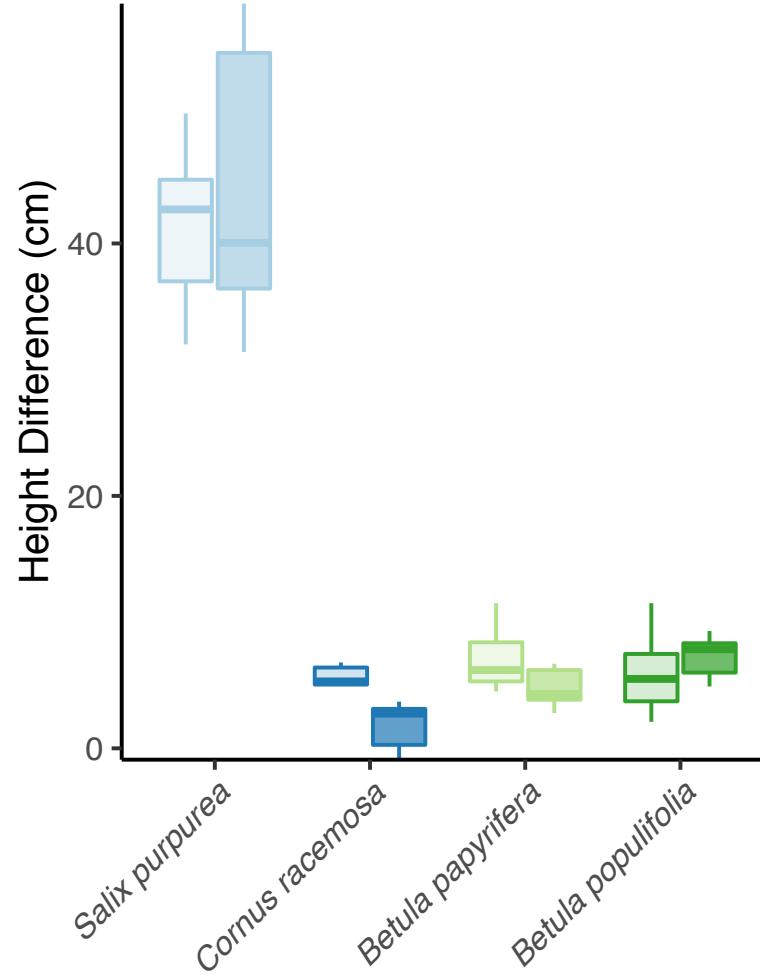
- Secondary compounds or pH – herbivory
- Amino acids – proline, glutamine

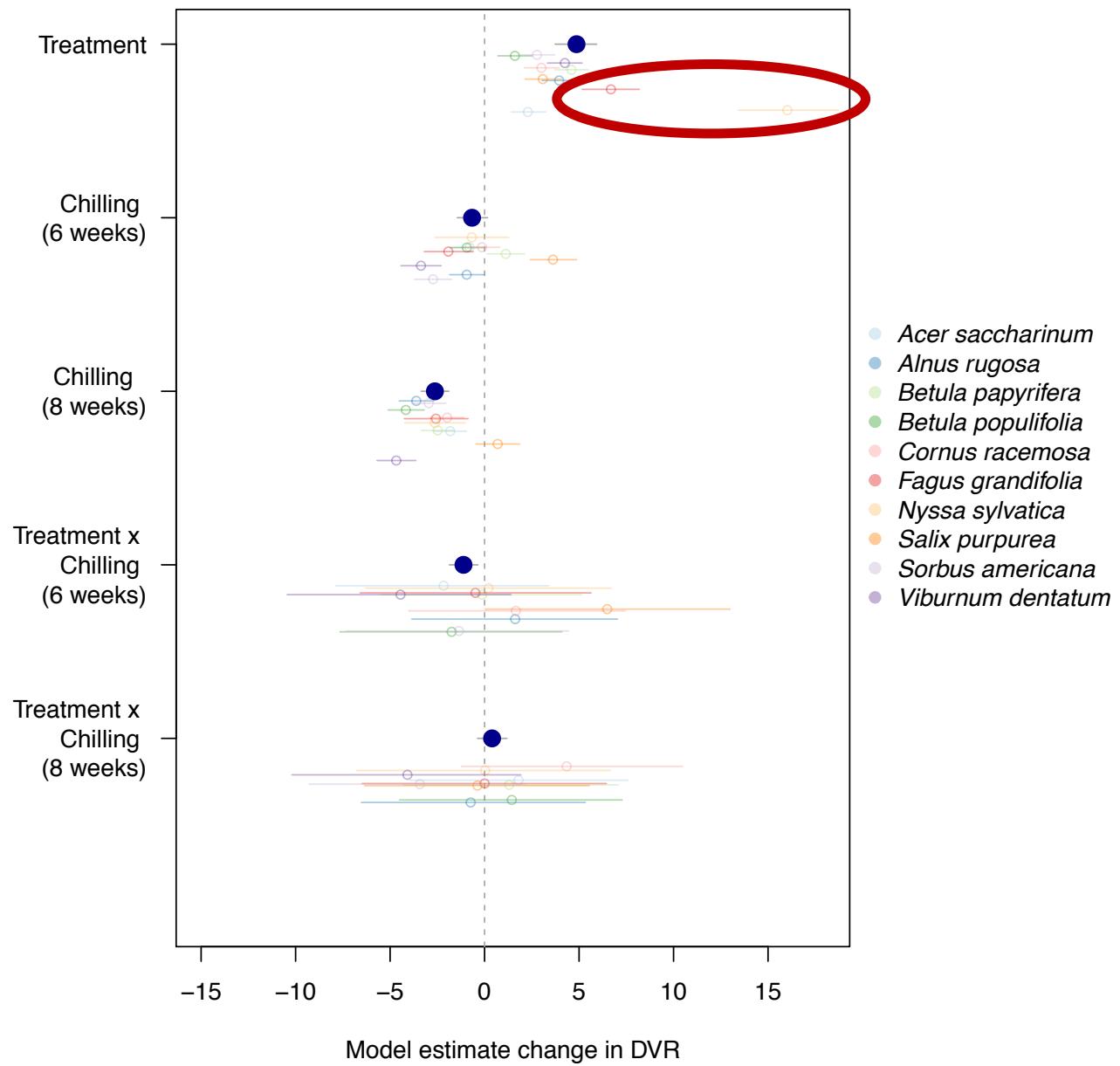
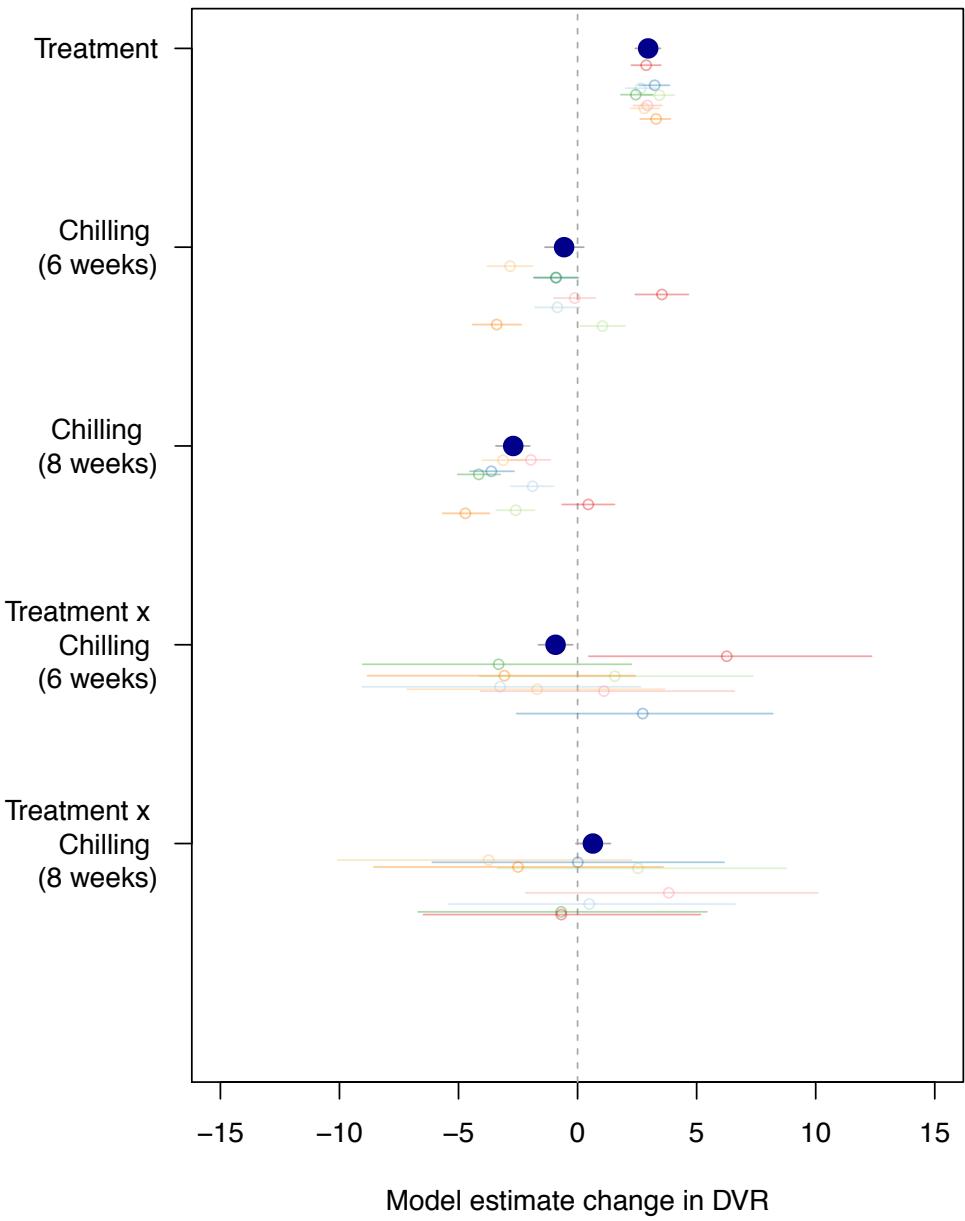


DVR by Day of BB



Height and Chl: 60 days after leafout

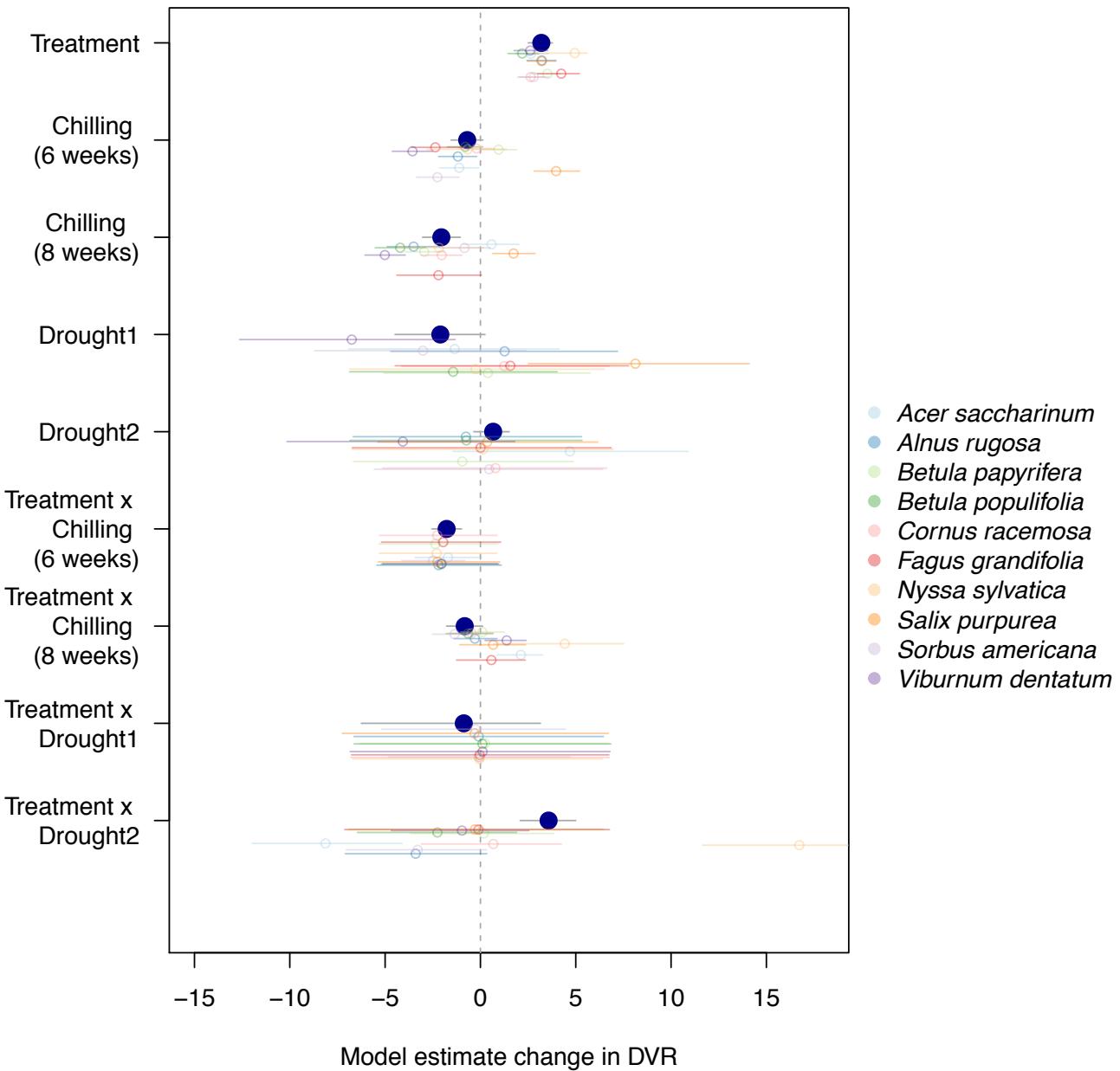




- *Acer saccharinum*
- *Alnus rugosa*
- *Betula papyrifera*
- *Betula populifolia*
- *Cornus racemosa*
- *Fagus grandifolia*
- *Nyssa sylvatica*
- *Salix purpurea*
- *Sorbus americana*
- *Viburnum dentatum*

Questions:

- When do I increase the photoperiod and/or temperature?
- Any other measurements?
- Thoughts on secondary compounds/pH
- Raised beds and monitor DVR next year?
- rstan vs rstanarm vs brms



	mean	se_mean
mu_a_sp	16.4400321	0.04149841
mu_b_tx_sp	3.1948404	0.03174597
mu_b_chill1_sp	-0.6941170	0.03169372
mu_b_chill2_sp	-2.0495611	0.04041891
mu_b_drought1_sp	-2.1021688	0.19802758
mu_b_drought2_sp	0.6687034	0.04271024
mu_b_txchill1_sp	-1.7721756	0.03074350
mu_b_txchill2_sp	-0.8237089	0.03748448
mu_b_txdrought1_sp	-0.8730149	0.53085052
mu_b_txdrought2_sp	3.5760628	0.06641219

	mean	se_mean
mu_a_sp	16.9738950	0.03495308
mu_b_tx_sp	4.8656279	0.03332194
mu_b_chill1_sp	-0.6631818	0.02856777
mu_b_chill2_sp	-2.6270683	0.02728854
mu_b_txchill1_sp	-1.1157894	0.03076256
mu_b_txchill2_sp	0.3957156	0.03137257