Intro

Focus on what is known about molecular mechanisms and physiology in other systems

* Molecular mechanism for plants that flower during shortening days
* Xiaoyu would know temp ones too. Maybe ask him.

Then a (perhaps briefer) discussion on the general trends we see within subpops

Then (perhaps) exploration of the associations in the diversity panel

Then (perhaps) post hoc test in fourway on just the few sites which have GWAS hits

OR

I like the flow of 1) we found a bunch of stuff via gwas that may or may not be real, 2) we validated a few peaks in an F2, 3) here is what we think is going on with those peaks.

Then in the Discussion can refute some of the long-standing environmental cues for switchgrass.

Ask Li – does Karl say we can use Rqtl on the fourway analysis?

Take all GWAS peaks – use QTL mapping as independent validation. These are the parents that are different. Are these also different when you split up linkage?

Flowering time is a great trait for studying GXE – there is interesting GXE here for sure.

Canonical trait where you’d expect GxE – pops are evolving different responses to the environment by modulating GxE in different ways.

Genetics side – evolving different modulators

Environment side – using different cues

Can disentangle this with common gardens

Can steer away from a specific system and disproving what people have thought in the past.

We have GxE flowering studies in Arabidopsis and helianthus – ben blackman’s work – and then in annual row crops. So there aren’t many perennial systems, there aren’t many wild systems where we have looked at GxE in flowering. We mostly know this from row crops, where there’s been domestication, and inbreds (except Helianthus).

Flowering time, altitude, and stress

Unique contribution here.

Another real opportunity in the field is joining information.

Autoregressive spatial covariance model

GDD and photoperiod changes

Critical daylength figure in supplement

Look at biomass – do the later flowering plants always have the highest biomass?

Try the mash cov idea

Pick GWAS figure and write a paragraph about it – we’re starting to use the GWAS panel and we’re excited about it. W/R. flowering or biomass manhattan and qqplot. Make in Inkscape maybe?

Send flowering date PCA analysis by site – justification for going to three sites in the future? Are these the megaenvironments? I mean no, not really. But whatevs.