**Questions**

1. What are the sources of variation in sporophytic traits?
   1. CMS, Chlorophyll, Photosynthesis
      1. Are northern populations different than southern populations?
      2. Are there differences between genets?
   2. Are sporophytic traits correlated with one another?

**Why**: Is there divergence between north and south due to environmental conditions and local adaptation?

What are the genetic and environmental sources of variation? Is there a heritable basis for the traits or is it due to phenotypic plasticity in these traits?

1. What are the sources of variation in gametophytic traits?
   1. Pollen germination, Pollen tube growth rate
      1. Are northern populations different than southern populations?
      2. Are there differences between genets?

**Why**

1. Is there a correlation between phenotypic expression of temperature tolerance traits in the sporophytic and gametophytic stages?

**Results**

1. Sporophyte
   1. CMS
      1. Are northern populations different than southern populations?
         1. Hot- No
         2. Cold- Yes
      2. Are there differences between genets?
         1. Hot- Yes
         2. Cold- No
   2. Chlorophyll
      1. Are northern populations different than southern populations?
         1. Hot- Yes
         2. Cold- Yes
      2. Are there differences between genets?
         1. Hot- No
         2. Cold- Yes
   3. Photosynthesis
      1. Are northern populations different than southern populations?
         1. Hot- No
         2. Cold- No
      2. Are there differences between genets?
         1. Hot- No
         2. Cold- Yes
2. **Gametophyte**
   1. *Pollen Germination*
      1. Are northern populations different than southern populations?
         1. Tmax- Yes
         2. Topt – Yes
         3. Tmin- No
      2. Are there differences between genets?
         1. Tmax- Yes
         2. Topt – Yes
         3. Tmin- Yes
   2. *Pollen Tube Growth Rate*
      1. Are northern populations different than southern populations?
         1. Tmax- No
         2. Topt – No
         3. Tmin- No
      2. Are there differences between genets?
         1. Tmax- No
         2. Topt – No
         3. Tmin- No