**Introduction**

- Wheat ranks third for global crop production (FAOSTAT, 2015) but genetic gains have been slow.
- Hybrid wheat offers an answer to improving grain yields.
- But how can we overcome the obstacles which plagued hybrid wheat in the past? We need to find traits that improve cross pollination success.
- Our objective was to identify germplasm which exhibited high anther extrusion which is a visual measure of anthers being exerted from the floret (see Figure 1).

**Visual Evaluation**

- Ratings were taken on a 1 to 9 scale with 1 being no anthers extruded and 9 being many anthers extruded (anthers covering the wheat spike).
- Ratings were taken on 290 genotypes encompassing 4 experiments in 2014 and 2015.
  - Some genotypes were replicated more than others.
- All experiments were alpha lattice designs.
- Analysis was done in R using the Agricolae package.

**Production Evaluation**

- A 25x25 diallel experiment was created consisting of 13 Nebraska and 12 Texas lines.
- Female parents were emasculated with the chemical hybridizing agent (CHA) Croisor® 100.
- Visual ratings were taken for anther extrusion, floral gape, and phytotoxicity due to CHA application.
- Female plots were harvested.
- Data analyzed using R.

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**Visual Evaluation**

- Genotypes differed significantly in all experiments for anther extrusion.
- On average, we were able to detect a 1.5 difference for anther extrusion between genotypes.

**Key Finding:** Genetic differences for anther extrusion exist. Freeman and Camelot were the consistent high and low performers having adjusted means of 7.8 SE 0.8 and 1.1 SE 0.8 respectively in 2014.

**Production Evaluation**

- The correlation between anther extrusion and grain yield shows that anther extrusion plays a key role in successful cross pollination but also that other factors need to be considered. Future work should look into anther size and weight, pollen travel distance, and pollen viability.

**References:**