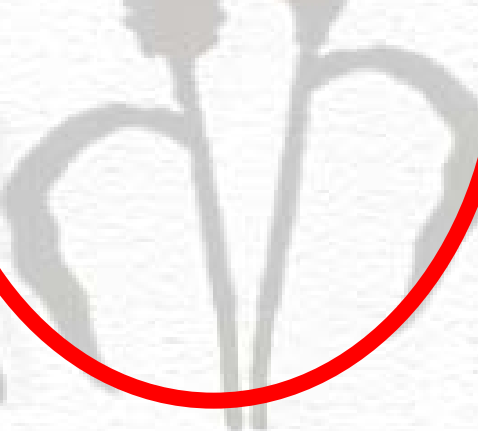




Feedback from Brainstorming Session I: Populations for combining crop improvement and genetic analysis in sorghum

Facilitated by Tom Hash
and Claire Billot





Sorghum

[*Sorghum bicolor* (L.) Moench]

Fifth most important cereal world-wide

- Grown in Semi-Arid Tropics, USA, Australia, Argentina
- Human consumption and animal feed (dual-purpose food-feed crop)
- Targets for marker-assisted breeding
 - genetic diversity assessment
 - **drought tolerance (stay-green)**
 - pest resistance
 - *Striga hermonthica*
 - shoot fly
 - stem borers
 - midge
 - head bugs
 - aphids
 - grain mold resistance
 - salinity tolerance
 - acid soil tolerance (Al^{+3} saturation)
 - grain and stover yield and quality traits





Pearl millet

[*Pennisetum glaucum* (L.) R. Br.]

Sixth most important cereal world-wide

- Predominately grown in Semi-Arid Tropics
- Human consumption and animal feed (dual-purpose food-feed crop)
- Targets for marker-assisted breeding
 - genetic diversity assessment
 - downy mildew resistance
 - drought and salinity tolerance
 - phosphorus acquisition from poorly soluble rock phosphate sources
 - improved ruminant nutritional quality of stover via enhances foliar disease resistance and altered fiber chemistry
 - grain density of Zn and Fe
 - grain and stover yield potential





Other small millets



Many species:
together grown on
>20M ha

- Finger millet (*Eleusine coracana*)
- Foxtail millet (*Setaria italica*)
- Proso millet (*Panicum ...*)
- Little millet (*Panicum sumatrense*)
- Tef (*Eragrostis tef*)
- Fonios
 - * Black (*Brachiaria ...*)
 - * White (*Digitaria exilis*)
- Barnyard millet (*Echinochloa frumatense*)
- Kodo millet (*Paspalum ...*)
- Job's tears (*Coix ...*)





Genetic stocks for sorghum



- **Biparental RIL sets**
 - Many cultivated x cult.
 - Few cultivated x wild
- **Nested RILs**
 - 25 populations with BTx623 common; balance "converted" sorghums
 - OK for grain for mechanized production systems
- **MAGIC populations and associated RILs**
 - Regional & global
- **Recurrent selection populations:**
 - cycle bulks available
- **Introgression line sets**





Genetic stocks for sorghum



- **TILLING** populations
 - Texas Tech University
 - University of the Southern Cross
- **GCP reference set**
- **Global Elite Material (GEM) panels would be an opportunity to link breeders to the reference set!**

Thanks from the sorghum team!

