

## **BRAINSTORMING SESSION**

### **Group C**

**Moderated by Theo van Hintum**

### **Feedback from Group C on Traits and Breeding Tools/Protocols**

**Reporter: Bonnie Furman**

#### Traits

1. Linking model crop traits with a focus on drought to a range of crop problems and orphan species.
  - a. How to use ideas of model crops to improve orphan crops
2. Phenotyping drought resistance
  - a. Decompose drought tolerance into its components; e.g. root systems, etc.
  - b. Component trait analysis of drought tolerance mechanism at inter and intra species level
    - i. Find out common phenotypes across species and look at genetic basis
    - ii. Goal of finding candidate genes for gene expression profiling within the component trait analysis
3. What traits are needed for a drought resistant variety in GCP crops
  - a. Focus on drought and determine secondary traits
    - i. Secondary traits should be secondary but still considered especially when associated or important for drought tolerance
4. Comparative phenotyping across/within crop families can be important for determining mechanisms for drought tolerance

5. Interaction between component traits both drought-drought and drought-secondary-trait associations for pyramiding

#### Protocols/breeding tools

1. High throughput inexpensive breeding tools/markers for drought or secondary traits with eventual use for NARS programs
2. Rapid development of MARS tools from existing QTL/genetic studies – getting existing info. into practice soon!
3. Push available progenitors to breeders/NARS – w/in policy/sanitation restrictions
4. Standardization guidelines for phenotyping within crops
5. Develop markers where don't exist: no marker = no map
6. Genes as breeding tools through MAS or possibly gene transfer where feasible
7. Available genes themselves should be made available as a breeding tool – IP policy applied.