# **Cluster of Activities Report Template**

**Cluster annual report - 2018**

**FP5.1 – Pre-breeding and Trait Discovery**

Authors

# MAIN ACHIEVEMENTS

# The **use of crop wild relatives (CWR)** in breeding programs has been conducted by ICRISAT, IITA and CIRAD/CERAAS. In Pigeon pea, a total of 2,321 introgression lines previously developed using C. *scarabaeoides* and C. *acutifolius* as wild donors were screened for pod borer infestation. In Chickpea, 17 introgression lines obtained from the complex cross [C. *arietinum* x (C. *reticulatum* x C. *echinospermumj*)] were identified having high levels of Botrytis grey mold resistance and good agronomic performance. New populations with other sources of resistance and different cultivated background are under development. In Pearl millet, nine introgression lines were identified from Advanced Backcross populations involving 2 *Pennisetum* *violaceum* accessions as donors with good level of flowering stage heat tolerance. In cowpea, 250+ wild relatives accessions were screened and led to the identification of ca. 15 potential sources of drought and heat tolerance. In peanut, previous successful approaches for the use of CWRs has been extended to new genome A species using new synthetics involving A. *correntina* and A. *villosa*. ABQTL populations are being developed with the same cultivated background and these synthetics as donors.

# In terms of **genetic resources characterization and population genomics**, whole genome sequencing of 8, 7, and 34 wild relative species of Chickpea, Pigeon Pea and Groundnut respectively has been conducted by ICRISAT and draft assemblies have been produced. In addition, pearl millet diversity was investigated by IRD team and partners, through genotyping by sequencing and GWAS analysis on two association panels, focusing on flowering and adaptation traits.

# In terms of **elite germplasm base broadening**, new BCNAM sorghum populations targeting post-flowering drought tolerance are being developed with 17 diverse donor parents and two elite recurrent parents.

Finally, a FPs cross-cutting activity on **Breeding Product Profiles** has been conducted as part of CoA5.1 through a joint workshop with the IAVAO partnership platform on Sorghum and Peanut Breeding Product Profiles.

# Outcome cases and policy influenced (proposed)

Revise and complete the suggested list of outcome cases and policies to be documented

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| --- | --- | --- |
| **Title of Outcome/ Impact Case Report (OICR) (30 words)** | **Description****(up to 80 words)** | **Geographic scope****(Specify if regional, national, sub-national and provide list of regions/countries)** |
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| **Name and description of policies modified in design****or implementation, informed by CGIAR research (20-50 words, ideally around 30 words)** | **Type****(policies/ strategies / laws/ regulations/ budgets/ investments/ curricula)** | **Whose policy is this?****The primary organization(s) either designing/promulgating the policy, law, investment (e.g. national government) etc. and/or within which it is operating.** | **Geographic scope****(Specify if regional, national, sub-national and provide list of regions/countries)** |
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# MAIN ACHIEVEMENTS WITH GENDER RELEVANCE

Generally, base broadening of cultivated diversity through the use of CWRs or genetic resources is expected to provide new traits with gender relevance. The development of demand-led breeding approaches (BPP workshop) is expected to generate varieties with better attributes reflecting the needs of end users especially women who are involved in transformation process. Finally, balanced gender representation in training activities will led to higher representation of women in research staff.

# MAIN ACHIEVEMENTS WITH Youth RELEVANCE

NA

# MAIN ACHIEVEMENTS WITH CAPACITY DEVELOPMENT RELEVANCE

# Most research activities involved students and visiting scientists. Specific training activities funded by CoA5.1 included PhD Student training in Corteva labs in Johnston, several training courses (Advanced R, Molecular Markers for Crop Improvement, NGS & Breeding, Advances in Genomics & Breeding Technologies).

Finally, awareness was raised among breeders of the fact that product profiles are not defined by breeders alone but through a process that must engage many value chain stakeholders.

# MAIN ACHIEVEMENTS WITH CLIMATE CHANGE RELEVANCE

NA

# MAIN GAPS AND CHALLENGES

NA

# MEASURES TAKEN AND ADJUSTMENTS PROPOSED

NA

# PARTNESHIPS: ACHIEVEMENT AND CHALLENGES

Please list up to three important partnerships for 2018, using the following table.

|  |  |  |
| --- | --- | --- |
| **Brief description of partnership aims (30 words)** | **List of key partners in partnership (one or more partners). Do not use acronyms.**  | **Main area of partnership (may choose multiple),** **Research/Delivery/Policy/Capacity Development/Other, please specify**  |
|  Use of CWRs in Peanut | CERAAS, Sénégal; University of Georgia, USA | Research |
| NARS in WA engaged around the topic of product profiles | Innovation and Plant Breeding in West-Africa (IAVAO) | Research, Delivery |
| Pearl millet heat and drought screening trials | Pioneer Hi-bred Pvt. Ltd., Bayer BioScience Pvt. Ltd., and Metahelix, CCS HAU | Research |

Please include collaborations with one or more CRPs or Platforms – or in some cases with other Centers, if these are not already core partners for your CRP.

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| --- | --- | --- |
| **Name(s) of collaborating CRP(s), Platform(s) or Center(s)** | **Brief description of the collaboration**  | **Optional: Value added, in a few words**e.g. scientific or efficiency benefits |
|  |  |  |

# FUND RAISING

NA