Breeding Resources Initiative

Sharifah Syed Alwee and Young Wha Lee
Breeding resources

Lead
Sharifah Syed Alwee

Deputy Lead
Young Wha Lee

1. Strategic Modernization
   Simulation and forecasting to inform investment decisions

2. Cost-effective Shared Services
   Routine use of tools, technologies and services

3. Performance Management of Consistent, Connected Operations
   Continuous improvement of operations

4. Smarter use of more data
   Larger, powerful shared datasets for analysis and decision-making

5. Innovation Development and Research Exchange (IDare)
   Adoption across the CGIAR-NARES breeding network
Breeding Resources – geographic focus of results

ESA
>50 breeding programs supported by BR
Priority crops: Maize, cassava, potato, sweet potato, rice;
Partners: CIMMYT, CIP, IRRI, IITA, KARLO, AfricaRice, DARS, IIAM, DR&SS, TARI

WCA
>20 breeding programs supported by BR
Priority crops: Maize, cassava, yam, rice;
Partners: IITA, CRI, SARI, ISRA, AfricaRice

SA/ SEA
>5 breeding programs supported by BR
Priority crops: rice, maize
Partners: CIMMYT, IRRI

LAC
>10 breeding programs supported by BR
Priority crops: Rice, cassava, potato, sweet potato, forages, beans, wheat, maize
Partners: CIP, CIAT, CIMMYT

CWANA
1 breeding program supported by BR
Priority crops: Wheat
Partners: ICARDA

SA/ SEA
>5 breeding programs supported by BR
Priority crops: rice, maize
Partners: CIMMYT, IRRI

LAC
>10 breeding programs supported by BR
Priority crops: Rice, cassava, potato, sweet potato, forages, beans, wheat, maize
Partners: CIP, CIAT, CIMMYT

CWANA
1 breeding program supported by BR
Priority crops: Wheat
Partners: ICARDA
## Progress 2022 - overview

<table>
<thead>
<tr>
<th>Work Package</th>
<th>Initial Focus Area</th>
<th>Scope Changes</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1: Strategic Modernization</strong></td>
<td>Informed investment into breeding modernization, guided by quantitative genetics simulation and costing of breeding programs and services</td>
<td>Costing of breeding programs now led by ABI. Quantitative genetic simulation moved to ABI. <strong>Focus on services costing and forecasting.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>2. Cost-effective shared services</strong></td>
<td>Cost effective data generation and analysis services through consolidation and collective bargaining</td>
<td>No major change in data generating services. Changes in data analyzing services: 1. Pause in hiring global breeding analytics lead as strategy and sponsorship of setting up a service unit is re-assessed. 2. Bioinformatics support capacity uncertain/deprioritised in funding.</td>
<td></td>
</tr>
<tr>
<td><strong>3. Performance management of consistent, connected operations</strong></td>
<td>Harmonize processes in breeding operations for generation of quality data across the CG-NARES network through a quality management system.</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td><strong>4. Smarter use of more data</strong></td>
<td>Reliable, responsive and future-looking Data Management System (DMS) for modern breeding.</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td><strong>5. Innovation Development and Research Exchange</strong></td>
<td>Increase global adoption of modernized breeding through a dedicated Modernization Facilitators service and change management support</td>
<td>Removed “modernization facilitator” – role determined to have too much overlap with CG-NARES network coordinators in ABI. Focused innovation scaling to those relevant for WP 2, 3, and 4. Change management focus shifted to continuous improvement training and support, complementing Work Package 3. Reduced scope of capacity development to that relevant for delivery or uptake of services.</td>
<td></td>
</tr>
</tbody>
</table>
Breeding Resources – 2022 key results

TOTAL of 123 results

3,093 people trained

Innovation readiness: almost 50% of the reported innovations are at stage 9 (Proven Innovation), ready to be scaled
Success in 2022 – EBS Adoption

Current EBS users and adoption candidates for 2023:

- Centers using EBS in operations:
  - CIMMYT Maize
  - IITA Maize
  - CIMMYT Wheat
  - IRRI Rice
  - AfricaRice Rice

- Currently adopting:
  - ICARDA wheat
  - IITA soybean

- Soon to adopt:
  - IITA cowpea

- Expressing interest in adopting:
  - CIAT forages
  - CIAT rice

- Want to learn more:
  - BRRRI (Bangladesh, rice)
  - PhilRice (Philippines, rice)
  - NARO/NaCRRRI (Uganda, Maize, Cassava, others)

- NARS expressing interest:
  - Seed Co (Zimbabwe, maize, wheat, legumes, others)

- Private Sector expressing interest:

Dr. John Derera during event that launched EBS Maize at IITA in April 2022.

October 2022 – In-person training at AfricaRice, M'bé Station.
Success in 2022 – Genetic Innovations Process Model

The CGIAR Breeding Process Model (BPM) connects Genetic Innovations Departments

Blueprint and Benefits

<table>
<thead>
<tr>
<th>Current</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breeding teams, centers, regions and stations define their processes in isolation in the absence of an overarching architectural model.</td>
<td>All Breeding processes follow the guidance of a CGIAR Breeding Process Model</td>
</tr>
<tr>
<td>Transparent and structured overview, and hierarchy of all breeding processes across crops and functions</td>
<td></td>
</tr>
</tbody>
</table>

Benefits

- Improved comparability of performance and cost between centers and crops
- Easier to identify and prioritize improvement opportunities
- Faster and more effective scaling of process improvements
- Higher level of standardization facilitates technology design, deployment and adoption
- Improved cross-crop- and center communication through "one language"

Mi = Market Intelligence; TPE = Target Population of Environments; LC = Lifecycle
Success in 2022 – Trialing & Nursery support services

Irrigation system layout CRI/CSIR
- Kumasi Ghana

Seed processing infrastructure
KARLO/CIMMYT - Kiboko / Kenya

Example of infrastructure projects being implemented (CtEH fund), supported by BR team
Success in 2022 – Capacity Building

Field day
KARLO - Kakamega/ Kenya

Continuous Improvement training
CSIR/ CRI – Kumasi/ Ghana