Excellence in Breeding Platform

Michael Quinn, EiB Lead
The objective

Accelerate & increase rates of genetic gain by breeding programs for the developing world

Vision of success
Crop and animal breeding programs are delivering high rates of productivity gain to farmers in the developing world through genetically improved cultivars and breeds that are resilient, nutritious, and desired by the market.
The EiB approach

• **How?** Working with breeders to define best practice and which tools and services would increase rate of genetic gain per dollar invested. Then, enabling this to be implemented!

• Four regional hubs: West Africa, South/Sub-Saharan Africa, South Asia, and, Latin America.

• **From where?** EiB, CGIAR, ARIs, private sector

• **Benefit to:** Public and private sector breeding programs targeting low- and middle-income countries
Five focus areas = Modules

Module 1: Breeding program management
Module 2: Optimizing breeding schemes
Module 3: Genotyping / sequencing tools and services
Module 4: Phenotyping tools and services
Module 5: Bioinformatics, biometry and data management tools and services

Creating synergies to accelerate genetic gains of breeding programs targeting the developing world

The Toolbox
## Areas of focus

<table>
<thead>
<tr>
<th>Breeding program management</th>
<th>Breeding program optimization</th>
<th>Genotyping</th>
<th>Phenotyping</th>
<th>Bioinformatics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender and market responsive product profiles</td>
<td>Use of predictive tools; phenotypic or genomic</td>
<td>Use cases for MAS, GS and QC inc. trait pipelines</td>
<td>GxExM &amp; Targeting</td>
<td>Landscape analysis &amp; strategy</td>
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<tr>
<td>Stage-gate process</td>
<td>Integrating trait breeding with core breeding</td>
<td>Cost-benefit analyses</td>
<td>High throughput phenotyping inc. indirect selection</td>
<td>Software</td>
</tr>
<tr>
<td>Genetic gains assessment</td>
<td>Optimizing breeding programs</td>
<td>Cost benefit analyses</td>
<td></td>
<td>Data standards</td>
</tr>
<tr>
<td>Breeding program assessments</td>
<td></td>
<td></td>
<td>Automation &amp; Mechanization</td>
<td>Biometrics</td>
</tr>
<tr>
<td>Access to mentors</td>
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<td>Access to service providers</td>
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</tr>
</tbody>
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Best practices and training modules in the Toolbox (QA)
Toolbox

• Online knowledge interface to access resources provided across modules 1 to 5

• For communication, documentation of know-how, access to training and to service providers, and, of any outputs that can be shared electronically (i.e. software)

• For Members, Contributors and Users
With whom EiB will interact…

• Members
• Contributors
• Users
With whom EiB will interact…

Members (Beneficiaries)

- Sign membership agreement, describing commitment to work with the EiB
- Agreement is signed by breeding teams and their managers.
- Available (for free) to all CGIAR breeding programs and (initially) 4 selected pilot NARS. Additional availability on a cost recovery basis.
- Members to commit to breeding program improvement plan.
- Will receive full EiB support to implement breeding program improvements.
- Full access to the toolbox, including restricted member sites.
- Potential to include over 100 individual programs.
- Decentralized training strategy focused around four regional hubs in South Asia, E&S Africa, W Africa, Latin America.
Membership agreement

What is a breeding team?

• Breeder(s) and breeding support scientists consistently working together on a species-by-target environment combination

• A breeding team will; make crosses, develop and test new lines.

• A distinct breeding team will; have distinct objectives (perhaps target environment) or species (durum wheat vs bread wheat).

• Team leader will be key contact for EiB to understand needs and follow up with for implementation
Initial members

- 4-5 pilot NARS
- Africa Rice
- CIAT
- CIMMYT
- CIP
- IITA
- ICARDA
- ICRAF
- ICRISAT
- ILRI
- IRRI
- WorldFish

Initial target:

- 60 – 100 breeding teams in Asia, Africa, Latin America
- Reached via four training hubs

In future: more members possible

- Self funded
- Third party funded
With whom EiB will interact…

**Contributors**

- Anyone contributing to achieving breeding program improvements through EiB, by providing tools, best practices, services, training etc.
- EiB will lead the dissemination of these tools and best practices across the system
- Will come from EiB staff, CGIAR, Private sector, ARI’s…. 
- Can register through the toolbox.
- Interaction with members will occur through workshops (personal and virtual), individual one on one mentoring / consultation and through the toolbox.
- Focus is on enabling members to implement the seven main ambitions.
Key contributors

- CGIAR centers
- Cornell University
- Diversity Array
- Du Pont/Pioneer
- IBP
- Monsanto
- Queensland University
EiB Past 12 months

- CGIAR breeding center visits by Marianne Banziger and Michael Quinn; to gain first hand insights into opportunities, challenges, and sources of excellence.
- Development and distribution of membership agreement.
- Development of templates for capturing status of breeding programs.
- Surveys executed and summarized.
- Workshops and Hackathons.
- Toolbox is now live!
New Positions

- Module 1 leader – George Kotch (Full time!)
- Module 2 leader – Very strong candidates in final stages of selection process
- NARS Coordinator - Very solid applications received
- Automation and mechanization specialist - Very solid applications received
- Product manager / Market researcher – Applications still being received
Outcomes expected from this week

For each of the areas of focus:

• What are the changes we're wanting to enable. What is best practice? What are the highest priorities?

• What training, mentorship (skills and know how), tools or services need to be made available and utilised/implemented to achieve the above objectives?

• Where are we currently at in terms of development of above training, tools and services?

• If further development is required, what is the plan (and schedule) for development?

• For all training, tools and services, what is the plan for delivery to breeding teams? Including location and schedule.
EiB objective & approach

- **Objective:** Accelerate & increase rates of genetic gain by breeding programs for the developing world.

- **Approach:** Working with breeders to define best practice and which tools and services would increase rate of genetic gain per dollar invested. Then, enabling the above!

- **Let’s go!** I hope you’re all as excited about this opportunity as I am. Let’s get started!
Suggestions?

Questions?

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