EiB NAREs Engagement:
Strategy and Progress

NAREs Breakout Session
EiB Annual Meeting 10-12 Nov 2020

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EiB NAREs Coordinator
NAREs & EiB

• Mod 1: Product Design, Program management
• Mod 2: Optimizing Breeding Schemes
• Mod 3: Genotyping tools and services
• Mod 4: Phenotyping tools and services
• Mod 5: Bioinformatics, biometrics, data management
NAREs & EiB

- Mod 1: Product Design, Program management
- Mod 2: Optimizing Breeding Schemes
- Mod 3: Genotyping tools and services
- Mod 4: Phenotyping tools and services
- Mod 5: Bioinformatics, biometrics, data management

NAREs Linkage: Support NAREs programs directly and provide linkage to EiB modules as required.
EiB NAREs Linkage Team

Biswa Nath Das
EiB Global NAREs Coordinator
• Nairobi

Sanjay Katiyar
Breeding Optimization specialist - Asia
• Hyderabad

Lennin Musundire
Breeding Optimization Specialist - Africa
• Nairobi

Ted Carey
West Africa and RTB Breeding Consultant
• Ghana

Manilal Williams
Genotyping Demand Planning and MAS strategy consultant
• Canada

Regional Consultants
EiB NAREs Engagement

**Vision:** NARs breeding programs adopt modern practices and run continuous, market led breeding pipelines to regularly deliver competitive varieties.

**Vision:** CGIAR and NARs teams work collaboratively across a given breeding pipeline with clear roles and responsibilities in order to drive genetic gain on farmers fields.
1. Modernizing NAREs Breeding programs Per Se
1. NAREs modernization: Stages of Engagement

- Identify Country Crop Priorities
- Baseline Needs Assessment
- Rating of Breeding Program
- Customized Improvement Plan

Implement Plan
## NAREs Tier Rating

<table>
<thead>
<tr>
<th>Tier</th>
<th>Tier Type</th>
<th>Breeding program Description</th>
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<tbody>
<tr>
<td>Tier 1</td>
<td>Mature</td>
<td>Well-budgeted pipeline aligned to market size and needs. Regular release of internal germplasm with clear &amp; robust connections to seed systems.</td>
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<tr>
<td>Tier 2</td>
<td>Mid Stage</td>
<td>Continuous pipeline, product profile led pipelines, closed elite pools, regular release of both internal and external germplasm. Pipeline is undersized relative to market size and needs.</td>
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<tr>
<td>Tier 3</td>
<td>Early Stage</td>
<td>Regular testing &amp; release of CGIAR germplasm. Some internal germplasm dev but pipelines non-continuous &amp; underfunded.</td>
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<tr>
<td>Tier 4</td>
<td>Testing</td>
<td>Regular testing and release of CGIAR germplasm. Internal breeding capacity is predominantly trait focused.</td>
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<tr>
<td>Tier 5</td>
<td>Dormant</td>
<td>No internal germplasm dev, irregular testing of CG and partner germplasm. Limited market information.</td>
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Customized Improvement Plans

• Each NAREs are different with separate needs
  – Individual gap analysis for best support
  – Determine the program’s ambition and needs and develop plan accordingly (*not all programs need to be Tier 1…*)
  – Hands-On Support to implement change

• Align to CGIAR Support
  – Compliment CGIAR support
  – Catalyst to fast track ongoing support
  – Provide an extra pair of hands
NAREs Engagement 2020

Rice, Maize, Cassava, Musa, Sweet Potato
HiRice

- Short term, catalytic project
- Rapid deployment of modern tools, services and methods.
- Eg product profiles, QA/QC genotyping, Digitization of operations etc

Impact
Increased performance of NARS rice breeding programs in 7 countries representing 37% of the total rice growing area in Africa.
Costing

- Operational Costs being Costed for 1st time
- Costs used to develop budget
- High Cost centers identified and addressed

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost per Row (USD)</th>
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<tbody>
<tr>
<td>Crossing Nursery by Hand</td>
<td>10.57</td>
</tr>
<tr>
<td>Sell Pollination Nursery</td>
<td>11.34</td>
</tr>
<tr>
<td>Test Crossing</td>
<td>5.88</td>
</tr>
<tr>
<td>Off Station Trialing*</td>
<td>2.52</td>
</tr>
</tbody>
</table>

Recommendations

1. Reduce phenotyping for high heritability traits
2. Mechanize high cost centers
3. Switch to DH or SSD from pedigree
Training and Scaling

- 6th October 2020: Continuous Improvement Webinar
- 19th November 2020: Genetic Gains Webinar
- Jan/Feb 2021: Market Segments and Product Profiles

Scaling
- Work through regional hubs (CORAF, ILCI, WB)
- Institutional Coordinators and Specialists
2. Building more effective CGIAR-NAREs Breeding Networks
Why Networks?

• Breeding takes time (pre-breeding to seed systems)
  – It is impossible for one team to manage the entire process
  – Diverse skills required for various components of pipeline

• Networks provide critical mass / scale
Effective CGIAR Co-ordinated Breeding Networks: Roles and Responsibilities

Breeding Program Category
- Category I: Donor Development
- Category II: Population Improvement
- Category III: Product Evaluation & Release
- Seed Systems and Portfolio Management

CGIAR Population Improvement
- Donor Development and Trait Introgression
- Trait Mining

NAREs / SMEs Population Improvement
- NAREs/SMEs Early Stage Testing

CGIAR Early Stage Testing
- Final Stage Regional Testing
- On Farm Testing, PPB, Release & Licensing

Final Stage Regional Testing
- Seed Systems: Production and Delivery
- Track Adoption, Market Intel, Prod. Manag.

CGIAR Regional Product Profiles and Pipeline Investment Cases

Regional Product / Portfolio Manager (CG/NAREs)
How can we increase Impact?

• Clear definition of roles, responsibilities & KPIs
  – Weakness at any point risk success of entire pipeline
• Clear handover points and stage gates
• NARs lead downstream components
• NARs lead market surveillance

The researchers found many studies that conclude that smallholders are more likely to adopt new approaches – specifically, planting climate-resilient crops – when they are supported by technical advice, input and ideas, collectively known as extension services.
Suggestions and Feedback

How can EiB best serve NAREs and help build stronger networks?
Thank you for your interest!

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