Accelerated Breeding 2025 Goals

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AB Goals Introduction

The purpose of these Goals is to help you to know where to focus during what we know is a tumultuous time.

There has been "a LOT of important progress made" and we are "on track". These goals build upon the Nov 2024 Dubai discussion.

Strong need for prioritization.

Prioritization

- CG is investing in too many traits, pipelines, market segments, and countries. Doing a little bit everywhere will not result in what GF are calling "Breakthrough Products".

- In addition, we must align with GF, our largest funder.

- We also hear from breeding teams they need more funding to increase genetic gain in their most important pipelines.

- Prioritization MUST be done by Crop Leads – neither breeding teams nor B4T can drive this.

- It is understood that more funding is needed, but prioritization is not about that. This is about achieving maximum impact with the funds you have.

What are these goals about?

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1. Prioritization (Goals 1 and 2)

2. Improving methods and approaches to breeding (Goals 4-7) and fundraising (Goal 3)

   - Improved breeding methods make us more successful AND creates an investment case for fundraising

3. Support, coordination and enablement (Goal 8)

To implement Goal #6, requires funding to be focused on priority pipelines and products, and therefore further makes the case for prioritization.

The other goals are not about "more funding", they're about doing things differently to be more successful.

1. Breeding Strategy – Product Design

While we have many good quality TPPs (~65%), some TPPs try to improve too many essential traits which will lead to negligible breeding progress.

   a. TPPs must target only 1-2 (max 3) value propositions for improvement. Less important traits should be changed to "Maintain" or "Nice-to-have".

   b. Check for uncorrelated or negatively correlated traits within value propositions

   c. Decide together with partners - What value proposition(s) and traits will result in farmers, markets, consumers wanting to replace their current variety.

Evidence: Updated national and regional TPPs in the Breeding Portal
Support: ReFOCUS, TRANSFORM, ACCELERATE

**This is about prioritization (of traits)

2. Breeding Strategy – Priority setting - Pipelines

For the first time, we have invaluable data aligning development indicators with Breeding Pipelines, Market Segments and Country data (three worksheets in shared file). Use it to make strategic decisions, where to invest, in which breeding pipeline, which market segments, and which country.

- What are your blockbuster pipelines and why?

- How do you rank the relevance and opportunity of your pipelines from 1 to ...n# pipeline?

- Make this ranking and associated rationale transparent within your team.

2. Breeding Strategy – Priority setting – Market Segments

How do you rank the relevance and opportunity of market segments / TPPs you're breeding for and why? Consider:

- Can a truly breakthrough product be developed and delivered?

- The opportunity for impact associated with the market segment (e.g., small ha generally = low impact).

- Extent of farmer demand for the TPP.

- Alternative suppliers of improved varieties.

- Is there a functional seed system in place; or is expected to be in place within next 5 years?

- Other relevant factors e.g., future game changers.

The above exercise will likely create opportunity to reinvest resources from bottom half of market segments / TPPs to the most relevant and impactful market segments, and right size breeding efforts.

2. Breeding Strategy – Priority setting – Countries

What countries makes most sense for you work with and deploy to?

It makes sense to work in countries

1. Where you find champion partners

2. Where your crop / TPP is most important. Hint: Low ha normally = less important

Evidence: Updated breeding strategy and investments, and roles of partners in the Breeding Portal.
Support: ReFOCUS, TRANSFORM, Inclusive Delivery

3. Resource Mobilization

We need to work together across crops to develop a stronger pitch for resources. We suggest to aggregate highly relevant TPPs into clusters describing how products will appeal to its target market and investors, where and why we are investing and with what partners (derived from your prioritization in 1&2).

Example are:

1. Climate resilience

2. Food security / reduced food price inflation

3. Improved nutrition

4. Reduced GHG emissions

5. New or increased income opportunities

Evidence: A high-quality fund-raising strategy is being launched/invigorated together with important champions (such as those that supported the World Food Prize laureate letter).
Support: AB, MI, B4T

4. TD&D re-focused

Currently, TD&D efforts are being directed towards too many traits. Many have limited investment and insufficient linkages with and benefits to breeding pipelines.

- Prioritize traits based on: 1. Needs of prioritized TPPs; 2. Lack of genetic variance (in elite); 3. Strong case for cost-effective marker-assisted approach
- Apply harmonized stage-gated approach that both guides and supports decision making in which TD&D efforts to invest.

Evidence: TD&D activities are documented in a newly established module in the Breeding Portal (and no longer in EXCEL SharePoint files).
Support: DISCOVER, ACCELERATE

5. Breeding Teams meeting minimum standards

1. Work with the right germplasm base = includes essential TPP traits at high frequency
2. Manage the program in a database. **Use Bioflow** – a marvelous tool to streamline data analysis**.**
3. Use improved statistical designs.
4. Document breeding schemes in Breeding Scheme Manager aligned with TPP and optimize scheme.
5. Implement recommended check strategy and assess genetic gain.
6. Use markers to apply QA/QC
7. Only run OFV (and even Late Testing) for products that are potentially breakthrough products
8. **When** OFV is done, each genotype is at a minimum of 30 locations and capture gender disaggregated feedback

Evidence: Breeding Portal: Bioflow uploads for MET Data and genetic gains; updated cycle times for breeding pipelines.
Evidence: Breeding Scheme has been documented in the Breeding Scheme Manager
Support: ACCELERATE, TRANSFROM for NARES, BR

*These are about changing the method and are not requiring additional investment!

6. Breeding/Development teams accelerate genetic gains

With investments focused on fewer essential traits and fewer Pipelines, TPPs and countries, crop teams aggressively;

1. Fix or discontinue trial sites/approaches that consistently result in poor quality data.

2. Innovate to develop high-throughput phenotyping for all the essential TPP traits.

3. Increase the relevance of Early Testing – important goal identified in the Dubai meeting:

    i. Ability to test for all essential TPP traits in Early Testing Y1.

    ii. Have full knowledge of relevance of Early Testing. Where needed (likely in many cases) change or add locations and/or add managed stress trials.

    iii. Ensure inclusion of conditions representative of farmers' conditions and management earlier in the breeding process

4. Further shorten cycle time

6. Breeding/Development teams accelerate genetic gains

5. Further mainstream molecular breeding (MAS+GS/GAB) in the breeding process with clear role clarity between breeders, molecular geneticists and biometricians.

6. Implement genomic assisted breeding to increase accuracy and genetic variance, selection intensity and reduce cycle time.

Evidence: Breeding Portal: Bioflow uploads for MET Data and genetic gains; updated cycle times for breeding pipelines.

Support: ACCELERATE, BR

7. TRANSFORM / Sub-regional teams

1. Subregional partners (in funded regions) identify/verify 1-3 most impactful, in-demand value propositions.

2. Advancement decisions are made jointly with partners.

3. Regional technical planning e.g., new crosses, is conducted jointly with regional partners.

4. Regional Crop networks with few scaling partners, identify and work with a wider range of effective scaling partners; or discontinue breeding for that market segment.

5. Standardized network agreements are being implemented with Level 1 and Level 2 partners.

6. On a network basis, NARES and CGIAR partners have their costs documented.

7. A percentage of network operational costs (aiming for 30% by 2030) is directed to NARES to support breeding and testing efforts.

Evidence: Updates in the Breeding Portal: variety releases and associated scaling partners.

Support: TRANSFORM

8. Cross cutting development activities

Provides support and coordination to breeding teams to be successful with above goals.

We have set priorities on where we will focus.

8. Cross cutting development activities

1. The ACCELERATE/QG team will:
   a. Provide a method of assessing impact of breeding scheme changes to predicted rate of genetic gain. **Evidence:** A new Bioflow module is in operation.
   b. Innovative ways of capturing other KPIs that measure breeding pipeline health. And work with BPAT to have aligned recommendations.
   c. Identify critical and criticized Bioflow modules and ensures with SUPPORT they are being improved. **Evidence:** new Bioflow modules are in operation.
   d. Develop a Bioflow module to measure genetic variance
   e. Assess how to better mainstream state-of-the art high-throughput phenotyping know-how
2. The DISCOVER team
   a. Continues to work on a common-decision tree to support TDD teams to avoid common pitfalls and implement current best practice approaches. **Evidence:** A common decision tree is available.
   b. Conceptualize the stage gates for TD&D efforts, go/no-go decisions and handover to breeding teams, and establish a TD&D module in the Breeding Portal that captures this. **Evidence**: The TD&D module developed and deployed.
3. The ReORGANIZE team
   a. Establishes the skills sets required for each breeding stage and how to optimize organization.
   b. Works with ENABLE and SUPPORT so that indicators so far not captured in the harmonized crop report get integrated.
4. The TRANSFORM team will support
   a. NARES specifically in implementing these approaches
   b. Regional networks to Co-Design and Co-Develop products
   c. Regional crop networks to coordinates capacity development (training, infrastructure etc) across the network.
   d. Networks to define members roles and comparative advantage based on a standard and objective assessment.

Additional messages

✓ The Breeding Portal documents the changes we make in our breeding strategy and the key results we achieve.

✓ The forthcoming harmonized crop report establishes linkages with other systems (GloMIP, Bioflow, EBS, Breeding Scheme Manager) and extracts crucial metrics and supports decision making.
  - We invite breeding teams to provide input and suggestions for additional dashboard driven analytics.

✓ The harmonized crop report will autogenerate evidence files for PRMS innovation reporting.

✓ Crop Teams are encouraged to use the PMP to document "workplans" for pooled and bilateral funding. The PMP allows crop teams to define who is responsible for what, and who commits to which deliverable or goal with what source of funding.

✓ The Breeding Portal, GloMIP, PMP, EBS or BreedBase, Bioflow, the Breeding Scheme Manager, the Service Portal are our key systems tools. Crop teams get trained in using the functionality applicable to them, and superusers in using the wider range of functionalities.

Thank You!

Questions and Discussion

CGIAR
Science for a food-secure future