

Evaluation Management Response

Evaluation title: Evaluation of CGIAR Excellence in Breeding Platform

Date of Management Response: 20 May 2022

Overall response to the evaluation:

We strongly welcome the recommendations and we have provided carefully considered responses to each, balancing our ambitions to improve performance and results with the realities of our financial and staff resources. We fully accept seven of the nine recommendations, and partially accept the remaining two – the only deviation for these two is that we propose that science oversight of GI will be more effective at the Action Area level than at the level of individual Initiatives, in order to promote coherence and cohesion, both conceptually and operationally.

In terms of process, the management response has been prepared through a three-week structured participatory exercise with relevant leadership and staff across CGIAR's Divisions and Centers, under the overall leadership of the Global Director for Genetic Innovation and applying the following principles:

1. We fully accept the validity of the Evaluation and we thank the Advisory Services and the Evaluation teams for their work.
2. CGIAR is a learning organization and we respond in a spirit of openness, engagement, self-reflection, and respect for each other.
3. We focus on the recommendations and our shared future, rather than spending time re-examining or querying the findings.
4. We are producing a collective Management Response, as it's not only specific Initiatives or teams that need to carry forward the actions and changes – it is all of us in C[GI]AR.
5. We keep this process fully internal to CGIAR until we co-deliver the Management Response alongside the Evaluation to the System Board & Council.
6. We are agile not heavy handed, and deliver the Management Response in under a month.
7. We are committed to delivering the Management Response going forward – and our Portfolio Performance Unit will keep track of how we are doing.

Person-in-charge for Follow-up to Management Response: Global Director Genetic Innovation; currently Sonja Vermeulen (a.i.)

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RECOMMENDATIONS and ACTIONS:

Recommendation 1 (copied from the Evaluation Report): **At the system level, One CGIAR must address issues of “end-to-end” thinking and ensure that the career development of all staff is well managed.**

- a) Units should establish mechanisms for **bringing teams and individuals** together to ensure trans-disciplinary teamwork, a sense of belonging, and awareness of the big picture and to encourage new ideas, collaboration, and synergies between groups. The risk of a silo mentality is high, particularly for units with wide geographical spread.
- b) Make available a professional, strategic, and well-resourced **HR function** to all staff to facilitate mitigating the problems associated with a highly diverse multinational organization.
- c) Maximize the value of its human resources through the **developing career** streams that separately identify science and management roles, competencies, and skill level(s), and in particular recognize and reward those with excellence in skills such as breeding as highly as excellence in research outputs.

Management Response

Fully accepted

Partially accepted

Not accepted

Management Follow-up

Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
<p>a. <u>Enabling trans-disciplinary teamwork:</u> Activate and maintain mechanisms for trans-disciplinary teamwork within and GI and with other Science Groups, including: (i) annual GI forum (ii) transdisciplinary webinar series (iii) deliberately shared functions (across GI Initiatives) including partner engagement, communications and MELIA (iv) co-management i.e. common reporting and coordination meetings for GI Initiatives (v) progressively more deliberate strategy-making and coordination across Science Groups, so that GI becomes part of a larger food</p>	<p>GI Senior Management team (Global Director and 4 Senior Directors)</p>	<p>Continuous – with annual reporting through internal mgmt. systems</p>	<p>Yes <input type="checkbox"/></p>	<p>No <input checked="" type="checkbox"/></p>	



Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
system transformation strategy.					
b. <u>People and Culture</u> : Establish a unified professional, strategic, and well-resourced HR function to all staff across CGIAR.	Global Director, People and Culture	2021 through 2024	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
c. <u>Career pathways</u> : This will be a multi-year endeavor. An early step will be to identify our current spread of skills and skills needs, figure out how these are map associated career pathways, and analyze gaps in GI capacities and career pathways / reward systems.	GI staff member or consultant, under guidance of Global Directors GI and P&C, with input from TPMU	September 2022 for the initial analysis; 2022-24 for building the wider strategy for multiple career pathways	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Will require additional (not yet budgeted) time / funding to undertake the analysis. 0.2 FTE for one month.

RECOMMENDATIONS and ACTIONS:			
<p>Recommendation 2 (copied from the Evaluation Report): One CGIAR units must set and meet high standards of governance and project management, with clear roles, responsibilities, decision-making, and accountability systems. This should include their independent steering committees, mechanisms to ensure collaboration and teamwork, deliberate change management, and transparency regarding grant-awarding processes.</p> <p>a) Ensure that a strong and independent steering committee are in place from the start of the program, composed of fully independent members with recognized management and scientific expertise. The agreed committee ToR should stipulate providing support to, and oversight of, management. Its ToR should include the review of progress toward and quality of planned results, and assistance with strategic shifts in programs.</p> <p>b) CGIAR units should develop and implement best practice change management approaches, including by ensuring that staff has access to basic training, with deep immersion for those directly involved in designing and managing change. The unit should consider the merits of a separate program management team with specialists in change and program management, focusing on the delivery of larger-scale projects and supporting those working on smaller-scale projects. It should be recognized that those who are excellent in research and breeding may not also have the skills and temperament to lead change management.</p> <p>Ensure that grant-awarding processes are transparent and follow clear guidelines while keeping administrative burdens to a minimum.</p>			
Management Response	<i>Fully accepted</i> <input type="checkbox"/>	<i>Partially accepted</i> <input checked="" type="checkbox"/>	<i>Not accepted</i> <input type="checkbox"/>
Management Response (commentary):	<p>Management strongly welcomes the recommendations on program oversight and change management, while noting that the oversight of science and management needs to be harmonized with arrangements across CGIAR (hence partially accepted).</p> <p>In June 2022 GI anticipates the launch of an oversight group to provide an <u>advisory function</u> for the whole Action Area, rather than for independent Initiatives (subject to support from the recommendations of the current system-wide review of science oversight). GI anticipates that this group will be very active, meeting monthly and advising widely. Membership tbc.</p> <p>GI fully embraces the need for major investments in <u>change management</u> and organizational development, and commits to actively building new ways of working between GI units, CGIAR breeding programs and NARES colleagues. A strategy will be drawn up and implemented that will include objectives and</p>		

	<p>principles, and actions at the levels of individuals (e.g. mentoring, training), teams and at the whole-system level (culture change). We will consider dedicated staffing and operational structure changes (e.g. dedicated sub-units).</p> <p>In the short term, <u>transparency in funding allocations</u> is a priority for the 2023 FINPLAN, and in the longer term, priority-setting will be progressively more sophisticated and responsive to the needs of poor producers and consumers via the Market Intelligence Initiative.</p>
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Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
a. <u>Advisory function</u> : Establish GI oversight group.	Global Director GI	June 2022 and onwards	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
b. <u>Change management</u> : Prepare and implement strategy on change management and organizational development, aligned with wider CGIAR processes.	GI Senior Mgmt Team (Global Director and 4 Senior Directors), working closely with EMT, SLT, Global Director P&C, and GI leadership in Centers and Initiatives	December 2022 for full strategy and initial demonstrable progress	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	We anticipate that change management and organizational development will require substantial investment of money, time and expertise. GI leadership will strongly advocate for system-wide change management investments to EMT and SLT.



Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
c. <u>Transparency in funding allocations</u> : Propose a transparent process for allocation of pooled funding to Center breeding programs for the 2023 year. In the longer-term Market Intelligence will lead prioritization of market segments and breeding pipelines.	Task Team convened by Global Director GI	FINPLAN 2023 (January 2023) and FINPLANS in subsequent years	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

RECOMMENDATIONS and ACTIONS:			
<p>Recommendation 3 (copied from the Evaluation Report): Successful project planning and management depends on clarity of goals and purpose, a comprehensive results framework based on a theory of change, and integrated monitoring, evaluation, with learning (MEL) mechanisms. The more complex the program, the more important it is to ensure that CGIAR units:</p> <ol style="list-style-type: none"> Clearly define the goal of the unit and its subunits in the chain from science delivery and coordination through to end users and consumers (mainly around decision support services). Develop a corresponding strategy with clear timelines and priorities and ensure strong engagement of downstream stakeholders in the process. Develop a clear results framework aligned with the 2022–2030 CGIAR Results Framework. Operationalize by incorporating all levels of results and milestones, from outputs through to impact, based on agreement with CGIAR, donors, and other stakeholders such as NARS. Results frameworks for CGIAR Initiatives should serve as a common reporting framework for all partners, significantly reducing transaction costs. Ensure that SMART interlocking objectives with deliverables, covering both science and non-science aspects, are in place for each team and individual, and ensure effective feedback loops for performance management, reporting internally and externally. Develop a theory of change and identify assumptions underpinning the proposed levels of change and corresponding milestones and indicators, based on lessons learnt. Donors and other stakeholders should participate in this process to ensure that the ToC covers all evidence-based assumptions and risks considering distinct lessons learnt. All funding sources should be linked to the ToC, and well-integrated into planning and reporting. Put in place an integrated monitoring and evaluation system that enables continuous learning, reflection, validation of the ToC, feedback loops among program components, and adaptation of activities based on the learnings. 			
Management Response	<i>Fully accepted</i> <input checked="" type="checkbox"/>	<i>Partially accepted</i> <input type="checkbox"/>	<i>Not accepted</i> <input type="checkbox"/>
Management Response (commentary):	<p>We fully accept this recommendation. Based on a <u>common vision</u>, each unit of the GI Science Group will develop a <u>unit strategy</u> defining goals, priorities, and timelines aligned with the 2022-2030 CGIAR Results Framework. The <u>theory of change</u> will guide the delivery of GI teams along expected results with clear indicators. Annual reflections will be organized to support adaptive management. Key load-bearing assumptions will be tested to provide continuous learning and adjustments for planned interventions. <u>Monitoring</u> systems will support reporting against the CGIAR <u>results framework</u>, with aligned <u>performance metrics</u> for leaders and teams.</p>		

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
a. <u>Common vision</u> : In the 2022 GI annual forum, co-develop a common vision and goal for the GI Action Area, that speaks to the CGIAR mission and strategy, and is shared across all participating Centers and Initiative leads. Agree KPIs around the vision.	GI Senior Mgmt Team (Global Director and 4 Senior Directors), working with leadership across GI Centers and Initiatives	Once the Senior Directors are in post and by December 2022	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Operational funds (e.g. travel, facilitation, etc) to organize the forum and document results need to be found.
b. <u>Unit strategies</u> : Develop strategy for each GI Unit, with clear forward link to the CGIAR 2030 research & innovation strategy, that specifies priorities, stakeholder engagement, structures and resources needed to deliver, and success metrics.	4 Senior Directors	In tandem with activity above and by December 2022	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
c. <u>Theory of change</u> : Iteratively develop and actively use the GI theory of change to frame initiative agendas; progressively align bilateral grants.	GI M&E lead and finance staff, working with counterparts across GI Centers and Initiatives	Development December 2022; use 2023 through 2024	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	0.2 FTE/year to further develop the TOC, review AA/Initiative activities and bilateral portfolio. Time allocated by initiatives team is considered within their current management responsibilities.

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
d. <u>Monitoring</u> : Establish and actively implement integrated monitoring and evaluation of GI Action Area and Initiatives’ theories of change and indicators (results framework).	GI M&E lead and M&E focal points	Development December 2022; use 2023 through 2024	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	0.3 FTE/year and annual meeting operational expenses to establish GI M&E systems and conduct annual review of GI Theory of Change. Time allocated by initiatives team is considered within their current management responsibilities.
e. <u>Results framework</u> : Report against results framework (nested at CGIAR, Action Area and Initiative levels) and iteratively update this framework through year-on-year learning on the theory of change.	GI Senior Management Team, Initiative Leads and M&E focal points	Development January-June 2022; Reporting 2022 through 2024	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	0.1 FTE/year to follow up reporting, harmonize data and update result framework.
f. <u>Annual performance metrics</u> : Establish annual performance objectives and metrics for leaders and teams in GI, that are fully linked to the common goal of the Science Group and the results framework of the Action Area.	GI Senior Management Team and HR function, supported by M&E focal points	Development December 2022; Reporting 2023 through 2024	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

RECOMMENDATIONS and ACTIONS:

The other recommendations below cover the technical/scientific issues with respect to individual CG or NARS breeding programs, and should guide all **Initiatives** under Genetic Innovations portfolio, including:

- Accelerated Breeding, formerly known as Accelerated Breeding: Meeting Farmers' Needs with Nutritious, Climate-Resilient Crops
- Genome Editing, formerly known as Accelerated Crop Improvement through Precision Genetic Technologies
- Breeding Resources, formerly known as Enabling Tools, Technology, and Services for Genetic Gains
- Seed Equal, formerly known as SeEdQUAL: Delivering Genetic Gains in Farmers' Fields

Recommendation 4 (copied from the Evaluation Report): **Ensure the new One CGIAR structure encourages and enables strong links between initiatives to ensure that programs and goals reflect all the needs of the pathway from gene discovery to sustainable production systems and food consumption.**

- a. Any initiative-level **theory of change** should link to ToC of Genetic Innovation Action Area, and be based on lessons learnt, with evidence-based assumptions and risks about spheres of control and influence.
- b. GI Action area and initiative-level results frameworks should ensure continuity and consistency to facilitate learning, planning and reporting, and, subsequently, evaluability.
- c. **Listen to all CG breeders and** implementing **partners** and ask what they need. Change is built on equal and equitable partnerships built on trust, which takes time and proximity.
- d. Ensure that breeding programs recognize the need to breed **for likely future needs**, including the need for climate change tolerance/resilience and better nutritional quality.
- e. Establish formal mechanisms to monitor that the end-users and most **vulnerable and poor are not left behind**, in line with an SDG principle.
- f. Put GI staff on the ground: significant change will be achieved only if GI staff are sufficiently numerous and close to breeders and other stakeholders. Leading and managing such profound changes is rarely successful if conducted from a distance (not necessarily physical, but in terms of mindset).

Management Response	<i>Fully accepted</i> <input checked="" type="checkbox"/>	<i>Partially accepted</i> <input type="checkbox"/>	<i>Not accepted</i> <input type="checkbox"/>
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<p>Management Response (commentary):</p>	<p>We strongly agree that cultivation of a <u>shared mindset</u> across CGIAR breeding teams is a priority, and needs to be accompanied by <u>joined-up management</u> across breeding programs, geographies and levels in the operational structure, with subsidiarity of decision-making to staff on the ground. For each of the Initiatives, all changes being implemented will be planned by CGIAR staff and implementing partners. Implementers will implement their own ambitions for change and support functions are clear of the changes they're there to support. Management will offer oversight where necessary (for example where changes being implemented seem not to match the needs and expected outcomes).</p> <p>We agree too that CGIAR breeding priorities must be based on a clear assessment of the diverse future needs of poor producers and consumers – their nutrition and health, livelihoods and incomes, gender equality, and exposure to environmental and climatic risks. Given the long timeframe between product profiling and release/adoption, breeding must, by definition, address future not current conditions. <u>Future-readiness</u> will be a key feature built into our market intelligence work. A very deliberate <u>focus on vulnerable people</u> will be a central part of our approach to distinguishing ourselves from the private sector and delivering on CGIAR's 2030 strategy.</p>
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Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
<p>a. <u>Active use of theory of change (ToC)</u>: GI's ToC framework will be iteratively reviewed and refined to further strengthen links between Initiatives and identify clear handover points between</p>	<p>GI Initiative Leads, supported by MELIA specialist</p>	<p>December 2022 initially, and then continuously</p>	<p>Yes <input type="checkbox"/></p>	<p>No <input checked="" type="checkbox"/></p>	

Management Follow-up					
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successive stages in the pathway from gene discovery to consumption. GI will report against the nested Results Framework on an annual basis.					
<p>b. <u>Shared mindset</u>: GI plans to put in place more spaces for exchange, learning and building of a common vision. An annual forum will be held to allow CG breeders and implementing partners to share their experiences and change management processes while also providing a learning space for continuous improvement. Facilitation and communication specialists will be hired to ensure strategic goals are co-developed and well understood by stakeholders (becoming closer together in terms of mindset). Partners, not just CGIAR staff will be included. Specifically, both CGIAR and (often NARES) implementing partner staff will be involved in visioning and planning, eligible for capacity development and mentorship programs, and co-responsible for internal learning and reporting.</p>	GI Senior Management Team (Global Director and 4 Senior Directors), and Initiative leads		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Operational funds (e.g. travel, facilitation, etc) to organize the forum and document results need to be found.

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
c. <u>Joined-up management</u> : Strengthen program management and project management capacity (through job allocation, training and buying-in of expertise where needed) to ensure that high standards of organizational and operational effectiveness are in place, including processes to ensure clarity of objectives, goals, responsibilities and accountabilities, so that CGIAR staff, partners and stakeholders are close in mindset. Unless there are strong technical reasons for not doing so, breeding management and operations will be located in the highest impact sub-region, preferably alongside partner NARES. GI will hire a Program Manager to facilitate cross-initiative coordination and synergy, and will be supported by the systems of the new Project Coordination Unit.	Initiative Leads under oversight of Senior Directors and Global Director GI, with support from GI Program Manager and Project Coordination Unit (PCU)	2022-2024	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Funding required for strengthening program mgmt. capacity and wider capacity development. If not available then prioritization will be required to make greatest impact with funding available.
d. <u>Future-readiness</u> : Collect evidence on future scenarios (major external factors that shape future needs for varieties) to identify future market segments and co-develop Target Product Profiles for “game changers”	Crop Leads coordinated by Accelerated Breeding WP1 (Refocus) lead (June 2022).	Continuous – with annual reporting through internal management systems.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

Management Follow-up					
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that can address underserved Impact Areas such as climate change tolerance/resilience, better nutritional quality and gender equality/social inclusion. Breeding programs will have all breeding decisions, including candidate selection decisions, guided by the Target Product Profile which will be co-developed by breeders and Market Intelligence. Breeders will have timely market intelligence data specifying the traits that will become important in the future and will be supported to initiate pre-emptive trait discovery and breeding activities.	Development of next versions of Target Product Profiles – regional transdisciplinary teams led by Market Intelligence WP1 and WP2 Leads.				
e. <u>Focus on vulnerable people:</u> Collect empirical data and develop future projections to identify specific market segments with highly vulnerable populations and high poverty levels. Target Product Profiles will be developed for these market segments, which can address some of these challenges, and pipeline investment cases will be built to direct genetic innovation investment towards these market segments.	Market Intelligence WP1, WP2 and WP4 Leads and Accelerated breeding WP1 (Refocus) Lead Breeding according to Target Product Profiles and targeting breeding to market segments that will	Continuous – with annual reporting through internal management systems.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
Seed Equal will focus on delivery to vulnerable groups, undertaking socio-economic research to test assumptions on reach to vulnerable and underserved communities, and conducting actions to increase their participation and the benefits they derive. WP6 of Seed Equal (working closely with Market Intelligence) will develop metrics to track inclusive (women and youth) access to seed of improved varieties. We will explore how seed providers could report against these new metrics, through bench-marking initiatives such as the Access to Seeds Index, to drive positive change.	<p>result in maximum impact across the portfolio – Global Crop Leads</p> <p>Delivery of varieties to farmers and demand creation leading to adoption – Seed Equal Lead.</p> <p>Metrics to track access - WP6 Seed Equal Lead</p>				

RECOMMENDATIONS and ACTIONS:

Recommendation 5 (copied from the Evaluation Report): **ABI should play a crucial role in further modernizing CGIAR and NARS breeding programs by being the link between upstream disciplines and breeding programs and knowing both in detail. In particular, the ABI must consider the following:**

- a. Target breeding programs that have not yet 'modernized' and on consolidating gains from others. The work of EiB is **changing the mindset** of CGIAR Breeding Programs, requiring follow-up activities.
- b. **Use breeding program assessments** to develop modernization strategies, improvement plans, and investment plans. Investment plans should be embedded in tailored, transformative, and integrated improvement plans with



clear milestones and results linked to the PRMF and common results framework. Assessments and plans should be followed up and renewed at regular intervals.

- c. **In simulation studies, establish a fine balance** between many factors. Theoretical and operational issues typically make a lot of assumptions that do not always hold. While simulation studies can create a lot of value toward the improvement of breeding schemes and approaches, this may not happen without a detailed understanding of each target breeding program. EiB was able to achieve this, and there will be continued need for improved capabilities and capacity to conduct this type of work within CGIAR-NARS partnerships.
- d. Support the development of **trait-specific markers** relevant to specific breeding programs (high-priority trait objectives from product profiles) to help increase the adoption of molecular breeding for faster development of market-ready varieties.
- e. Widen scope in terms of disciplines, add **phenotyping technologies** and methodologies in addition to breeding operations. Equip breeding programs with highly efficient phenotyping for improved decision-making and higher selection gains.

Management Response	<i>Fully accepted</i> <input checked="" type="checkbox"/>	<i>Partially accepted</i> <input type="checkbox"/>	<i>Not accepted</i> <input type="checkbox"/>
Management Response (commentary):	Fully agreed. These recommendations align fully with the plan for the Accelerated Breeding Initiative. We have covered the issues related to common mindsets under Recommendation 4, and here focus on the more technical aspects. Regarding responsibilities, some of the crop-agnostic aspects of capacity development (e.g. crop-agnostic components of phenotyping technologies) will be the responsibility of the Breeding Resources Initiative. This will be done in close collaboration with Accelerated Breeding.		

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
<p>a. Priority-setting: Each CGIAR breeding program receiving Accelerated Breeding funding will develop and execute against a plan for modernization of breeding and for consolidating progress made to date. These will be the “Accelerated Breeding work plans”. They will prioritize the priority actions identified in the breeding program assessments.</p>	<p>Development and implementation of Accelerated Breeding work plans – Global Crop Leads</p> <p>Monitoring progress and providing support for implementation and feedback to plans – Accelerated Breeding Work Package Leads</p>	<p>Development of work plans – July 2022.</p> <p>Implementation of work plans - ongoing, with distinct time-bound milestones as described in the Accelerated Breeding workplan.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<p>Pooled funding is, in the 2023 year, inadequate to support both breeding and breeding program modernization. Modernization and breeding are reliant on funding aligned with prioritized product profiles, for breeding, and modernization plans.</p>
<p>b. Indicators and reporting: For each output in the Results Framework, criteria will be developed for objectively assessing completion (and quality) of delivery. This will similarly be developed for milestones toward outputs as written into the Accelerated Breeding workplan. Crop teams will report against each output on at least an annual basis.</p>	<p>Development of completion and quality criteria and methods for establishing a “baseline” – Accelerated Breeding Work Package Leads</p>	December 2022.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

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For each team/workplan, output assessments will be made in collaboration among breeding teams, Global Crop Leads and Accelerated Breeding Work Package Leads to establish a baseline. These assessments will be used to identify the most impactful changes to be implemented and plans will be tailored and transformative and described by the workplan which will incorporate all plans for modernization, improvement and investment.	<p>Establishing a baseline for each Accelerated Breeding output – Global Crop Leads</p> <p>Reporting progress against each Accelerated Breeding output – Global Crop Leads</p> <p>Development and implementation of crop level Accelerated Breeding work plans – Global Crop Leads</p>	<p>December 2022.</p> <p>Annually.</p> <p>Development of work plans – July 2022.</p> <p>Implementation of work plans - ongoing, with distinct time-bound milestones as described in the Accelerated Breeding workplan.</p>			

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<p>c. <u>Trait specific markers:</u> Highest priority traits guided by market intelligence will be targeted by the Discover Work Package using comprehensive and standardized criteria for identifying priorities and will include insights from product profiles and Market Intelligence.</p> <p>Marker development as a shared service has been established by EiB and will be continued by Breeding Resources. Highest priority trait-specific markers guided by market intelligence will be developed by Breeding Resources.</p>	<p>Identification of traits to prioritize for development of associated markers – Crop teams working with Discover Work Package Lead and market intelligence teams.</p> <p>Development of markers as a shared service – Breeding Resources Lead in collaboration Discover Work Package Lead and focal points</p>	<p>Ongoing, with distinct time-bound milestones as described in the Accelerated Breeding workplan.</p> <p>Ongoing 2022 - 2024</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	<p>Pooled funding is inadequate to support both the development and routine use of prioritized trait-specific markers in breeding programs. Currently only about 25% of the resources come from pooled funding. The development and use of high priority markers requires additional funding aligned with trait priorities. CGIAR has a staffing gap in bioinformatics.</p>
<p>d. <u>Broadening inter-disciplinary capacity:</u> Breeding Resources will provide crop-agnostic tools and services to support improved phenotyping. For example, a platform for processing data collected</p>	<p>Improved phenotyping – Senior Director Breeding and Pre-breeding and Senior Director</p>	<p>Ongoing, with distinct time-bound deliverables as described in the Accelerated</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	



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by drones to develop estimates for high priority target traits. All disciplines required for germplasm development (including trait discovery and deployment and variety development) are in scope for Accelerated Breeding. One of the outputs in the Accelerated Breeding workplan is to improve phenotyping. Including, increasing accuracy, increasing relevance of data with respect to the product profile, the target population of environments and performance under farmers' conditions.	<p>Integrated Breeding Research Services.</p> <p>Development and provision of crop agnostic tools and services for improved phenotyping – Senior Director Integrated Breeding Research Services.</p>	<p>Breeding work plan.</p> <p>Ongoing, with distinct time-bound deliverables as described in the Breeding Resources work plan.</p>			

RECOMMENDATIONS and ACTIONS:

Recommendation 6 (copied from the Evaluation Report): **One CGIAR should support breeders with information and tools to allow them to determine priorities and traits. Breeding programs should incorporate the following considerations into decision-making:**

- a. Formalize agreement with stakeholders, including donors, on how to balance priorities between major and minor crops and on prioritization and funding allocation to Center or external programs (e.g., NARS). Recognize that progress is likely to be slower with some activities than others, reflect in evidence-based planning and build that into the results framework to track and measure.
- b. Develop and regularly validate complete and useful product profiles as needed, at least for a number of breeding programs, possibly those involving the most interested or willing CGIAR or NARS breeders.
- c. Simultaneously, ensure that the market segmentation developed by crop breeding is used to define priority levels and that practices and resources are adequate for high-priority markets. Markets, as currently identified and described, should be validated with actors on the ground, including NARS and local private companies. Based on informative product profiles and market segmentation information, help partners—both people and organizations (One CG, donors, crop breeding leads, etc.)—develop action plans to use this information to make strategic decisions about which markets to serve and which products to develop.
- d. Complement the private sector in a meaningful way instead of merely copying it.
- e. Continue to fully enable specific breeding programs rather than attempting to cover all programs and spreading resources too thinly for impact.

Management Response	<i>Fully accepted</i> <input checked="" type="checkbox"/>	<i>Partially accepted</i> <input type="checkbox"/>	<i>Not accepted</i> <input type="checkbox"/>
Management Response (commentary):	Fully accepted. These recommendations align fully with the Genetic Innovation Theory of Change (ToC) and the workplans of the Initiatives, including Market Intelligence, which is designed to become the primary priority setting hub of the Genetic Innovation Action Area. Pipeline Investment Cases for major and minor crops, based on forward-looking market intelligence will guide GI management decisions on prioritization and funding allocation to Center or external programs (e.g., NARS).		

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
a. <u>Inclusive product profiling</u> : Market Intelligence WP2 on Product Profile Design will use market intelligence from WP1 to develop Target Product Profiles for clearly defined Regional Market Segments identified in WP1 and ensure that NARES partners are involved in product profile design from the start. WP4 will integrate all this information into Pipeline Investment Cases, which will be published on an Investor Dashboard, which will enable donors, partners and decision makers in making impactful investment decisions in breeding pipelines.	Market Intelligence Initiative, WP1, WP2 and WP4 leads	December 2022	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
b. <u>Complementarity with private sector</u> : The CGIAR Initiative on Market Intelligence's WP1 will identify opportunities across the five impact areas in market segments where CGIAR-NARES-SME breeding networks can deliver products. Special attention will be devoted to complementing the private sector in market segments that are underserved by the latter or Impact Areas that received little attention (e.g., gender equality, social inclusion, climate change, environmental health and	CGIAR Initiative on Market Intelligence, WP1, WP3 and WP4 leads	December 2022	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
			Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
biodiversity). Market and behavioral intelligence from WP1 and WP3 will be communicated to the private sector (e.g., seed and food companies) to help them finetune their strategies towards the five Impact Areas.					
c. <u>Priority-setting</u> : Market Intelligence’s WP4 on Pipeline Investment Cases will support GI management with evidence on returns to investment under several scenarios, which will enable prioritization and optimization of breeding pipelines for maximum impact across the five Impact Areas.	CGIAR Initiative on Market Intelligence, WP4 lead and GI Senior Management Team	Second half of 2023	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

RECOMMENDATIONS and ACTIONS:			
<p>Recommendation 7 (copied from the Evaluation Report): Highly technical facilities with resources and skilled staff are required for many modern breeding operations and services. ABI should learn from previous experience in relation to these services:</p> <ul style="list-style-type: none"> a. Maximize efforts to increase the reliability of genotyping services, from tissue sampling all the way to data or information delivery. Reflect on developing a different operational and business model to address logistical and operational issues that limit the potential of shared services and result in sending plant material overseas. b. Systematically engage service providers and CGIAR or NARS stakeholders in considering setting up regional external service centers. c. Include a holistic financial approach in the planning of service externalization in a proactive way. Setting up external services to replace internal capabilities without properly handling these internal capabilities is inefficient and may impact and potentially disrupt internal capabilities and structures. d. Engage with multiple internal and external providers as the demand for services increases to mitigate risks associated with dependence on a single external provider. 			
Management Response	<i>Fully accepted</i> <input checked="" type="checkbox"/>	<i>Partially accepted</i> <input type="checkbox"/>	<i>Not accepted</i> <input type="checkbox"/>
Management Response (commentary):	Fully accepted and in agreement that these actions are exactly what are needed. We do note that in order to fully address this recommendation requires a unified and effective administrative framework, for example to negotiate new shared service with external vendors, develop regional support teams, maintain service demand (tied to service affordability) which is still under development at One CGIAR level.		

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
<p>a. <u>Genotyping services:</u> We will improve genotyping submission workflow and enterprise analytical solutions and support breeding programs in adoption of improved workflows and enterprise solutions.</p> <p>Development of regional genotyping shared services support teams</p>	<p>Senior Director, Integrated Breeding Research Services</p> <p>Breeding Resources Initiative WP5</p> <p>Global Crop Leads</p>	Jan 2022 to Dec 2024	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<p>b. <u>Costing and cost recovery:</u> Demand analysis and costing exercise for internal capabilities.</p> <p>Develop new full cost recovery business plan for genotyping services.</p>	<p>Demand and costing analysis: Breeding Resources Initiative WP1 and WP2 Leads</p> <p>Cost Recovery business planning: Breeding Resources Initiative WP2</p>	<p>Jan 2022 to Dec 2023</p> <p>Jan 2022 to Dec 2023</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<p>c. <u>Reviews of large long-term contracts:</u></p> <p>Periodic review of shared services contract. Develop new service contracts or finetune existing contracts if needed.</p>	<p>Breeding Resources Initiative WP2</p>	Continuous	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

RECOMMENDATIONS and ACTIONS:			
<p>Recommendation 8 (copied from the Evaluation Report): Seed Equal and ABI initiatives should continue to build long-term relationships with NARS and other partners through the following enhancements:</p> <ol style="list-style-type: none"> Increase the breeding capacities in NARES and SMEs for improved genetic gain in farmer-preferred varieties (ABI). Increase awareness of the value of molecular breeding at NARS through trainings and capacity building. Ask for and listen to feedback from participants to facilitate increasing adoption of the approach and the use of shared services (ABI). Ensure that seed multipliers provide quality seed of new improved varieties, from CGIAR and NARS networks, at greater scale, tailored to the needs of the beneficiaries and thereby increasing varietal turnover and contributing to achieving genetic gains in farmers' fields (SeEdQUAL). 			
Management Response	<i>Fully accepted</i> <input checked="" type="checkbox"/>	<i>Partially accepted</i> <input type="checkbox"/>	<i>Not accepted</i> <input type="checkbox"/>
Management Response (commentary):	<p>Fully accepted. <u>Breeding capacity</u> of NARES and SMEs will be increased by working closely with partner NARES and SMEs to implement optimized breeding schemes focused on targeted product profiles. <u>Molecular breeding</u> will be a key component of capacity development services. CGIAR will work to ensure that <u>seed multipliers</u> (both formal and farmer-based) provide quality seed of new improved varieties at greater scale, through a series of activities in the Seed Equal Initiative that have been planned in considerable detail – see actions below.</p>		

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
<p>a. <u>Breeding capacity:</u> Systematic and customized support to increase breeding capacity at NARES, SMEs and Universities will be implemented through ABI in alignment with partner ambitions and their breeding modernization plans. Specific NARES breeding programs will be supported to take on greater responsibility to breed for specific market segments and product profiles where they have a comparative advantage over regional CGIAR efforts. A mechanism for open access support will be developed by 2023 to enable NARES that are not formal members of CGIAR-NARES breeding networks to access technology, germplasm and training from the network.</p>	Accelerated Breeding Transform Work Package Lead and GI Global Crop Leads.	Ongoing, with distinct time-bound deliverables as described in the Accelerated Breeding work plan. First deliverable in June 2022.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	If the Initiatives receive the substantial uplift in 2023 and 2024 that is indicated in the FINPLAN, then the resources will be available to support the significant plans that are already in the CGIAR initiative proposals (Accelerated Breeding and Breeding Resources) for capacity building across the CGIAR-NARES network. If not, this work will depend on bilateral fundraising.
<p>b. <u>Molecular breeding:</u> All NARES breeding modernization plans that are being developed in collaboration with EiB, ABI and bilateral projects will include adoption of</p>	Implementation of NARES-CG-SME breeding networks using current best practice including	Ongoing, with distinct time-bound deliverables as described in the Accelerated	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
<p>genotyping tools for routine breeding operations: Hybridity confirmation (F1 QA/QC), line purity and reference finger printing and marker assisted selection for key traits aligned to the product profile. Training of NARES partners on sampling and data interpretation will continue with support from the Breeding Resources initiative of CGIAR.</p> <p>Members of CGIAR-NARES breeding networks will benefit from discounted genotyping costs as negotiated with the vendor whilst non-members of CGIAR-NARES breeding networks will still be able to access QTL and marker data on a public online database maintained by the Breeding Resources initiative.</p>	<p>use of molecular breeding – GI Global Crop Leads.</p> <p>Training to support NARES to access genotyping shared service supporting molecular breeding – Senior Director, Integrated Breeding Research Services</p>	<p>Breeding work plan. First deliverable in June 2022.</p>			
<p>c. <u>Seed multipliers:</u> The three crop-archetype based Work Packages of Seed Equal (WP1-3) will work alongside Accelerated Breeding and partner breeders to ensure product profile-driven varietal selection and replacement strategies are in place for key markets/end users. Assessment and innovation around collaborative</p>	<p>Seed Equal Work Packages 1 (cereals), 2 (legumes) and 3 (vegetatively propagated crops) and capacity building through training and tools</p>	<p>Ongoing with time bound deliverables in work packages 1-6 of Seed Equal</p>	<p>Yes <input checked="" type="checkbox"/></p>	<p>No <input type="checkbox"/></p>	<p>Adequate funding is available within the initiative funding to both implement the recommendations and to achieve the time-bound deliverables of the</p>

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
<p>mechanisms with private and public partners for accelerating varietal turnover will be key along with scaling of on-farm testing for selection and demonstration purposes (leveraging other bilateral investments such as the 1000 Farm initiative).</p> <p>WP4 will work with NARS networks to develop and test tools in support of scaling, including for product advancement and product placement, variety licensing, and M&E of adoption. WP5 (working closely with WP3 of Market Intelligence) will develop evidence-based, context-specific policy recommendations to encourage inclusive seed sector growth particularly in relation to: EGS production, varietal release, quality assurance, smart input provision schemes, credit-linked extension, and other instruments to accelerate varietal turnover and deepen demand for quality seeds. WP6 will develop evidence-based gender-transformative business and capacity development models and strategies to enhance synergies between formal and</p>	<p>in WP4, development of appropriate seed policies in WP5 and also gender data collection for evidence and tailoring of solutions in WP 6</p>				<p>Seed Equal initiative. An additional 18 MM USD (over 5 years) W3 funding is being sought to further innovate in and further develop vegetative propagated crops seeds systems (advances in seed multiplication and new business models and institutional arrangements) aligned to the initiative. Discussions with MNC seed companies are ongoing to provide additional technical assistance to improve the quality of foundation seed</p>



Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
informal seed systems. Lastly WP6 will develop new metrics to track inclusive (women and youth) access to seed of improved varieties.					for key target crops through specific quality management processes for both public and private seed multipliers

RECOMMENDATIONS and ACTIONS:

Recommendation 9 (copied from the Evaluation Report): **Commit to developing informatics systems for a diverse range of breeding programs, even though the effort is complex, expensive, and long-term. ABI (and CGIAR as a whole) must include the following in its decision-making process:**

- a. Develop **clear and strong objectives and strategies for breeding informatics activities, validated by an independent steering panel.** Such objectives and strategies, with the proper governance model in place, should be able to withstand any isolated attempts to significantly change them, thereby avoiding radical and unproductive changes in direction and maximizing the chance of delivery of value to end users.
- b. **Monitor the progress of enterprise breeding system (EBS)** development and its likely uptake by breeders. Maintain a dialogue with **users, donors, and platform maintainers** to ensure that decisive steps to cut support for legacy systems are taken at the right time to maximize resource allocation efficiency.
- c. Continue to support **other platforms and linkages** when EBS is not universally available or accepted.
- d. Fill in skills gaps within CGIAR and in partners with training (e.g., in the use of digital breeding tools, change management), matching breeding experts in various locations (e.g., Africa and Asia) with the needs of field support teams (BMS support teams).
- e. Keep the administrative burden of database use to a minimum.

Management Response	<i>Fully accepted</i> <input type="checkbox"/>	<i>Partially accepted</i> <input checked="" type="checkbox"/>	<i>Not accepted</i> <input type="checkbox"/>
Management Response (commentary):	We accept these recommendations in the most part. While we do not accept that every Initiative needs an independent steering panel, experience with the EBS Program has shown the value of a strong advisory function that includes end-users in particular.		

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
a. <u>Integrated and responsive breeding informatics</u> : Integrated Breeding and Research Services will house breeding informatics activities. Software development and deployment activities will be guided and supported by an advisory group that includes leads of end user breeding programs. Established processes for prioritization, change control, and risk management will govern decision making.	Senior Director, Integrated Breeding Research Services	Steering team and processes will be established between Q2 2022 – Q2 2023	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
b. <u>EBS monitoring and decision making</u> : Continue to monitor KPIs for user adoption; stakeholders including users, donors, and platform maintainers will take part in jointly deciding appropriate cutover points from legacy systems to EBS. Where EBS is not available or where a transition is not desired, BMS or Breedbase will be supported.	Senior Director, Integrated Breeding Research Services	Q1 2022 – Q4 2024	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	IBP estimates about 1.6 M per year for maintaining and developing BMS as well as supporting users. Lukas Mueller's lab at BTI estimates about 2M a year is needed to support Breedbase for the same.
c. <u>Targeted capacity development</u> : Focus capacity development on digitization and use of data management tools for CGIAR and	Accelerated Breeding WP3 Lead	Q1 2022 – Q4 2024	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	We have a small budget in Breeding Resources for change

Management Follow-up					
Actions to be implemented	Responsible	Timeframe	Is additional funding required to implement recommendation		If further funding required – how much and what is to be done if no funds available?
NARES partners, leveraging existing connections with local field teams such as the IBP support network. A core digitization user support function will be formed under the Data Management and Breeding Analytics unit to coordinate a globally distributed help desk, harmonise documentation and training materials and support local teams in their training efforts. Change delivery training will be offered to both CGIAR and NARES partners.	Breeding Resources WP3, 4, 5 Leads Senior Director, Integrated Breeding Research Services				management that could support development of change leaders, but more comprehensive change management training for the breeding networks as a whole is not currently budgeted for.
d. <u>Reducing administrative burden:</u> Support cloud implementations of data management software, maintained and deployed by a single core team.	Breeding Resources WP4 Lead Senior Director, Integrated Breeding Research Services	Q1 2022 – W4 2023	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	