CRP Review 2020: Roots, Tubers and Bananas

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The CGIAR CAS Secretariat is conducting independent reviews of 12 CGIAR Research Programs (CRPs), including Roots, Tubers and Bananas (RTB).

CRP Background

The main objective of RTB is to maximize the contribution of the vegetatively propagated staple food crops to tackle hunger and malnutrition, reduce poverty, and make smallholder farmers more resilient to climate change. RTB, led by the International Potato Center (CIP), works across five continents, in partnership with the Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT); the International Institute of Tropical Agriculture (IITA), and the French Agricultural Research Centre for International Development (CIRAD). Structured on 5 interlinked Flagships (FPs): Discovery Research for Enhanced Utilization of RTB Genetic Resources (FP1); Adapted Productive Varieties and Quality Seed of RTB Crops (FP2); Resilient Crops (FP3); Nutritious RTB Food and Added Value Through Postharvest Innovations (FP4); and Improved Livelihoods at Scale (FP5).

RTB CRP Review

After the 1st evaluation of RTB CRP, completed in December 2015, this review covers Phase II (2017-2019) to identify lessons for future research modalities and provide information on quality of science and effectiveness.

Review sources of data and information included: program documents; 40 interviews with RTB leaders, donors, and partners; staffing and financial resources; and annual reporting data, including three Outcome Impact Case Reports (OICRs), and bibliometric analysis of 371 peer-reviewed journals.

Photo: *Banana farmer, Uganda. Credit: RTB*

Q1: To What Extent does RTB Deliver Quality of Science (2017-2019 Work)?

The four CGIAR partners centers and CIRAD contribute a wide range of disciplinary skills, which are adequate for delivery of outputs and outcomes, creating opportunities for cross-fertilization of ideas and learning and facilitates coherence, integration, and enhanced ability to take advantage of synergies and complementarities. More than half publications (57%) are high quality and demonstrate recognition of coauthors (author collaboration index is 5.28) and international collaboration (89% are multi-country publications), and they show broader applicability. Good progress has been made in modernizing breeding programs. Eighty-seven varieties of RTB crops have been released. Notable advances have been made in developing the Seed Systems Toolbox, information and communication technology (ICT) solutions for pest and disease management, methods for assessing quality traits, and ongoing advocacy to increase adoption of biofortified foods and cassava peels animal feed. Scaling approaches demonstrate sustainable intensification of RTB agri-food systems. The quantum of outputs is impressive (110 physical outputs and services).

Q2: What Outputs and Outcomes Have been Achieved, and What is the Importance of Those Identified Results?

RTB has recorded 108 milestones, 77 (71%) have been completed, 30 (28%) extended, and three

(3%) changed. It produced 21 OICRs across its FPs. Geographically, OICRs from FPs 1, 3, and 5 are spread quite uniformly across regions, while 22 (45%) from FP2 and FP4 are concentrated in Eastern and Western Africa.

RTB reported 131 innovations with 78 external partners, divided into 5 types: Biophysical Research; Genetic, Production Systems and Management Practices; Research and Communication Methodologies and Tools; and Social Science. 97% of the innovations involve other CGIAR centers and 43% academic or research organizations. There is a total of 21 policies, 86% national and the remainder regional. Government agencies that implement seed regulations and disease control strategies are the most frequent partners for RTB policies, being -10 (47%).

The theory of change is used predominantly as a planning rather than a management tool. Resources are not directly allocated using the ToC but they are linked indirectly through the planning process.

Cross-Cutting Themes

Cross-cutting themes made an important contribution to achieving programmatic integration, coherence, quality of science, and effectiveness.

Capacity development (CD) was a clear element in the RTB for Phase II. 21 OICRs, 13 included CD at the 'highest level'. 499 students to attain higher degrees and over 340,000 people to receive training at all other levels. **Climate change** research is embedded in RTB's foresight studies, genomics, breeding, agronomy, pest management, and seed systems research. Climate change was reported as a significant factor in 10 of the 14 OICRs reported (2018-2019). **Gender** is well-integrated in all FPs with strategies designed around key FP activities. 10% of W1/W2 funds support gender activities and additional support is available in W3/bilateral projects. Gender was ascribed a 'significant' level in 10 OICRs but only 2 at the 'highest level'. **Youth**, in terms of research on the role of youth in agriculture, is a new endeavor for RTB. Most effort is currently focused on how to engage youth in agriculture. 15 OICRs included Youth at the 'lowest level'.

Q3: Future Orientation

Significant and measurable progress has been made by RTB during 2017-2019. Golden Eggs (collective knowledge assets) position RTB to play an important role in further contributing to the SDGs over the next 10 years. It is therefore critical that RTB continues to develop and expand these packages to inclusively cover the full program achievements.

Key Lessons

RTB has a unique structure; cross-cutting clusters feature in all FPs while in FP5 all clusters are cross-cutting. This has enabled cross-crop and cross-center collaborative research and facilitated cross-fertilization, spillovers, and learning.

Integration of gender with biophysical research has added value to research outputs for end-users, especially women.

Photo: *Farmers exchange potato varieties, Peru.*
Credit: *IIED*

Recommendations for CGIAR

- Retain clonally propagated crops together as a group within key research areas to further enhance synergies and achievements.
- Consider broader use of the concept of Golden Eggs for future initiatives/projects.
- Opportunities for integration between initiatives/projects in One CGIAR must be better supported if cross-CGIAR contributions to the IDOs and SDGs are to be fully captured.
- One CGIAR should recognize CD as a core part of its role and apply sufficient resources to achieve results.
- One CGIAR should recognize the key role of partnerships in its design of future initiatives to ensure that relationships (corporate, technical, and personal) built up by RTB and other CRPs are not lost.

Read the full report:
https://cas.cgiar.org/evaluation/crp-2020-RTB