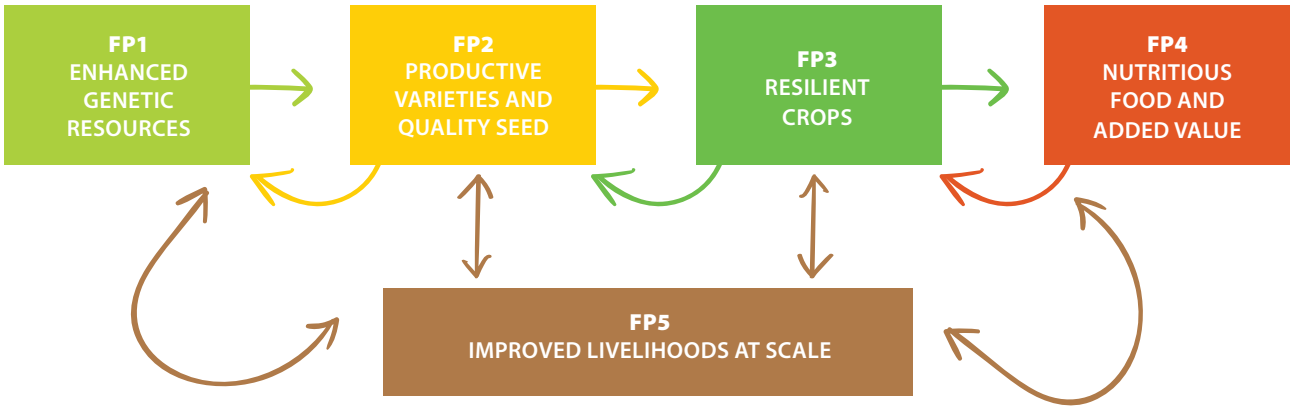
RESEARCH PROGRAM ON
Roots, Tubers and Bananas

Spotlight on sweetpotato in the context of roots, tubers and bananas

The CGIAR Research Program on Roots, Tubers and Bananas (RTB) is an alliance led by the International Potato Center implemented jointly with Bioversity International, the International Center for Tropical Agriculture (CIAT), the International Institute of Tropical Agriculture (IITA), and the Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), that includes more than 350 partners for research on banana, cassava, potato, sweetpotato, yam, and minor roots and tubers. The program has two dedicated clusters of activity on sweetpotato, led by CIP scientists, that will interact with, learn from, and add critical mass to RTB's other work.

RTB's organizes research around five flagship projects (FP) which mutual interact and reinforce in a continuum from discovery through to impact at scale.


S.QUINN/CIP



Tapping into underutilized RTB genetic diversity, FP1 collaborates with advanced research institutes (ARIs), universities, national agricultural research systems (NARS), and other CRPs. FP2 supports gender-responsive breeding pipelines to obtain high-yielding and nutrient-rich varieties in line with consumer demand and adapted to future climates and resistant to biotic and abiotic threats. FP2 collaborates closely with national breeding, genetics, and phenotyping programs, ARIs, and universities. It is informed by FP3–FP5 in regards to the needs of next users of varieties and particular constraints such as disease resistance. FP2 includes a crosscutting component on seed and approaches for demand creation. Scaling occurs with national seed agencies, private companies, service providers, and development partners.

FP3 develops products for pest and disease characterization and management and improved agronomic practices for more resilient cropping systems. Pest/disease risks models related to climate change and pest risks analyses are developed with strategic research partners. Results are used to devise policy and technical advice for national plant protection organizations and regional

and sub-regional organizations. Optimized land, crop, and water management techniques are developed in collaboration with NARS and universities and promoted through well-trained extension services and other service providers.

FP4 promotes collaborations among public and private partners. The objective is to develop and disseminate improved and more efficient processing and post-harvest technologies and protocols for RTB-based food products that help to reduce waste and losses and make healthy and nutritious food available. Moreover, FP4 provides technical evidence and policy advice to national authorities, development partners, and donors for designing and implementing agriculture for nutrition initiatives and education/communication programs. Particular attention is paid to generating more equitable employment and income opportunities for women and youth.

FP5 has a dual role as a space for systems research and for providing capacity development and backstopping in support of innovation and scaling in FP1–FP4. It provides a livelihood systems-related guiding framework for all FPs to steer them toward promising scaling of innovations, opportunities for advancing gender and intergenerational equity, expected and proven areas of greatest return, and scientific evidence on impactful partnership and scaling models.

RTB's research on sweetpotato falls in to two dedicated clusters of activity (clusters): (1) User preferred sweetpotato varieties and seed technologies which is part of FP2 and (2) Nutritious sweetpotato for expanding markets and improving nutrition, part of FP4.

User preferred sweetpotato varieties and seed technologies

Housed under FP2, this cluster investigates, develops, and disseminates better sweetpotato varieties and ensures that they meet farmer and consumer preferences. This will improve the availability of sweetpotato varieties that are rich in beta-carotene and high in anti-oxidants, to meet diverse user preferences and needs with gender-responsive seed systems. Hence this cluster has strong linkages to the second cluster on sweetpotato under FP4. In 2016, one area of work by the cluster included predicting genetic gains under breeding scenarios in advanced selection states. The objectives of this research were to use variance components to determine breeding efficiency in advanced breeding stages, using data from breeding efforts aimed at developing dry and starchy orange fleshed sweetpotato (OFSP) for the humid tropics. A large set of trials comprising 42 genotypes, nine locations and three years of field testing was conducted in the Peruvian Amazon. The analysis of variance showed that years/seasons of field testing can be partially substituted by spatial variation of field locations in sweetpotato. The smallest magnitude variance component was Genotype X Season. Further, a two-stage selection can accelerate variety release. Moreover, this research shows that searching for optimal allocations of field testing efforts leads to significantly higher genetic gains even under limited field testing resources than when field resources are not a limiting factor. Hence, the analysis of diverse breeding scenarios to identify those enabling higher genetic gains is recommended, particularly for NARS partners since they oftentimes operate under very limited resources.

Nutritious sweetpotato for expanding markets and improving nutrition

Celeste Barnabe, a mother participating in the nutrition education program in Niassa Province, Mozambique.

The cluster on 'Nutritious sweetpotato for expanding markets and improving nutrition', which is under FP4, aims to improve nutrition and diets and provide income opportunities through more diversified and intensified utilization of nutritious sweetpotato. Highlights from the past year including the development of nutrition education materials to support end-users of OFSP. These were disseminated in Rwanda (73,238), Kenya (32,071), Malawi (43,631), Tanzania (26,777), Nigeria (35,000), and Mozambique (26,634). Training was provided to partners to improve program delivery of nutrition interventions involving sweetpotatoes. This focused on key concepts in Maternal Infant and Young Child Nutrition (MIYCN) as well as education on the importance of dietary diversification. Furthermore, Social and Behavior Change Communication (SBCC) concepts were imbedded into brochures and counselling cards and participants who received training were taught different approaches to the delivery of nutrition interventions following SBCC such as Care Groups, Mother Clubs, Farmer Field Schools. Healthy Eating Counselling Cards were also deployed and in use by community health workers, farmer promoters and other staff involved in the OFSP-nutrition value chain to disseminate nutrition information to next users.

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