Demand-led Breeding

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demand·led breeding

www.demandledbreeding.org

HIGHLIGHTS FOR
2022

VISION STATEMENT

Transforming African agriculture by enabling small scale farmers to better participate in local and regional markets, by increasing the availability and adoption of high performing plant varieties that meet market demands and are resilient to the challenges of climate change and extreme weather events.

PURPOSE STATEMENT

The DLB project seeks to understand and learn from best practices in plant variety design worldwide. The project tests the thesis that market-led product development by public and private sector research agencies will lead to increased availability and higher levels of uptake of new, high performing crop varieties that enhance productivity and profitability of target crops.

DEMAND LED BREEDING IN AFRICA

The purpose of the **Demand led Breeding** (DLB) program is to contribute to the transformation of African agriculture by enabling small scale farmers to participate in local and regional markets, by increasing the availability and adoption of high performing plant varieties that meet market demands and are resilient to the challenges of climate change and extreme weather events.

The intended research outcome is that plant breeders in Africa will adopt more demand-led approaches to plant breeding to respond to the preferences of farmers, consumers, and others along the value chain, and the need to develop more climate resilient varieties. The DLB program is supported by an Alliance for Food Security, formed in 2014 by the Australian Centre for International Agricultural Research (ACIAR), the Crawford Fund and the Syngenta Foundation for Sustainable Agriculture

(SFSA), Switzerland. The project is managed by the University of Queensland, on behalf of its co-sponsors and partners in Africa. News on project activities and access to educational resource materials and professional development opportunities can be found at: **https://www.demandledbreeding.org**

Forging New Partnerships in Africa, Australia and Internationally

The key research and educational institutional partners in Africa are: the African Centre for Crop Improvement (ACCI) at the University of KwaZulu Natal South Africa; the Alliance of Bioversity and the International Centre for Tropical Agriculture (CIAT), and the Pan African Bean Research Alliance (PABRA); the West Africa Centre for Crop Improvement (WACCI) at the University of Ghana; the Ethiopian Institute of Agricultural Research (EIAR), and Haramaya University, Ethiopia; the Ugandan National Research Organization (NARO) and Makerere University, Uganda; and the University of Nairobi, Kenya.

During 2021-22, the DLB team in Africa has been approached to expand its partnerships in West and Central Africa (e.g., Cote d'Ivoire, Democratic Republic of the Congo (DRC) and Nigeria), and with the West Africa regional agricultural research for development organization, CORAF/WECARD, especially for sharing DLB approaches with plant breeders in Francophone Africa.

The DLB team is also collaborating with the international Breeding Program Assessment Tool (BPAT) project, based at the University of Queensland, and funded by the Bill and Melinda Gates Foundation (BMGF). BPAT and DLB co-sponsored an international symposium on plant breeding in low- and middle-income countries, at the Australasian Plant Breeders Congress (APBC) in Queensland, Australia in May 2022, with over 100 participants, including speakers from Africa, Australia, Europe and USA, contributing in person or by video link. DLB and BPAT are discussing further joint activities in 2022-23, including participation in the international TropAg symposium, to be held in Brisbane Australia in November 2022 (**https://tropagconference.org**)

Demand led breeding "community of practice" with plant breeders in Africa

The DLB team supports an expanding *DLB Community of Practice* of some 400 plant breeders working in national agricultural research systems (NARS) and universities across some 30 countries in Africa. The members of the DLB community of practice are DLB alumni, primarily African plant breeders who participated in the DLB sponsored education and training workshops during the

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first phase of the project. Twenty-four DLB workshops were held in eastern, southern and West Africa between 2015-2019, to introduce to the African plant breeding community the principles of demand led plant breeding and its applications to crops important for food security, climate resilience and for increasing incomes in farming communities. The DLB team is working with the community of practice, though eight crop-orientated working groups, to mainstream demand led breeding approaches within national plant breeding programs for a range of crops and environments in Africa. The DLB team continues to develop additional educational resources, including two new technical modules, which publicly available through the website at: **https://www. demandledbreeding.org/education-modules**

Product Profiles: A Practitioners' Guide **used for new product profiles to promote new varieties**

An important early step in demand led breeding is developing product profiles that identify the priority traits required by various actors along the value chain. During 2020-21, DLB convened a working group of African and international plant breeders to develop new guidelines for preparing and communicating product profiles. These guidelines are applicable for a wide range of crops, environments, and markets. The DLB publication on *Product Profiles: A Practitioners' Guide* and templates for creating new product profiles are available at: **https://www.demandledbreeding.org/ product-profiles**

During 2021-22, the DLB product profile guidelines were used by African plant breeders participating in the community of practice to develop some 20 new product profiles, for seven different crops (bean, cassava, Kersting groundnut, maize, pigeon pea, sorghum, and tomato). These product profiles serve to characterise promising and potential new crop varieties, with traits of value to farmers, traders, and consumers to meet household needs and/or market demands; and to identify traits important for climate resilience. The suite of product profiles describes varieties for a range

of crops, countries, and environments. The product profiles will be used both to promote the benefits and value of breeding new crop varieties, and promote the scaling up of available, highly promising varieties, though creating demand for high quality seed, to enable their wider distribution and use in target markets and environments: **https://www.demandledbreeding.org/ product-profiles**

Professional development resources and opportunities for plant breeders in Africa

The DLD project continues to develop and make available educational resources and other professional development materials for use by plant breeders in Africa. New resource materials developed in 2022 expand the resources already available online at **https://www.demandledbreeding.org**, These resources include a CABI published textbook on *"The Business of Plant Breeding"* and its seven teaching modules.

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The textbook and its associated research and educational resource materials are available to download as open access via the CABI site at: **https://www.cabi.org/products-and-services/about-cabi-books/open-resources/the-business-of-plant-breeding/**

A new DLB Module, on *"Gender, Diversity and Inclusivity in plant variety design"* is now completed and available at **https://www.demandledbreeding.org/education-modules**. This new Module 8 describes the principles and practices of taking account of gender and diversity when determining the traits important to different groups of farmers and consumers, and how to accommodate their preferences in designing new plant varieties. A new technical Module, on preparing new

A new DLB Module, on *"Gender, Diversity and Inclusivity in plant variety design"* https://www.demandledbreeding.org/education-modules.

product profiles, based on the DLB publications and tool box on *Product Profiles: A Practitioners' Guide*, has also been completed and is available at: **https://www.demandledbreeding.org/education-modules**

Policy and advocacy

The DLB community of practice members have identified two priority areas where they would value the DLB team's professional support and new resource materials, on **(1)** Making the *business cases* for sustainable investments in demand led breeding, for targeted crops and countries; and **(2)** Identifying *innovative financing mechanisms* and encouraging *agri-entrepreneurship* amongst the breeding and seed system communities, for the development, promotion and scaling up of new plant varieties in Africa. The DLB team is developing new resources in these areas, which are being made available progressively to the DLB community during 2022/23, through the communications program, including DLB workshops with partner countries, regional and international seminars, and online resources.

Policy and advocacy consultations initiated by the DLB team in these priority areas during 2021-22 include: **(i)** Two webinars organised by ACCI in South Africa on *"Making the case for demand led breeding in southern Africa*; **(ii)** a workshop in Ethiopia to prepare the business case for strengthening investments in breeding beans and other crops, in Ethiopia, sponsored by the Ethiopian Institute of Agricultural Research (EIAR), CIAT/PABRA and the DLB program; **(iii)** presentations by DLB team members on a framework for preparing business cases for innovative investments in demand led plant breeding and encouraging agri-entrepreneurship in Africa, at a DLB-led international session during the Australasian Plant Breeding Congress in May 2022.
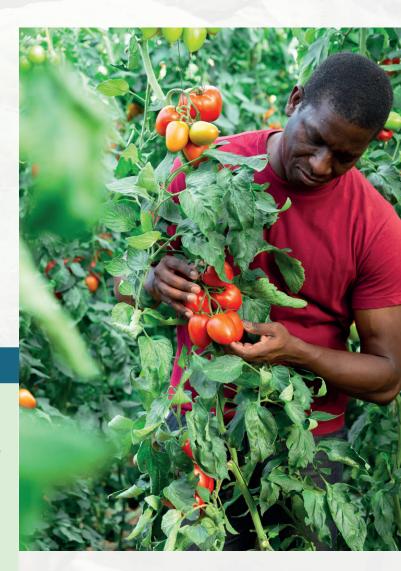
Future opportunities

These, and other initiatives on promoting innovative financing mechanisms for sustainable support for demand led plant breeding in Africa and encouraging entrepreneurship amongst plant breeders in Africa are being further developed by the DLB team and its partners in Africa and internationally during 2022-23, as part of advocating the *business of plant breeding in Africa*, not as a cost to the public purse for governments, or international international development agencies, but as an investment in the future of African agriculture, and the farmers, traders, processors and consumers who drive this dynamic and critically important sector.

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Key African partners

The key project partners in Africa are three regional centres specialising in plant breeding, namely: African Centre for Crop Improvement (ACCI) at the University of KwaZulu Natal in southern Africa; West Africa Crop Improvement Centre (WACCI) at the University of Ghana; and the Alliance of Bioversity International and the International Centre for Tropical Agriculture and the Pan African Bean Research Alliance. In addition to the three centres, other DLB partners include; the Ethiopian Institute of Agricultural Research (EIAR) and Haramaya University, Ethiopia; the Ugandan National Agricultural Research organization (NARO) together with Makerere University, Uganda; and Kenya's University of Nairobi. The project team also works with an extensive Community of Practice of more than 400 plant breeders working in national agricultural research institutes and universities throughout Africa.

African Centre for
Crop Improvement

Alliance

Ethiopian Institute
of Agricultural
Research (EIAR)

Haramaya
University

Makerere
University

National Agricultural
Research organization
(NARO)

University
of Nairobi

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