

Breeding, Variety Release and Maintenance

Country: Uganda

Profile Element	Response
Focus crops for assessment	Maize, rice, bean, cassava
National public institutions (stations) in charge of breeding work for focus crops	National Agricultural Research Organization (NARO), National Crops Resources Research Institute (NaCRRI)
Number of qualified and active public breeders for each focus crop	NaCRRI has 6 maize Breeders: 4 with PhDs, 2 with M.Sc. All above 7 years' experience. There are two bean breeders at NaCCRI
Number and focus of scientists from support disciplines (such as agronomy, entomology, etc.) that support breeding for each focus crop	3 (Agronomy - 1, Entomology- 1, Socio-economics - 1) for the maize program. The program has 6 Research Technicians all with B.Sc. and above 10 years' experience.
Private entities with breeding programs for focus crops in the country	A few Seed Companies (e.g. NASECO)
Institutions/agencies in charge of variety testing and release	Exclusively One Institution, the National Seed Certification Services (NSCS), Department of Crop Inspection and Certification, Ministry of Agriculture Animal Industry and Fisheries (MAAIF). The NSCS is responsible for conducting the VCU and DUS tests. However, since the NSCS does not have the capacity to do this, NPTs is delegated to NARO while DUS is carried out by NSCS. Cost for variety testing 250 USD per site and testing is done in a maximum of 8 sites.
Average time to release a variety (note TASAI or other source)	On average, the length of the variety release process ranges from 18 to 33 months. However, private sector breeders (seed companies) reported far longer variety release periods than public sector breeders.
Availability of documented variety release data, including DUS and NPT/VCU	Yes it is readily available, it is captured and documented during variety development and release
Extent of on-farm testing program (indicate #farms x #varieties x #reps)	On-farm trials are part of variety testing procedure, usually on-farm trials are conducted for at least two seasons at more than four diverse locations
Focus crop varieties released in the last 10 years and commercialization status of each (none, emerging, expanding, stalled, full)	Over 15 varieties released in the last 10 years, of which over 60% are being commercialized

List and year of release of varieties accounting for 80% of crop volume, by focus crop	2002, 2008, 2012, 2013
Average life of a variety in the market	Average age of popular maize and bean varieties grown was 10 and 6 years respectively (TASAI 2020)
Status of Plant Variety Protection (PVP) Act	PVP law passed in 2014; PVP regulations only put in place in 2021
Functionality of variety licensing program(s)	Early stage. NARO is working on the first variety licenses starting 2022. In 2021, NARO Holdings licensed public varieties to seed companies under exclusive, semi-exclusive and open rights.
Functionality of royalty collection programs	Being put in place through the NARO Intellectual Property Management Committee (IPMC) and under NARO technology, Assets, Services Commercialization Policy and guidelines of June 2020; and the NARO guidelines for Intellectual Property Management. March 2018
Allocation of royalties collected back to breeding program(s)	Being put in place through the NARO IPMC on behalf of breeding programs
Infrastructure in place to support public breeding work --cold rooms, irrigation, land (resilience screening, green houses), modern labs, etc.	Adequate land and modern lab. Other infrastructure need upgrading
Status/condition of national gene bank	National Gene bank in place, maize breeding program conserved >50 of its germplasm. But the gene bank still encounters gaps in human and infrastructural capacities
Major innovations that have impacted the program in the last 5 years	Adoption of modern breeding techniques, including molecular marker technology
Key variety access and licensing information available on government website(s)	Missing information
Learning events or joint activities between breeders and private sector in the last two years	Technical backstopping for quality seed production, joint variety selection, Joint variety promotion, Access to quality early generation seed
Program's total budget for each of the last 5 years	Not available
Proportion of the budget spent on the following: salaries/breeding/testing/other (total should add up to 100%)	88% (12% administrative costs) for the maize program