

Making the Best Bets Accessible

Expected at the end of 2018, the best bet catalogue will present on the web and mobile based platforms a collection of the best performing sweetpotato varieties in Africa. In 2018, a collection of 98 varieties from 16 SSA countries has been grown in a field trial at Kiboko-KALRO, Kenya (Fig. 1). The team collected all phenotypic information on 26 traits at 90 days after planting and photographed them for the catalogue. Root samples were taken at 120 days and will have nutritional quality traits determined by NIRS. Disease-free pre-basic seed will be maintained at the regional level for fast access.

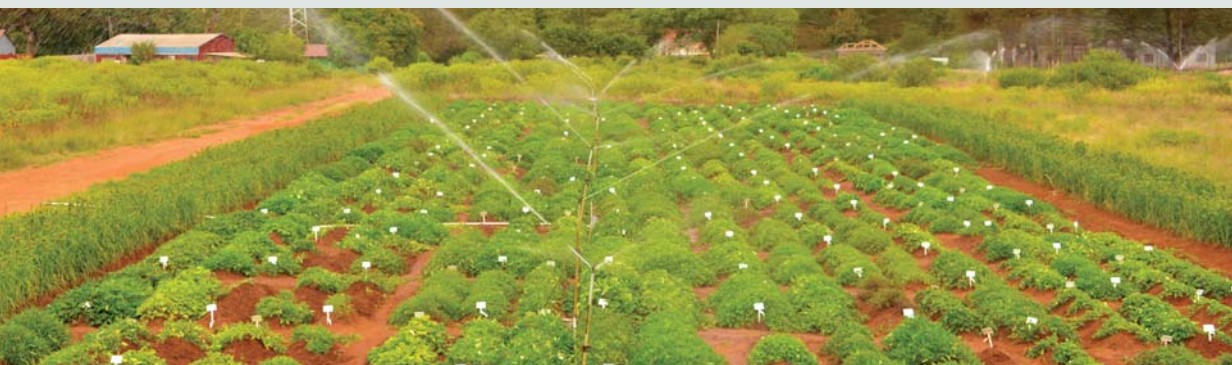


Fig. 1 Characterization trial at the KALRO station in Kiboko, Kenya (Credit: A. Kamweru)

➤ What is the problem?

Every African sweetpotato breeding program has its own collection of varieties/cultivars. The materials have gone through a series of selections and proven to be successful in the targeted environment. The varieties/cultivars/landraces or introductions, is well known by the local breeders. However, this knowledge is not shared with other sweetpotato breeding programs. Use of standardized descriptors across countries needs to be improved.

➤ What do we want to achieve?

The best bet catalogue will present a collection of the best performing sweetpotato germplasm in Africa. We want to characterize the materials and identify the genetic diversity represented in the best bets. The digital Sweetpotato Catalogue will provide an up-to-date comprehensive look at well performing existing varieties and landraces, newly-released varieties and upcoming releases of improved sweetpotato varieties in sub-Saharan Africa (SSA). The first edition of the Sweetpotato Catalogue was published in 2010, and a revision of the first edition in 2014. Both editions were published in print and focused only on orange-fleshed varieties. The online edition aims to present information on current popular sweetpotato varieties in SSA of all flesh color types on the web and mobile based platforms. Most of the varieties are released in at least one country and are

being grown by farmers, while others are advanced clones about to be released. A good number of the varieties are important parents in breeding programs to improve levels of β -carotene, root dry matter, drought tolerance, and resistance to sweetpotato virus disease in the region. Some of the varieties are landraces from African countries while others are introduced germplasm from the USA, South America, and Asia, and have been found to be adapted to environments in SSA.

The digital catalogue will be arranged by varieties with information and pictorials for each one (Fig. 2). Each variety will have a set of morphological characteristics, root attributes, and other major attributes as well as consumer and processing qualities. These will be exportable as a single A4 page. Additional information on the current status of each variety will be presented as clickable links. The catalogue will be a reference for anyone working with sweetpotato in SSA. The information will be relevant to different stakeholders, scientists, development practitioners, extensionists, and donors. It will facilitate selection of varieties to use in distinct settings. Furthermore, variety recommendations can be refined by having information on performance in different environments. Contact information of breeders in the specific countries will be part for the catalogue.



RESEARCH
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and Bananas

Partners

- International Potato Center (CIP)
- Kenya Agricultural Livestock and Research Organization (KALRO)
- National program breeders from 15 other SSA countries contributed varieties and information for the catalogue

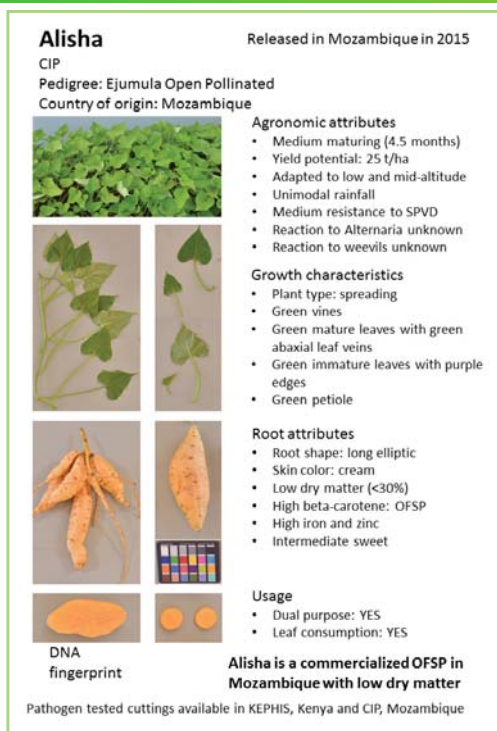


Fig. 2 Design impression of the online catalog. (Credit: J. Swanckaert)

The catalogue will be backstopped by the regional germplasm collection effort maintained by the International Potato Center (CIP) at the Kenya Plant Health Inspectorate Service (KEPHIS) in Muguga. Each variety classified as a “best bet” will have disease-free tissue culture plantlets maintained and at least 20 virus-indexed pre-basic cuttings under double protection in the screenhouse. This will facilitate access to quality pre-basic starter seed as needed by users.

➤ Where are we working?

The best bets are currently being characterized in Kenya. Other environments across Africa will follow. The catalogue will be available on the Sweetpotato Knowledge portal (www.sweetpotatoknowledge.org) and the corporate website of CIP (www.cipotato.org). It will also be available as a standalone android app downloadable from the Google Play Store for free.

➤ How are we going to make it happen?

The best bets characterization includes a complete description of agronomic attributes, growth characteristics, root attributes and usage. The information and release documents provided by the breeders further supports the catalogue. A characterization trial was set up in Kiboko, Kenya with 98 genotypes presented. Morphological data and pictures were taken at 90 days (Fig. 3) and root samples harvested at 120 days for quality analysis using Near-infrared spectroscopic (NIRS) method at Namulonge, Uganda. Each genotype is being sampled (Fig. 4) for DNA fingerprint to enable users to identify their own materials. Evaluation in different environments will provide a refined recommendation.



Fig. 3 Roots of var. Margarete at 90 DAP (Credit: A. Kamweru)



Fig. 4 DNA collection of the best bets led by Mercy Kitavi. (Credit: A. Kamweru)

➤ What have we achieved so far?

- i. Harvest at 90 days: Detailed pictures of vines and roots, morphological data collection and DNA collection
- ii. Harvest at 120 days: Pictures of roots and root samples for quality analysis
- iii. Agronomic information on all varieties from the breeders
- iv. 98 varieties are undergoing thermotherapy to remove viruses and disease-free cuttings are being established in the screenhouse with double protection

➤ Who are we working with?

The first characterization trial at Kiboko has been carried out jointly by CIP’s Sweetpotato Action for Security and Health in Africa (SASHA) project and the Kenya Agricultural & Livestock Research Organization (KALRO). Other partners include: The CGIAR Research program for Roots, Tubers & Bananas (RTB) and the Genomic Tools for Sweetpotato (GT4SP) project.

➤ What’s next?

The next major step is the development of the catalogue website and catalogue app. The process of making standardized images for the catalogue will be documented and these instructions shared with breeding teams across SSA. These will help improve the quality of pictures being submitted from the different countries in the future for updating the best bet germplasm collection. Capacity building efforts on the use of improved breeding data management tools will continue across different programs in SSA. This is aimed at promoting standardized collection and storage of evaluation data across the different environments.

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