



Breeding Pipeline: Groundnut Breeding 2007-2017

Determination of aflatoxin levels in farmers groundnut stocks

Farmer managed seed production and dissemination

2015: From the initial 7.5 tons basic seed investment for 5 improved varieties the number of beneficiaries has grown to 15,000 farmered organized around **314 seed banks**. 70% of the groundnut crop is produced from **improved varieties** (Nsinjiro, CG 7 and JL 24) compared to about 26% in 2010. Nearly **33,000 farmers** have been reached with improved seed in the three districts.

2017: In Tanzania, community seed banks produced a total of 263 tons of **quality declared seed** (QDS). Most of these were Pendo variety. Plans are underway to **link this with the official seed certification institute** (TOSCI).

The project has produced **20,000 kg** of breeder seed for **11 varieties** that include the newly released varieties in Malawi (7) and Zambia (5).

Increased collective understanding, action, and influence

2017: In Malawi, farmers working with the project partner Ekwendeni Mission Hospital were trained on **collective marketing**. They have now developed and registered their association with 172 members using the community seed bank as the foundation for **collective action**.

Nutrition informed breeding; Modern Breeding Tools

2017: Breeding with **high oleic** acid parentage material. A Single Nucleotide Polymorphism (**SNP**) based marker assisted breeding scheme has been piloted to conduct early generation screening. 1500 samples were sent to Intertek in Sweden and preliminary results show progenies with oleate introgressions.

Southern Africa Community of Practice



More appropriate variety testing and release systems that test varieties under targeted conditions

2013: **Participatory Variety Evaluation** revealed new farmer preferred lines, with ranking superior to the very successful variety Pendo.

For the first time in Tanzania, the project facilitated Farmer Research Groups to agree to official seed production contracts with **Agricultural Seed Agency (ASA)** to produce certified groundnuts seed of Pendo.

2015: Malawi **released 7 varieties**.

2017: Tanzania released 3 new varieties with wide adaptability and excellent **confectionery traits**.

50 sets of elite lines were supplied to partners to facilitate **multi-location testing**. Of these, 10 lines were proposed for release and sent for seed multiplication.

Include multi-dimensional outcomes

Interactions between interrelated pathways

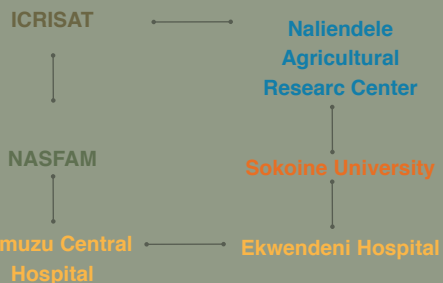
More productive cropping systems

In 2006 the average farmer in Masasi district was earning approximately Tshs 700,000 from groundnuts but the **income increased** to Tshs 1.5 million by 2010 as a result of promotion of improved variety Pendo and associated crop management production packages.

Pest and disease management systems include proactive elements such as genetic resistance

2011: a number of germplasm lines with **good resistance to groundnut rosette disease, rust, and aflatoxin** have been identified and formed a basis for further hybridization activities. F1 progenies from these crosses are being advanced and a Backcross (BC1F1) nursery has also been established.

Project Partners



Context

Groundnut is a **nutritious legume** that can be grown in **low rainfall** areas both for home consumption and market. However, low yield is common due to **pest and disease** problems and **poor varieties**. The presence of **aflatoxin** poses a serious threat to **human health** and renders the crop **unsaleable** in export markets. In 2011 aflatoxin contamination was found in all districts tested (6 between 2 countries) ranging from 0 - 2591ppb with a mean of 113 ppb for 236 samples. **18% of all households consuming groundnuts in the sample group are exposed** to levels beyond internationally recognized safety limit of 20ppb.

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- Farmer Organization
- Governmental Organization
- University in Region
- National Ag Research Center