DEVELOPMENT OF SWEETPOTATO VARIETIES FOR DUAL PURPOSE USE THROUGH PARTICIPATORY BREEDING IN RWANDA

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AGRA-PASS

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OVERALL GOAL

- To develop and release through farmers participatory breeding and variety selection, SP varieties with high yielding varieties for alternative uses (with emphasis on dual purpose use, so that varieties are also **attractive to be used as animal feed** – especially for cows), resistance to SPVD, *Alternaria*, rich in nutrition quality, early maturity, and good storability.

Project goal/strategy

- The project is aiming to extend the existing sweetpotato breeding program in Rwanda in the direction of using **more parents**, **more controlled crosses** and a **rapid selection scheme** (called an accelerated breeding scheme : **ABS**) with farmer participation in Rwanda

Project components

- (i) Breeding, selection and release of new varieties with the aid of farmer participation
- (ii) Training of farmers on production, utilisation and maintenance of clean and disease-free cuttings
- (iii) Training of technicians in controlled crosses and accelerated breeding methods.

Target areas/Regions

East Province

The project works in Low, Mid and High altitude Provinces of Bugesera, Muhanga and Huye districts of Rwanda

South Province

Expected outputs

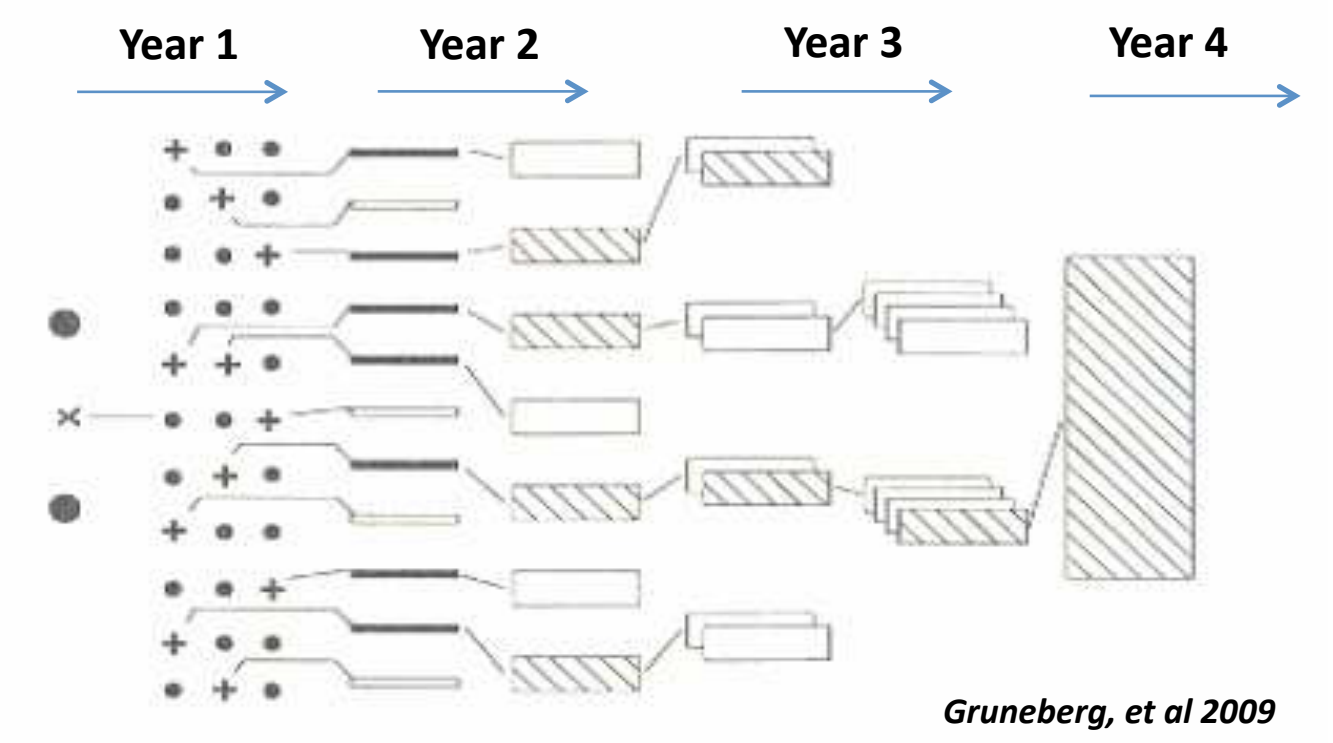
- To develop within 3 years at least 30 advanced OFSP clones and at least 30 advanced white or yellow clones
- By targeting the release of 2 new OFSP and 2 WFSP varieties

Methodology

- Use of 60 of parents in polycross CB. (the aim is to combine these 60 parents in a factorial controlled cross design [6 male parents (top clones with – 3WFSP and 3 OFSP) x 54 female parents (about 40 W clones and 15- O clones)].

The target is to develop more than 12,000 polycross seed and at least 4,000 controlled cross seed

ABS-SP concept



Gruneberg, et al 2009

The basis of ABS: - the finally selected clone is genetically absolutely identical with the original seed plant (Each seed plant is a potential variety!!!)

h^2: σ^2_G , σ^2_{GY} and σ^2_{GL}

Methodology con't

- The target is to develop more than 12,000 polycross seed and at least 4,000 controlled cross seed.
- From each genotype in multiplication (single seed plant nursery), 12 cuttings have to be obtained
- A OT will conduct at 3-4 environments (3 plants per genotype in 1m row plots in each observation trial / environment).
- OT of 0.8-1 ha size

Methodology con't

- **8000 clones to enter observation trial selection [3 clones plants for each genotype at each location] at 4 Env.**

- Attributes to be considered :

1) no or low pest and disease observations,
2) storage root yield per ha,
3) upper biomass production per ha,
4) storage root dry matter content
5) beta carotenoid estimations on basis of color charts,
6) storage root size, shape and form for market purposes

- **800 to 1200 genotypes selected in the 1st selection step carried out by farmers**
- **At least 60 clones to enter advanced breeding clone trials together at 6 Env.**

  (45 plants per plot x 2 replication = 90 per genotype)
- **At least 48 on-farm trails established each with 8 clones**

  2 WFSP or cream clones and 2 OFSP clones selected for variety release

THANKS