BASICS PROGRAM: Breeders Seed

(Chiedozie Egesi and Peter Kulakow)

Ibadan
18 April 2016
1. A regular supply of certified nucleus and pre-basic seed for released cassava varieties is produced and sold to basic seed producers in Nigeria.

2. A new rapid multiplication system, SAH, increases the rate of multiplication and delivery of prebasic seed with starting material initiated from tissue culture.
3. Variety demand by diverse end users in differentiated cassava markets is determined by communication with end users, demand creation trials and results of cassava variety adoption studies

4. Certification standards and practice for prebasic and basic seed result in increased commercial exchange of high quality stems

5. Backstopping and co-learning with project partners improves project performance and increases exchange of high quality seed
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Initial Target Varieties

• Initial target of improved varieties with highest demand
  – TME419 – High starch
  – TMS-IBA980581 – High starch
  – TMS-IBA980505 – High starch
  – TMS-IBA961632 – High starch
  – TMS-IBA070593 -- Biofortified
• 26 total varieties are currently in tissue culture
SAH Update

- SAH is potential game changing technology for rapid multiplication that can increase multiplication rates from the current 1:5 to 1:40 times per year to 1:5 per month or more
- Proof of Concept trial under way in Argentina
- In vitro multiplication suitable for five varieties
  - Ramada Paso
  - Rocha
  - Mpar 75
  - Santa Catarina
  - Palomita
- Update: In vitro culture has been growing very slow. Micropropagation is used only to keep the initial material.
• In vitro transfer to SAH
  – All different types of explants could be rooted and developed into SAH plants.
  – Initial growth and rooting speed was affected by the in-vitro conditions of the mother plant.
    • **Success rate:** 98% of the in-vitro explants transferred into SAH grew into plants
      – 75 initial in-vitro plants were transferred from test tubes to SAH
      – Some adjustment in relation to the number of plants per container needs to be studied
SAH Update

• SAH multiplication and protocol
  – In-vitro: plants can be cut every 30 days
  – SAH: plants can be cut every 13-15 days
    • In-vitro produces very variable plants, some test tubes show very good growth, other plants are weak. SAH produces vigorous plants in all cases.
    • Cassava multiplies in SAH: from 100 SAH plants = 500 plants were obtained in one month.
    • Note: there were a few issues with growth room temperature that might have slowed growth because the conditions were adjusted to potato
SAH Protocols

• A protocol for Cassava SAH multiplication has been developed
  – Optimal environmental factors are being determined (light intensity, temperature)
  – Two different nutrient solutions have been tested

• Propagation success: 93% of 500 SAH cuttings developed into plants.
SAH Protocols and workshop

• Plants growing in SAH produced many roots and they performed very well after transplant. SAH plants transplanted into pots grew to 22 cm in 20 days.

• SAH Workshop scheduled for 25-28 April 2016 in Mar del Plata, Argentina
Managed by Dr. Richardson Okechukwu
Utilizes current best practices for basic seed production
Oyo state Cassava farms are located in 3 contiguous locations around Iddo local government area near Ibadan.
  – Akuffo Farm Settlement – 5 ha (multiplication and research)
  – Akinsola Farm – 10 ha (multiplication and demonstration)
  – Oyenuga Farm- 25 ha (multiplication farm)
Available varieties --
  – Primarily TME419 in abundant supply
  – Smaller quantities of IBA980581, IBA961632 and IBA980505
• Establish at least 2 isolated and irrigated seed multiplication farms for first generation pre-basic production of products of SAH
• Utilize current best practices for prebasic and basic seed production
• Coordinate prebasic production with certification process
• Production of prebasic stems for sale to commercial basic seed producers – NRCRI, IITA and other prebasic stem producers receive income from all stem transactions
Indicators for breeders seed include:

- Variety specific multiplication rates for all stages of stem production
- Quality management records
- Seed flows tracked
- Cost tracking
- Revenue generated
- Details will be developed in M&E planning
2016 Work Plan: Milestones

- SAH technology introduced to three labs in Africa
  - SAH workshop held in Argentina
  - SAH installations developed in Africa
  - Pilot testing of SAH in Africa using backstopping support from SAHtechno.

- First year demand creation trials established
  - Initial varieties selected for the processor group and for village seed entrepreneur group
  - Protocols developed
  - First year trials established in 4 locations on station and 4 locations on-farm by NRCRI and IITA

- First year delivery of 100K QPM to Context Network
2016 Milestone- Interdependencies

- Stability of markets
- Seasonal weather variability
- Demand for planting materials
- Cost and price stability for stems
- Prebasic supply chain functioning
  - Tissue culture –
    - identify confirmed,
    - virus indexing,
    - Multiplication goals achieved
  - SAH and rapid multiplication
  - Pre-basic seed nurseries established
  - Delivery/sale of stems to basic seed producers
- Certification of prebasic seed initiated and feasible
- Coordination with other projects and stem suppliers