Modernizing KALRO Breeding Programme: EiB/KALRO Engagement

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Presentation Outline

1. Introduction
2. About KALRO
3. Constraints in Agriculture in Kenya
4. CGIAR Linkages
5. EiB engagement, KALRO Plans and models
KALRO’s mandate is to:

- Promote, streamline, co-ordinate and regulate research in crops, livestock, genetic resources, biotechnology and animal diseases
- Expedite equitable access to research information, resources and technologies and
- Promote the application of research findings and developed technologies in the field of agriculture and livestock
Constraints to Driving Genetic Gain

**Biotic and abiotic stresses; phenotyping**
- Limited use of technologies e.g. genotyping, data mgt

**Poor mechanization**
- Poor pre-and-post harvest handling

**Limited range of products; unorganized marketing system**

**Production**
- Unpredictable climate
- Pests and diseases
- Low productivity
- Land fragmentation

**Inputs**
- Narrow technology horizon
- Low yielding varieties
- Limited extension services
- Input price volatility

**Postharvest**
- Limited pre-and-postharvest handling technologies
- Poor handling and inappropriate storage leading to losses
- Insufficient aggregation centres
- Limited mechanization across value chain

**Processing**
- Poor market access
- Policy regulatory shifts
- Crop price volatility
- Better nutrition & gender responsive breeding

**Market**
Focus Crops

Cereals - Maize, Sorghum, Rice, Millets, Wheat, Barley

Grain Legumes - Beans, Pigeon pea, Cowpea,

Root & Tuber Crops – cassava, potato, s/potato,

Industrial crops - Tea, Coffee, coconut, Oil Crops, fibre crops,

Horticulture - Fruits (Musa), vegetables

East African Breeding Networks Countries to compliment each other
Current Status and Linkages with CGIARS

- Capacity building NARs staff
- Provision of parental breeding lines
- Provision of specialised services (DH development, Genotypying, Global rust initiative)
- Infrastructure development
- Integrated Breeding Platform for BMS
Engagement with EiB and KALRO Plans

Identify Priority Crop Networks
Baseline Program Assessment
Rating of Breeding Program
Develop Improvement Plan
Investment Plan
Implement Plan

We are currently here with NARS maize, cassava, sweet potato, g/nut & KALRO maize, bean, wheat and potato

5 years (priority crop programmes)
10 year (priority crops)

Non functional
- No product profiles
- Little breeding capacity
- Highly dependent on CGIAR germplasm

Testing program
- Limited testing network
- Very dependent on CGIAR germplasm
- Most operations manual

Early stage
- Reliable testing network
- Limited resources for breeding pipeline
- Irregular release of mostly CGIAR varieties

Mid-stage
- Multidisciplinary breeding team
- Moderate size pipeline
- Mix of CGIAR and NARS germplasm
- Regular variety release
- Limited molecular breeding capacity

Mature breeding program
- Well-resourced program driven by market needs
- Genetic gain is measured
- High variety adoption rate
- MAS and digital field data collection in use

Excellence in Breeding PLATFORM
Models for CG-NARs networks

STG 0 ▶️ STG1 ▶️ STG 2 ▶️ STG 3 ▶️ STG 4 ▶️ STG 5

CGIAR ▶️ NARS

NARS ▶️ CGIAR

NARS ▶️ CGIAR
Every year the world grows by 80 million people. That’s a lot of mouths to feed.