

# **NARO Breeding Program Status and Modernization Priorities**

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**Excellence in Breeding Annual Meeting, November 5-7, Steinberger Airport Hotel, Amsterdam**

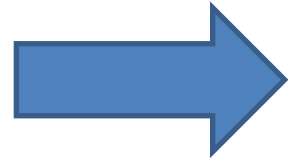


- 16 Public Agricultural Research Institutes (7 NARIs and 9 ZARDIs),
- Staff number of 905 as of July 2019, of which 278 are scientists (> MSc)



# NARO's Research mandate

1. Crops
2. Forestry
3. Livestock
4. Fisheries



## Focus Crops

- Cereals (**maize**, rice sorghum, millets)
- Legumes (Beans, cow pea, pigeon pea)
- Oil crops (**ground nuts**, sesame, sunflower, soy bean, oil palm)
- RTBs (**cassava**, **sweet potato**, **banana**, yam)
- Horticultural crops

National  
Priority/strategic  
Commodities  
(10/15):

High impact export potential:-

*Coffee, Tea, Fisheries*

High potential for import replacement:-

*Cotton, Veg oil, beef (by-products)*

Food/nutrition security & exports:-

*Maize, Dairy, Cassava, Rice, Banana*



# NARO Breeding and Deployment Capacity Dashboard

- i. Number of breeders: 38 (33 PhDs, 5 MScs)
- ii. Number of released varieties: 123 releases last 10 years - 17 crops
- iii. Testing sites (2 drought, 16 Mid-altitude optimum sites, 7 highland sites)
- iv. Infrastructure (irrigation, agro-machinery, seed processing and storage, phenotyping facilities)
- v. Functional databases (BMS, Cassavabase, sweetpotatobase, fieldbook)
- vi. 2 Genebanks (*Exsitu, insitu* - 4 community seed banks)
- vii. Strong partnership with Universities/MaRCCI and Seed Companies

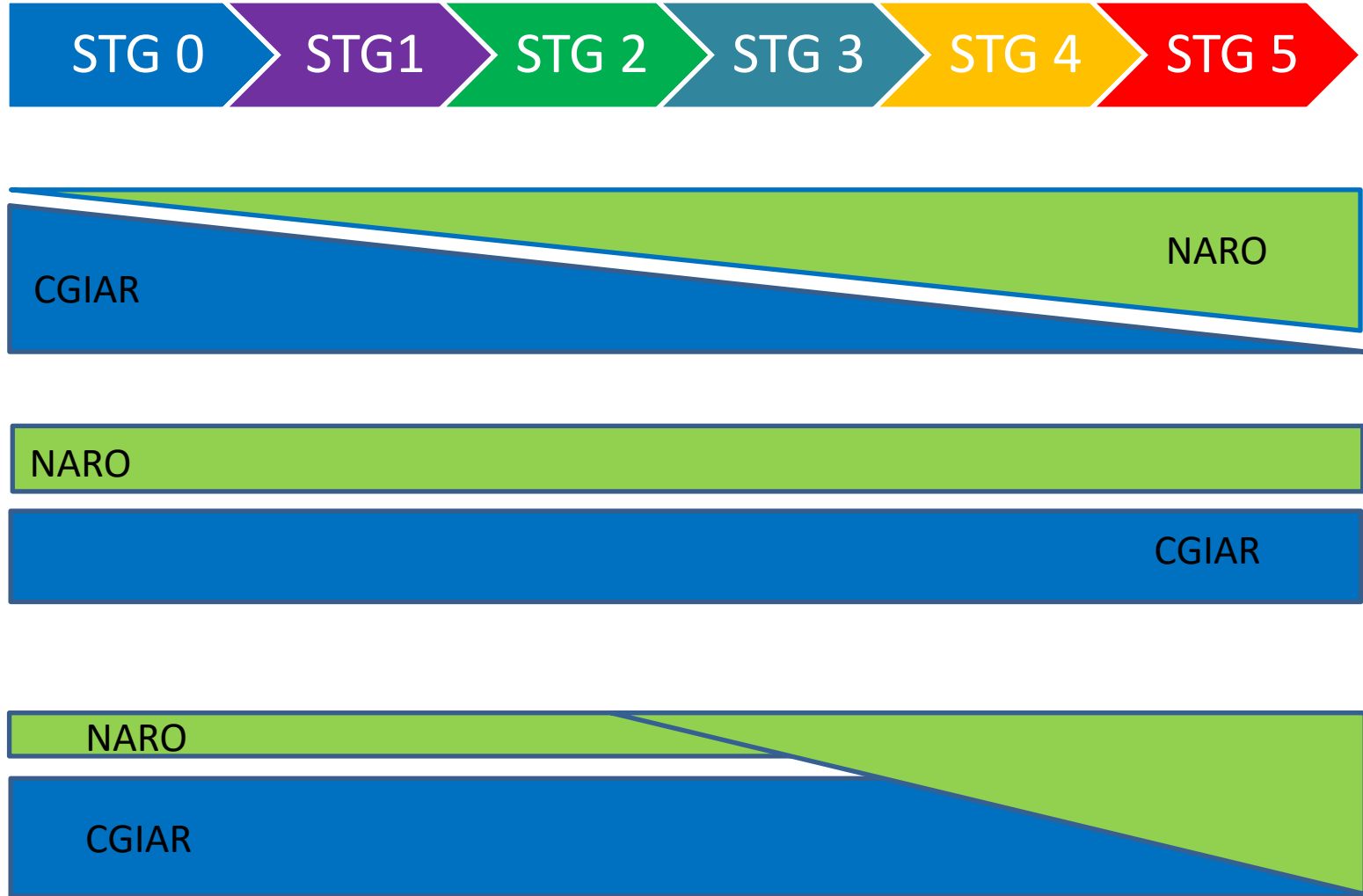


## Current Status and Linkage with CGIAR

- i. Germplasm exchange and leverage
- ii. Traits discovery and deployment
- iii. Testing networks (regional trials, screening sites, regional nurseries)
- iv. Capacity building (training and infrastructure)
- v. Improving seed systems (variety releases, EGS and QA/QC)
- vi. Partner in major CGIAR- NARs Projects (AVISA, STMA, NEXTGEN, BBB, AA)



# NARO's Vision for CG-NARs Networks- Crop Dependent





## Vision for NARO Breeding

Guided by NDPIII (Agro-industrialization) and NARO Strategic Plan (Product and market)

### Short-term vision – 5 years (Strengthening breeding pipelines to increase genetic gains)

1. Understanding market needs for products including nutrition and gender
2. Breeding program assessment, costing and optimization
3. Implement and refine product profiles for pilot crops - monitor progress based on targets
4. Develop strategies and policies for variety replacement
5. Adoption of enabling technologies (Genotyping, digitized data collection/management, DH/Anther culture, GS, RGC)
6. Invest in breeding infrastructure for improved phenotyping (for field and lab platforms, for good data, quality control, seed storage, traceability)



## Vision for NARO Breeding

### Long-term– 5 - 10 years (Productivity gain increases on-farm)

1. Genetic gain on-farm – At least 1%/year genetic gain to bridge the gap between current pop growth (3.3%) and Ag. growth (2.3%)
2. Continuous capacity building in enabling technologies (rapidly changing)
3. Pro-active variety replacements and improved seed systems



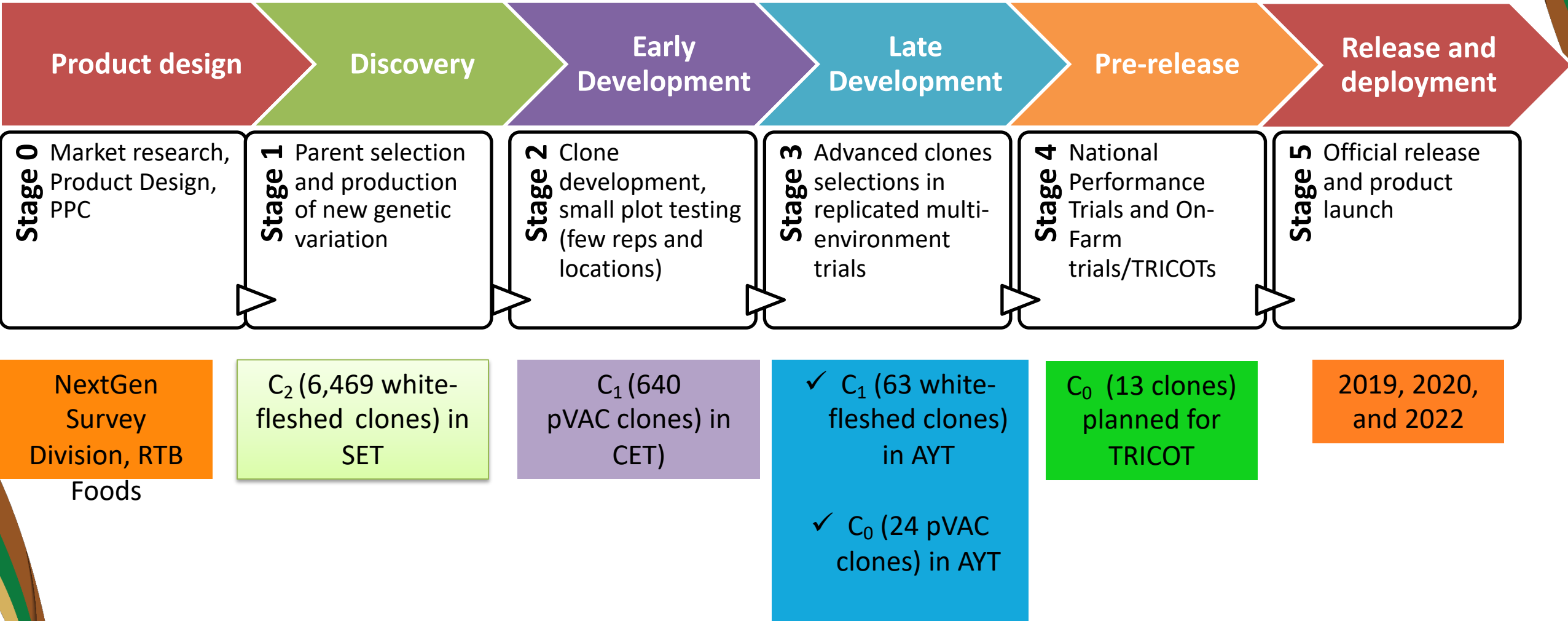


## Current engagement with EiB

- i. Trainings and active engagement with Global EiB leads
- ii. Product profiles developed for pilot crops- (maize, cassava, sweet potato and ground nut) and stage gate for cassava
- iii. Assessment of breeding pipelines (maize, cassava, sweetpotato, g/nuts- improvement plan development for groundnuts) and mechanization at Namulonge
- iv. Planned on-site consultant- 4 months to support modernization
- v. Genotyping lines and populations – HTGP, IGSS



# Implementation stage gate system – a case of cassava





# What can EiB help with in Future?



- i. Continuous review of breeding programs (end-to-end) and implementation of improvement plans
- ii. Share best practices and experiences between public and private sector programs including mechanization
- iii. Support training, retooling, exchange visits, attachments and consultancies
- iv. Subsidized genotyping costs with vendors based on economies of scale across EiB members
- v. Sustainable support to implement and optimize breeding pipelines
- vi. **CGIAR modernization should go hand-in-hand with NARs modernization**



Thank you