Overcoming hurdles to change, a day in the life of a NARES breeder: Experience in NARO

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Presentation outline

• Case study of overcoming barriers for successful implementation of an aspects of breeding modernization:
  • Journey towards breeding and operational excellence
  • Barriers to breeding modernization
  • Overcoming the barriers
  • Experience and lessons learned for other programs
  • A day in life of NARES breeder
• Q&A
Operational processes towards excellence

• NARO’s research agenda is guided by 10-year strategic plan aligned to sector plan and national development plan (NDP III)

• Moving from only technologies for increased production and productivity to market-oriented research for agro-industrialization

• 5-year mid-term operational plan from which annual plans are derived

• Robust performance management (PM) structure and process for annual staff appraisal

• PM translates high level research strategy into manageable, SMART objectives, processes and deliverables for institutes, departments, teams and individuals
Change management in NARO breeding

• Breeding programs have been able to relate high level principles of strategy and vision to their product profiles and breeding philosophies

• Primary goal is to modernize breeding programs for crop commodities – maize, rice, sorghum, millet, cassava, sweet potato, banana beans and groundnut

• Upgrade of breeding operations with integration of molecular and mechanization technologies for operational excellence

• Organizational team work to override commodity teams/ individual success with market-oriented mindset
What was implemented to modernize breeding in the last 3 years

• Market-facing breeding- stimulation of cottage and large-scale industries with new traits and products (brewery, starch, food and feed industries)

• Implementing recommendations from reviewed product profiles and BPAT breeding assessment

• Shortened breeding cycles by integration of genomic selection, anther culture, doubled haploid, LED-induced flowering
What was implemented to modernize breeding in the last 3 years

Tools to enhance data collection from experimental fields and/or end-user surveys. Costing tools enhanced decision-making.

Instrumentation to enhance data collection, while reducing drudgery

Data ecosystems adopted

Changes in modernizing breeding

- Multi-disciplinarity and coordination (Advancement meeting, crop calendars, shared knowledge and facilities)
Barriers to breeding modernization

• Barriers to change have been organizational, policies and technical

Organizational and policy barriers:

• Commodity-based research structure weakens inter-program and institute collaboration, cross-functionality for effectiveness

• Limited capacity - IT connectivity, mechanization, irrigation, bioinformatics

• Inadequate and delayed budgets

• Human resource base- staff attrition, slow recruitment and absorption of well trained and experienced personnel

• Bureaucratic and lengthy procurement processes
Breeding Barriers: best displayed by reviewing data value chain

Data Collection
- Barriers to getting data fit-to-purpose with a mindset of urgency

Data Dissemination
- Barriers to curating, storing and drawing insights from collected data

Data Uptake
- Barriers to using data to support decision-making and reinforce standard practice

Data Impact
- Barriers to using data to optimize processes and policy design
Overcoming barriers to breeding modernization

• Talent spotting, succession planning, recruitment and deployment – provision for NARO core and project staff

• Monthly coordination and reflection meetings across breeding programs

• Joint resource mobilization strategy- Grants office, proposal committees

• Leveraging on collaboration, shared facilities and services –strategic partnerships

• Enabled champions mobilizing and driving changes
Overcoming barriers: Enabling national and institutional policies

- NARO strategic plan 2017/18-2027/28
- NARO technologies, assets and services commercialization policy
- Framework for access to and licensing of NARO plant varieties
- Research data management policy, 2021
- PVP law (2014) and regulations (2021)
- Establishment of NARO Holdings Ltd to overcome some institutional bottlenecks
Experiences and lessons learned in breeding modernization

- Demand-driven research and priority setting increases uptake and adoption of research products
- Investment in key research infrastructure – labs, irrigation, seed storage
- Collaborative grant writing
- Need to conduct impact assessments and document evidence of change
- A central data management is essential to monitor metrics.
- Cross-disciplinary and cross-functional collaborations and network across commodities is important and impactful
- Shared services and facilitates reduce costs and increase efficiency
A day in the life of a NARES breeder

• Resource mobilizer, implementer, manager, communicator and reporter

• Limited hand-offs due to limited human resource

• Allover the place and jack of all trades- Limited specialization in breeding pipelines and disciplines (genetic resource management, line development, product development, testing, analytics, seed systems and dissemination)

• In some cases, a breeder for multiple commodities

• Closer to customers and industry-opportunity for impact

• Social and family person