# Accelerated Breeding - 2022 in numbers

Michael Quinn,

Accelerated Breeding Lead

**INITIATIVE ON**

# Accelerated Breeding

CGIAR

## Aims:

- Ensure modernized CGIAR-NARES breeding networks deliver higher rates of **genetic gain** in the form of better-performing, farmer-preferred crop varieties

- Decrease **average age of varieties** in farmers' fields, providing real-time adaptation to climate change, evolving markets and production systems.

**Lead:** Michael Quinn

## Impact areas:

- Nutrition, Health & Food Security
- Poverty Reduction, Livelihoods & Jobs
- Gender Equality, Youth & Social Inclusion
- Climate Adaptation & Mitigation
- Environmental Health & Biodiversity

### WP1
**ReFOCUS**
**Meet farmers' needs**, based on Market Intelligence insights

Peter Coaldrake

### WP2
**ReORGANIZE**
**Organize breeding activities and teams** to best drive breeding outcomes

Sarah Hearne

### WP3
**TRANSFORM**
Build inclusive, impactful **CGIAR-NARES-SME breeding networks**

Bish Das

### WP4
**DISCOVER**
Drive & improve **trait discovery & deployment**
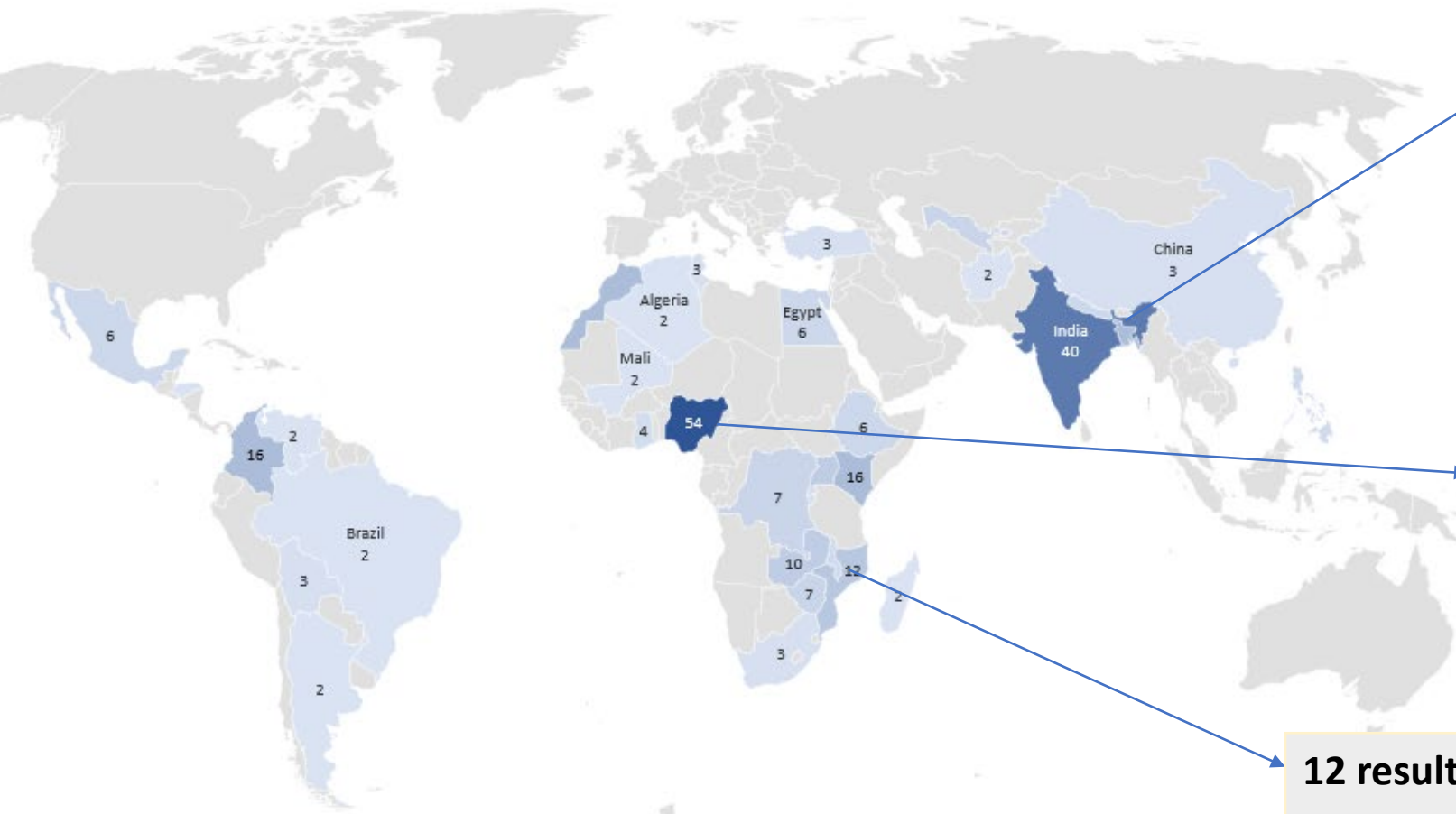
Sarah Hearne

### WP5
**ACCELERATE**
**Optimizing breeding pipelines** to accelerate rate of genetic gain

Dorcus Gemenet

# Accelerated Breeding – geographic focus of results



**16 results reported in Bangladesh**

E.g. Genetic dissection for head blast resistance in wheat using two mapping populations

Contributing to SDG 1, 2, 5 & 13

**54 results reported in Nigeria**

E.g. Cassava breeding networks in Africa accelerate genetic gains for resilient, biofortified varieties for home-processing and sale; national collaborators release six high provitamin A varieties supporting efforts to reduce malnutrition.

Contributing to SDG 1, 2, 5 & 13

**12 results reported in Mozambique**

E.g. Gender-differentiated trait preferences for sweetpotato varieties in Mozambique

Contributing to SDG 5 – Gender Equality

**463 results in total:** Map displays countries with 2 or more results; continental and global results not shown

# Progress against ToC

One CGIAR breeding is already a tremendous force:

- 21 crops and forages, 33 collaborative breeding networks involving ~ 1,200 partners in 135 countries.

- Partner organizations in 45 countries registered in 2022 a total of 303 crop varieties deriving from CGIAR breeding pipelines: 234 climate resilience, 105 reduce malnutrition among women and children, some both
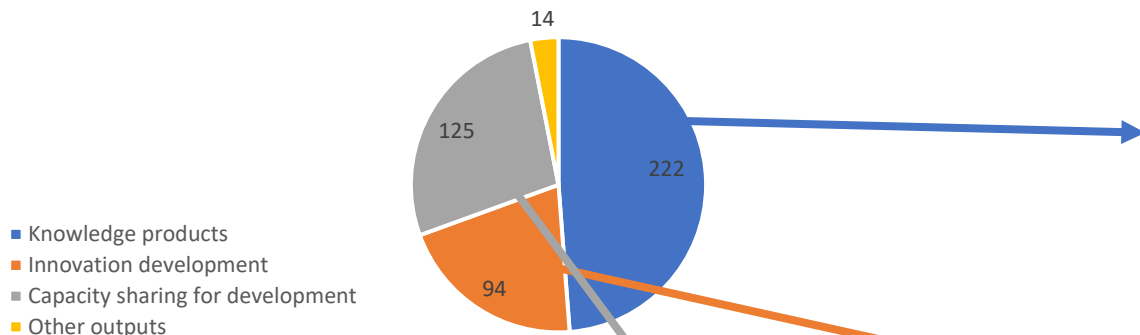
Our ToC made simple:

- **More focused**: through ReFOCUS and DISCOVER, in collaboration with Market Intelligence.

- **Faster**: through ACCELERATE and DISCOVER, in interaction with Breeding Resources.

- **More equal and collaborative**: through TRANSFORM and ReORGANIZE, in interaction with all Genetic Innovation Initiatives.

On track for all results.
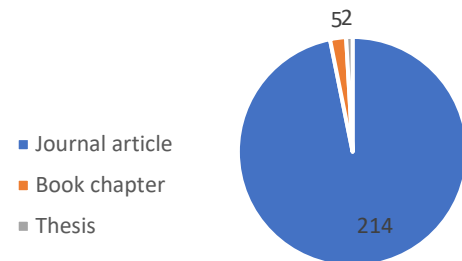
# Accelerated Breeding – 2022 key results
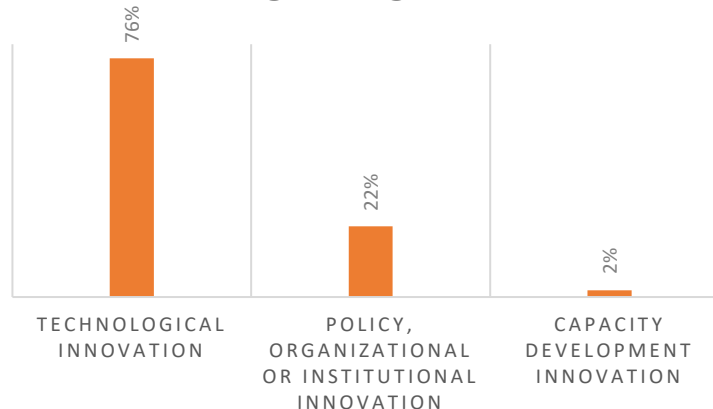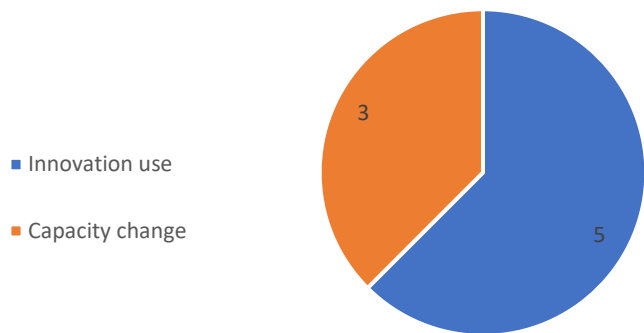
CGIAR

## Output result categories



- Knowledge products
- Innovation development
- Capacity sharing for development
- Other outputs

222
125
94
14

TOTAL of **463** results

## Knowledge products type



- Journal article
- Book chapter
- Thesis

52
214

## INNOVATION TYPE



76%  TECHNOLOGICAL INNOVATION

22%  POLICY, ORGANIZATIONAL OR INSTITUTIONAL INNOVATION

2%  CAPACITY DEVELOPMENT INNOVATION

## Outcome result categories



- Innovation use
- Capacity change

3
5

## SDG contribution

1 NO POVERTY — **208 results**

2 ZERO HUNGER — **208 results**

5 GENDER EQUALITY — **276 results**

13 CLIMATE ACTION — **208 results**

● Female ● Male

**7,636 people trained**

3,582
4,054
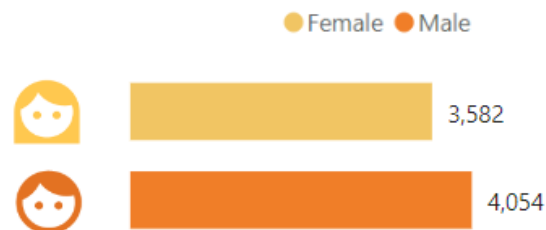
# Success examples – More focused





Standardized description of the CGIAR breeding portfolio

For the first time in CG history, the full portfolio of CG pipelines has been described together with market segments served and Target Product Profiles pursued.

Starting point for many other objectives:

- Agreeing with countries on breeding priorities
- Aligning investment with impact through pipeline investment cases
- Optimizing breeding schemes to increase genetic gain
- Genetic gains assessments

# Success examples – More collaborative / equal



Greater NARES engagement and systematically improving partnership approaches.

- High level meetings incorporating insights of senior NARES leaders across Africa and Central and West Asia
- Stronger processes to defining joint breeding objectives and roles of CGIAR and NARES
- Capturing NARES strengths, improvement ambitions and capacity development needs, so far in 38 NARES breeding programs in Africa and South Asia
- Strongest technical support to 20 collaborative breeding networks and 26 countries in Africa and South Asia
- 125 capacity sharing events with 7600 participants

# Success examples – Faster

21 crops and forages: 60 breeding programs – 150 breeding pipelines

- **Faster:** Genomics-supported recurrent selection now implemented in 35% of all breeding pipelines; room for improvement.

- **More efficient:** Breeding schemes optimized in 11 crops.

- **Reality check:** Large-scale on farm evaluations captured gender-disaggregated farmer feedback in cassava, maize, potato, rice.

- **Aligned:** Standardized stage plans and genetic gain analysis.

- **Exchange:** Monthly cross-commodity dialogues among over 100 CGIAR and NARES breeders.

# Success examples – Linking upstream research to downstream impact

Capturing the full portfolio of 350 trait discovery and deployment (TD&D) activities

- 34% on biotic stresses
- 25% on abiotic stresses
- 28% on nutritional, production and end-use traits

This is CGIAR upstream research, with 118 publications in 2022 alone.

Agreeing on cross-center processes to:

- Cross-crop leanings, including through standardization of approaches
- Optimizing TD&D activities
- Aligning investment with impact

Thank you