Advancing national livestock traceability: development and rollout of Rwanda's first cattle identification and registration

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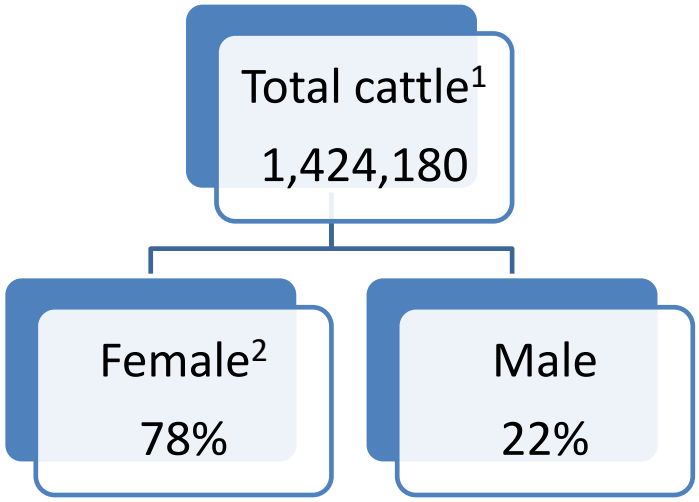
Rwanda Cattle farming at glance!



Total cattle farmers
666,659

83% in Rural

17% in Urban area

Cattle farming objectives

Milk production (for income and consumption)
Asset and savings
Manure

Common production systems

Zero grazing dominates
Semi-grazing
Open grazing (especially in Eastern province and in Gishwati)

Common breeds/populations

Holstein-Friesian and their crosses
Jersey and their crosses
Local breeds (Inyambo, Inkuku and Inkungu)

[1] From the 5th Population and Housing Census, NISR, 2022
[2] National cattle identification and registration, RAB 2022

National Cattle identification and registration

Overview

- First national cattle identification and registration
- Implemented through collaboration among Ministry of Agriculture and Animal Resources (MINAGRI), Rwanda Agriculture and Animal Resources Development Board (RAB), Royal Jersey Agricultural and Horticultural Society (RJAHS), PAN Livestock Services Ltd, Heifer International Rwanda, Ripple Effect, Rwanda Youth in Agribusiness Forum (RYAF) and other partners.
- National rollout started in October 2021.
- By July 2022, a total of **1,436,675** cattle (91.2%) were identified and registered.

National Cattle identification and registration

Goal

To transform cattle from an unrecorded asset into a traceable, measurable, and manageable resource that supports productivity, disease control, and genetic improvement.“

Key Objectives

- Uniquely identify and register all cattle in Rwanda.
- Establish a centralised national livestock database.
- Support disease surveillance and movement control.
- Improve livestock sector planning and decision-making.
- Enable animal performance recording and genetic improvement.
- Strengthen ownership verification and livestock security.

Regulation Framework and Planning

- Anchored in the Animal Identification Law No. 33/2002 *(Being reviewed)*.
- Aligned with the Strategic Plan for Agriculture Transformation Phase 4 (PSTA4 -*2017-2024*).
- Integrated into Rwanda's Comprehensive Data Warehouse.
- The livestock database is now part of the AMIS (Agriculture Management Information System of the Ministry.

Methodology and Tools

- A cloud-hosted SQL Server database was customized for Rwanda cattle farming.
- Unique ear tags assigned to individual cattle.
- A web-based App was developed and allowed data collection using smartphones and tablets.
- Real-time synchronization to central national database.

Database Functionalities

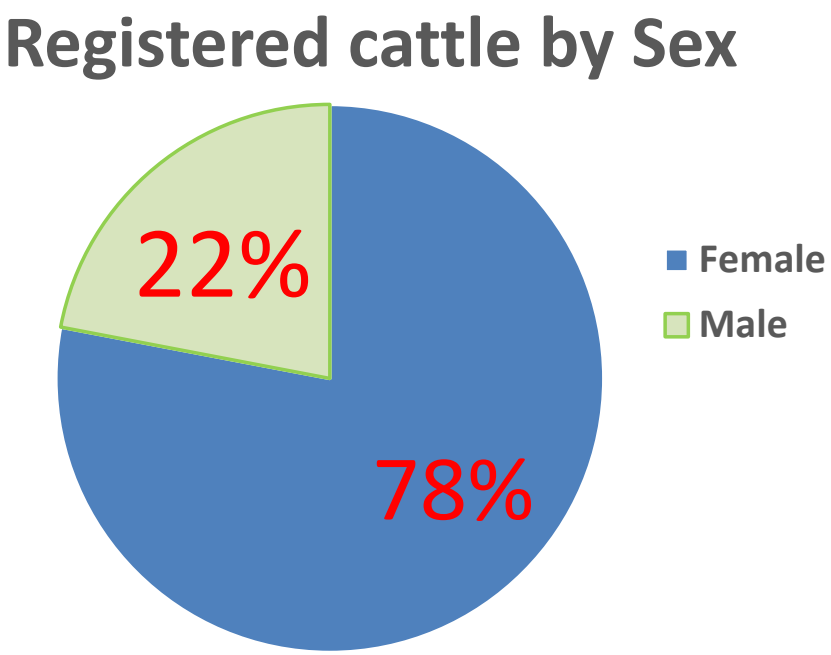
- Allows farm and premises registration with unique code, GPS coordinates and other required details.
- Animal registration and lifecycle traceability (movements, transfer, etc).
- Recording of calving, Artificial insemination, pregnancy diagnosis, vaccination, disease and milk production.
- Automatic calculation of fertility, health and productivity indicators.
- Action lists and scheduling for future animal management events.

Stakeholder Engagements

- MINAGRI: leadership, policy and coordination.
- RAB: Supervision of implementation, training and procurement.
- RAB, RJAHS, PAN Livestock Services: Database development and piloting.
- Heifer, Ripple effect, and RYAF: technical and financial support.
- Districts and sectors: field supervision and mobilization.
- Over 1,100 private enumerators trained and deployed (part of Veterinary Sanitary Mandate).

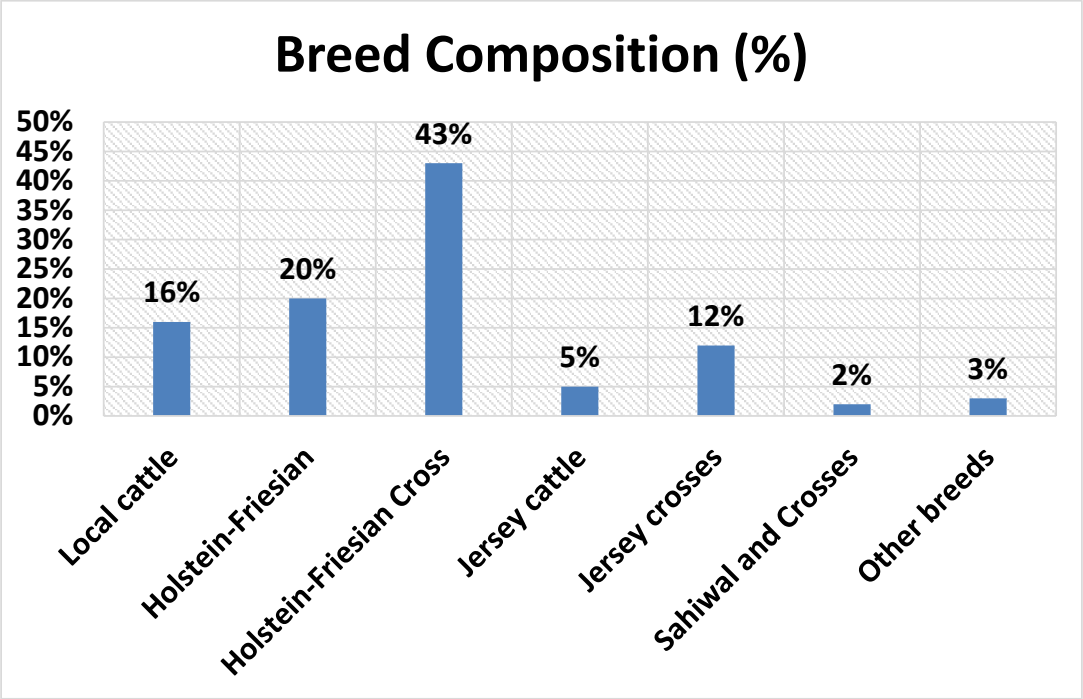
Summary Results – Sex Distribution

- From October 2021 to July 2022, a total of **1,436,675** cattle (91.2% of estimated cattle) were ear tagged and registered.
- Distribution of cattle per sex reflects Rwanda's dairy-oriented production system.



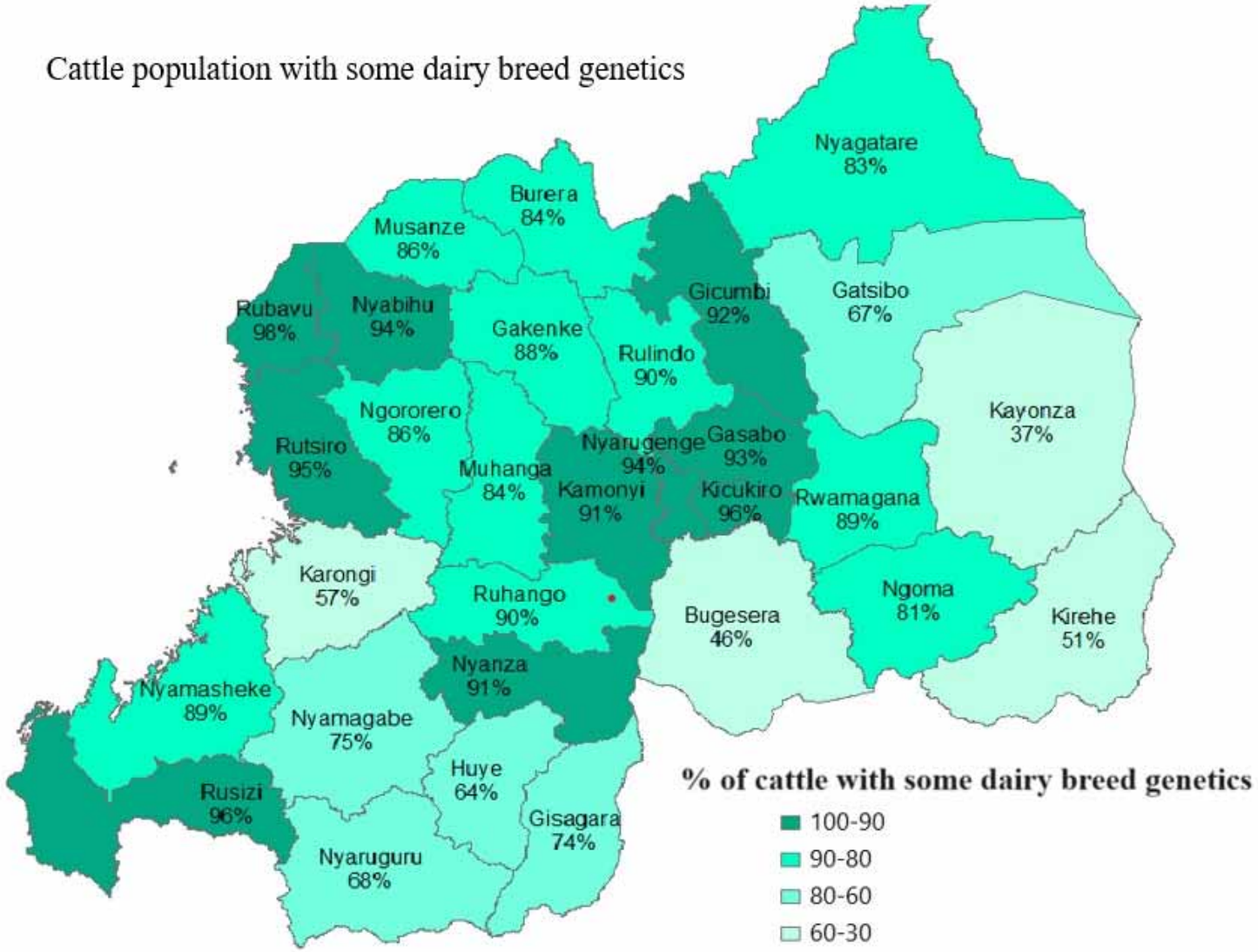
Summary Results – Breed Composition

- Holstein-Friesian genetics dominate the national herd.
- Strong adoption of crossbreeding.
- Local breeds remain important adaptive resources.
- Data provides a foundation for genetic improvement planning.



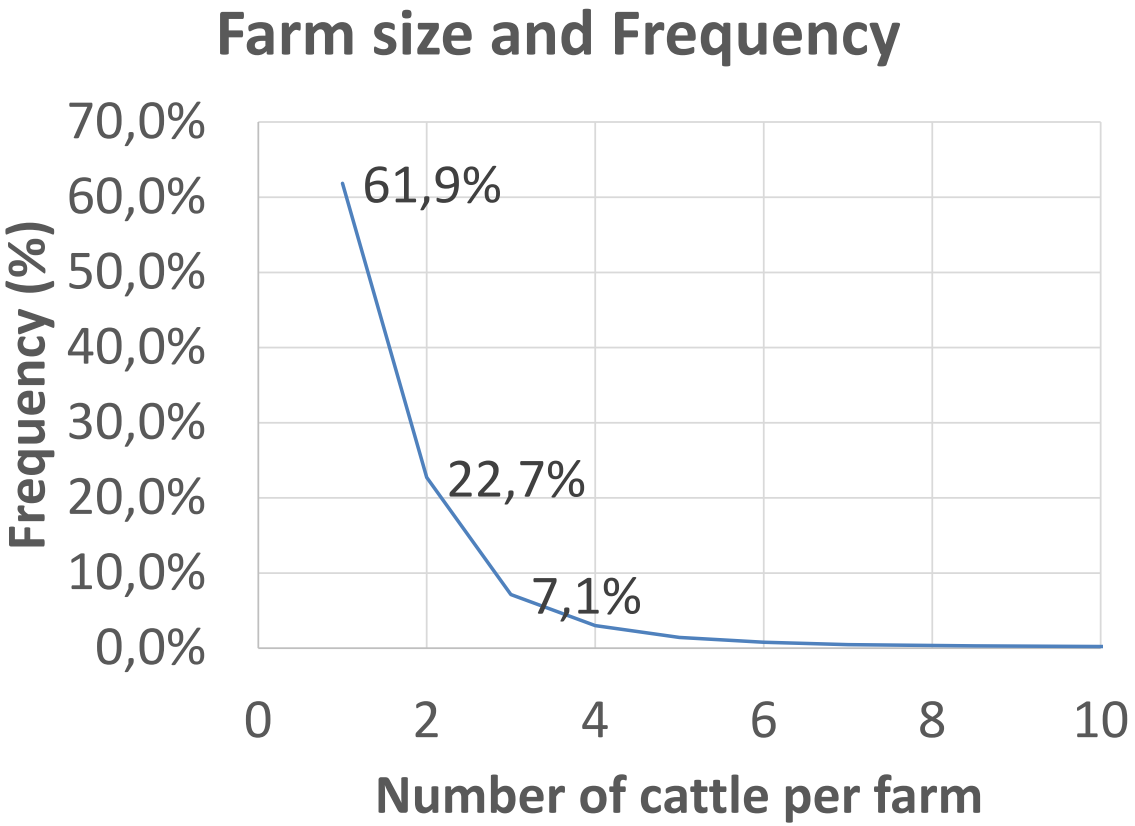
Summary Results – Breed Composition

- Dairy cattle distributed across Country.
- Improving general husbandry should be the first intervention to increase productivity.



Summary Results – Farm size

- 666,659 farms registered with 1,436,675 cattle.
- Average farm size is only 2.16 cattle per farm nationally.
- Median farm size is 1 animal per farm.
- Farms with more than 100 cattle were 383 farms.
- These figures confirm that Rwanda's cattle rearing is predominantly smallholder-based.



Challenges Faced

- Database speed issues during peak usage.
- Internet connectivity limitations in some locations.
- Variable IT literacy among field enumerators.
- Logistical constraints during implementation.
- It was still in Covid-19 period.
- Being the first at national level, some stakeholders didn't understand the purpose yet.
- Sustainability and long-term financing.

Lessons Learnt

- Strong stakeholder coordination accelerated the rollout.
- Large-scale training (sometimes online) was essential for quick implementation.
- Active involvement of private technicians/veterinarians was very effective.
- Continuous training, awareness and regulation are required for data quality, completeness, etc
- The cattle registration was key to monitor and stop RVF outbreak, solve cases of cattle ownership, and movements.

Ongoing improvements/ Way Forward

- Have started the pilot of performance recording (in partnership with RJAHS and ILRI).
- Now the cattle database is being integrated into the AMIS (Agriculture Management Information System).
- Improving the identification with more secure and temper-proof ear tag.
- Towards printing ear tags locally to allow possible replacement, customization at lower admin level (add QR code).
- Want to know how to meet ICAR standards.

Ongoing improvements/ Way Forward

- Routinely registering newborn calves is planned to be a joint performance target for all districts.
- Start recording Insemination and vaccination in July 2026.
- Develop sustainable financing mechanisms.
- Expand the system to other livestock species.

Rwanda Cattle genetic improvement

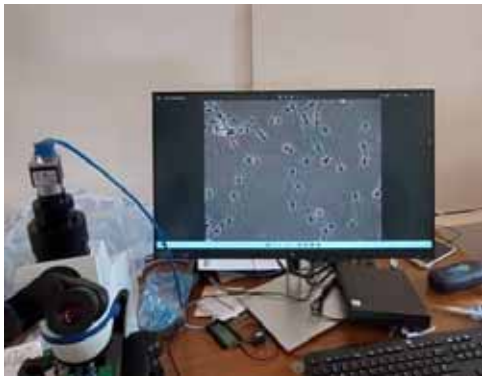
- Increasing adoption of bovine artificial insemination, using imported bulls: Holstein-Friesian, Jersey, Fleckvieh and imported semen: Brown Suisse, Angus, Normande, Girolando.
- Natural meeting with locally selected bulls.
- No structured breeding programme yet.
- High level of crossbreeding.
- Limited use of embryos
- National programme for conservation of indigenous breeds (Invambo, Inkungu).

Rwanda Cattle genetic improvement









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