
Regional Dairy Workshop - Why Dairy? Why Jersey?


# Why the need for a Dairy Profit Index fit for the purpose in East Africa?

## Case for Rwanda

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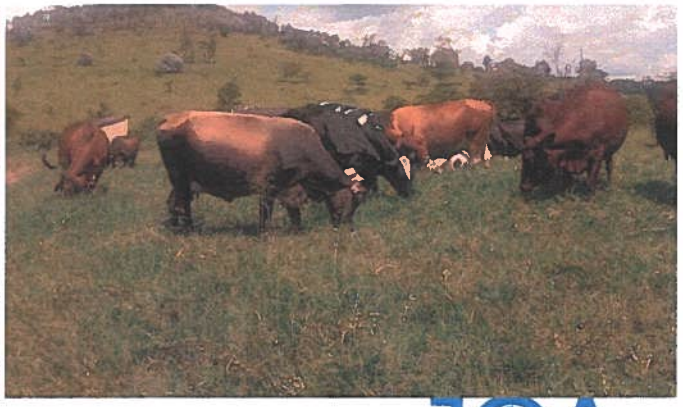
# Context

- Cattle population in Rwanda is around 1.3M and is stable;
- 41% are local breeds, 16% pure exotic breeds and 43% crossbreds which are projected to increase (LSA, 2017);
- Milk production has significantly increased from 189,827 MT in year 2007 to 816,000 MT in 2018;
- Key factors for milk increase: Improved management, health, **Girinka program, Artificial Insemination** (crossbreeding = Genetic Improvement);

# Cattle genetic improvement initiatives in Rwanda

- Mainly **crossbreeding** of local cattle with mostly Friesian and Jersey, but, also Sahiwal, Brown Suiss semen (produced on imported bulls or imported semen) = **Artificial Insemination** *(100,000 inseminations/yr);*
- **Importation** of improved and crossbred **live cows**;
- Multiple Ovulation and Embryo Transfer (MOET) still at research level to improve its success rate;





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# Cattle genetic improvement initiatives in Rwanda

## ▪Challenges

▪Cattle productivity has increased at the expense of health and reproductive performance:

- ▪Sub clinical mastitis prevalence was recently reported 76.2% at cow level and 43.1% at udder quarter level and high producing cows like Friesians were 2.5 to 10.08 times more susceptible;

▪ The current genetics imported – bulls, semen and cows are selected in different production and climate systems and thus don't express their full potential in Rwanda Environment;

# Why Rwanda Dairy Profitability Index →

## Towards having the right dairy cattle in the right place"

- Basis to select the most **profitable** dairy cow in Rwandan environment and production system ?
- Key considerations
  - Limited Land holdings *(around 0.4 ha/HH)*
  - Smallholder farmers *(1-3 cows are majority)*
  - Limited feeds *(crop –forage competition)*
  - Tick born diseases
  - Hot environment
  - *Farmer preference*

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# Why Rwanda Dairy Profitability Index →

## Towards having the right dairy cattle in the right place"

- Key elements of profitability:
  - Milk volume, *butterfat, protein, …*
  - Fertility, Disease resistance, survival,
  - Udder, Somatic sell score,
  - Robustness, Lifetime production;
  - Feed efficiency;

# Rwanda Dairy Profitability index (RDPI)

RDPI = a*Milk+b*Fat+c*Protein+d*Fertility+ e*prodlife ...

Where a, b,c, d,e : not yet known, but, would be economic weights demonstrating the importance of corresponding traits.

- Data on Rwandan cattle in their production environment is key
- Data on costs of production also required

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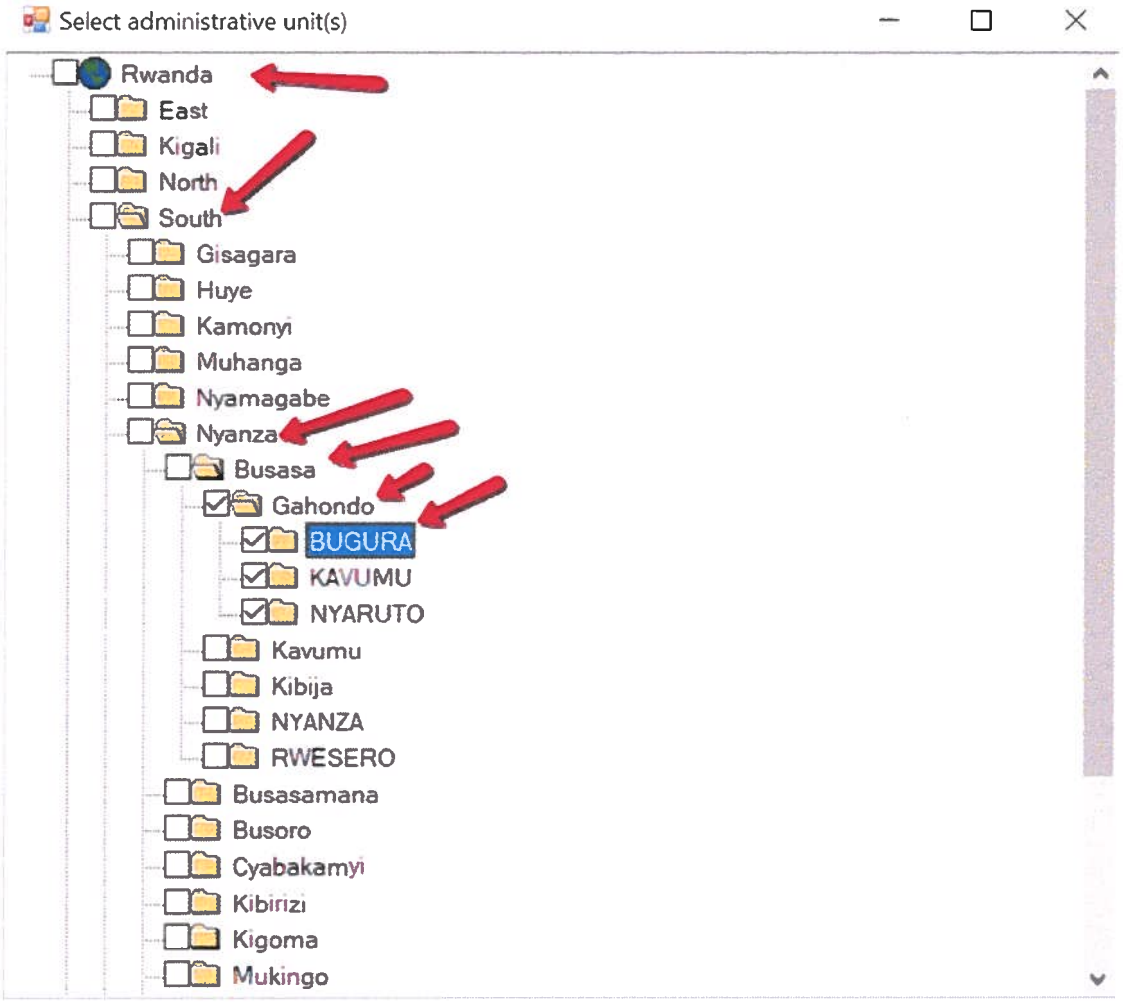
# Data availability ??

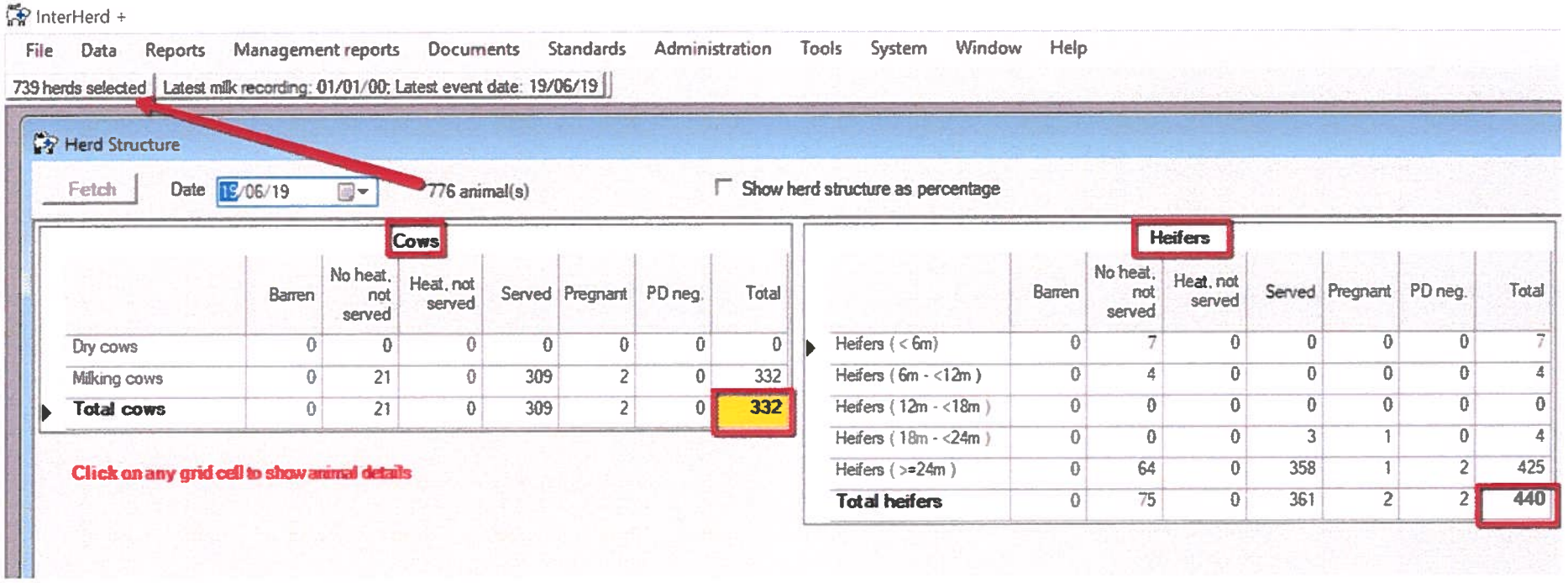
- Shallow data available on station and in few private farms (milk volume, fertility, disease treatments);
- Livestock registration and performance recording system to capture reproduction, health and production traits is being customized to Rwanda Livestock farming and is being piloted on AI in six Districts;
- Molecular information would be very useful !

# Cattle registration and recording: progress




Database structured to Rwanda administration and farming context

# Cattle registration and recording: progress



InterHerd +

File Data Reports Management reports Documents Standards Administration Tools System Window Help

739 herds selected | Latest milk recording: 01/01/00; Latest event date: 19/06/19

Herd Structure

Fetch Date 19/06/19 776 animal(s) Show herd structure as percentage

**Cows**

| | Barren | No heat, not served | Heat, not served | Served | Pregnant | PD neg. | Total |
|---|---|---|---|---|---|---|---|
| Dry cows | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Milking cows | 0 | 21 | 0 | 309 | 2 | 0 | 332 |
| **Total cows** | 0 | 21 | 0 | 309 | 2 | 0 | **332** |

Click on any grid cell to show animal details

**Heifers**

| | Barren | No heat, not served | Heat, not served | Served | Pregnant | PD neg. | Total |
|---|---|---|---|---|---|---|---|
| Heifers ( < 6m) | 0 | 7 | 0 | 0 | 0 | 0 | 7 |
| Heifers ( 6m - <12m ) | 0 | 4 | 0 | 0 | 0 | 0 | 4 |
| Heifers ( 12m - <18m ) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Heifers ( 18m - <24m ) | 0 | 0 | 0 | 3 | 1 | 0 | 4 |
| Heifers ( >=24m ) | 0 | 64 | 0 | 358 | 1 | 2 | 425 |
| **Total heifers** | 0 | 75 | 0 | 361 | 2 | 2 | **440** |

Almost as many farmers as animals!

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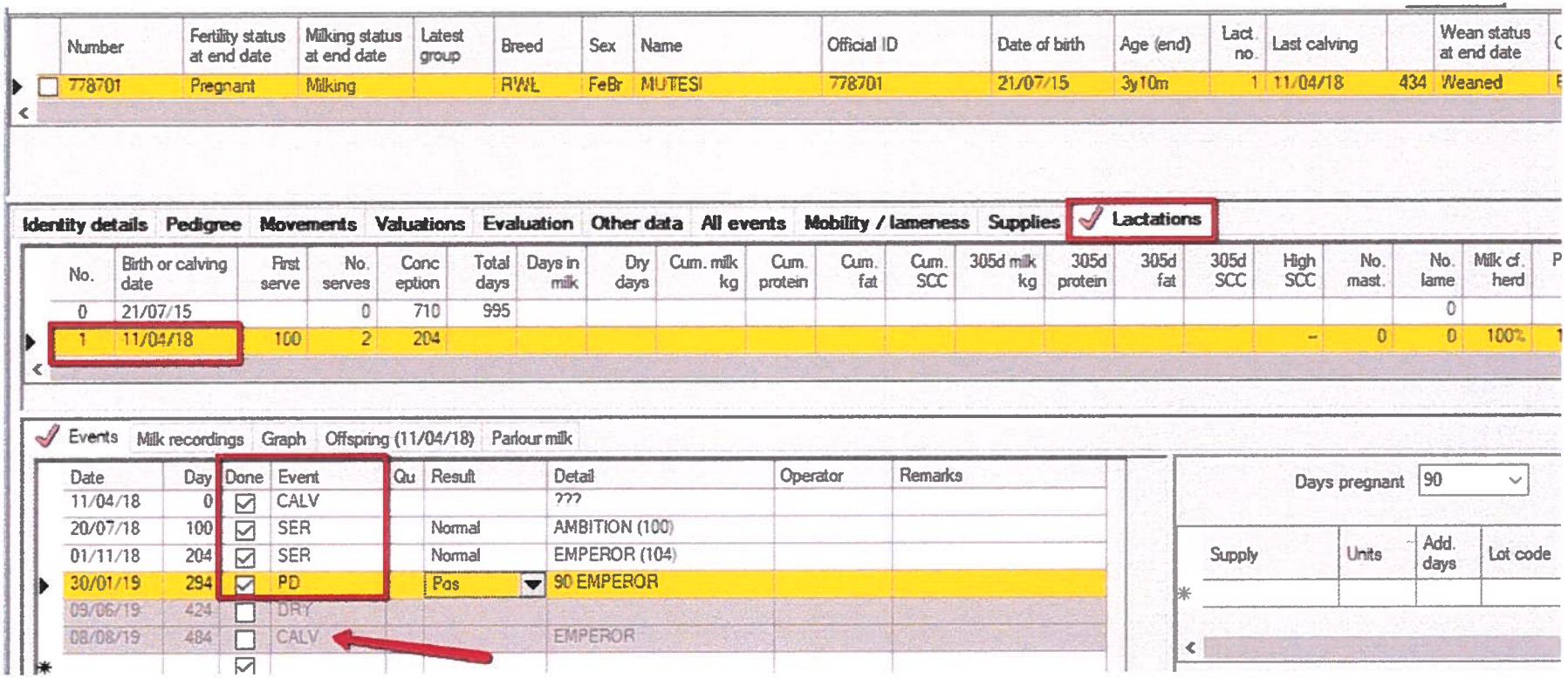
# Cattle registration and recording: progress



| Number | Fertility status at end date | Milking status at end date | Latest group | Breed | Sex | Name | Official ID | Date of birth | Age (end) | Lact no. | Last calving | | Wean status at end date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 778701 | Pregnant | Milking | | RWL | FeBr | MUTESI | 778701 | 21/07/15 | 3y10m | 1 | 11/04/18 | 434 | Weaned |

Identity details | Pedigree | Movements | Valuations | Evaluation | Other data | All events | Mobility / lameness | Supplies | Lactations

| No. | Birth or calving date | First serve | No. serves | Conception | Total days | Days in milk | Dry days | Cum. milk kg | Cum. protein | Cum. fat | Cum. SCC | 305d milk kg | 305d protein | 305d fat | 305d SCC | High SCC | No. mast. | No. lame | Milk cf. herd |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 21/07/15 | | 0 | 710 | 995 | | | | | | | | | | | | | 0 | |
| 1 | 11/04/18 | 100 | 2 | 204 | | | | | | | | | | | | - | 0 | 0 | 100% |

Events | Milk recordings | Graph | Offspring (11/04/18) | Parlour milk

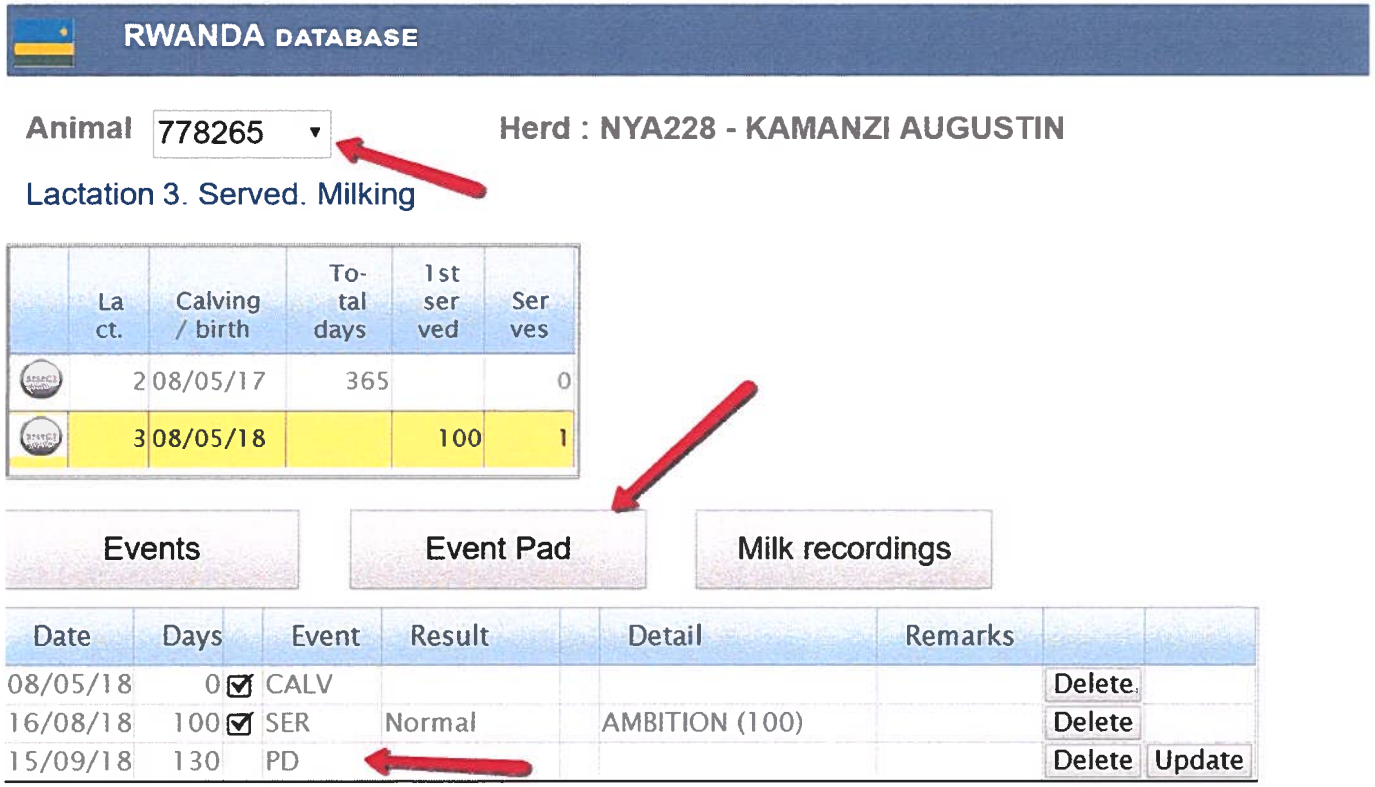
| Date | Day | Done | Event | Qu | Result | Detail | Operator | Remarks |
|---|---|---|---|---|---|---|---|---|
| 11/04/18 | 0 | ☑ | CALV | | | ??? | | |
| 20/07/18 | 100 | ☑ | SER | | Normal | AMBITION (100) | | |
| 01/11/18 | 204 | ☑ | SER | | Normal | EMPEROR (104) | | |
| 30/01/19 | 294 | ☑ | PD | | Pos | 90 EMPEROR | | |
| 09/06/19 | 424 | ☐ | DRY | | | | | |
| 08/08/19 | 484 | ☐ | CALV | | | EMPEROR | | |

Days pregnant 90

| Supply | Units | Add. days | Lot code |
|---|---|---|---|

Individual animal's life is described as series of "actual" and "scheduled" events

# Cattle registration and recording: progress




## Mobile access for field workers

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# Conclusion

- RDPI is needed to maintain and sustainably increase dairy cattle productivity and profitability;
- The index will be a comprehensive criterion to guide in ranking and selection of dairy cows, bulls to produce semen and to guide the importation of the most appropriate genetics into Rwanda
- Data on Rwandan cattle in their production environment is key;
- Data on production costs elements

Rwanda 2019

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# Thanks to funding and great partnership

Centre for Tropical Livestock Genetics and Health

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