Application of Digital Technology for Livestock Development
BAIF, INDIA

BAIF Development Research Foundation
Pune, India
www.baif.org.in
BAIF, a dream of Mahatma Gandhi realized by Dr. Manibhai Desai At Urulikanchan, Pune, India in 1967, to replicate his experience in rural development

BAIF’ MISSION
To create opportunities of gainful self-employment for the rural families, especially disadvantaged sections, ensuring sustainable livelihood, enriched environment, improved quality of life and good human values

Coverage
- 5.0 million families
- 16 States
- 6000 BAIF team

Program Domains
- Livestock
- Sustainable Agriculture
- Integrated Tribal Development
- Natural Resource management
- Community health
- Women empowerment
Breeding Program for small holder dairy farms
BAIF’ Core intervention in dairy value chain

GENETIC SELECTION & MULTIPLICATION
- Pedigree Selection
- Progeny testing
- Genomic Selection
- MOET, IVF-ET
- Multiple breeds

FROZEN SEMEN PRODUCTION
- 600 bulls & 300 bull dams
- 12 Million Frozen semen straws / year
- 500 K Sex sorted semen straws / year

HGM GERMLASM DISSEMINATION
- AI service in 12 states
- 4920 AI centres
- 4 million farms per year
- 5 million AI per year
Ensure Sustainable Breeding in Smallholder Dairy

BAIF’ Primary goal in the Dairy Value Chain Sustainability

Fit Adapted Genotype to the Environment

Produce Robust Cows

Ensure Sustainable AI Service Delivery

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Innovation and Research in BAIF’ Breeding Program

• Real time Digital Data Capture Platform to aid in
  • Breeding Project MIS
  • Technical performance of breeding programs
  • Management feedback to the farmers
  • Performance recording, Genetics and Reproductive Research

• Application of Genomics in targeted Breeding
  • Understand breed purity
  • What combinations of crossbred adapted to different systems

• Genomic Selection
  • Select and disseminate high genetic merit germplasm, quickly

• Assisted Reproductive Technologies (MOET & IVF-ET)
  • Faster multiplication of high genetic merit germplasm

• Sex Sorted Semen technology
  • Improved heifer production for faster dairy development
Types of Data Collected and Data Applications

A. Breeding Program Data
1. Farmers’ master data
2. Animal’ master data
3. Semen straw Inventory
4. AI Transaction data
5. AI Follow-up actions (Pregnancy & Calving)

B. Genetic Research Data
1. Animal related data: milk yield, milk component, animal body weight, body type trait, feeding, breeding etc.
2. Farmer level: Baseline and herd management information
3. Biological sample: Blood sample
4. Secondary data: Agro-climatic and environmental variables

Data applications
1. Traceability of AI
2. Program Performance Analysis
3. Program Sustainability
4. Program improvement
5. Farmer’ feedback
6. Conception, Calving Rates & Sex ratio
7. Scientific Analysis, Breed composition
8. Identification of appropriate genotype
Requirements to scale up these actions....

- **National Level Stakeholder's platform**
  - Breeding Programs are of National in dimension, not by a single agency

- **International collaborations and technical advisory**
  - Adopt quickly an International learnings and knowledge exchanges

- **Infrastructure & Capacity building**
  - High computational demand for breeding program operations – resource sharing
  - Well trained manpower – Quantitative genetics, Bio- statistics, Bio-informatics
  - IoT solutions for data capture & farm management in small holder systems
  - Application of latest data analytic methods – AI, ML, Image processing, etc.

- **Enabling policy environments and long term investments**
  - Dairy cattle breeding is a long term process, small holder systems can’t afford fully
  - Appropriate policy instruments should be in place for a participatory and sustainable breeding interventions
THANK YOU

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