

Join us for a talk on:

“Leveraging MOET/IVF in the Transformation of Dairy Genetics in Uganda - what lessons for the NDCoE at Mbarara ZARDI?”



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26th February 2026

12:00 - 13:00 (EAT)



<https://us05web.zoom.us/j/86490127099?pwd=x3CpHbad2g3cWSEHmKxxhIF2CYtj3d.1>

Meeting ID: 864 9012 7099

Passcode: 5U3CKe



Leveraging MOET/IVF in the Transformation of Dairy Genetics in Uganda:

What Lessons for the NDCoE at Mbarara ZARDI

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February 26, 2026



Context

- We have the science, we have the plan
- Research must be for the "public good, not just academics"
- We cannot afford to "shelve" our research .
- **NARO National Dairy Centre of Excellence (NDCoE)** at Mbarara ZARDI, flagship opportunity
- Presentation today focuses on how we leverage advanced ARTs, transform dairy genetics
- Explore the critical lessons from past and current efforts, ensure the NDCoE delivers on its promise of socio-economic transformation



The Genetic Challenge

Uganda's dairy sector is a major economic driver, producing an estimated **3.72 billion liters of milk annually**

- The Western region, NDCoE host, leads this production at 40%
- Productivity per animal remains low (about 5litres per cow per day) compared to global standards
- Genetic ceiling must be broken



The Tools: MOET & IVF

- **MOET (Multiple Ovulation Embryo Transfer):** Amplify the genetics of a superior female by producing multiple offspring in a year, not just one
- **IVF (In Vitro Fertilization):** Harvest oocytes from a superior heifer or a pregnant cow, fertilize them in the lab, transfer the resulting embryos into recipient cows
- **The Promise:** Technologies compress the genetic interval. 2-3 years what would take 10-15 years through conventional breeding



NARO - NDCoE

The NDCoE mandate:

- Boost dairy productivity through improved feeding, breeding, and management
- Develop superior and resilient dairy breeds that can withstand climate change and thrive in smallholder systems
- Equip farmers with practical skills to adopt these innovations.
- Safeguard the sector by providing a fortification against inferior genetics
- GOU planned investment is a monumental commitment



The Key Questions for NDCoE

- How do we ensure the advanced genetics produced via MOET/IVF don't just remain in our lab, but reach the "last mile" farmer?
- How do we align our technical work at NDCoE with the broader national need for a breeding policy?
- What are the practical lessons from existing initiatives that can guide our strategy?



Lessons for the NDCoE



Lesson 1 - From "Academic Exercise" to "Public Good")

- **The Warning:** Direct challenge to us - We must not become an "ivory tower"
- **The Lesson:** Success of MOET/IVF will not be measured by the number of embryos we produce in the lab, but by the number of high-grade heifers in farmers' kraals
- **Action for NDCoE:**
 - Establish **demonstration units** not just at the center, but with model farmers across the region
 - Host regular **farmer field days** to showcase calves born from these technologies. Seeing is believing



Lesson 2: Bridging the Technology Adoption Gap

- **Challenge:** Farmers still face basic challenges like "production and storage of pasture". High-genetic-merit embryo into a cow that is starving?
- **Lesson:** MOET and IVF are not standalone solutions
 - **Nutrition:** improved pasture establishment, feed conservation, supplementary feeding
 - **Health:** A superior embryo will fail in a disease-endemic environment
- **Action:** Breeding program must be packaged with management and feeding protocol, train farmers on how to manage these improved animals



Lesson 3: Supportive Policy Environment

- **The Threat:**

- Fake breeds undermine farmer trust and waste resources
- Minister explicitly called for a national breeding policy to "criminalize" those selling fake breeds

- **The Lesson:**

- High-value MOET/IVF genetics at risk of being diluted or discredited

- **Action for NDCoE:**

- Actively participate in and provide the **technical evidence base** for the proposed national breeding policy
- Become the **certification authority** for elite dairy genetics in Uganda, ensuring that what leaves center is pure, what farmers buy elsewhere is verified



Lesson 4: Institutional Synergy + Coordination

- **Structure:** The NDCoE sits at Mbarara ZARDI, under NARO
- **Lesson:** Duplication of effort a waste of resources. The NDCoE cannot work in isolation.
- **Action for NDCoE:** Establish a clear coordination framework with:
 - NaLIRRI
 - National Animal Genetic Resources Centre and Databank (NAGRC & DB)
 - Universities (like Makerere, Gulu)
 - Private Sector (AI service providers, embryo transfer companies)



The Path Forward: A Policy and Action Agenda

- **Establish an "Open Day" Protocol:** Mandate quarterly field days at the NDCoE and satellite farms to demonstrate MOET/IVF offspring
- **Develop Integrated Technology Packages:** For every elite embryo distributed, provide a "farmer kit" on nutrition and health management
- **Lead the Policy Debate:** Task a technical team from NDCoE (plus other NARO institutes) to draft the operational guidelines for strengthening the National Breeding Policy
- **Create a Genetic Database:** Use the NDCoE to host a publicly accessible registry of proven bull and cow genetics to combat fakes
- **Forge a National MOET/IVF Network:** Sign MOUs with NaLIRRI, NAGRC & DB, Makerere, and key private players to share facilities, genetics, and data



Conclusion

- The NDCoE is a strategic investment in Uganda's our dairy future
- MOET and IVF give us the tools to achieve in years what would otherwise take generations
- However, technology without adoption is just an academic exercise
- The lessons are clear:
 - **showcase** our work
 - **support** our farmers with integrated solutions
 - **secure** our sector with a strong policy framework



"Do not shelve your research from the public. When you do research and it is not taken up by the community... then it becomes only academic." - Hon. Frank Tumwebaze

Ensure the NDCoE/NARO is defined not by the research we do, but by the transformation we deliver



Thank you