

A SCIENTIFIC BLUEPRINT FOR SUSTAINABLE AGRI-ENTERPRISE

TREATISE ON MODERN DAIRY GOATS FARMING IN KENYA



**AUTHORED BY
TASSELLS FARM LIMITED (TFL)
RESEARCH DIVISION**

Treatise on Modern Dairy Goats Farming in Kenya

A Scientific Blueprint for Sustainable Agri-Enterprise

Authored by: Tassells Farm Limited (TFL) Research Division

For decades, goat farming in Kenya has been synonymous with subsistence. At Tassells Farm Limited, we believe the modern dairy goat is the key to **nutrition security, poverty eradication, and sustainable agri-enterprise.**

This treatise is both a guide and a call to action: a roadmap for farmers, veterinarians, policymakers, and investors.

From **genetics to housing, nutrition to technology**, it details how small parcels of land can become engines of prosperity through science-led goat farming.

“The goat is not just livestock. It is a pathway to dignity, health, and wealth.”

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Dairy hand Manual.

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Treatise on Modern

Dairy Goats

Farming in Kenya.

A Scientific Blueprint for Sustainable Agri-Enterprise.

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Agri-preneur, Tassells Farm Limited.



Tassells Farm Limited Research & Development Division Tassells Farm Limited
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This basic article provides dairy farmers, livestock practitioners, and researchers with a scientifically backed guide for high-yielding hybrid dairy goats. It reflects the

innovations and lessons from Tassells Farm Limited, an award-winning agribusiness redefining dairy farming.

My take as an Agri-Entrepreneur to Tassells Farm Limited

For decades, the image of goat farming in Kenya has been one of rural subsistence, of a few animals tethered to a post, browsing scrubland. While this system has its place, it vastly underestimates the incredible potential of the modern dairy goat. This potential is not merely agricultural; it is economic, nutritional, and profoundly transformative.

At Tassells Farm Limited (TFL), we have moved beyond seeing goats as simply livestock. We see them as efficient, sophisticated bio-processors, capable of converting often-underutilized resources into one of the most nutritionally dense foods known to humanity: goat's milk. The journey from kid to milk to market is a science, an art, and a business—all intertwined.

This treatise is born from our passion and our painstaking research. It is a culmination of hands-on experience, scientific inquiry, and a deep-seated belief in the power of agri-enterprise to lift communities. We have witnessed the spark in a young farmer's eyes when they grasp the economics of a well-managed herd. We have seen children thrive on the milk, and families find financial freedom in its sale.

Our mission is to shatter the outdated paradigms. This document is a blueprint. It is a call to action for the aspiring farmer, the seasoned vet, the policy maker, and the investor. It details the 'how' and the 'why' of modern dairy goat farming, from the granular details of mineral supplementation to the vast potential of Internet of Things (IoT) technology.

The future of Kenyan agriculture is not only in expansive fields of monocrops or large-scale dairy cattle. It is also in the intelligent, intensive, and immensely profitable management of high-yielding dairy goats on small parcels of land. It is a future where poverty is eradicated one homestead, one litre of milk, at a time.

Join us in this revolution.

Sincerely,

Susan Njoroge. MD.Tassells Farm Limited.

1.0 The Foundation: Breeding Stock and Kid Rearing

Modern dairy farming begins with genetics. The choice of breed is the single most critical decision, dictating potential yield, adaptability, and profitability.

Primary Dairy Breeds in Kenya:

- **Saanen:** The Holstein of the goat world. Pure white, large-framed, and the highest milk yielder (averaging 3-5 litres/day over a 10-month lactation). Less tolerant to direct sunlight, requiring well-designed housing.
- **Toggenburg:** Distinctive brown with white stripes on the face and white legs. Slightly lower yields than Saanen (2-4 litres/day) but renowned for hardiness and consistent production.
- **Alpine:** (French and British) Agile and good grazers. Yield is comparable to Toggenburg. Known for high butterfat content, enriching milk quality.
- **Crossbreeds (e.g., Saanen x Galla):** Often the most practical choice for many Kenyan farmers. They offer a hybrid vigor, combining the high yield of exotic breeds with the heat tolerance, disease resistance, and browsing ability of local breeds.

Kid Rearing (From 0-3 Months):

- **Colostrum Management:** The first 48 hours are non-negotiable. Kids must receive **≥10% of their body weight** in high-quality colostrum within the first 12-18 hours of life. This passive transfer of immunoglobulins is the cornerstone of their future health.
- **Milk Feeding Regimen:** After colostrum, transition to a strict schedule of heat-treated goat milk or high-quality milk replacer. Feed 10-15% of body weight divided into 3-4 feeds per day. **Ad libitum feeding leads to digestive upset and uneven growth.**
- **Weaning:** Weaning is based on weight, not age. A kid should be weaned onto solid feed (high-quality hay and concentrates) once it has consistently doubled its birth weight (typically 6-8 weeks).
- **Disbudding:** Performed between 3-14 days of age using a hot-iron disbudding tool with appropriate local anesthetic administered by a qualified veterinarian. This is a critical welfare and management practice to prevent future injuries within the herd.
- **Vaccination & Parasite Control:** A program must begin early. (See Section 4.0).

2.0 The Engine of Production: Nutrition and Feeding

Goats are ruminants, but are classified as concentrate selectors, not grazers. Their nutrition requires precision.

Forage Base:

- High-quality **legume hay** (e.g., Lucerne, Desmodium) is superior to grass hay, providing higher protein (16-22% CP).
- **Conserved Fodder:** Silage (maize, sorghum) and haylage can bridge forage gaps during dry seasons.
- **Cut-and-Carry:** Cultivating high-protein shrubs like **Calliandra calothyrsus**, **Leucaena leucocephala**, and **Mulberry** provides excellent, low-cost supplementation.

Concentrate Feeding:

Lactating does have high energy demands. A well-formulated dairy concentrate (16-18% CP) should be fed at a rate of **0.5 kg of feed for every litre of milk produced**, in addition to free-choice quality forage.

Mineral Supplementation:

This is where most smallholder systems fail. A **specific goat mineral lick** containing Calcium, Phosphorus, Magnesium, Selenium, Zinc, and Copper is **mandatory**. Copper requirements for goats are significantly higher than for sheep and are crucial for fertility, immune function, and overall health. **Never use cattle or sheep minerals for goats.**

Water:

Clean, fresh, and cool water must be available *ad libitum*. A lactating doe can drink 5-10 litres per day. Water intake directly correlates with feed intake and milk yield.

3.0 The Production Hub: Housing and Infrastructure

A modern goat house (**a shed**) is not a shack; it is a designed environment for productivity and health.

- **Location:** Well-drained, elevated site, facing away from prevailing winds and direct afternoon sun.
- **Space Requirements:** A minimum of 1.5-2.0 sqm per adult goat. Overcrowding is a primary stressor leading to disease outbreaks.
- **Flooring: Slatted floors (wood or concrete)** raised 1-1.5m above the ground are the gold standard. They dramatically reduce parasitic load (larvae cannot climb to reinfect goats), keep goats dry, and minimize hoof problems.

- **Feeding Infrastructure:** Utilize **raised feed troughs** to prevent contamination with feces and **keyhole-style hay racks** to minimize wastage.
- **Milking Parlour:** A clean, dedicated, and quiet space separate from the living quarters. Must include a stanchion, milking equipment, and a filtering/chilling system.

4.0 The Shield: Health, Vaccination, and Disease Management

A proactive, not reactive, health program is the mark of a professional operation.

- **Core Vaccination Program:**
 - **Clostridial Diseases (Enterotoxaemia):** Essential. Vaccinate does 4-2 weeks before kidding to ensure colostral immunity. Kids are vaccinated at 8 and 12 weeks.
 - **Contagious Caprine Pleuropneumonia (CCPP):** A major threat in East Africa. Annual vaccination is strongly recommended.
 - **Rift Valley Fever (RVF):** As per government directives, especially in endemic areas.
- **Mastitis Control Program:**
 1. **Prevention:** impeccable milking hygiene, post-milking teat dipping (1% iodine solution), dry cow therapy at the end of lactation.
 2. **Detection:** Regular **California Mastitis Test (CMT)** to detect subclinical infections.
 3. **Treatment:** Prompt, aggressive antibiotic treatment for clinical cases based on culture and sensitivity tests.
- **Parasite Eradication:**
 - **Internal (Worms):** The #1 health constraint. Implement **FAMACHA© scoring** every 2 weeks to check for anaemia from Barber's Pole worm (*Haemonchus contortus*). This allows for **targeted selective treatment**, deworming only the animals that need it, thereby slowing anthelmintic resistance. Regular faecal egg counts (FEC) are crucial for monitoring.
 - **External (Ticks, Lice):** Regular spraying or dipping with approved acaricides. Keeping premises clean and bushes cleared.
- **Hoof and Horn Care:**
 - **Hoof Trimming:** Required every 2-3 months to prevent lameness, which severely impacts fertility and milk production.

- **Disbudding:** As mentioned in kid rearing, it is a critical welfare practice.

5.0 The Product: Milk and its Derivative Gold

Goat milk is not just a substitute for cow milk; it is a superior functional food in many respects.

- **Nutritional & Medicinal Value:**
 - **Digestibility:** Fat globules are smaller and protein forms a softer, more digestible curd, making it ideal for the elderly, infants, and those with lactose intolerance or cow milk protein allergy.
 - **Prebiotics:** Rich in oligosaccharides, which act as prebiotics, promoting gut health.
 - **MCTs:** Higher in medium-chain triglycerides (MCTs), which are linked to a host of health benefits.
 - **Minerals:** Excellent bio-availability of calcium, phosphorus, and selenium.
- **Value-Added Products:**

Transforming milk into products drastically increases profit margins.

 - **Fresh & Fermented Milk:** Pasteurized milk, yoghurt, mala, lala.
 - **Cheese:** Feta, chevre, and ghee have high market value.
 - **Soap & Cosmetics:** Goat milk soap is a highly profitable niche market due to its skin-friendly properties.

6.0 The TFL Economic Empowerment Research: A Case Study (Feb 2021 - May 2022)

Initiative: "The 895 Homesteads Project" - Funded and Executed by Tassells Farm Limited.

Objective: To determine the efficacy of modern dairy goat farming as a primary tool for poverty eradication at the household level.

Methodology:

1. **Selection:** 895 low-income homesteads across 5 counties were selected. Each was provided with two in-kid pure Saanen/Galla crossbred does and one buck for community sharing.
2. **Training:** Intensive, ongoing training on all aspects outlined in this treatise was provided by TFL extension officers.

3. **Support:** TFL established a centralized support system for veterinary services, AI, and mineral supplement access.
4. **Data Collection:** Meticulous records were kept on milk yield, sales, health incidents, and household income changes over the 16-month period. A guaranteed offtake agreement was established, with TFL buying back surplus milk at a fixed, fair gate price.

Findings:

- **Milk Production:** The average daily yield per doe was 2.8 litres over a 270-day lactation.
- **Economic Impact:** The average homestead earned **KES 45,000** net income per doe per lactation after accounting for feed and healthcare costs. With two does, this represented a transformative annual income.
- **Demand:** The market demand for fresh, clean goat milk far exceeded supply. All milk produced was sold, primarily at the farm gate and to local clinics for maternal and child health.
- **Poverty Metrics:** Based on the Multidimensional Poverty Index, 72% of the participating homesteads moved above the poverty line within the project period. The income was consistent and reliable, funding education, better housing, and diversified diets.

Conclusion: The research irrefutably proved that with the correct genetics, knowledge, and minimal support, dairy goat farming is a potent, scalable, and sustainable engine for socio-economic transformation in rural and peri-urban Kenya.

7.0 The Future: Technology, Climate Action, and Global Alignment

The Technological Divide:

A Kenyan farmer today relies on manual labour and observation. A farmer in the Netherlands or Israel uses:

- **IoT Sensors:** Monitoring rumination activity (indicating health stress), location, and heat cycles.
- **Automated Milking Systems (AMS):** Allowing voluntary milking, increasing yield, and providing real-time milk data (yield, conductivity for mastitis detection).

- **Precision Feeding:** Automated feeders dispensing rations tailored to each animal's production stage.

Closing the Gap: Adoption of simple SMS-based heat detection alerts, digital record-keeping apps, and affordable solar-powered milk chillers are the first steps towards this technological leap.

Alignment with Global Goals:

- **SDG 1 (No Poverty), SDG 2 (Zero Hunger):** Directly addressed by the economic and nutritional model.
- **SDG 5 (Gender Equality):** Goat farming is often managed by women, empowering them economically.
- **SDG 13 (Climate Action):** Goats have a smaller carbon footprint than cattle. Integrating trees (fodder and fruit) into goat farms (agroforestry) sequesters carbon. Manure is a superb organic fertilizer, reducing reliance on synthetic alternatives.

A Call to Action:

- **Farmers:** Embrace continuous learning, record-keeping, and collective action through cooperatives.
- **Vets:** Develop specialized skills in small ruminant medicine and herd health planning.
- **Policy Makers:** Develop policies favoring small ruminants, subsidize AI for goats, and include goat milk in school milk programs.
- **International Organizations:** Fund and support value-chain development for dairy goats, not just cattle.

8.0 Conclusion: The African Goat Farming Revolution

Dairy cow farming has its place, but for the vast majority of Kenyan landholders with limited acreage, capital, and feed resources, the modern dairy goat presents a far more capable, efficient, and profitable alternative. It is an enterprise of empowerment.

The revolution we at Tassells Farm Limited envision is not loud, but it is profound. It is the quiet hum of a milk chiller in a previously unelectrified home. It is the confident smile of a farmer who can pay school fees from the sale of milk. It is the healthy glow of a child nourished by nature's most perfect food. It is the intelligent application of science to uplift a continent.

This is more than farming. It is a pathway to dignity, health, and wealth. The goat is our ally. Let us farm it wisely, passionately, and with the modern tools it deserves.

The African Goat Farming Revolution is here. It is sustainable, it is intelligent, and it is being led from the homestead up. Join us.

Tassells Farm Limited - "Innovation in Agri-Enterprise"

THINK DAIRY.....THINK TASSELLS!!!



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