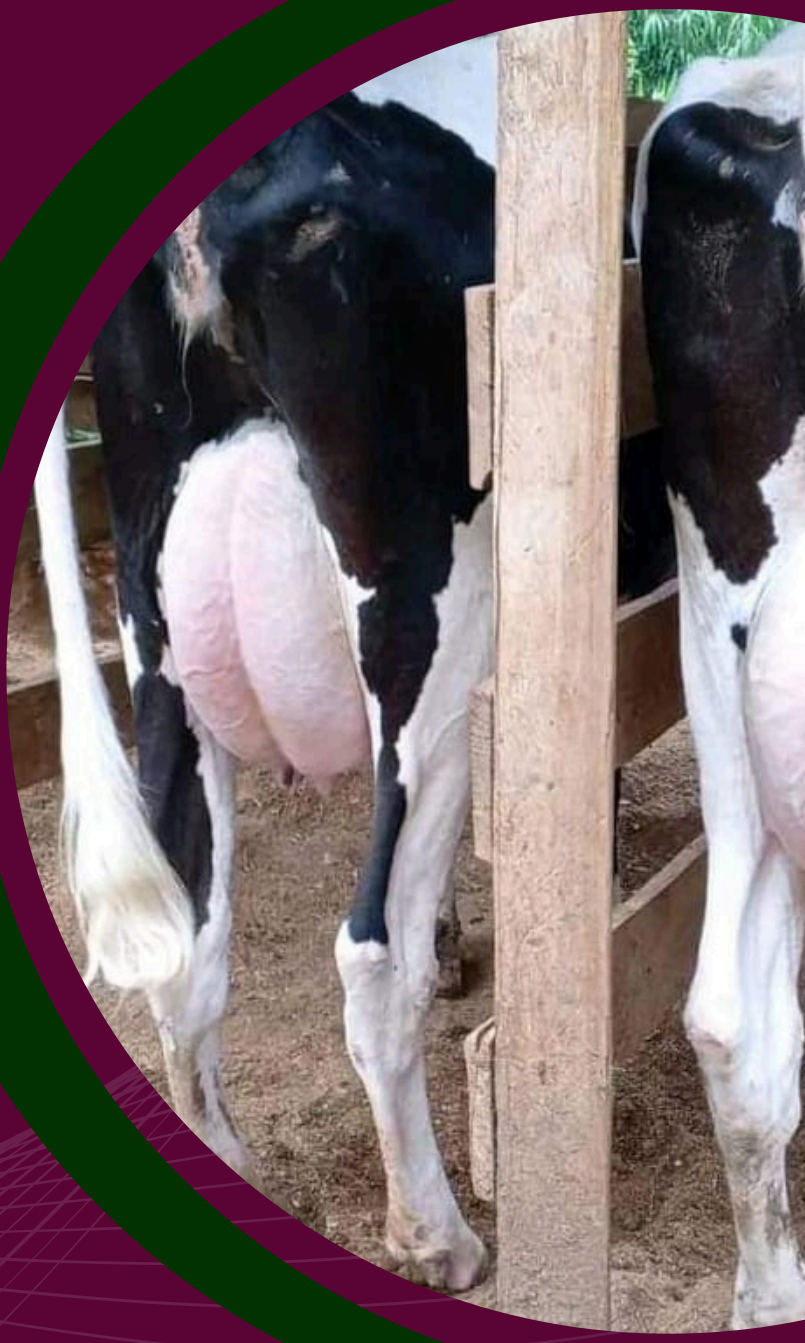
TASSELLS Farm Limited

Re-Defining Agri-Living

BOVINE CALVING MANAGMENT



A Scientific Protocol for Production, Science, and Sustainable Opportunities

Authored by Tassells Farm Limited (TFL) Research Division

Bovine Calving Managment

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Mastering the Calving Process.

The calving period is the pivotal moment in the dairy and beef production cycle. It represents the culmination of significant investment in genetics, nutrition, and management, setting the stage for the herd's subsequent performance. A successful outcome is fundamental to profitability and sustainability.

This guide moves beyond basic knowledge to explore the critical details that separate adequate management from excellence. It outlines scientific protocols based on current research and best practices, covering everything from sire selection to postpartum care.

Adherence to these guidelines is designed to minimize losses, optimize animal welfare, and maximize the genetic potential of the herd. This is a systematic approach to calving success, in which every team member has a vital role to play.

Tassells Farm Limited (TFL)

Research & Management Division

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Introduction to,

Bovine Calving Management.

A Scientific Protocol for The Board of Directors, Senior Management, and Veterinary Officials, Tassells Farm Limited

Author: Compiled by Agricultural Informational Services

M. Njoroge, Director TFL

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Preface

To the Management and Staff of Tassells Farm Limited,

The calving period is the pivotal moment in the dairy and beef production cycle. It represents the culmination of a significant investment in genetics, nutrition, and management, and it sets the stage for the subsequent lactation and reproductive performance of the herd. A successful calving outcome—defined as a live, healthy calf and a dam that recovers quickly and breeds back efficiently—is fundamental to the profitability and sustainability of TFL.

This booklet is designed as a comprehensive, scientific, and practical guide to standardize our approach to bovine calving. It moves beyond basic knowledge to delve into the critical details that separate adequate management from excellence. We will explore the foundational role of genetics in ensuring calving ease, the precise nutritional science behind the dry cow period, the intricate stages of parturition, and the meticulous care required for both dam and calf postpartum.

The protocols outlined herein are based on current research and best practices. Adherence to these guidelines will minimize losses, optimize animal welfare, and maximize the genetic potential of our herd. This is a living document, intended for all staff involved in the calving process, from the breeding manager to the stockperson on the night watch.

Our goal at TFL is not just to manage calving, but to master it.

Livestock Science Division, Tassells Farm Limited

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1.0 The Foundation: Genetics and Record Keeping

1.1 The Genetic Basis for Calving Ease

Calving ease is a heritable trait. By selecting sires with high Estimated Breeding Values (EBVs) for Calving Ease and low EBVs for Birth Weight, TFL can significantly reduce the incidence of dystocia (difficult birth). Bulls are rated for both **Direct Calving Ease** (how easily their calves are born) and **Maternal Calving Ease** (how easily their daughters will calve). Using easy-calving, low-birth-weight bulls on heifers is non-negotiable for herd health and profitability.

1.2 The Critical Role of Record Keeping

Accurate records of service/insemination dates are the bedrock of calving management. With a known gestation length (average 280-283 days for Holsteins), we can calculate an Expected Calving Date (ECD). This allows for:

- Timely movement to the close-up group.
- Scheduling of staff for observation.
- Preparation of maternity facilities.
- Early identification of overdue animals, which may require veterinary investigation.

2.0 The Dry Cow Period: Preparing for a Successful Transition

2.1 The Far-Off Dry Period (Days 60-21 pre-calving)

Objective: To maintain body condition, support udder involution, and provide fetal nutrients without promoting excessive fat deposition.

- **Nutrition:** A high-forage, low-energy diet is provided. The aim is a Body Condition Score (BCS) of 3.0-3.25 (on a 5-point scale).
- **Management:** Cows are grouped separately from lactating animals to reduce metabolic competition and stress.

2.2 The Close-Up or "Steaming Up" Period (Last 21 Days pre-calving)

Objective: To adapt the rumen to the higher-energy lactation diet, support the rapidly growing fetus, and bolster the cow's immune system.

- **Nutritional Physiology:**
  - **Energy:** The diet's energy density is increased by introducing concentrates (the "steaming up" process). This promotes the growth of rumen papillae, which are essential for absorbing volatile fatty acids from the lactating ration.
  - **Protein:** Metabolizable protein requirements increase by 25-30% to support fetal growth and colostrum production.
  - **Minerals & Vitamins:** Supplementation with **Biotin, Zinc, Selenium, Vitamin E, and Vitamin A** is critical for improving hoof health, immune function, and reducing the risk of retained placenta.

2.3 The Importance of a Controlled Dietary Cation-Anion Difference (DCAD)

A negative DCAD diet involves feeding anions (e.g., chlorides, sulphates) to lower the blood pH slightly, creating a state of compensated metabolic acidosis. This has a profound effect:

- It primes the cow's calcium homeostatic system, making calcium more readily mobilizable from bones at calving.
- This is the single most effective nutritional strategy to prevent **Milk Fever** (hypocalcemia), a condition that can lead to dystocia, retained placenta, and displaced abomasum.

3.0 Parturition: The Calving Process

3.1 Signs of Impending Calving

- **Stage 1 (2-6 hours):** Restlessness, isolation, elevated tailhead, relaxation of pelvic ligaments ("springing"), vulva swelling. Uterine contractions begin.
- **Stage 2 (30 mins - 4 hours):** The water bag appears and ruptures. Active abdominal straining begins. The calf enters the birth canal. This stage culminates in delivery.

3.2 Space and Environmental Requirements

The maternity pen must be:

- **Spacious:** At least 12' x 12' to allow the cow to move and lie down comfortably.
- **Clean, Dry, and Well-Bedded:** Use ample fresh straw or sand to minimize pathogen exposure. This is the first line of defense against mastitis and metritis.
- **Quiet and Separate:** Located in a low-traffic area to minimize stress.

3.3 The Detailed Physiological Process of Calving

1. **Presentation:** The normal presentation is **anterior (frontwards)**, with the head resting between the two front feet. Any deviation (e.g., backwards, head back, leg back) constitutes a malpresentation and requires intervention.
2. **Progression:** With each strain, the calf is pushed through the birth canal. The "two-feet-and-a-nose" sign indicates a normal delivery is imminent.

3.4 Dystocia: Dangers and Decision-Making

Dangers to the Calf: Death from suffocation, fractures, nerve damage.
Dangers to the Dam: Uterine prolapse, vaginal tears, haemorrhage, metritis, death.
Common Causes: Feto-maternal disproportion (calf too big), malpresentation, uterine inertia.

3.5 When to Intervene: Timelines for Assisted Delivery and Caesarean Section

- **Rule of Thumb:** Intervene if there is no progress within **30 minutes of active, forceful straining** after the water bag or feet have appeared.
- **Assisted Delivery (Calving Aid):** Only attempt if the calf is correctly presented. Use clean, long OB sleeves and lubricant. Apply traction only in sync with the cow's contractions. **Excessive force is unacceptable.**
- **Call the Veterinarian For:**
  - Any malpresentation you cannot correct within 15-20 minutes.
  - No progress after 30 minutes of assisted pulling.
  - Suspected uterine torsion.
  - A heifer with a calf that feels too large. **Do not wait.** A timely Caesarean section has a much better outcome than a prolonged, traumatic attempted vaginal delivery.

4.0 Post-Partum Management

4.1 Detailed Management of the Newborn Calf: The Golden Hour

1. **Airway:** Clear the nose and mouth of membranes and fluid.
2. **Stimulation:** Rub the calf vigorously with a dry towel to stimulate breathing and circulation.
3. **Umbilical Cord Disinfection:** Dip the navel in 7% tincture of iodine to prevent bacterial infection (naval ill).
4. **Colostrum Management (MOST CRITICAL STEP):** Feed **≥10% of the calf's body weight (e.g., 3-4 litres for a Holstein) of high-quality colostrum within the first 2 hours of life.** Use a clean esophageal tube if the calf is weak. This provides passive immunity.

4.2 Detailed Management of the Dam: The Critical 24 Hours

1. **Check for a Second Calf:** Always palpate the uterus per vagina.

2. **Provide Fresh Water and Comfort:** The cow will be thirsty. Offer warm water with electrolytes.
3. **Monitor for Milk Fever:** Check for weakness, cold ears, and inability to stand.
4. **Allow the Afterbirth to Pass Naturally:** Do not pull on retained placenta.

4.3 The Rationale for Separation and Expected Duration

- **Why Separate?**
  - **Calf Health:** Prevents transmission of diseases like Johne's and allows for controlled colostrum and milk feeding.
  - **Dam Health:** Allows the cow to recover and be monitored without competition from the calf.
  - **Ease of Management:** Ensures accurate record-keeping for the calf.
- **Duration:** Immediate separation (within hours) is standard practice at TFL.

4.4 Addressing Post-Partum Complications: Retained Placenta (RP)

- **Definition:** Failure to pass the fetal membranes within 12-24 hours post-calving.
- **Remedies:**
  - **DO NOT FORCIBLY REMOVE.** This can cause severe trauma and bleeding.
  - **Intra-uterine Antibiotics:** Administered by a veterinarian to control localized infection.
  - **Systemic Antibiotics and Anti-inflammatories:** To prevent metritis and systemic illness.
  - **Supportive Care:** Ensure good nutrition and hydration. Most RP will slough off on its own within 5-10 days with proper management.

5.0 Re-breeding: Setting the Next Cycle in Motion

- **Voluntary Waiting Period (VWP):** This is the period after calving (typically 50-60 days) before we begin insemination. It allows for uterine involution (return to normal size and function) and the cow to reach a positive energy balance.
- **Timing for First Insemination:** The first insemination occurs after the VWP, based on observed heat signs or through a timed AI protocol. A cow should be pregnant by 85-100 days in milk to maintain a 12-13 month calving interval.

6.0 Conclusion: A Systematic Approach to Calving Success

Calving management at TFL is not a single event but a continuum that begins with sire selection and dry cow nutrition. By implementing these scientific protocols with diligence and consistency, we can systematically reduce calving difficulties, improve calf survival rates, ensure the health and productivity of our dams, and enhance the overall economic and welfare standards of Tassells Farm Limited. Every team member has a vital role to play in this process.

Glossary of Terms

- **BCS (Body Condition Score):** A system (1-5 scale) for assessing fat reserves in cattle.
- **DCAD (Dietary Cation-Anion Difference):** The balance of major minerals in the diet; a negative DCAD is used to prevent milk fever.
- **Dystocia:** Difficult or prolonged birth.
- **EBV (Estimated Breeding Value):** A estimate of an animal's genetic merit for a specific trait.
- **Feto-maternal Disproportion:** A situation where the calf is too large to pass through the dam's pelvis.
- **Metritis:** A severe infection of the uterus.
- **Parturition:** The act of giving birth.
- **Retained Placenta (RP):** Failure to expel the fetal membranes within 24 hours of calving.
- **Uterine Involution:** The process of the uterus returning to its non-pregnant size and condition after calving.
- **VWP (Voluntary Waiting Period):** The planned interval after calving before insemination begins.

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