CATTLE BREEDING GOVERNMENT RANCHES SECTION 2025

SMART HEADS; STRONG MARKET

ANIMAL BREEDING PRACTICES

1. IMPORTANCE OF PROPER ANIMAL BREEDING PRACTICES

a. **Increases productivity:** Proper breeding improves herd performance, leading to better weight gain, reproductive efficiency, and overall profitability.
b. **Improves genetics:** Systematic selection enhances desirable traits such as size, conformation, and disease resistance.
c. **Better returns and sustainability:** Better breeding practices reduce the need for external inputs like feed and veterinary care, contributing to increased returns and long-term sustainability.

2.0 SELECTION

A producer should clearly define or establish their own individual breeding objective or goals before implementation of a selection process. The breeding objective defines the IDEAL animal to breed and selection is a process or method by which a farmer identities that animal.

How to develop a breeding objective?

a. Consider who is your market and find out their requirements.
b. Focus on traits of economic importance.
c. Some traits are readily passed on from one generation to another (highly heritable). Target such traits for greater progress.
d. Some traits have greater economic importance than others, depending on the target market.

2.1 When to select?: This is done at 18 months of age, for both bulls and females.

2.2 How to select (selection criteria)?

Selection is based on the following:

a) Breed

❖ Select a breed suitable to your ecological zone.

b) Pedigree information and performance records

i. Individual performance

a. Birth weight.
b. Weaning weight.
c. Yearling weight.

ii. Performance of parents (Dam and Sire)

- ❖ Parent should have history of producing superior off-springs.
- ❖ Dam should have a long productive life (longevity).
- ❖ Early maturity of a dam.
- ❖ Good temperament.
- ❖ Good mothering ability.

iii. Estimated Progeny Difference

- ❖ Selected individual should outperform individual of the same age (calf crop) raised in the same environment.

2.3 Why do we select?

a. To improve genetic makeup of the herd.
b. To increase productivity and returns.
c. To optimise reproductive performance.
d. To replace culled animals.

2.4 Physical examination

Selection is based on breeding soundness evaluation

Bulls	Replacement heifers
Body conformation: ❖ Good body conformation. ❖ Good muscling.	**Body conformation:** ❖ Good body conformation. ❖ Good muscling.
Testicles: ❖ Well distended and equal sized ❖ Large and with good Scrotal circumference: Age: Minimum Circumference 15 – 18 months : 30 – 31cm 18 – 24 months : 32 – 34cm.	**Udder:** ❖ Must be well-balanced and developed to produce enough milk.
Sheath: ❖ Retracted and not hanging.	**Teats:** ❖ Four distinct and squarely placed teats.
Libido (Sex drive): ❖ Should be able to easily locate a female on heat and service immediately.	**Receptiveness to a bull:** ❖ Should not be aggressive to a bull when on heat.
Eyes: ❖ Alert eyes to easily locate females during breeding.	**Eyes:** ❖ Alert eyes.
Feet and legs:	**Feet and legs:**

❖ Long, walk straight, strong and active.	❖ Long, walk straight, strong and active
General health examination: ❖ Free from prepuce prolapse. ❖ Testes free from inflammation. ❖ Disease free.	**General health examination:** ❖ Free from mastitis. ❖ Disease free.

3 CULLING

Culling is the elimination or weeding out of undesirable animals from the herd.

3.1 Time for culling:

Culling is a continuous process conducted in September every year (before the start of a new breeding season).

3.2 Why do we cull?

Bulls	Females (Heifers and cows)
Genetics: ❖ Cull bulls with inferior genetics, and ❖ Bulls from inferior parents (sire/dam).	**Genetics:** ❖ Eliminate females with inferior genetics. ❖ Cull females from inferior parents (sire/dam).
Reproductive performance: ❖ Failure to service 20-40 cows within 90 breeding days.	**Reproductive performance:** ❖ Cows/heifers are expected to produce calf every year. ❖ Cows that missed calving should be culled or given only one chance.
Age:	**Age:**

❖ Bulls beyond 10 years productive life.	❖ Females beyond a productive life of 12 years for exotics and 15 years for Nguni.
Deformities: ❖ Deformed feet and legs etc.	**Deformities:** ❖ Deformed feet and legs, poor udder conformation etc.
Health problems: ❖ Deteriorating health, prepuce prolapse, limping, eye problems, wounds not responding to treatments etc.	**Health problems:** ❖ Deteriorating health, Contagious abortion, Mastitis, History of uterine prolapse, limping, eye problems, wounds not responding to treatments etc.
Temperament: ❖ Cull over protective and/or aggressive animals.	**Temperament:** ❖ Cull over protective and/or aggressive animals.
Phenotype: ❖ Cull individuals with undesirable phenotypic features to make the herd uniform.	**Phenotype:** ❖ Cull individuals with undesirable phenotypic features to make the herd uniform.
Drought mitigation: ❖ To remain with productive animals thus ensuring effective utilization of available feed resources.	**Drought mitigation:** ❖ To remain with productive animals thus ensuring effective utilization of available feed resources.

4 BODY CONDITION SCORING

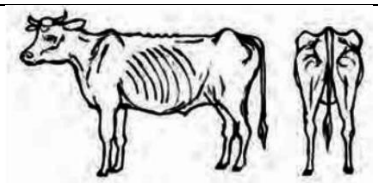
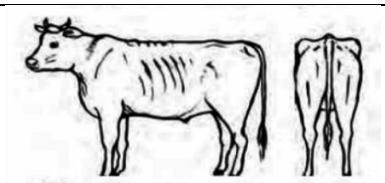
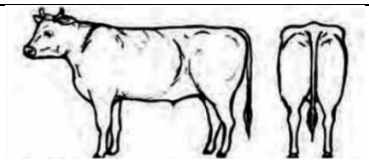
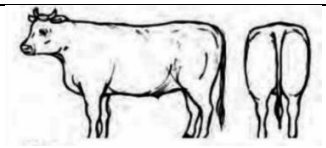
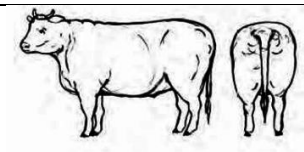
4.1 Definition and Importance

- Body condition is a reflection of the body fat reserves carried by the animal.

4.2 Body condition scores

Table 1. Body Condition Scores (BCS)

Score	Visuals	Remarks	Action

1		Backbone prominent Hips and shoulder bones prominent Ribs clearly visible Tail head area recessed Skeletal body outline.	Supplement.
2		Backbone visible. Hips and shoulder bones visible. Ribs visible faintly. Tail head area slightly recessed. Body outline bony.	Supplement.
3		Hipbones visible faintly Ribs generally not visible Tail head area not recessed Body outline almost smooth	Supplement and start breeding.
4		Hipbones not visible Ribs well covered Tail head area slightly lumpy Body outline rounded.	Maintain body score. Ideal time for breeding
5		Hipbones showing fat deposit Ribs very well covered Tail head area very lumpy Body outline bulging due to fat.	No need for supplementary feeding. This is not an ideal time for breeding.

5.0 PREPARATION FOR BREEDING

5.1 Flushing

- Flushing in beef cattle refers to the practice of increasing the nutritional intake of cows, typically before breeding, to improve their reproductive performance.

5.1.1 Why Flushing is done:

a) **Increase Fertility**: Flushing helps increase the number of eggs a cow can release during estrus, leading to better chances of conception.
b) **Improve Reproductive Performance:** Helps cows with lower body condition scores or those that are not cycling regularly to come into estrus and conceive more easily.
c) **Enhance Calf Production:** Flushing can help cows carry twins or more viable calves, which is beneficial for herd productivity.
d) **Use in Heifers and Mature Cows:** It can be used in both heifers (young cows) and mature cows to improve reproductive efficiency.

5.1.2 How Flushing Works

Flushing typically involves:

a) **Pre-Breeding Nutrition:** The cow's diet is adjusted to ensure she has an abundant supply of nutrients, particularly energy (from grains or high-quality forage) and protein, to support the development of the eggs and improve overall body condition.
b) **Time Frame:** Flushing is usually started about 2–3 weeks before the breeding season begins, allowing enough time for the cow to build up nutrient reserves.
c) **Nutritional Management:** This could involve offering higher-quality pasture, supplemental feeding (e.g., grain or protein-rich supplements), or using a specific feeding strategy to improve body condition before mating.

5.2 Control and prevention of reproductive diseases

a) Conduct regular health checks to ensure cattle are free from diseases like brucellosis, tuberculosis, and reproductive diseases (e.g., trichomoniasis).
b) Consider vaccinations for common cattle diseases and parasite management that may impact fertility or pregnancy.

6.0 MANAGING BULLS AND COWS DURING BREEDING

6.1 Nutrition during the Breeding Period

a) Bull Nutrition: Ensure bulls have adequate nutrition to maintain high fertility levels. Nutritional deficiencies can lead to reduced semen quality and libido.
b) Cow Nutrition: Nutritionally balanced feed is essential for cows to cycle properly and carry a pregnancy to term.

6.2 Managing Stress during Breeding

Stress (due to poor handling, transportation, or weather extremes) can impair fertility in both bulls and cows. Minimize stress during the breeding season to ensure optimal reproductive performance.

6.3 Managing Pregnant Cows

a) Provide adequate nutrition and health care to ensure a successful pregnancy.
b) Monitor cows for signs of potential issues such as infection, dehydration, or dystocia (difficult labor).
c) Ensure there is continuous access to fresh clean water of the proper temperature.

7.0 BREEDING METHODS

7.1 Natural breeding

- Involves the mating of bulls and cows in a natural setting.
- The typical **bull-to-cow ratio is 1:20**, though it can vary depending on the bull's age, breed of bull, health, and the environment.

- This ensures that the bull is able to service all cows/heifers successfully for the purpose of attaining high conception rates.
- Advantages: Simple method, no need for equipment or technical expertise.
- Challenges: Cost of maintaining a bull, risk of disease transmission, potential for lower genetic progress, and reduced control over breeding timing.

7.2 Artificial Insemination

Artificial Insemination (AI) involves collecting semen from a bull and manually inseminating cows using specialized techniques.

7.2.1 Advantages of artificial insemination

- There is no need to maintain a breeding bull hence the costs for maintaining a breeding bull are saved.
- Bulls can be aggressive so the risk of injury of both the personnel and animals is prevented.
- A farmer has an access to superior bulls/bucks across the globe.
- Semen can also be sourced from a superior deceased sire.
- Semen collected can be taken to the urban or rural areas for insemination with ease.
- Semen can be used on tens of thousands of females a year instead of an actual bull being only able to service about 30 females per breeding season.
- Herd improvement can be achieved within a short period of time.
- Females serviced through artificial can give birth around the same time with a space of some few days. That will allow management practices to be carried out at the same time. Such can also allow for the sharing of resources including vaccines.
- This practice prevents the spread of certain genital diseases.

7.2.2 Disadvantage of artificial insemination

- Requires well-trained operators and special equipment.
- The operator has to have adequate knowledge on heat detection.
- Improper cleaning of instruments and sanitary conditions may lead to lower fertility.
- Chances of inbreeding are high as most farmers will be interested only in a superior bull for semen, thus a single superior bull might cover a large area resulting in inbreeding.
- Practically, conception rate is lower with conception being about 70% compared to natural mating where is usually above 85% under good management.

8.0 BREEDING RECORDS

8.1 Importance of breeding records

Records are important in livestock farming because:

i. To keep track of all animals (Identification records).
ii. Control of inbreeding and aid in breeding planning (breeding records)
iii. Aid in selecting animals with the right characteristics for breeding (production, health, feed efficiency) to improve the herd.

iv. Aids in feed planning and management.
v. Aids in disease management; keeping track about treatment (disease records) and finding effective treatments.

8.2 Types of important breeding records

a. Pedigree/parentage:

Specify names or other identification of the animal, and its parents and grandparents.

b. Performance and Health Records

i. Maintaining accurate records of performance (growth rates, birth weights, etc.) and health (vaccination history, disease resistance) allows for better decision-making when selecting breeding stock.
ii. Sire / Dam
iii. Mating Date
iv. Conception Rates, Date
v. Calving Rates, Date

9.0 STRATEGIES TO IMPROVE CONCEPTION AND CALVING RATES

a) Maintain breeding cows and bulls in good condition score (Score 4) through good nutrition.
b) Prevent abortions through;
    - Vaccination of heifers and breeding females
    - Improve nutrition on breeders
c) Maintain recommended bull to cow ratio.
d) Maintain good general health (dipping, vaccination, treatments).
e) Once cows are pregnant, preparing for calving is crucial to ensure a smooth process.
f) Monitor Pregnant Cows: As cows are near their due date (usually 9 months), watch for signs of impending labor such as restlessness, isolating themselves, and udder swelling.
g) Assistance during Calving: Be prepared to assist cows with calving difficulty.
h) Keep dams with good reproductive performance.

10.0 STRATEGIES TO IMPROVE WEANING RATE (CALF SURVIVAL)

a) Maintain good dam and calf nutrition through good pastures and supplementary feeding.
b) Maintain the dam and calf in good health.
c) After calving, proper care for both the cow and calf is essential.
d) Check Calf Health: Make sure the calf receives colostrum, which is rich in antibodies.
e) Cattle Nutrition: Provide good quality feed and water to the cow. If needed, supplement her diet to support milk production.
f) Maintain/ keep dams with good mothering abilities.
g) Protect calves from predators.

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