

BREEDING BULLS MANAGEMENT FOR IMPROVED HERD PRODUCTIVITY

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Abstract

Breeding bulls play a crucial role in determining the genetic progress, reproductive efficiency, and productivity of dairy herds. With the increasing use of artificial insemination, selection of genetically superior and fertile bulls has become essential. Effective bull management includes proper selection, gentle handling, systematic training for semen collection, suitable housing, regular exercise, balanced nutrition, and reproductive care. Adequate shelter, protection from heat stress, hygienic practices, hoof trimming, grooming, and proper exercise help maintain physical fitness and reproductive performance. A balanced diet containing green and dry fodder, concentrates, minerals, vitamins, and clean drinking water is essential for maintaining optimal body condition. Regular disease screening, vaccination, parasite control, and hygienic semen-collection practices further safeguard bull health. Scientific management of breeding bulls ultimately contributes to improved genetic gain, reproductive efficiency, and economic sustainability of dairy farming.

Keywords: Breeding bulls, exercise, nutrition, shelter, vaccination

Introduction

The bull is often considered half the herd because it can influence nearly 50% of the herd's genetic and reproductive performance (Butler et al., 2020). With the widespread adoption of artificial insemination (AI), selecting breeding bulls of superior genetic merit has become increasingly important, as a major share of genetic improvement in a herd depends on appropriate bull selection. The use of a bull with poor fertility can adversely affect conception and calving patterns in a large number of cows, ultimately causing significant economic losses to dairy farmers (Barth, 2018). Effective management of breeding bulls requires careful attention to selection, handling, training, housing, exercise, nutrition, and reproductive health.

Selection

Bulls should be selected according to their pedigree and genetic merit. Bull calves should be separated from breeding cows and heifers before reaching puberty to prevent unwanted mating. Puberty generally occurs between 1½ and 2½ years of age in zebu cattle and buffaloes, while crossbred animals usually attain puberty at a younger age (Nogueira, 2004).

Handling

Breeding bulls should always be handled calmly, carefully, and consistently to prevent fear, aggression, and the development of undesirable behavioural habits. Rough handling, excessive force, shouting, or other abusive practices can cause stress and may make bulls unpredictable or difficult to manage. The bull should be fitted with a copper nose ring at around one year of age of diameter about 6 cm, which can be replaced

with a larger ring of diameter 10 cm as the animal matures (Bisla et al., 2018). Gentle handling from an early age helps the bull become accustomed to routine activities such as movement, grooming, health examination, restraint, and semen collection.

Training and Semen collection

Breeding bulls should be trained from about one year of age to facilitate safe handling and semen collection. Early disbudding helps reduce the risk of injury, while gradual training in mounting a dummy, false mounting, and using an artificial vagina helps develop proper sexual behaviour and efficient semen collection. Semen should generally be collected at least twice a week, with two ejaculates obtained on each collection day, resulting in approximately 90 collections and 180 ejaculates per adult bull annually. However, the collection frequency should be adjusted according to the individual bull's reproductive capacity and performance. Temperament and libido assessment should be conducted at around 18–24 months of age, when semen collection can be initiated in crossbred bulls. Indigenous bulls are generally trained for semen collection at 24–30 months of age (Bisla et al., 2018)

Housing and Shelter

Breeding bulls should be housed in individual concrete-floored pens under well-ventilated, east–west oriented sheds (Sirohi et al., 2017). Each pen should provide adequate loafing space and solid partitions to prevent physical and visual contact between bulls. The shed should have feeding mangers, water troughs, and drainage channels, with regular sanitation and insect control to minimize flies, fleas, ticks, and other pests.

The bull shelter should protect animals from direct sunlight while ensuring adequate ventilation and air circulation. During winter, bulls may be allowed to remain in sunlight for 2–3 hours, while adequate protection should be provided against excessive cold. Each bull should ideally be provided with

approximately 12 m² of covered space (3 × 4 m) and 27 m² of open exercise area (3 × 9 m).

In summer, wash the breeding bulls regularly in the morning, and also bathe them in the evening to provide relief from heat stress. After bathing, brush them with a nylon brush so that their skin remains clean and shiny.

During summer, breeding bulls should be bathed twice daily to reduce heat stress and brushed with a nylon brush to maintain coat cleanliness (Ahirwa et al., 2017). The open area should have a soft, non-slippery clay–sand floor with proper drainage. Formalin- and phenol-based disinfectants should be avoided; glutaraldehyde-based products may be used instead. A 4% sodium bicarbonate spray can be applied weekly, and the floor should be sterilized annually using a blowtorch or straw burning.

Exercise for Bulls

Young and adult bulls should receive regular exercise at least 2–3 times a week to prevent excessive fat deposition and maintain physical fitness. Exercise also helps control hoof overgrowth, supports healthy joints, and promotes natural hoof wear. Proper hoof care is essential, as overgrown hooves can interfere with normal movement and mounting ability.

Bulls should be given approximately one hour of exercise on non-collection days. Exercise should be avoided on days scheduled for semen collection.

Feeding and Nutrition

Each breeding bull should be provided 15–20 kg of fresh green fodder daily, such as berseem, oats, maize, cowpea, or jowar, depending on seasonal availability. Maize–oat silage may also be included as a nutritious forage source. In addition, bulls should receive 5–6 kg of dry fodder daily, with green and dry fodder offered separately. Concentrate or grain feed may be provided at approximately 5 kg per 500 kg body weight per day, divided into two equal portions and offered in the morning and evening. During the lean season, vitamin A supplementation

should be provided along with an adequate mineral mixture and salt. Bulls weighing more than 350 kg may receive about 100 g of mineral mixture daily (DAHD, 2022). Clean, fresh drinking water should be available to bulls at all times.

Reproductive Health and Vaccination

Bull calves should be disbudded within a few days of birth using chemical or hot-iron methods to facilitate safer handling. Regular hoof trimming and grooming should be practiced to maintain hoof health and coat cleanliness. The prepuce should be washed with sterile 0.9% saline, with the surrounding hair trimmed to 1–2 cm (DAHD, 2022).

Before introducing a bull into the herd, it should be screened at an authorized laboratory for important reproductive and infectious diseases, including Brucellosis, IBR, Campylobacteriosis, Trichomoniasis, Tuberculosis, Johne's disease, and Coccidiosis. Bulls should also receive annual vaccinations against Foot-and-Mouth Disease

(FMD), Hemorrhagic Septicemia (HS), and Black Quarter (BQ).

Before semen collection, bulls should be thoroughly washed, particularly around the lower body, to remove adhering dung or manure. The penis and prepuce (sheath) should be cleaned periodically with 0.9% normal saline at 10–15-day intervals. Regular application of Butox may be used to control flies and other external parasites.

Conclusion

Effective breeding-bull management is essential for maintaining herd fertility, genetic progress, and farm profitability. It includes proper selection, calm handling, systematic training, suitable housing, regular exercise, balanced nutrition, and strict reproductive health practices to maintain bull health and performance. Regular disease screening, vaccination, hygiene, and appropriate semen-collection practices further ensure high-quality breeding services and reduce reproductive and economic losses.

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