

BEEF BULL MANAGEMENT



BASICS

OVERVIEW

- It is well known that the reproductive program in a herd has a major influence on productivity and is directly linked to profitability.
- Good reproductive performance requires diligent management of many important and interrelated factors.
- The performance of herd bulls during natural service is dependent upon not only their health and proper management but also the health of the females they will be breeding.
- To be successful, programs should start with good planning and genetic selection considerations for the important traits necessary for each herd and continue through the implementation stages of the breeding season.
- At the end of the production cycle, success is measured by overall reproductive efficiency and the performance of the offspring.

SYSTEMS AFFECTED

Male reproductive, production management, nutrition

GENETICS

Selection of specific production traits

INCIDENCE/PREVALENCE

N/A

GEOGRAPHIC DISTRIBUTION

Worldwide distribution

SIGNALMENT

Species

Beef cattle

Breed Predilections

All breeds

BULL MANAGEMENT PROGRAMS

- Bull management programs begin with the purchase of new herd sire prospects.
- The genetic direction of the herd is of obvious importance.

- In addition to inherent genetic traits, bulls must be healthy, fertile, and capable of expressing the desirable traits.
- Bulls should be purchased from seed-stock breeders that have documented herd health programs that minimize the likelihood of infectious diseases.
- The bulls should be immunized against common diseases and, if necessary, treated for parasites or tested for diseases indicated from a biosecurity standpoint.
- All bulls should undergo a complete breeding soundness evaluation (BSE) performed by a competent veterinarian to assess their general physical and reproductive soundness. This includes newly purchased bulls and a yearly reexamination of herd bulls.
- In addition to the general physical examination, it is important to collect semen and evaluate the sample for sperm motility and morphology.
- Bulls should meet the minimum standards established by the Society for Theriogenology.
- Each component of the BSE such as scrotal circumference (SC) should be accurately measured and utilized within the context of age, weight, nutritional status, and contemporary group.
- SC is a good indicator trait for age at puberty in offspring; it is highly correlated with daily sperm production and is mildly correlated with the percentage of normal spermatozoa.
- Body condition, structural correctness of feet and legs, and general soundness are also important factors for new sire prospects.

BULL TO FEMALE RATIO

The number of bulls required to adequately cover a given number of breeding females is related to a variety of factors. An arbitrary classification of some considerations follows:

Factors Influencing Bull to Female Ratio (BFR)

- Pasture or range conditions and cattle distribution
 1. Terrain
 2. Water availability and location(s)
 3. Carrying capacity
 4. Pasture adaptation
 5. Pasture size
- Individual bull variation
 1. Age
 2. Condition
 3. Fertility
 4. Mating ability
 5. Social behavior
 6. Injury
- Operation and management
 1. Length of breeding season
 2. Animal breeding and selection
 3. Reproductive disease
 4. Nutrition and body condition
 5. Management observation
- Defining the optimum BFR is difficult because certain factors influencing each set of circumstances are unpredictable.
- The expected number of females in estrus available to the bull(s) on any given day is an important point that must be considered.
- Anecdotal reports indicate that smaller breeding pastures with fewer animals are more efficient and provide more uniform distribution of bulls and females. This obviously limits the total number of females exposed to dominant bulls when compared to large multi-sire pastures

where females congregate in a sexually active group. This is a group of females in estrus that band together from proestrus through standing estrus.

- The bull(s) join this group and are constantly moving throughout the pasture. This is of most concern in very large groups of females because the bulls tend to run together.
- It is possible for single bulls to cover 60 breeding females in limited breeding seasons and produce comparable reproductive rates to a much lower BFR.
- Generally, BFRs of 1:25 or 1:30 for mature bulls and BFRs of 1:15 or 1:20 for yearling bulls have been utilized for range areas with minimal observation and little breeding season management.
- This may be an important area of management consideration if optimizing efficiency and reducing expenditures is desirable.

Other Considerations

- The time each cow conceives in relation to the start of the breeding season influences the weaning weight of her offspring and the ability to select replacement heifers with adequate age in a yearly production cycle.
- In limited breeding seasons, efficient management requires early conception and higher overall pregnancy rates.
- It is important to identify and optimize the use of bulls with preferred genetic traits, especially as producers move toward value-based marketing through vertically coordinated programs.
- The use of frequent observation of breeding pastures and immediate detection and correction of problems is important.

Molecular Evaluation

- More recent technology utilizing a commercially available set of DNA microsatellite markers to identify each sire's progeny from multi-sire breeding pastures has been developed.
- Proteomics shows promise in terms of accurately identifying progeny. As new technology advances, it may reach an economic level that could permit its use in commercial herds.
- The identification of progeny in multi-sire breeding pastures will permit an accurate genetic evaluation system for a greater number of young sires.
- This potential could rapidly revolutionize bull selection programs and permit the ability to select and optimize the use of bulls with superior reproductive and genetic traits.

SELECTION GUIDELINES

- Select superior bulls from a genetic standpoint.
- Carefully screen the health of all new bulls.
- Conduct a breeding soundness evaluation on all bulls and select bulls that are above average in scrotal circumference, motility, and percent normal sperm morphology.
- Conduct breeding soundness evaluations on bulls yearly, preferably just before breeding season begins.
- Develop a method to identify some progeny of each sire.
- Observe mating ability of bulls during breeding at the start and several times during the breeding season.
- Utilize knowledge of social behavior, terrain, calving pattern, bull performance, and other factors to determine the number of bulls, bull to female ratio, and grouping of bulls.



MISCELLANEOUS

ASSOCIATED CONDITIONS

Lameness, infertility, nutritional deficiencies

AGE-RELATED FACTORS

BFR is age dependant

ZOONOTIC POTENTIAL

N/A

PREGNANCY

- It is possible for single bulls to cover 60 breeding females in limited breeding seasons and produce comparable reproductive rates to a much lower BFR.
- Generally, BFRs of 1:25 or 1:30 for mature bulls and BFRs of 1:15 or 1:20 for yearling bulls have been utilized for range areas with minimal observation and little breeding season management. This may be an important area of management consideration if optimizing efficiency and reducing expenditures are desirable.
- The time each cow settles in relation to the start of the breeding season influences the weaning weight of her offspring and the ability to select replacement heifers with adequate age in a yearly production cycle.
- Therefore, in limited breeding seasons, efficient management requires early conception and higher overall pregnancy rates.

RUMINANT SPECIES AFFECTED

Beef bulls

BIOSECURITY

Bull should be purchased from reputable healthy source and screen for contagious diseases
Good fencing of the ranch is important to prevent neighboring bulls from accessing a herd

PRODUCTION MANAGEMENT

- The performance of herd bulls during natural service is dependent not only upon their health and proper management but also upon the health of the females they will be breeding.
- To be successful, programs should start with good planning and genetic selection considerations for the important traits necessary for each herd and continue through the implementation stages of the breeding season.

SYNONYMS

N/A

SEE ALSO

Breeding Soundness Examination: Bull
Body Condition Scoring: Beef (www.fiveminutevet.com/ruminant)

Beef Herd Records (www.fiveminutevet.com/ruminant)

ABBREVIATIONS

BFR = bull to female ratio

BSE = breeding soundness evaluation

DNA = deoxyribonucleic acid

SC = scrotal circumference

Suggested Reading

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