

ACHIEVING GOOD POST-AI PERFORMANCE

1) GOOD BULL PERFORMANCE

Introduction

The role of the bull in dairy herd fertility is frequently underestimated. Every year there are sad stories of mating disasters, lost opportunities and disputes where a breakdown in bull service has been the major problem. In most cases, the situation could have been prevented by a bull Breeding Soundness Evaluation (BSE) and regular bull care and maintenance.

A common assumption that most farmers make is that all bulls are 100% fertile. This assumption is 90% correct, the problem is not the 90% fertile but the 10% infertile or subfertile bulls.

The effects of poor bull performance are not known until its too late. The effects of 'dud' bull(s) in a mob of heifers can be quite disastrous, especially if they are not monitored closely.

Basic Anatomy And Physiology

The reproductive tract of a bull is not nearly as simple as it looks from the outside. Sperm is formed in the testicles, which hang free from the body and operate at a lower temperature. It takes between 8 and 9 weeks for the sperm to develop within the testicles.

From there the sperm travel up inside the abdomen via the epididymis to the accessory sex glands, which provide nourishing fluids and an environment for final maturation and storage of semen.

Final ejaculation of semen during mating occurs with the assistance of the bulbourethral gland and penile muscles. Hopefully the penis will be working, fully extended from the sheath and placed correctly in the vagina of a cow in heat!

As with any biological system, the whole apparatus needs to be working well and in a co-ordinated manner for a motivated bull.

CAUSES OF POOR BULL PERFORMANCE

1. Conformation Defects

Leg, hip and hoof conformation is very important as bulls must be able to walk and mount repeatedly without pain. Leg and pelvic conformation defects can be heritable.

Penile and preputial deformities are not uncommon, as are small or absent testicles. Other conformational defects (eg undershot jaw) should not be ignored, especially if they might limit the bulls performance under pressure. Eye conditions are also important, as a bull performs better with visual stimulation.

Older bulls must be checked carefully. In addition to developing teeth problems, arthritis begins to creep in. It is estimated that 15% of range Angus bulls should be culled each year due to the effects of age.

2. Systemic Diseases

Any fever can reduce sperm quality by heating up the testicles. As sperm takes 8-9 weeks to form semen quality may be reduced for up to 9 weeks after the fever. Other diseases such as heart, lung or gut diseases will also limit a bulls mating performance.

3. Genital Diseases

Any of the reproductive organs can suffer. Conditions encountered include:

- infection/inflammation
- abscesses
- warts
- hernias
- lacerations
- haematoma.

4. Semen Defects

Sometimes these are permanent 'production faults', (primary abnormalities), where the testicles produce faulty sperm. Secondary abnormalities are usually temporary and may be caused by conditions such as fever, bull

immaturity, or semen collection technique, where the semen has been temporarily damaged. In the future semen quality should be restored.

BREEDING SOUNDNESS EVALUATION (BSE)

A bull Breeding Soundness Evaluation (BSE) is a systematic check of a bull to ensure potential fitness for breeding. A BSE should be done well in advance of mating (at least 3 weeks before) to allow for bull treatment and recovery, or replacement - before alternatives become scarce and expensive. There are 3 options:

1. Thorough physical and genital exam.

- internal + external examination
- palpate testes + epididymis + penis
- measure scrotal circumference

Assuming libido and penile deviation/corkscrew are not a problem, about 10% of bulls are unsound for breeding. Up to 90% of these unsound bulls will be picked up by an experienced operator in a thorough physical and genital examination. The remaining 10% will only be identified by semen evaluation.

2. Semen Evaluation

- collected by electroejaculation, massage or back-raking
- motility and concentration can be assessed on the spot
- morphology (sperm anatomy) may be assessed at a lab

A BSE in dairy practice will usually involve (1) and/or (2). This does not assess sex drive or ability to mount, intromit and ejaculate. These can be assessed at mating time or by the serving capacity test (3), which is a test usually conducted by bull breeders.

3. Serving Capacity/Capability

- depends on bull numbers and facilities
- number of services per bull in 20 minutes
- demonstrates ability and desire to serve.

Serving capability can be assessed by the vet or farmer if the bull is seen successfully mounting and ejaculating. The serving capacity test was developed for beef bulls and effectively ranks bulls according to sex drive (libido).

The test is excellent at identifying functional problems such as arthritis, corkscrew penis or penile deviation. These are faults which may not be identified by other means.

The BSE has a positive cost benefit ratio, as well as offering peace of mind. If the bull team is not up to it, herd fertility and subsequent milk production will undoubtedly suffer (or require more inputs such as inductions).

BULL CARE AND MAINTENANCE

During the mating season, the bull becomes a "sexual athlete". He must be prepared, fed and maintained accordingly.

LAMENESS

Lameness is a very common cause of bull failure, particularly in milking herds. Farmers and farm workers may not notice the bull going lame if he doesn't come all the way to the shed. As with all lameness, early intervention can prevent the problem becoming worse. Rotation of bulls can allow bruised feet to heal before progressing to more severe forms of lameness.

SYSTEMIC DISEASES

Bulls occasionally come down with other systemic diseases during the mating period. They should be given the same general and veterinary care as other herd members. Simply 'resting' the bull for 1-2 weeks may not be enough, especially where a high fever may cause poor semen quality for up to 9 weeks after the illness. Sick bulls can occasionally spread infectious diseases eg mange, BVD, IBR pneumonia or venereal disease. Cast an eye over the bull for general appearance and health every time you look at him. Include the penis and testicles in your assessment.

WEIGHT LOSS

A bull is expected to lose weight during the mating period - probably about one condition score per month. It goes without saying he needs to be in reasonable condition to start with.

BULL RATIOS

Bull ratios should generally be in the order of 1:30 - 1:50. Heifers require more bull power than cows, particularly if inexperienced bulls are used. If

you are fortunate enough to buy a highly ranked serving capacity tested bull, you could mate as low as a 1:70 ratio.

With synchronised mobs, a higher bull ratio is required. Remember that returns to AI service from synchronised matings come in synchronised as well. A bull ratio of 1:4 cows served per day is realistic.

In the dairy herd situation back-up bulls are often used, so some bulls can be rested. This is good practice, and provides some insurance against individual bull failure. However, it does not provide a guarantee of fertility and a Breeding Soundness Evaluation is still a wise move.

TO ENSURE GOOD BULL PERFORMANCE-

Purchase bulls in good condition with an option of returning if unsound.

Contact the vet for a Breeding Soundness Evaluation one month before bulls start mating.

Pay attention to bull ratios, and bull care and maintenance.

Promptly replace unsound bulls.

Note bull behaviour in the paddock, including aggression (this is a disaster if the dominant bull is infertile) and successful service. Feet must leave the ground during ejaculation.

Ensure good recording. Records of bull matings are very useful in analysis of expected calving data and pregnancy testing if required.

2) GOOD COW FERTILITY

REPEAT BREEDERS

These are cows that have been mated and returned 3 times or more. As a group these cows have a conception rate less than 50%.

There are two main causes of this subfertility. Firstly a significant proportion have an infected or damaged uterus as a result of a difficult calving, RFM's, a dead calf etc. Some of these cases can be successfully treated, so put up any cows with discharges, or a history of RFM's or difficult calvings, for a vet examination prior to the start of mating. This gives the animal a much better chance of being treated in time to get her in calf.

The second main case of subfertility is hormonal imbalance. These repeat breeders can be treated with hormones called GnRH such as 'Receptal' or 'Fertagyl', which will increase their conception rates by 10 - 15%. Bear in mind that this group has a untreated conception rate of < 50%, so it will only increase conception rates to a "normal" level of 60 - 65%.

LONG RETURNS

Cows that return 4-5 weeks or more after service are said to have a long return. This will usually be due to natural attrition of non-viable embryos, and should be less than 2% of successful matings.

There are some diseases, eg B.V.D. which may cause a higher than normal rate of long returns.

If a higher than 'normal' level of long returns is experienced you should contact your veterinarian to try and establish a diagnosis.

Cows which have a long return and show a discharge may benefit from veterinary treatment.