

Bull Breeding Soundness Examinations

Most properties have now completed their assessments of pregnancy diagnosis. The results for the Glen Innes district have been relatively consistent with previous years, however occasionally we have encountered poor results where there have been 20 – 30% not detectably pregnant (NDP) females. Reasons for these problems can be varied including, infections diseases like vibrio, leptospirosis, pestivirus or akabane. Additionally influences from nutrition, mineral deficiencies and bull problems can affect fertility. All of these problems could be easily investigated if there was a concern that herd fertility was declining. Alternatively it is far better to be proactive and protect valuable income through prevention with vaccination, good nutrition, mineral supplementation and bull testing, which is discussed in this article.

Examination of bulls prior to their use in the breeding season is an important aspect of any well-managed cattle breeding enterprise. This is especially important in single sire herds where 1 bull may be joined with 40 or 50 cows. If one cow is barren the pregnancy rate may drop by 2-3%, however if the bull is barren or sub fertile this rate may drop by up to 100%. Examining a bull for breeding soundness does not guarantee that this will not happen, because the bull may still become injured or exposed to infection, after joining begins however without the Bull breeding soundness examination (BBSE) the potential breeding value of that particular bull is unknown. Bulls that have passed a BBSE get females pregnant earlier (hence reducing variation in the size of calves at weaning), can get more females pregnant and also pass on indirect genetic benefits.

When performing a Bull Breeding Soundness Examination there are a number of aspects that your veterinarian may look at.

The 5 components of bull examination are as follows:

- 1) General physical examination – this includes gait, conformation, condition scoring, external reproductive organs, internal reproductive organs, eyes, head and mouth
- 2) Examination of the testes and scrotal size determination
- 3) Collection of semen sample and assessment of this in the field
- 4) Optional laboratory examination of how the individual sperm appear (morphology)
- 5) Optional serving assessment and libido

There are a few interesting aspects to the above components. Scrotal size in bulls gives an idea of the daily sperm production (i.e. the larger the size of the testicles, the larger the volume of the testicles and the more sperm that can be produced by the testicles). Scrotal size is moderately to highly heritable (a bull with large testicles is likely to produce bull calves with large testicles) and it also has a low to moderate heritability for female fertility (a bull with large testicles is likely to produce more fertile female offspring).

When examining semen under a microscope in the field your veterinarian looks at a number of characteristics. These are generally subjective – i.e. it is not an exact count but more an approximation. Thus there can be some variation between veterinarians. Under the microscope your veterinarian will look at the density (how many sperm cells there are or how packed together those sperm cells are), the mass activity (how the sperm move as a group) and the progressive motility (how well individual sperm move forward). A bull with low progressive motility may have sperm that are swimming in circles or even just twitching without any forward movement. It is assumed that these sperm are unlikely to progress up the female reproductive tract to fertilise an egg. Bulls with low progressive motility (less than 40%) generally have a low fertility in the field. However there is a poor correlation between fertility and progressive motility when these values are greater than 50% (i.e. a bull with 60% progressive motility may not be less fertile in the field than a bull with 80% progressive motility).

Recent research has highlighted the benefits of laboratory examination of the appearance of individual sperm (sperm morphology). Sperm morphology is a more quantitative (i.e. count the number of defects in 100 sperm). Sperm are made up of a head, a midpiece and a tail. Defects in any of these regions may cause reduced fertility. These defects are generally due to an abnormal condition (be it physical or environmental) somewhere in the reproductive tract. This reduced fertility may be permanent or it may be transient. Some defects still allow the sperm to fertilise an egg (you may just need denser sperm) while some defects prevent the sperm from fertilising the egg. Generally your

veterinarian will send a sample of 'fixed' (preserved) semen away to an expert sperm morphologist for determination of what abnormalities are present.

The Glen Innes Veterinary Hospital has 3 veterinarians who are members of the Australian Veterinary Association and the Australian Cattle Veterinarians. If you have any questions regarding Bull Breeding Soundness Examinations, vaccinations, mineral deficiencies or nutrition please contact your veterinarian.