



## Increasing Your Lamb Crop Series

# Testing Rams for Breeding Soundness

### Introduction

A breeding soundness examination (BSE) is an overall assessment of a male's potential ability to service and impregnate a given number of females during a given period of time. It is a picture-in-time of the male's reproductive potential. The evaluation includes:

- A thorough physical exam
- A body condition score (BCS)
- A scrotal circumference (SC)
- A thorough microscopic semen evaluation

Rams contribute up to 75% of the genetic change in a flock, therefore, it is very important to not short cut the selection or care of the ram. A breeding soundness exam prior to purchase should be part of buying criteria. Producers must remember that health status can change between a BSE and ram turnout, which may decrease breeding ability and semen quality. For example, a disease, such as bluetongue or pneumonia, or significant stressors, such as an injury or overheating, can cause a change in breeding ability and semen quality.

### THE FIRST STEPS

As a BSE is performed, the ram should be bright, alert, walk with a sound gait and have no physical lesions or signs of illness. In flocks with multiple service rams, each ram should have a unique identification tag. All information pertaining to that ram should be recorded on a breeding soundness form.

### BODY CONDITION SCORE (BCS)

A BCS is assessed by feeling along the ribs and lumbar spine. It is based on a scale of 1 to 5. A score of 1 means a ram is very thin and under conditioned. A BCS of 5 is a very fat, over-conditioned ram whose individual lumbar spine or dips along the vertebrae cannot be palpated. Both a score of 1 or 5 are unsatisfactory and require feeding changes to modify the score prior to the breeding season. A BCS in between these is considered satisfactory, with a 3 or 4 ideal going into the breeding season.

A BSE should be performed annually on all rams six months of age or older in a flock, allowing producers to cull less productive rams, provide adequate feed to increase or decrease body condition, provide any care or treatment as needed and purchase any replacement(s) prior to mating.

Rams have a job to do and often will forego eating enough to maintain their physical condition, in the peak of breeding season, thus thin rams may not make it through the breeding season. Meanwhile, an over-conditioned ram will often have very poor semen quality, cause interference with other rams while they are breeding ewes, and be lazy and not perform – these are referred to as the “couch potatoes.”

### SCROTAL CIRCUMFERENCE (SC)

The genitalia are examined next.

The scrotal exam includes palpation of the testes and epididymi. These should be firm, with no lumps, lesions, swellings, hard or soft spots, no difference in size and no atrophy. Out of breeding season, they may be slightly flaccid.

Scrotal circumference relates to the capacity to service more ewes per breeding cycle, earlier maturing female offspring and the increase in number of multiple births produced. The heritability of SC is estimated at 35% (SID 2002). A SC is measured in centimeters with a scrotal circumference tape.



*A scrotal circumference is measured in centimeters.*

As part of the genitalia exam, the penis is extended fully. The penis and prepuce are examined to ensure there are no lesions, (e.g., pizzle rot), injury, strictures or adhesions. Having the penis extended also allows for a clean semen collection.

## SEMEN EVALUATION

New research is demonstrating that the use of testicle ultrasound technology and a formula to determine total testicular volume may be more reliable predictor of testicular size and total spermatozoa production of rams. Ultrasound imaging of testicles can also be used to identify abnormalities within the testicular tissue and the genital system.

A semen sample is collected via artificial vagina (AV) or electro-ejaculation (EE). The use of AVs requires a ewe being in heat at time of semen collection and is often used when collecting for artificial insemination (AI) and/or freezing as a larger volume of semen is often collected.

EE is more often used when time is a constraint, such as with the annual breeding soundness exam, especially with multi-sire flocks. A modified calf table may be used to hold the ram during this procedure. The semen motility, or sperm showing forward progressive movement, is evaluated. The sample is diluted to show individual cell motility and the non-diluted sample should be scanned for swirling. Motility is easily influenced by poor technique, improper diluent and temperature; therefore, good techniques and reproductive veterinarian/technicians are critical to ensure accuracy of test.

The size and shape of the individual cells – the morphology – is evaluated using a phase contrast microscope, as some defects are undetectable with a regular light microscope. Any defects should be noted on the BSE form. Above 50% normal morphology is satisfactory and above 80% normal morphology is exceptional. The presence and volume of white blood cells (WBC), if found on the microscope, will be noted as it may indicate disease. This may warrant an ELISA blood test or semen PCR test for *Brucella ovis* (*B. ovis*), or other treatment and breeding soundness retest.

## THE OVERALL RESULTS AND OTHER CONSIDERATIONS

The overall breeding soundness rating for a ram is based upon the parameters measured above. The ram will be rated as:

E = Excellent

S = Satisfactory

Q = Questionable

U = Unsatisfactory

Most states require a *B. ovis* negative test within the past 30-60 days or that a ram be from a *B. ovis* free certified flock for any change in ownership. Buyers should always require this, as well as all rams over six months of age and owned by the seller, be tested and *B. ovis* negative.



*A modified calf table may be used to comfortably and safely hold the ram during an electro-ejaculation procedure.*

## Reference Chart for Rams

| Class        | Scrotal Circumference (<14 months) | Scrotal Circumference (>14 months) | Motility | Morphology | Debris                     |
|--------------|------------------------------------|------------------------------------|----------|------------|----------------------------|
| Excellent    | > 33 cm                            | > 35 cm                            | > 50%    | > 90%      | no white blood cells       |
| Satisfactory | > 30 cm                            | > 33 cm                            | > 30%    | > 70%      | no white blood cells       |
| Questionable | < 30 cm                            | < 33 cm                            | < 30%    | < 70%      | may have white blood cells |

Source: Purdue University Fact Sheet AS-599-W, Breeding Soundness Examinations of Rams and Bucks

## WHY DO BREEDING SOUNDNESS EXAMINATIONS?

Incorporating ram BSEs as part of production management can increase profits by \$25-\$34 per ewe. A study in south central Wyoming was conducted in the late 1980s using a range flock of 2,800 ewes divided equally into two groups.

Group 1 was exposed to rams having a BSE of satisfactory or better. Group 2 was exposed to non-tested rams selected by traditional ranch selection criteria. At weaning, the Group 1 ewes produced an average of 17 more pounds of weaned lamb per ewe than those in Group 2 (Colorado State University, 1983-1993). Assuming a low market price of \$150/cwt and a high market price of \$200/cwt, this equates to a \$25 to 34 increase in revenue per ewe. This increased revenue was realized with a cost of \$0.60 per ewe for the BSE. The assumptions being the cost of the BSE is \$18 per ram and the exposure rate is 30 ewes per one ram.

Healthy rams with excellent semen can service more ewes in a given year and produce more lambs. In one case, a western U.S. range flock of 1,410 ewes utilizing BSE tested rams with satisfactory or better semen was able to run one ram per 85 ewes. Only 50 (3.55%) ewes turned up not pregnant. More impressively, 1,050 (74.47%) of the ewes had twins, while only 310 (21.99%) had singles and a total of 90% of the lambs were born in the first 18 days of lambing (Kimberling et al., 1999-2008). A shorter lambing season decreases labor costs and provides the producer with better feeding and marketing options with a more uniform lamb crop.

## BSEs ARE INEXPENSIVE INSURANCE

Producers often think if ewes are getting pregnant, they do not have a problem or need to semen test rams. If rams are not tested, they will not know if there is a problem. A BSE will:

- Identify less productive rams so they can be culled, therefore improving overall flock reproductive efficiency.
- Shorten lambing season, reducing labor needs and producing a more uniform lamb crop.
- Maximize ram breeding potential (higher ewe-to-ram ratio), thus allowing for fewer rams to keep, manage and replace.
- Decrease the number of open ewes. In single ram operations, a BSE can save the producer from the disaster of no lamb crop.



*The ram breeding soundness examination provides much needed information, allowing producers the ability to make better management decisions.*

These attributes add to the bottom line in the production scheme. Producers who have adopted BSEs, and utilize the information, look at the testing as an inexpensive insurance policy. The ram breeding soundness examination provides much needed information, allowing producers the ability to make better management decisions.

## What are you paying to keep a ram for just one year?

| Ram Cost/Year                                          |                 |
|--------------------------------------------------------|-----------------|
| Purchase Price: \$1,000 per Ram* Salvage (Cull) Value: |                 |
| Depreciation (4 years)                                 | \$207.50        |
| Interest (6%)**                                        | \$35.10         |
| Death Loss (5%)                                        | \$29.95         |
| Feed & Maintenance                                     | \$120.00        |
| <b>Cost/Year</b>                                       | <b>\$391.85</b> |

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