



PHOTO BY KASEY BROWN

Test 'em All

Not just for new purchases, breeding soundness exams ensure your bull battery is ready for turnout.

by **HEATHER SMITH THOMAS**

Many factors affect fertility and breeding ability of bulls, including semen quality, conformation and soundness, desire to breed cows, etc. It's wise to make sure every bull passes a prebreeding soundness exam.

This evaluation looks at five things:

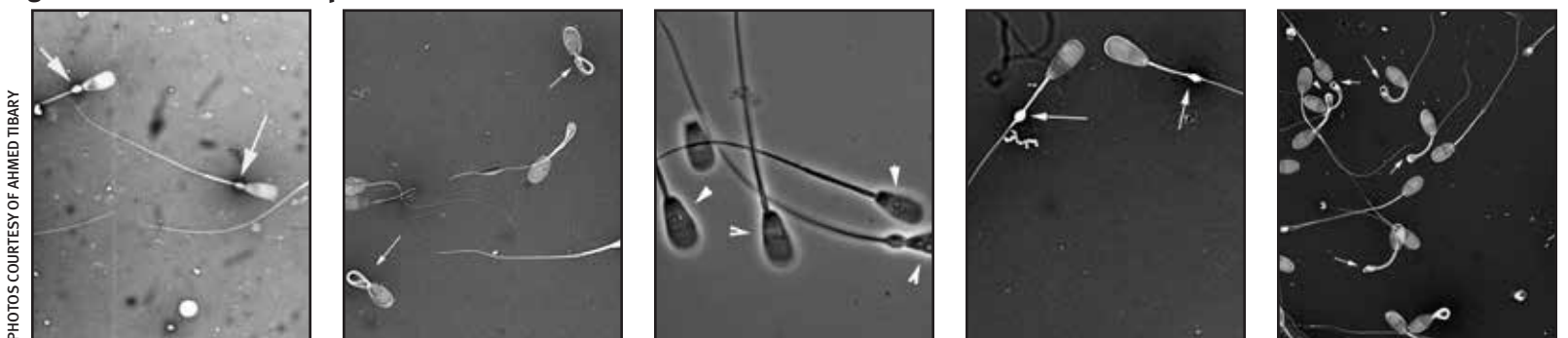
1. physical soundness (feet/legs, eyes, etc.),
2. reproductive tract soundness,
3. scrotal circumference that meets minimum requirements,
4. percentage of normal sperm cells, and
5. acceptable sperm motility.

Ahmed Tibary, professor of theriogenology at Washington State University, says there are still many producers who don't assess prebreeding soundness. The National Animal Health Monitoring System (NAHMS) 2007 Beef Cattle survey reported only 57% of large ranches (more than 200 cows) used breeding

soundness exams (sometimes referred to as BSEs). The national average was 19.5%.

It's most common to check virgin bulls. Many producers don't check bulls that were used the year before, assuming the bull is fine again for this year. However, any bull may have had an injury or infection, and may not be

Fig. 1: Abnormalities of the sperm



PHOTOS COURTESY OF AHMED TIBARY

1. Proximal cytoplasmic droplets, commonly seen in peripubertal young bulls

2. Dag defect: severely coiled /folded tail, which can be of genetic origin

3. Diadem: these are vacuoles within the nucleus and can be due to environmental factors (high temperature) or stress

4. Distal cytoplasmic droplets

5. Distal mid-piece reflex: often caused by stress or heat stress, and may be genetic

Fig. 2: Physical defects in bulls



1. Bull with penile wart (fibropapilloma)



2. Large preputial abscess



3. Asymmetrical testicles



4. Severe trauma of the penis



5. Severe penile-preputial adhesions



6. Hair ring on the penis



7. Preputial trauma



8. Persistent frenulum

as fertile or capable of breeding as he was last year.

Soundness

“The first thing we check is health and soundness — feet/legs, ability to mount and breed a cow — and conformation faults. In older bulls, injuries to claws, feet, legs, eyes, back, etc., could be a problem,” he says. You also want to be sure the bull is free of disease.

“Examination of reproductive organs includes inspection of external genitalia. The prepuce/sheath is assessed for conformation and abnormalities. The scrotum is examined for conformation, symmetry or presence of lesions. Testicles are palpated to see if they are normal consistency or too hard or soft,” says Tibary. Common problems include lesions on the scrotum (if winter was cold) and injuries to the sheath.

Scrotal size

In other countries, minimum acceptable scrotal circumference is determined by breed and age of the bull.

It’s most common to check virgin bulls. Many producers don’t check bulls that were used the year before, assuming the bull is fine again for this year. However, any bull may have had an injury or infection, and may not be as fertile or capable of breeding as he was last year.

“Here in the U.S. we still use the same standard for all breeds,” Tibary says. “Several breed associations are looking into that, and it may change in the future; cattlemen may become stricter about what they need for their own breed.”

Size of testes determines how many sperm are produced daily.

“We know the amount of sperm produced per gram of testes, so weight of the testes determines how many sperm are produced,” he notes. “Circumference gives an estimate for testicular weight and a reliable method for estimating sperm production, and how many cows can

be bred by that bull. Making sure a bull has at least the minimum circumference standard will ensure he can be used with at least 25 cows.”

The appropriate bull-to-cow ratio, Tibary says, depends on age, scrotal circumference, length of breeding season and management.

Palpation

“Transrectal palpation of internal sex organs allows us to discover seminal vesiculitis (inflammation of the seminal vesicle, also called the vesicular gland). This is the most common infectious

problem in bulls that results in poor fertility and poor semen quality. We also check for inguinal hernia by palpating the inguinal rings,” says Tibary.

The accessory glands (bulbourethral gland and prostate) are usually not as much concern.

“When we palpate these glands and the seminal vesicles, we can determine their size and shape,” he explains. “They should not be enlarged or painful, and there should be no adhesions associated with these structures. Palpation doesn’t pick up on everything, and looking at semen we must keep in mind that some abnormalities in semen may indicate a problem in the seminal vesicles,” he explains.

This type of infection is usually associated with either a blood-borne infection or ascending infection up through the reproductive tract.

“The most common predisposing factor in a battery of young bulls, we suspect, is that around the time they are reaching puberty and fed high-energy/high-protein

(Continued on page 34)



6. Detached heads: often associated with vesicular adenitis



7. Incomplete mid-piece, pseudodroplet often associated with gossypol toxicity



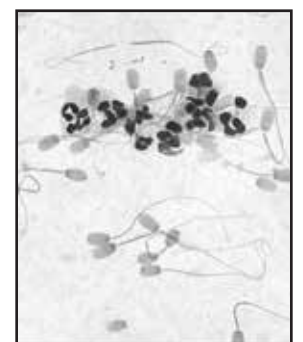
8. Knobbed acrosome: may be of genetic origin



9. Pyriform or pear-shaped head: seen following thermal stress



10. Terminally coiled tail: seen often with thermal stress or gossypol toxicity



11. White blood cells: associated with seminal vesiculitis

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rations, they may have subclinical acidosis and may be showering bacteria from the gut," Tibary says. "Other possibilities include systemic infections, especially in young bulls because they are just becoming active in terms of accessory sex glands, and the infection can settle in there."

Older bulls contract reproductive-tract

infections when breeding infected cows, he says. Prognosis depends on severity and age of the bull. In older bulls, this infection tends to be a bigger problem because they generally don't respond to treatment.

"There are advanced treatments involving direct injection of the seminal vesicles, or surgery to remove those

glands," he offers. "These treatments are invasive and expensive and usually reserved for valuable bulls as a last attempt to salvage their reproduction."

Semen collection

The last part of the exam is semen collection and evaluation.

"During electroejaculation we examine the shaft of the exterior penis to see if it is normal and if there are any lesions, and whether the bull can extend it. A common problem is preputial adhesions."

Injured prepuce or broken penis can occur if a bull gets hit by another bull when trying to breed, or if the penis was not retracted when chasing a cow through brushy terrain, getting it snagged and torn. It may heal with adhesions to the sheath.

"Another common problem is penile warts. Large warts can interfere with mating. Warts can be removed surgically but it is important to check the bull again, as they may recur," Tibary explains.

"A problem seen in younger bulls is

"There are advanced treatments involving direct injection of the seminal vesicles, or surgery to remove those glands. These treatments are invasive and expensive and usually reserved for valuable bulls as a last attempt to salvage their reproduction."

— Ahmed Tibary

persistent frenulum. The penis has not completely detached from the prepuce. This is usually considered an inherited problem, but can be easily treated by cutting that attachment. If the bull is more than 12 months old and still has this condition, I advise against using him in a purebred operation. If he is a very young bull (10 months of age) and there's just a little tag of attachment, it's probably just a sign of immaturity," says Tibary.

Semen evaluation

The semen sample must be representative of what that bull is producing, so collection must be done according to standards of practice.

"Relying on just one drop of semen isn't a true examination. We need an adequate sample, decent flow of ejaculate with good concentration, uncontaminated with urine. The sample must be protected from cold," says Tibary. If the evaluation is done outside, and semen is placed on a cold slide, this may chill the sperm and hinder motility.

"We want to see at least 30% progressive motility. We note gross motility, which evaluates a wavy motion, plus individual motility, which requires dilution of the sample with proper solutions so motility is preserved," he says.

"Cold may also affect the way sperm (Continued on page 36)



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BV South Point 6007|
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- His service sells April 14, 2018.

| | CED | BW | WW | YW | CW | RE | \$W | \$F | \$B |
|--------|-----|-----|----|-----|----|------|-------|--------|--------|
| EPD | 5 | 2.5 | 86 | 150 | 77 | 1.00 | 88.23 | 119.32 | 187.82 |
| % Rank | 60 | 75 | 1 | 1 | 1 | 10 | 1 | 1 | 1 |



BV Fortress 7048|
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| | CED | BW | WW | YW | CW | RE | \$W | \$F | \$B |
|--------|-----|-----|----|-----|------|-------|-------|--------|--------|
| EPD | 10 | 0.2 | 72 | 122 | 0.37 | -0.49 | 75.36 | 104.64 | 168.28 |
| % Rank | 20 | 25 | 3 | 5 | 1 | 4 | 3 | 2 | 3 |



BV Rampa 6528|
Reg#18769603

- Maternal brother to the ABS bull, BV Pinpoint 1045. Dam is the second dam of the new Origen bull, BV Southside 6007.
- The dam, Basin Lucy 262S, is a dominant producing cow showing progeny ratios of BW 5/97, WW 5/104, YW 5/103, IMF 42/105, RE 42/103.

| | CED | BW | WW | YW | CW | RE | \$W | \$F | \$B |
|--------|-----|-----|----|-----|----|-----|-------|-------|--------|
| EPD | 3 | 3.9 | 69 | 111 | 64 | 1.2 | 50.90 | 75.91 | 175.80 |
| % Rank | 75 | 95 | 5 | 15 | 2 | 1 | 40 | 15 | 2 |



BV Double Vision 6525|
Reg#18771082

- Powerhouse bull and performance standout. Rare EPD projections with top 1% \$F, \$B WW, YW, CW and 2% \$W. A total of twelve EPDs in the top 10%. 6525 was a calf standout recording ratios of WW 126, YW 116, ADG 106.

| | CED | BW | WW | YW | CW | RE | \$W | \$F | \$B |
|--------|-----|----|----|-----|----|------|-------|--------|--------|
| EPD | -2 | 5 | 89 | 160 | 83 | 0.88 | 78.39 | 136.80 | 182.46 |
| % Rank | 95 | 95 | 1 | 1 | 1 | 5 | 2 | 1 | 1 |



BV Double Vision 6518|
Reg#18771099

- Dominant performance on this Jindra Double Vision son. 6518 jumped through all the ratio hoops recording WW 114, YW 108, ADG 101, IMF 141, and RE 110.
- 6518 is the product of two power cows. Dam maintains a calving interval of 4/344 with progeny ratios of BW 3/99, WW 3/106.

| | CED | BW | WW | YW | CW | RE | \$W | \$F | \$B |
|--------|-----|-----|----|-----|----|------|-------|-------|--------|
| EPD | 1 | 3.6 | 65 | 117 | 46 | 1.15 | 65.83 | 75.21 | 146.08 |
| % Rank | 90 | 95 | 10 | 10 | 25 | 4 | 10 | 15 | 15 |

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EPDs enhanced by



Test 'em All *(continued from page 34)*

looks after staining. This is the next step — looking at morphology (form and structure). We note proportion of normal sperm versus abnormal sperm. We must examine at least 100 sperm and determine the proportion of normal sperm and proportion of each abnormality.” Tibary says.

“There are many abnormalities, and

some have more effect on fertility than others. The most important thing — no matter what the abnormality — is that a bull must have at least 70% or more normal sperm in order to pass the exam,” he emphasizes.

“We pay attention to what type of abnormality when we want to try to

predict whether a valuable bull might improve or not, and whether we should retest him later. In some situations we have an entire battery of bulls that have the same abnormalities, and we want to know why,” he says.

If there’s a history of stress, like very cold weather, it is possible to see a certain

number of abnormalities. If a group of bulls were on a ration containing a lot of cottonseed with high gossypol levels, they’ll show a lot of abnormalities with certain characteristics, he explains. The veterinarian and producer might discuss whether to retest later to see if sperm becomes more normal.

Another question is whether the first ejaculate is typical of what the bull will produce, especially if he has not been breeding cows (such as a young bull or a bull that’s been apart from cows over winter).

Satisfactory potential breeders don’t have any problems in terms of history and physical examination, and meet minimum requirements for testicular size and sperm morphology and motility.

“This first ejaculate is often referred to as a ‘rusty’ load, with accumulation of old sperm that doesn’t look good,” Tibary says. “Some bulls have a tendency to accumulate old sperm, and you’d need to collect them several times to clean out, so you can get a true picture of their semen.”

In closing

Breeding soundness exams are simply for screening and not a fertility predictor.

“The intent is to find and remove bulls with problems that would interfere with breeding ability and fertility and to make sure a bull is normal,” Tibary says. “We classify them as satisfactory, deferred (to be tested again later to see if the bull improves) or unsatisfactory.”

Satisfactory potential breeders don’t have any problems in terms of history and physical examination, and meet minimum requirements for testicular size and sperm morphology and motility.

“If a bull is in the deferred category, the problems we saw are not extreme and can be resolved with either time or treatment. We may defer the bull for a few weeks, and check him again,” Tibary says. This may include the young, immature bull.

The third category is the unsatisfactory bull. The most common reasons for failure are sperm morphology (too many abnormal sperm) and physical unsoundness.

“One aspect that’s not checked is serving capacity, or libido. We don’t know if that bull will actually breed a cow,” Tibary warns. At the start of breeding season, bulls need to be monitored to see if they are actually doing their job.

Editor’s Note: Heather Smith Thomas is a cattlemaster and freelance writer from Salmon, Idaho.

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