BCIA features enhanced Bull Buying Program for Bull Customers

As a third party administrator of the Central Bull Test Program, the Virginia Beef Cattle Improvement Association (BCIA) works to serve its two purposes of: 1) to foster the improvement of beef cattle in Virginia through improved genetics and management with major emphasis placed on selection criteria for traits of economic importance, and: 2) to carry on educational and promotional work in connection with the production of improved beef cattle.

With the above mission in mind, BCIA sets forth strict requirements for bulls to be tested in one of their programs. Some of the eligibility requirements include: bulls meeting evaluated YW EPD requirements based on breed VQA requirements; minimum frame score of 5.0; soundness; disposition; and pre-weaning and vaccination programs.

The bulls will be on test for 112 days. During this testing period, weights will be taken as well as hip height measurements, ultrasound data collection, and semen testing. At the end of the test, the top two-thirds of the bulls on test will be selected for the sale. This selection takes into account the bull's growth, average daily gain, frame score, scrotal circumference, and EPD requirements.

In the 2008 – 2009 test year, as a result of a bull buyer survey, the BCIA test program made enhancements towards its bull buying program. Some of those improvements include: a full semen evaluation on all senior bulls (conforming to the Society of Theriogenology guidelines), genetic testing, and breeding guarantees.

At the end of each test, all bulls receive a breeding soundness exam and all senior bulls receive a full semen evaluation. Every bull must pass a breeding soundness evaluation off-test. The exam includes semen evaluation for Senior bulls, internal palpation, scrotal circumference measure and penile inspection with electro-ejaculator. Minimum scrotal measurement is 32 cm for bulls less than 15 months of age, and 33 cm for bulls 15 to 18 months of age. This is a 2 cm more stringent requirement than the Society for Theriogenology recommendations. Senior bulls are given a minimum of two opportunities to pass the semen evaluation (off test and again pre-sale).

Based upon this suggestions from bull buyers, the BCIA test committees has set forth the highest standards for bulls to complete in order to sell (see Table 1 for complete requirements). Bulls not meeting the minimum requirements are scratched from the sale.

Table 1 Requirements for being classified as a satisfactory potential breeder bull by the Breeding Soundness Examination system of the Society for Theriogenology.

Minimum Recommended Scrotal Circumference	
Age	SC (CM)
< 15 Mo.	30
>15 < 18 Mo.	31
>18 <21 Mo.	32
>21 < 24 Mo.	33
> 24 Mo.	34

Minimum Recommended Motility is 30% of Fair (F)		
Mass Activity (Gross)	Rating	Individual
Rapid Swirling	Very Good (VG)	> 70%
Slower Swirling	Good (G)	50-69%
Generalized Oscillation	Fair (F)	30-49%
Sporadic Oscillation	Poor (P)	< 30%

Minimum Recommended Morphology is 70% Normal Cells.
To be classified as a Satisfactory Potential Breeder requires a satisfactory Physical Examination and minimum values for Scrotal Circumference, Motility and Morphology. Any bull not meeting minimums is classified as either an Unsatisfactory Potential Breeder or classification may be deferred at the discretion of the evaluator.

Dr. Dee Whittier, Professor of Large Animal Clinical Sciences at the Virginia Maryland Regional College of Veterinary Medicine, administers the breeding soundness exams for the bull test stations, as well as the full semen evaluation on the Senior bulls. Dr. Whittier explains what is tested in the breeding soundness exam below:

> The BSE is performed at a single examination, although repeated examinations may be required in some cases. The BSE consists of the following procedures.
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> - **Physical examination**- The bull is examined in a systematic way for any problem that would hamper his ability to impregnate cows. This examination may be rather brief or more detailed if there is a reason to suspect that there is a problem with any body system. Common areas for problems are abnormalities of the feet and legs or the eyes. A bull cannot locate and mate cows unless his feet and legs are sound. Structural faults, such as sickle hocks and post legs, can cause sore feet and stresses on tendons and joints that affect the bull's mobility. Legs and joints should be free from any swelling or old injuries. Cracked hooves, corns and long hooves also slow the breeding ability of bulls. Long hooves and corns should be dealt with four to six weeks prior to the breeding season. This will give the bull time to recover and have sound feet before he is turned out for breeding. Eyes should be clear and free of injuries or diseases. Pink eye or cancer eye may hinder a bull's vision and reduce his breeding effectiveness. Such problems may also allow him to be dominated by other bulls and diminish his ability to cover the desired number of cows.

As part of the physical examination a body condition score is assessed. The system used is the 9-point-scale system. Bulls that are either overconditioned or underconditioned would be expected to have lower fertility.

- **Reproductive tract examination**- The bull reproductive tract consists of the scrotum, testicles, penis, prepuce and their associated structures. These structures can be examined externally both visually and by manual palpation. However, examination of the penis and entire prepuce typically requires the extension of the penis using an electroejaculator. There are also a number of internal portions of the reproductive tract which require an exam per rectum. The arm of the examiner is inserted through the anus of the bull into the rectum. Because of the flexibility of the rectum the internal portions of the penis, the internal parts of the vas deferens and the accessory sex glands (the prostate and seminal vessicles) can be manually examined.

- **Measurement of Scrotal Circumference (SC) -** Measuring scrotal circumference is a crucial part of the BSE. Scrotal circumference has been determined to be the measurement that best predicts the output of sperm cells for bulls when multiple collections by artificial vagina are not available. The measurement technique involves the use of a circular tape. This measure is useful because there is a correlation between the scrotal circumference and the volume of semen-producing tissue that the bull possesses. Since SC increases with the age and weight of the bull the circumference must be interpreted in light of the bull's age. Scrotal Circumference has been determined to be the one of the best predictors of bull fertility.

- **Semen collection and examination** - Although semen could theoretically be collected using an artificial vagina, in most cases the difficulty in training bulls to use this system makes it impractical. Instead, the semen sample is collected using a device called an electroejaculator. This device employs a probe that is inserted rectally into the bull. The probe has electrodes that conduct tiny amounts of electricity to the nerves that run through the bottom of the bull's pelvis. This stimulation results in the bull achieving an erection and finally ejaculating semen. An experienced veterinarian or reproductive physiologist should determine semen quality. An examination of the reproductive tract may indicate possible abnormalities in semen quality. Bulls exhibiting normal physical capabilities may still be incapable of settling cows because of poor quality semen.
    - Motility: Motility can be estimated by observing the mass movement of a concentrated sample of semen. Semen graded as very good has vigorous swirls; that graded good has slow swirls. Poor semen motility indicates limited or no motility. Semen should

have a minimum of 30 percent vigorous, motile sperm when diluted and viewed through the microscope. It is important that motility is not hindered prior to the motility score observation. Temperature, shock and other factors can greatly interfere with motility scores.

- Morphology: There is considerable evidence that increased abnormalities of sperm cells are associated with poor conception rates. Abnormalities are classified as primary and secondary conditions.

Interpreting the results of the BSE

There are a number of other factors that influence bull fertility that are not easily measured in a single examination. Three of these include libido (sex drive), mating ability and reproductive diseases. These must be dealt with by each bull owner:

- *Libido*- Tests for sex drive have been attempted for many years but no test has proven satisfactory for widespread usage. Owners must observe bulls to be sure that they follow cows that are in heat and show other signs of interest and activity indicating interest in breeding cows.
- *Mating ability*- Since semen is collected using an electroejaculator for the BSE there is not an opportunity to see a bull actually complete the breeding act. Some bulls have physical problems that prevent them from successfully mating. Some of these problems may develop as a result of an injury that has incurred during the breeding season. Bulls should be constantly observed to be sure that they are able to successfully breed cows. Any abnormality (swelling, bleeding, etc.) seen near the sheath opening should be investigated as these are frequently associated with an inability to mate. Likewise lameness often interferes with successful breeding.
- *Reproductive diseases*- Of particular import are the venereal diseases. These can be tested for but are not routinely tested for during the BSE. If bulls are purchased as virgins and not allowed to breed in a herd of unknown status, the likelihood of contracting a venereal disease is essentially nil. Otherwise, a specific examination for venereal disease may be requested from a veterinarian.

Bulls which fail to pass the BSE are assumed to be subfertile. Certainly they may sire some calves but would not be expected to perform well in a typical breeding setting. Bulls who fail the BSE at one point may later be capable of passing. Evaluators usually attempt to predict such outcomes and thus classify bulls as Unsatisfactory or a Deferred status.

In addition to the breeding soundness exam and full semen evaluation on Senior bulls, all BCIA bull test bulls also undergo genetic testing. All Angus and Angus-influenced bulls of other breeds (i.e. SimAngus, Gelbvieh Balancer) must be genotyped free of the genetic defect Arthrogryposis Multiplex (AM) and Neuropathic Hydrocephalus (NH) or be determined not at risk of being a carrier of the defect as determined by absence of carrier ancestors in their pedigree. AM carrier (AMC genotype) bulls and NH carrier (NHC genotype) are not sale eligible. As the addition of genetic tests are added, BCIA has adopted the policy that all bulls will be genotyped for these genetic defects and bulls deemed carriers of the genetic defect will not be eligible for the sale.

Besides the stringent requirements for the BCIA bull test bulls to meet in order to sell, the BCIA bull consignors also stand behind their bulls. By signing a consignor agreement at the start of the bull test season, the consignor's agree to certain responsibilities and expectations for both the consignor and BCIA regarding the development and marketing of bulls, breeding guarantee, and other items. The following guarantee is published in the sale catalog:

> ***BULL GAURANTEE***: All bulls sold are guaranteed, via written contract between BCIA and the seller, to be breeders. Guarantee will be applicable to bulls which prove to be infertile, have structural soundness problems (including foot soundness), or have other issues which apply under a good-faith guarantee. Any bull that settles a reasonable number of healthy cows shall be considered a breeder. This guarantee is contingent upon the buyer providing proper management prior to, during, and after the breeding season. Proper management shall include appropriate nutrition, breeding management (bull to female ratio appropriate for bull's age, not commingling yearling bulls with mature bulls in same breeding pastures, proper observation of bulls during breeding season, etc.), and animal health care. If the bull proves to be a non-breeder, the seller shall be entitled to provide the buyer one of the following: a) full refund for the purchase price, b) replace the bull with another of equal value, or c) issue credit to the buyer redeemable at a future BCIA bull sale.

The BCIA Bull Test Program and its consignors want the bull buyers to know and understand what the expectations and requirements are of each of the bulls that are eligible for sale. Because of these standards, BCIA only sells the top 2/3 of the bulls that meet or exceed these requirements.

BCIA and the Central Virginia Bull Test Program would like to invite everyone to its 52nd Annual Culpeper Senior Bull Test Sale on December 12th, 2009 at the Culpeper Agricultural Enterprises in Culpeper, VA at 12:00 noon. For a complete list of sale bulls, please visit our website at www.bcia.apsc.vt.edu or call the BCIA office at 540-231-9163 for a sale catalog.