Arkansas to Host 2012 National Forage Tour

The American Forage and Grassland Council (AFGC) national forage tour has been set for May 17-18 in Rogers, Arkansas. This will be a great opportunity for you to see some innovative forage operations in Northwest Arkansas. The tour will highlight several interesting topics, including:

- Managing hybrid Bermuda to achieve high yield and quality.
- Interseeding alfalfa as a management tool in a biosolids environment.
- Incorporating best management practices for farming sustainability in a sensitive watershed.
- Forage and biofuel research at the University of Arkansas research farm.

In addition to the tour, this event will also include the National Hay Competition to be held on May 17. Participants should also plan to attend a Cool-Season Grass Workshop to be held on May 16. The workshop will include excellent training about cool-season forages from seed production all the way through planting and management.

For the program agenda and to register for the event, visit the conference website at www.AFGC.org.

Successful Calf Crops Are Dependent on Checking the Bull Before Breeding Season

Breeding season is just about here for spring-calving cow herds. Improvement in next year’s calf crop is dependent upon the breeding decisions you make today. Breeding success depends on the reproductive health of both the cow and bull. Because a bull is expected to service various numbers of cows, the potential fertility of the bull is much more important than determining the fertility of any individual cow.

What genetic and physical improvements need to be made? What sire breed would best complement the cow base? How many bulls are needed to correctly breed the cows? Do I need to use two different sire breeds? These are all very relevant questions that need to be answered as the spring breeding season approaches. Nonetheless, without a proper breeding soundness exam (BSE), these decisions may not matter. The greatest bull with bad semen will not produce calves.

It is essential to evaluate bulls every year before breeding starts because the fertility of a bull can vary from year to year. The breeding soundness exam should be performed 30 to 60 days before the start of breeding season. It is important to allow...
sufficient time to replace questionable bulls. This time allotment will also allow for enough time for stressed animals to recover and be tested again before the beginning of the breeding season.

The physical examination includes evaluating body condition, feet and leg structure and the general health of each bull. The external evaluation of the reproductive tract includes evaluation of the testes, spermatic cords and epididymis. Scrotal circumference is an important measure since it is directly related to the total mass of sperm-producing tissue, sperm cell normality and the onset of puberty in the bull and his female offspring.

![Circumference measurements should be taken at the widest point on the scrotum.](image)

Depending on the breed type of the bull being tested, the minimum scrotal circumference can vary. Maximum testicular size usually occurs at 4 to 6 years of age. With advancing age, testicular tissue may lose some sperm-producing capacity. Therefore, scrotal circumference measurements are not as accurate after this time. The table illustrates the minimum scrotal circumference (SC) that will allow a bull to pass a breeding soundness exam. However, bull buyers should not feel comfortable in accepting the minimum, but rather select bulls that are average or above average for the breed and the age of the bull. Therefore, the “Good” column of the table is a better guideline for bull selection.

<table>
<thead>
<tr>
<th>Age</th>
<th>Minimum SC (cm)</th>
<th>Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 15 months</td>
<td>30</td>
<td>&gt; 34</td>
</tr>
<tr>
<td>15-18 months</td>
<td>31</td>
<td>&gt; 36</td>
</tr>
<tr>
<td>18-21 months</td>
<td>32</td>
<td>&gt; 37</td>
</tr>
<tr>
<td>21-24 months</td>
<td>33</td>
<td>&gt; 38</td>
</tr>
<tr>
<td>&gt; 24 months</td>
<td>34</td>
<td>&gt; 39</td>
</tr>
</tbody>
</table>

There is great variation in scrotal circumference between breeds of bulls. Measurements of many English and European breeds have shown that yearling bulls should have scrotal circumference of at least 30 cm and that by 20 months of age should have a scrotal circumference of at least 32 cm. Brahman breed bulls will have smaller testes at the younger ages, and they will reach maturity at an older age. The Brahman breed bulls will have adult scrotal circumferences similar to other beef breeds.

**Semen Morphology and Motility**

The semen is collected and evaluated for motility and morphology. This will assure that the largest percent of the sperm is moving in a forward motion and that there are very few abnormal shapes. Semen morphology is the study of the shape of sperm in the ejaculate and is measured as the percentage of normal and abnormal sperm.

An abnormality is classified as either primary or secondary, depending on whether the defect occurs in the testis or after the sperm leaves the testis. Reduced fertility usually occurs when the number of primary defects is greater than 18 to 20 percent. Secondary defects are not generally as serious and do not affect fertility unless a large number are present.

Abnormalities are inherited and can be induced through stress, infection, increased testicular temperature or other factors. Abnormal sperm in semen may be either temporary or permanent. Some bulls may need to be tested again in six to eight weeks.

![Examples of Abnormal Sperm](image)

After completion and only when the bull has been deemed a “satisfactory breeder” will you benefit from your pre-breeding season selection decisions. After your bulls are with the cows, it is a good management practice to watch them throughout the breeding season. Sometimes bulls will fail to get some cows bred, especially after heavy service. Bulls may come up lame or may develop some unforeseen reproductive injury. In any case, they will need to be replaced immediately to help keep your calving season within the ideal 60 to 75 days.

Remember that a bull is only as good as his semen. A cow is responsible for half the genetic material in only one calf each year, while the bull is responsible for half the genetic material in 20 to 50 calves. The bull’s ability to locate cows in estrus and breed them is clearly vital to a successful breeding program.
A recent UA study evaluated the effect of trace mineral supplementation on bull semen quality during the summer months when high environmental temperatures can negatively affect fertility. The study found that semen quality was improved in bulls fed an organic trace mineral supplement compared to bulls fed a more traditional inorganic mineral supplement. Minerals are commonly supplemented to livestock as inorganic molecules of sulfates or carbonates. Complexes of a mineral bound to an amino acid or a carbohydrate are known as organic minerals. Recently, organic sources of some minerals have been used for supplementation to livestock and possibly provide improved bioavailability.

Mature Angus and Balancer bulls were utilized in the study and assigned to one of two treatments. Bulls received either an inorganic or organic trace mineral supplement from mid-May to September. The inorganic mineral supplement contained trace minerals from inorganic sources, while the organic diet contained a portion of the trace minerals (Zn, Cu, Co and Mn) from organic mineral sources. The organic mineral supplementation was delivered by Availa-4® from Zinpro Corporation. The total level of trace minerals and all other ingredients in the bulls’ diets were identical for the two treatment groups.

Because sperm production in bulls requires 60 days, weekly semen collection began in mid-July and continued for nine weeks utilizing electroejaculation. Samples were evaluated immediately after collection by computer-assisted sperm analysis. Then semen was processed and frozen for follow-up post-thaw evaluation.

Bulls supplemented with organic trace minerals exhibited improved fresh-semen sperm motility compared to bulls supplemented with inorganic trace minerals (65.5% versus 56.1%, respectively). Likewise, frozen-semen sperm motility also increased at zero and two hours post-thawing. Overall, these results suggest replacing a portion of the supplemental Zn, Cu, Co and Mn with organic trace mineral amino acid complexes may improve measures of bull semen quality both before and after freezing. A more detailed description of the study can be found at this web site: http://arkansasagnews.uark.edu/597-1.pdf.