

Missouri Ag News

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Nutritional Effects on Bull Reproductive Development

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Crops	Horticulture
Engineering	Livestock
Forestry	Other



The majority of bulls sold in the Southeast Mo All-Breed Performance Tested Bull Sale this October were yearlings. A potential hurdle for young bulls is the ability to pass a Breeding Soundness Exam (BSE), which measures the bull's ability to meet minimum standard for testicular development, sperm motility, and normal sperm morphology. Overcoming this hurdle can have great impact on production systems as using bulls at an early age reduces production costs, shortens the generation interval and may increase genetic gains. In addition, yearling bulls used at an appropriate bull to female ratio achieved fertility comparable to that of 2-yr-olds.

The main factor involved in semen quality of yearling bulls is age of puberty, and subsequently maturity. Therefore, programs which hasten maturity will improve the successful use of yearling bulls in production systems and potential qualification for Performance Tested Bulls Sales. Both pre- and post-weaning nutrition have been

reported to influence age at puberty, testes size, and sperm production.

Pre-Weaning: Clinical evidence supports that calthood nutrition effects age at puberty and testes size. Bulls raised by first parity dams had decreased 365-d scrotal circumference compared to bulls raised by older dams (5 – 9 yrs). The observed difference is presumably a factor of increased milk production by older dams. Improved nutrition (160% NRC) from 2 to 6 months of age hastened puberty and increased yearling scrotal circumference while bull calves fed poor nutrition (60% NRC) during this time frame had delayed puberty, smaller testis, and reduced sperm production. The negative impacts of poor nutrition during early development could not be overcome by improving nutrition following 6 months of age. Therefore, careful attention must be paid to calf nutrition prior to weaning.

Post-weaning: Bulls receiving high energy (80% grain/20% forage) from weaning (6-7 mo) until 15 months of age had greater body weight and backfat, but had no change in paired testes weight compared to bulls fed medium

Bryson, C.T. and M.S. DeFelice. 2009. Weeds of the South. Athens, GA: University of Georgia Press. pp. 357

Fall is the Time.. continued.....

energy (100% forage). However, bulls receiving high nutrition had less daily sperm production and sperm reserves and an increased incidence of abnormal sperm. This reduction in sperm production may be attributed to increased fat deposition in the scrotum of animals fed high energy diets, impairing heat dissipation from the testes reducing sperm production and semen quality. To determine the effect of average daily gains with age at puberty and at maturity and reproductive development bulls were developed on varying concentrate diets (none, 14%, or 37%) consisting of rolled barley and canola meal from 6 to 16 months of age. These diets did not result in excessive fat accumulation in the

scrotum, increased scrotal temperature, or reduction in sperm production and semen quality. Therefore average daily gains of approximately 1.0 to 1.6 kg/d should be targeted for beef bulls to achieve optimal reproductive development.

To ensure optimal reproductive development and function both pre- and post-weaning nutrition should be monitored closely. Under-nutrition during calthood can negatively impact reproductive development which may not be reversed by increased post-weaning gains. As we move into the winter months, supplementation can be a beneficial tool if you are raising bulls, especially bulls from young dams. Further, excessive post-weaning gains can impair sperm production and bull fertility, therefore a balanced diet to achieve moderate weight gains is recommended.

Erin Larimore, Livestock Specialist, University of Missouri, Jackson, MO

References:

- Barth A.D., Brito L.F.C., and Kastelic J.P. 2008. The effect of nutrition on sexual development of bulls. *Theriogenology*. 70: 485-495.
- Brito, L.F.C., Barth, A.D., Wilde, R.E., and Kastelic, J.P. 2012. Effect of growth rate from 6 to 16 months of age on sexual development and reproductive function in beef bulls. *Theriogenology*. 77: 1398-1405.
- Kastelic, J.P. and J. Thundathil. 2014. Testicular function and fertility in bulls. *Reproduction in Domestic Ruminants VIII*. 229-238.
- Farid, A., Makarechian, M., Price, M.A, and R.T. Berg. 1987. Repeatability of reproductive performance of beef bulls as yearlings and 2-year-olds at pasture. *Anim Reprod Sci*. 14: 21-29.

Freeze Branding Workshop

December 3, 2014
Wilson Farm
Alton, MO - 2:00pm

Are you interested in a method of permanent livestock identification that is visible and improves your ability to keep accurate records?

Are you tired of lost ear tags and/or ear tags that are hard to read?

Are you interested in deterring theft and improving your ability to recover your livestock if stolen?

Cost and Contact Information:

\$10 per person – RSVP by December 2nd

To register to attend or for more information, please contact the Oregon County Extension Center at 417-778-7490 or email us at oregonco@missouri.edu.

Considering Grain Sorghum in 2015?

I have had a few calls regarding grain sorghum this fall. Some of the reasoning behind an interest in milo is introducing a summer grass grain crop into continuous soybean fields in order to rotate herbicide modes of action for pigweed management. If it has been a few years or this is your first season planting milo, I will outline some management considerations.

Variety selection and identifying what varieties are available is the first component in making a decision to plant milo. Utilize variety testing data from MU and surrounding states and then speak with your seed supplier for variety availability. In general, full season varieties offer higher yield potential. After a few years' hiatus, MU variety testing had grain sorghum trials throughout the state. The data is posted on the variety testing website: <http://varietytesting.missouri.edu/sorghum/results.htm>. Note: The Barton and Mississippi County trials were not included in harvest data.

The second is planting. Milo can be planted at various row widths. From a weed management perspective, 15 inch row spacing can help speed canopy closure while offering some flexibility with in-season management. Know your kernel weight since seed size will influence

seeding rate. Target final plant stands between 50,000 to 70,000 plants on dry land. Plant when soil temperatures are approaching 65 degrees. Increase planting rate by 15% to compensate for any emergence losses. Planting depth is ½ inch to 1 inch but do not exceed 1.5 inches deep.

Third is fertility and pest management. Nitrogen recommendations are based on the formula: $60 + [(lbs\ of\ Milo/A) * (0.014)] - 10 = Units\ of\ N$. So 125 bushels per acre (7000 lbs/A) would need 148 units of N. Phosphorus removal for 7000 lbs/A is 65 lbs P₂O₅/A. Potassium removal would be 42 lb K₂O/A. Pest management considerations include preemergence and post emergence weed control. Grass control is limited to residual preemerge grass products. Insect management includes midge and corn earworm. Midge is critical to scout during the entire span of flowering. Flowering begins at the tip and moves down the head over 5 or more days. For more information on pest management options check the M171 Pest Management Guide: <http://extension.missouri.edu/p/M171>.

Other considerations are harvest and budgets. Harvest should begin when milo is between 20% and 17% moisture. Waiting past this point increases risks of lodging, bird feeding, sprouting or other yield loss factors. University of Arkansas has a guide on harvesting milo: <http://www.uaex.edu/publications/pdf/FSA-1017.pdf>. Another consideration is looking over the MU Crop Budgets that David Reinbott puts together each year: <http://extension.missouri.edu/scott/crop-budgets.aspx>.

Anthony Ohmes, Agronomy Specialist,
University of Missouri, Jackson, MO.

Watermelon Meeting

American
Legion
Kennett, MO

Wednesday, December 3, 2014

Lunch is provided through our sponsors.

For more information or to let us know you will attend call: 573-686-8064.

Updated Guide from USDA Highlights Programs

The USDA has a wide range of financial assistance programs, but finding the right one can be difficult, complicated further by trying to stay up to date with changes in funding following each Farm Bill.

Thanks to the newly updated guide *Building Sustainable Farms, Ranches and Communities: A Guide to Federal Programs for Sustainable Agriculture, Forestry, Entrepreneurship, Conservation, Food Systems, and Community Development*, producers, researchers, nonprofits and landowners can find programs to help them achieve their goals.

The 86-page guide covers 63 government programs and has been updated to cover programs included in the 2014 Farm Bill. Each listing provides a description of the program's available resources, information on how to apply, and in some cases, examples of how the funding has been used. Additionally, the guide includes basic information on how to design sound projects, find appropriate programs and write grant applications.

"*Building Sustainable Farms, Ranches and Communities* provided me with concise, comprehensive, well-organized and user-friendly information on federal grant programs," says Mary Holland, a regional food systems entrepreneur who serves the Upper Midwest.

Beginning farmers faced with hefty start-up costs can use the guide to find grants and loans, in addition to technical assistance. Landowners will find opportunities to be compensated for participating in land and energy conservation programs. And experienced producers looking to conduct research to improve agricultural

practices can find programs to help foster innovation on their farm.

The guide also opens doors for people who have never applied for USDA funding before. "I use this wonderful guide with start-up nonprofits all over the country. The guides are especially valuable because most groups I work with aren't familiar with federal programs. It's great having something that's so concise and also helps people understand how to go and look for additional resources," says Lorna Donaldson, a Tennessee farmer and national sustainable agriculture enterprise consultant.

Building Sustainable Farms, Ranches and Communities was developed through a partnership between the Michael Fields Agricultural Institute (MFAI), the National Center for Appropriate Technology (NCAT) and the National Sustainable Agriculture Coalition (NSAC), with support from SARE and other USDA agencies. The guide was first published in 1997 and this is the 4th update.

To download a free PDF of the guide and to learn how to order hard copies, visit www.sare.org/building-sustainable-farms.



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Wheat Going Into Winter

I have had several talks regarding concerns about winter wheat emergence and yellow to browning wheat color. Wheat planting was delayed in some areas this season with a slightly prolonged corn and soybean crop. In addition there was heavy rainfall in areas during emergence and cold temperatures that hit early this month. In total, some wheat fields are showing signs of this stress.

Wheat stand counts can be taken this winter to determine condition of plants and how tillering has progressed. Ideal final stand counts should be 30 to 35 primary plants per square foot with an ideal tiller number of two by winter vernalization. Now, working from that stand point yield can be maintained with stand counts as low as 25 plants per square foot. If tillering has not begun then in late January to early February re-evaluate stands and consider a spring green-up application of nitrogen to help improve chances of spring tiller development.

Wheat has a low tolerance to wet soils. Some of the yellowing this year was due to wet soil and oxygen depletion around the developing roots. Also in some wheat fields following corn, the higher yields and residue compete for nitrogen.



In general, when planting behind a high residue crop consider applying 10 to 30 units of nitrogen. This is usually achieved if a phosphorus product such as DAP is applied. Wheat can handle this stress to some level. Cold temperatures and wind can cause freeze burn of older leaves. This is generally cosmetic and wheat will continue to develop leaf material once spring green-up begins. One concern with freezing and thawing soils and poor root development is plants heaving out of the soil exposing crown and roots. This can reduce stands, therefore stand counts in spring are helpful when determining whether you are producing a grain crop or cover crop.

This time of year the only action is to scout once before vernalization requirements are reached then again prior to spring green-up. For more information on management of wheat contact University of Missouri Extension to obtain IPM Guide 1022, "Management of Soft Red Winter Wheat."

Anthony Ohmes, Agronomy Specialist,
University of Missouri, Jackson, MO.

Farm Bill Meetings

- December 2 - 10:00 a.m. to Noon, Perryville
- December 4 - 9:00 a.m. to Noon, Holiday Inn, Poplar Bluff
- December 8 - 7:00 p.m. to 9:00 p.m., Woodland School, Marble Hill
- December 15 - 7:00 p.m. to 9:00p.m., Cape County Extension Office, Jackson
- December 16 - 9:00 a.m. to Noon, Delta Growers Coop, East Prairie

Food Safety Modernization Act

The comment period on the revised Food Safety Modernization Act is now **open until December 15**. If you are interested in the National Sustainable Agriculture Coalition's review and understanding of the rules, check out their website at <http://sustainableagriculture.net/fsma/>. It will give you the background of the rules and let you see if you will be affected or not. Those engaged in direct marketing, or marketing of local foods to wholesale outlets, should look through this website and dive into these rules.

Oregon State University's Center for Small Farms also has information, including how they commented on the first round of rules that were proposed in late 2013: <http://smallfarms.oregonstate.edu/node/175900>.

The Organic Trade Association has comments here: http://www.organicnewsroom.com/2014/09/ota_encouraged_by_fda_revision.html.

The National Sustainable Agriculture Coalition believes: "Everyone has a role in ensuring safe food from field to fork. The Food Safety Modernization Act (FSMA) is the first major overhaul of our nation's food safety practices since 1938, and it includes new regulations for produce farms and for facilities that process food for people to eat. It represents some big changes to our food system – and it is extremely important for the Food and Drug Administration to get these regulations right." <http://sustainableagriculture.net/fsma/>

Mary Hendrickson, Sustainable Agriculture, University of Missouri, Columbia, MO

Delta States Irrigation Conference and Trade Show

Aquifer Issues
New Irrigation Ideas
Engines
Surface Irrigation
Furrow Irrigation and PHAUCET
Center Pivots
Irrigation from the Trenches
Wells
Irrigation Scheduling
Variable Frequency Drives
Lessons Learned in Wireless Soil Moisture
Monitoring

December 17 & 18, 2014

Miner Convention Center

Miner, MO - 8:00am

Contact Joe Henggeler at 573-379-5431.

**Corn
Meeting**

December 10

Miner, MO

Miner Convention Center

Beginning at 8:30 a.m. the meeting will have speakers from the University of Missouri and University of Kentucky, with information in the areas of crop management, fertility management, weed, insect and disease management. A farm bill meeting will follow a sponsored lunch. For more information contact me ohmesg@missouri.edu or David Reinbott reinbottd@missouri.edu or phone 573-243-3581 or 573-545-3516.

Future Meetings & Events -

Watermelon Producers Meeting Wednesday, December 3, 2014. American Legion in Kennett, MO beginning at 8:30 a.m. Please RSVP at 686-8064 if you plan to attend.

Freeze Branding Workshop Wednesday, December 3, 2014. 2:00 p.m. at the Wilson Farm near Alton, MO. Fee is \$10 per person. To register and get directions contact Oregon County Extension Center 417-778-7490.

Show Me Select Heifer Sale Saturday, December 6, 2014. Fruitland Livestock Auction in Fruitland, MO. Contact Teresa at 573-243-3581 to receive a catalog by mail.

Regional Corn Meeting Wednesday, December 10, 2014. Miner Convention Center in Miner, MO. Registration at 8:00 a.m. Contact Anthony Ohmes 573-243-3581 or David Reinbott 573-545-3516.

Forage Testing For Quality Production Monday, December 15, 2014. VanBuren Senior Center in VanBuren, MO. This will include obtaining and using information from a forage test. To register contact Sue Miller at the Carter County Extension Center, 573-323-4418

2014 Delta States Irrigation Conference and Trade Show Wednesday and Thursday, December 17 & 18, 2014. Miner Convention Center in Miner, MO. Dec. 17 - 8:00 a.m. to 4:30 p.m. & Dec 18 - 7:30 a.m. to 4:30 p.m. Contact Joe Henggeler at 573-379-5431.

Farm Bill Meetings

- December 2 - 10:00 a.m. to Noon, Perryville
- December 4 - 9:00 a.m. to Noon, Holiday Inn, Poplar Bluff
- December 8 - 7:00 p.m. to 9:00 p.m., Woodland School, Marble Hill
- December 15 - 7:00 p.m. to 9:00p.m., Cape County Extension Office, Jackson
- December 16 - 9:00 a.m. to Noon, Delta Growers Coop, East Prairie

Regional Soybean Meeting January 14, 2015. Miner Convention Center, Miner, MO. Registration at 8:00 a.m. Contact Anthony Ohmes 573-243-3581 or David Reinbott 573-545-3516.

Ag Expo January 30 and 31, 2015. Black River Coliseum in Poplar Bluff, MO.

Beginning Beekeeper Training February 7, 2015. Butler County Extension Center in Poplar Bluff, MO.

Missouri Rice Producer Meeting February 19, 2015. Dexter Eagles in Dexter, MO. Registration at 8:00 a.m. Contact Sam Atwell at 573-748-5531

Missouri State Fair August 13-23, 2015. Sedalia, MO. For more information visit www.mostatefair.com or call 1-800-422-FAIR.

Commodities and markets - <http://extension.missouri.edu/scott/crop-budgets.aspx>

2014 Farm Bill - <http://extension.missouri.edu/scott/Farm-bill.aspx>

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Show-Me-Select Heifer Sale: Dec. 6, 2014

The Show-Me-Select Heifer Sale for SE Mo. Spring Calving will be held on **December 6, 2014 at 1:00** at Fruitland Livestock Auction. It includes 170 bred heifers mostly Angus Cross with some Simmental-Angus. These heifers are 98% Black or BWF, 55% A.I. Bred, 70% Fetal Sexed, and due to calve from January 1 to April 25, 2015. Heifers will be sold in uniform lots by breed, color, size, calving date, and fetal sex (if available). Catalogs are available at the Cape Co. Extension office or available by mail: please contact Teresa 573-243-3581 to receive a catalog by mail.

Consigners:

Besand & Pecaut, Perryville
 Birk Cattle Co, Jackson
 Glen Birk Farms, Jackson
 Crooks Farm, Leeton
 Deer Creek Cattle Co, Clarksville
 Floyd Ferrell, Sikeston
 Willis Koenig, Perryville
 McClure Farms, Perryville
 Lazy P Ranch, Oak Ridge
 Eli Sample, Annapolis
 Kenny Spooler, Jackson
 Turner Farms, Belgrade