



Beef Tips

January 2007

Department of Animal Sciences & Industry

www.asi.ksu.edu/beeftips

Upcoming Events

See details on page 4

Four-State Beef Conference
January 10 - 11, 2007

Tri-State Cow/Calf Symposium
January 27, 2007
Benkelman, NE

KOMA Beef Conference
February 15, 2007
Fort Scott Sale Barn
Fort Scott, KS

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Gender-selected semen now on the market

Sandy Johnson, livestock specialist

Commercially available sex-sorted semen is now available for a limited number of sires. Despite assorted claims from time to time, the only proven, repeatable and reliable method of sorting is done with a machine called a flow cytometer/cell sorter. The initial development of this technology was by USDA scientists. Private industry now has licensed key patents and patented other aspects of the technology. The amount of research funding needed to take this process to commercialization was only available in private industry.

Sperm cells are sorted based on the X bearing sperm containing 4 percent more DNA than the Y sperm. A dye that attaches to the DNA makes the X sperm brighter when viewed by the proper electronic equipment and a powerful computer. Cells must pass a light beam one at a time to be sorted correctly. The machine can discern three populations; 20 to 30 percent X sperm, 20 to 30 percent Y sperm and 40 to 60 percent unknown with 90 percent accuracy. Typically one conventional dose of semen of each sex can be produced in an hour; however, there is considerable variability between sires and even ejaculates. Recently the Monsanto Corporation has developed a multi-nozzle flow cytometer to provide gender sorted semen at 85 percent accuracy. No field data have been presented on subsequent fertility of their proprietary process.

To adapt the process for commercial purposes multiple machines costing over \$300,000 each and a lower dose inseminate are used. Insemination of unsexed sperm at a lower dose produces normal fertility for some bulls and only slightly reduced fertility in other bulls. When a conventional dose of sexed sperm is used, pregnancy rates are slightly lower than with unsexed semen. The sorting process increases handling and processing time and exposes the cells to a concentrated dye. Sperm

move through the sorter at 50 miles per hour and come to a stop in a collection device only to be centrifuged at high speeds to concentrate them enough to fit 2,000,000 in a .25 ml straw.

Pregnancy rates to sex-sorted sperm vary with management, female age and parity. Research results ranged from 35 to 100 percent of unsorted controls. In the best conditions, pregnancy rates were 70 to 90 percent of controls. Thus if normal conception rates are 70 percent, then 49 to 63 percent conception rates might be expected with sexed sperm. Under average conditions, pregnancy rates are 50 to 70 percent of controls.

Ten percent of pregnancies are expected to be of the "wrong" sex. If 10 animals are inseminated, four to five become pregnant; one to two could be of the wrong sex, with the end sex ratio similar to normal. Larger numbers of females (minimum of 20) would need to be inseminated before achieving the distortion of sex ratio desired.

The cost of currently available sex-sorted semen is about \$30 more than the same bull unsorted. In the sorting process, 75 percent of the semen is wasted since only one gender is usually desired from a given bull. Sex-sorted semen is not available from the most popular bulls because owners can sell all of this semen they can produce. Because of the cost of sorting and reduction in pregnancy rates, George Seidel of Colorado State University estimates that one gender must be worth \$300 more than the other at birth for sexing semen to be profitable.

Sexed semen is only recommended where an existing highly successful AI program is already in place. Fertility will be highest in

See Sexed Semen on page 4

Compare feedstuffs on a cost per nutrient basis to minimize feed costs

Karl Harborth, livestock specialist

The ongoing drought, limited forage supplies, high hay prices, and rising grain prices have made managing feed costs extremely difficult for most Kansas cattle producers. During situations like these, producers must become more flexible in the resources they obtain for their operation and feed them as efficiently as possible. The following are a few things to think about when purchasing feeds.

Producers should have all forages and by-products tested for nutrient composition as content can be highly variable. Without the feed test, producers may be spending money on an expensive protein or energy supplement that was not needed or needed only in smaller amounts. If you have any questions about testing forages please feel free to contact your local county extension agent and they can help you with these procedures.

Your base forage (pasture, stockpiled forage, crop residues, etc.) will dictate the type of supplementation program you will need to have this winter to meet the nutrient requirements of your cows. Regardless of the type of supplements that you need, you should purchase the needed nutrients in a nutrient dense form and based on the cost of that nutrient.

For example, if a protein supplement is needed, evaluate the possible supplements that you can purchase on the cost of each pound of protein available in these supplements. Be sure to compare feed ingredients on a dry matter basis. An example of this is shown in Table 1.

As shown in Table 1 some feeds may be more expensive on a per ton basis, but when compared on a nutrient basis they become a more economical choice. Transportation costs, storage and feeding requirements need to be considered in evaluating the total cost of the supplement.

Limit feeding corn to cows can be a viable alternative to purchasing expensive hay, but more management is involved, and not all producers are set up to handle bulk grain. This seemed like a very good alternative before corn prices began to increase. A common question is when does corn become too expensive of an energy source to be an alternative to hay? The answer depends on your price of corn and the quality of the hay you are trying to replace. Table 2 shows a comparison between the cost of energy (TDN) of corn and two different quality hays at various prices.

See Compare Feedstuffs on page 3

Table 1. Typical protein supplements shown on a \$/lb of protein basis

Item	\$/ton	CP% ^a	\$/lb of protein ^b
Protein tub	400	16	1.25
Liquid Protein Supplement	230	35	0.33
Soybean meal	217	49	0.23
20% cube, all natural protein	215	20	0.54
Wheat Midds	145	19	0.38
Dried Distillers Grains with Solubles	135	30	0.23
Corn Gluten Feed	130	20	0.33
Soy Hulls	130	12	0.54
Sunflower Meal	130	31	0.22
Alfalfa Hay	115	20	0.29

^adry matter basis.

^b\$/lb of protein =(\$/ton of feed ingredient)/(2000 x Crude Protein %)

Compare Feedstuffs, continued from page 2

Table 2. Cost of energy (TDN) for cattle based on hay price, corn price and hay quality.

Hay Price \$/Ton	Hay Price \$/Ton TDN	Corn Price ^a \$/Ton TDN	Corn Price \$/ Bushel
Low quality hay (45 percent TDN)			
50	111.11	100.20	2.50
70	155.56	140.39	3.50
90	200.00	180.51	4.50
Average Quality Hay (53 percent TDN)			
50	94.34	100.20	2.50
70	132.08	140.39	3.50
90	169.81	180.51	4.50

^aBased on TDN = 89%

Another way to conserve feed resources and minimize cost is to limit wastage. One way to limit wastage is to feed controlled amounts of hay. A dry, pregnant cow will eat 20 to 30 percent more hay than her needs when allowed free access to hay. A study from Purdue estimates that hay refused or wasted when cows were fed a 1-day, 2-day or 4-day supply per feeding was 11%, 25% and 31%, respectively.

The second way to limit wastage is to evaluate the delivery system in which hay is fed. Hay feeders that have a barrier (cone, double ring, or slanted bars) can reduce hay wastage by 50% compared to conventional bale rings. A study conducted at Michigan State University showed cone type feeders to have wastage of 3.5% of dry matter and ring feeders to have 6.1% wastage.

The amounts of wheat or hybrid sudan hay wasted with three large round bale feeding methods were evaluated in a K-State Research & Extension study. The feeding methods were: 1) bale processor used to shred forage into bunkers; 2) the same processor

used to shred forage onto the ground; and 3) unrolling large round bales on the ground. Estimated forage wastages or refusals from unrolling, shredding onto ground, and shredding into bunkers were 23, 13, and 8% with wheat hay and 22, 16, and 11% with sudan hay, respectively.

Table 3 illustrates the dollar value of forage that is wasted based on a range of hay prices and percent of forage wasted. In some cases, the value of wasted forage may pay for changes in feeding techniques. If feeding sites are not moved frequently, additional costs will be incurred removing the accumulation.

Controlling costs during times of drought and high feed prices may require considerations of different feedstuffs. Testing forages and feed ingredients before feeding will make it easier to feed them accurately and efficiently. Purchase feed ingredients on a nutrient basis in order to balance rations at the lowest cost possible. Minimize hay wastage by evaluating feeding methods and frequencies.

Table 3. Dollar value of wasted hay based on hay price and amount wasted for 100 cows^a per month.

Hay Price \$/Ton	Percent wasted				
	3.5	7	10	15	20
30	44	88	125	188	250
50	73	146	208	313	417
70	102	204	292	438	583
90	131	263	375	562	750
110	160	321	458	688	917

^a1250 lb dry cow, consuming 25 lbs of dry matter per day

**"Sexed semen
is only
recommended
where an
existing highly
successful AI
program is
already in
place."**

Sexed Semen from page 1

virgin heifers when inseminating after a detected estrus. Use of cows and/or fixed-timed AI will generally result in unacceptable fertility rates. In superovulated cows, the number of good quality embryos is reduced by about half with sexed-sperm compared to control.

Calves born from matings with sexed semen are completely normal with the exception of gender ratio. Abortion rates, neonatal death rates, gestation length, birth weights, weaning weights and incidence of abnormalities were similar with sexed semen compared to controls.

Currently the use of sexed semen is limited due to cost and reduced fertility. Improvements should come over time and allow for more widespread application.

Information for this article was summarized from a proceedings paper by G. Seidel and J. Schnenk entitled Sex-Selected Semen prepared for the Applied Reproductive Strategies in Beef Cattle Workshop held August 30 to 31, 2006 in St. Joseph, MO.

Tri-State Cow/Calf Symposium

The 2007 Tri-State Cow/Calf Symposium will take place on Jan. 27th at the Dundy County High School in Benkelman, NE. General sessions will include a producer panel relating why they started using electronic ID and how it is being used; Adding Value to the Calf Crop, Sandy Johnson, Kansas State University; and Using a Systems Approach to Ranch Management Decisions, Don Adams, University of Nebraska West Central Research and Extension Center. Producers will be able to attend two of the following break-out sessions: Winter Grazing Strategies , Jerry Volesky, University of Nebraska WCREC; Heifer Development - Before and After Birth, Rick Funston, University of Nebraska WCREC; Use of Ethanol Byproducts for Cows- Opportunities in the Future, How to Feed and Store, Galen Erickson, University of Nebraska-Lincoln; Filling the Gaps in Year-Round Grazing, Bruce Anderson, University of Nebraska-Lincoln; and National Animal ID System and Radio Frequency Identification Pilot Project Update, Bryan Rickard, Kansas Department of Animal Health. Registration is \$25 before January 22nd. Contact Nancy Frecks at 308-423-2021 or nfrecksl@unl.edu.

4-State Beef Conference

Plan to attend the 23rd Annual 4-State Beef Conference. The conference planning committee has designed an excellent program that should have something of interest to all beef producers. Speakers and their topics for the 2007 conference are as follows:

- o Dr. John Lawrence, Iowa State University – *"What is the State of the Beef Industry?"*
- o Dr. Rick Rasby, University of Nebraska – *"Utilizing Co-Product Feeds – Storage, Purchasing, etc."*
- o Dr. Rob Kallenbach, University of Missouri – *"Grazing Management"*
- o Dr. Larry Corah, Certified Angus Beef – *"Why is Percent Choice Declining?"*

The conference is scheduled for Wednesday, January 10th and Thursday, January 11th, 2007. The Wednesday morning session will begin at 10:00 a.m. in Holton, Kansas at the Jackson County Fair Building, and the afternoon session will begin at 4:00 p.m. in Tecumseh, Nebraska at the Community Building. The Thursday morning session will also begin at 10:00 a.m. in Lewis, Iowa at the ISU Armstrong Research Farm, and the afternoon session will start at 4:00 p.m. in Bethany, MO at the Community Center.

The registration fee is \$25.00 per person and reservations are requested by January 5th, 2007. The fee includes a beef meal and a copy of the conference proceedings. For more information, contact your local county extension office, or visit our website at: www.extension.iastate.edu/feci/4StBeef/.

KOMA Beef conference

The KOMA Beef Conference will be held on Wednesday, February 15 at the Fort Scott Sale Barn in Fort Scott, KS. On-site registration starts at 2:45 pm. This year's topics include: a cattle market outlook, post-weaning calf wellness management, age and source verification, premise identification update, and forage and soil drought recovery. Pre-registration is \$20.00 by February 8 or \$30.00 at the door. For more information please contact Karen Walters at 620-244-3626, kwalters@ksu.edu .