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TO: Montgomery County Beef Improvement Association Members

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RE: July 2017 Browsing Newsletter

FRAME SCORE AND PRODUCTION SYSTEM VS. PERFORMANCE AND PROFIT

Frame Score is calculated from height at the hips. Genetic selection in beef cattle over the last 40-50 years has resulted in taller, and heavier, cattle. A research study compared over three years two groups of steers averaging at weaning Frame Score 3.8 (Small Frame, SF), 453 lb and Frame 5.6 (Large Frame, LF), 567 lb. After weaning, steers were grazed through April on unharvested corn, supplemented with alfalfa-grass hay and 2 lb/day of 32% CP supplement. Over that period, SF and LF did not differ significantly in ADG (averaging 1.33 lb/day); final weight was 676 lb for SF and 779 lb for LF.

At weaning, one-half of both groups was moved to a feedlot (FLOT), fed for 218 days, and slaughtered in mid-December. Feedlot ADG and final weights differed significantly at 3.44 and 1515 lb for LF and 2.95 and 1312 lb for SF. The other one-half grazed (GRAZ) native range from early May to mid-August (108 days), field pea-barley intercrop (32 days), and unharvested corn (71 days) for total grazing period of 211 days, ending in early November. Over the combined grazing period, LF ADG and final weight were significantly higher, 2.34 and 1275 lb vs. 2.13 and 1124 lb for SF. At that point, these steers were placed on a finishing ration for 82 days and slaughtered in February-March. Feeding results were:

Trait/Group	LF FLOT	SF FLOT	LF GRAZ	SF GRAZ
Days fed	218	218	82	82
Start wt., lb	767	671	1230	1086

Out wt., lb	1516	1312	1610	1401
ADG, lb	3.44	2.95	4.70	3.88
DM/day, lb	26.8	21.9	29.2	25.4
DM\$/lb gain	0.81	0.79	0.65	0.70

GRAZ consumed more feed per head, gained faster and cheaper, and were heavier at slaughter. LF consumed more feed, gained faster but not cheaper, and were heavier at slaughter. Heavier live and carcass weight was related to larger ribeye area and higher carcass value/steer. All groups averaged higher than 92% Choice quality grade. Mechanically-evaluated tenderness was very similar for all groups. Per-head economic factors were:

Trait/Group	LF FLOT	SF FLOT	LF GRAZ	SF GRAZ
Cow cost \$ *	603	538	603	538
Background \$	153	122	153	122
Grazing \$	–	–	300	250
Feedyard \$	679	595	272	242
Carcass \$	2073	1820	2224	1974
Net/steer \$	620	565	896	822

* LF cows averaged 1459 lb and SF 1151 lb.

Under these systems, and with cost and values over the three years of the study, Large Frame had somewhat higher net return than Small Frame, primarily because higher carcass value from higher weight more than offset higher cow cost. The Grazing-Feeding system returned notably more than Feeding alone, primarily because feedyard time and cost was less than half. The full report is available at <https://www.ag.ndsu.edu/DickinsonREC/documents/livestock/2016-3yr-graz-vs-flot-annual-report-cow-size.pdf>.

AI CLEAN-UP BULLS – HOW MANY DO YOU NEED?

Most artificial insemination programs today use estrus synchronization for AI followed by turning out clean-up bulls. Following AI, there is some variation in when cows that did not conceive to AI return to estrus. In one study, of those not conceiving, over the next 26 days after AI, 47% of cows showed estrus on day 20-22, 22% showed estrus from day 1-19 or day 23-26, and 31% did not return to estrus. Patterns of variation in return to estrus could have some influence over how many clean-up bulls might be optimum. Other possibly influencing factors include age of bulls, pasture size, and pasture terrain.

Results were combined from 33 research papers. The basis of comparison was final pregnancy rates. Rate for natural service using from 20-30 females per bull was 87.8%. In studies using synchronization and AI, number of clean-up bulls was categorized in three groups according to number of clean-up bulls per females. Results for pregnancy rate were

- ✓20-30 females per clean-up bull = 87.8 %,
- ✓31-49 females per clean-up bull = 82.6 %,
- ✓50-60 females per clean-up bull = 89.2%.

The authors concluded “producers utilizing estrus synchronization and AI should keep in mind the similarity between final pregnancy rates when using a bull:female ratio of 1:25 or 1:50” and “the cost difference of purchasing and maintaining” more clean-up bulls.

EFFECT OF BISON RUMEN CONTENTS ON FIBER DIGESTION BY CATTLE

Bison evolved in North America mostly by migratory grazing. Research has shown that bison are more efficient than cattle in digesting the more fibrous components of most forages. A study was conducted to evaluate effects from inoculating cattle with rumen contents from bison.

After an adjustment period of 46 days, baseline rate of fiber digestion was analyzed on a group of 16 Angus X Hereford heifers averaging 1014 lb. Heifers were then inoculated over 14 days with rumen contents from 32 bison. At that point, inoculation ceased, animals were maintained for another 12 days, and fiber digestion was again analyzed over the next 13 days. In comparing baseline and post-inoculation results, the authors concluded “inoculation of cattle with bison rumen contents failed to improve degradation of fiber”.

HEIFER DEVELOPMENT SYSTEM VS. GAIN AND REPRODUCTION

Over four years, Angus-crossbred heifers averaging 518 lb were grazed (GR) on corn residue or native range (plus 1 lb/day of 29% CP dried distillers grain) or placed in a feedlot (FL) on hay plus corn gluten feed.

After development, heifers were synchronized, artificially-inseminated, and then clean-up bulls were turned in. Selected results were:

- ✓FL gained significantly more than GR and were sig. heavier at breeding;
- ✓after breeding, GR gained sig. more than FL but were still slightly lighter at final pregnancy diagnosis;
- ✓AI and final pregnancy rate did not sig. differ;
- ✓net cost per pregnant heifer did not sig. differ, being only slightly less for GR.

The authors noted that price fluctuations can affect such results but concluded “producers may utilize their most readily available and/or cost-effective feed resources with no detriment to pregnancy rates as first-calf heifers”.

A NEW \$ VALUE GENETIC SELECTION INDEX FOR COWHERDS

More beef breed associations now generate some economic genetic selection indexes, commonly called \$ Value Indexes. These indexes combine in one number relevant EPDs and economic values. Many indexes deal only with postweaning performance and/or

carcass merit. Some of these also include cowherd traits for a total system index. A few address only factors important through weaning, the production system of the majority of cowherds in the U. S. As an example of the latter, Beefmaster Breeders United has recently introduced its Maternal Index (\$M). It is designed for producers selling steers at weaning and either retaining for breeding or selling heifers.

The index was developed by noted genetics authorities as reported in a recent research paper. EPDs included in the index are direct calving ease, maternal calving ease, weaning weight, maternal effect on weaning weight, mature cow weight, and heifer pregnancy. Market prices over 2010-2014 were obtained (from USDA-AMS or the Livestock Marketing Information Center) for weaned steers and heifers and for cull cows in the southeastern U. S. states, the region where Beefmaster are most commonly found. Pasture, hay, and supplement costs over the same period were obtained from USDA-NASS.

The relative effect on profitability of the six traits included in the index was analyzed. The largest effect was due to reduced mature cow weight, followed by higher weaning weight, and then higher maternal effect on weaning weight. Direct calving ease, maternal calving ease, and heifer pregnancy had only small effects. So, since weaning and mature weights are genetically positively correlated but have opposite economic effects, some tradeoff between weaning and mature weight maximizes profit in this index.

CATTLE NUMBERS AND PRICE PROJECTIONS – 2017 TO 2026

The Food & Agricultural Policy Research Institute annually projects numbers, prices, and returns for most agricultural commodities over the next 10 years. Latest projections were published in March, 2017. Some selected projected figures at that time are:

- ✓Beef cow numbers are projected to range from 30.8 million head in 2017, to 31.1 million in 2019 and gradually decline to 29.8 million in 2026, dairy cows are projected at 9.3 to 9.4 million over that period;
- ✓Feeder steers at Oklahoma City averaging 600-650 lb are projected to average about \$134/cwt over 2017, decline to about \$127 over 2018-2019 and steadily increase to about \$160 over 2026;
- ✓Finished steers in the 5-state major feeding area are projected to average about \$111/cwt over 2017, decline to about \$106 over 2018-2020, and gradually increase to about \$118 in 2026;
- ✓Utility grade slaughter cows are projected to follow a similar pattern, from about \$64/cwt in 2017, decreasing over three years to about \$62, and increasing to about \$73 in 2026;
- ✓Per head cow-calf receipts, total costs, and net returns are projected over 2017 at about \$681 and \$668, for a net of \$13;
- ✓Over 2019, receipts, costs, and returns are projected at about \$662 and \$682, for a net loss of \$20;

✓By 2026, receipts are projected to gradually increase to about \$842, costs increase to about \$743 (with most increase from non-pasture/feed expense), and returns increase to about \$100.

The full report is available at <https://www.fapri.missouri.edu/> .

BQA TIP-OF-THE MONTH – HORN FLY CONTROL

Horn fly control is important for animal welfare, performance, and herd health. If horn flies are not controlled, research has shown that animal gains are often reduced by 0.09 lbs/day for nursing calves and 0.20 lbs/day for stocker cattle and replacement heifers. To reduce problems with resistance, chemical classes of topical insecticides should be rotated each year. Currently available topical products can be classified as either pyrethroids, organophosphates, or avermectins. Remember to rotate chemical classes and not just brand names or application methods.

TAMU BEEF CATTLE SHORT COURSE, August 7-9, 2017 at Texas A&M University

The Texas A&M Beef Cattle Short Course has a rich tradition and historical place in the programs emanating from the Department of Animal Science at Texas A&M University. Dating as far back as 1942, Professor John K Riggs started the first in a series of Beef Cattle Short Courses held on the campus of Texas A&M College to discuss the results of beef cattle research from the Texas Agricultural Experiment Station with Texas beef producers. This historical beginning and purpose is still the standard today for the Beef Cattle Short Course held at Texas A&M University. Today the highly respected TAM Beef Cattle Short Course is nationally and internationally recognized as the largest attended beef cattle educational program of its type in the world. It has gained the respect from organizations, associations, Land Grant universities and agencies alike as the focal point for beef cattle educational information. The Cattleman's College features more than 20 concurrent sessions. Topics include animal health, nutrition, reproduction, breeding, genetics, selection, research, marketing and handling. Management sessions will cover business, forage, range, and purebred cattle. Topics such as landowner issues and fence building will be featured at this BCSC. Sessions are designed for everyone, from the newest member of the industry to the most seasoned producer. A number of pesticide CEUs, veterinarian CECs and BQA credits are available to attendees. Additionally, over 125 agriculture related businesses and trade show exhibitors annually attend the course and attest to the fact that it is the most highly attended activity of its kind anywhere in the United States. Annually over 1400 participants attend the Beef Cattle Short Course to gain valuable knowledge about beef cattle production.