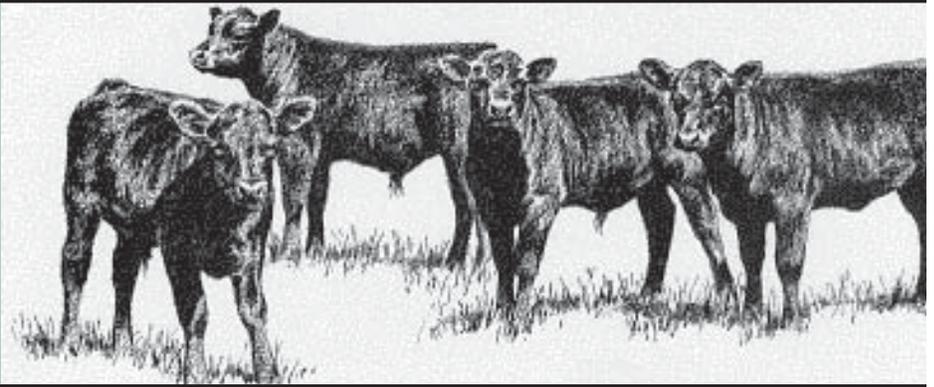


# The MSU Beef Team Presents

<http://beef.ans.msu.edu>



# Cattle Call

*Funded by the Animal Industry Initiative*

Volume 8 Issue 1

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*Michigan State University Extension Programs and materials are open to all without regards to race, color, national origin, sex, handicap, age or religion.*

## Michigan Bovine TB Disease Free Zone Surveillance Plan

John Molesworth DVM

On October 1, 2002, the state of Michigan instituted a new bovine TB surveillance program for the disease free zone of Michigan. With regard to bovine TB, Michigan is currently divided into an Infected Zone, Surveillance Zone and Disease Free Zone. The Infected Zone includes Presque Isle, Montmorency, Alpena and Alcona counties. While the surveillance zone consists of Cheboygan, Otsego, Crawford, Oscoda, Ogemaw and Iosco. The remainder of the state is in the Disease Free Zone.

This plan was developed under the direction and guidance of the Michigan Bovine TB Advisory Committee with the following specific objectives in mind, 1) develop a bovine TB surveillance plan that was scientifically sound, 2) develop a plan that would utilize resources in a fiscally responsible way, and 3) develop a plan that could reduce bovine TB testing requirements for intrastate movement in the TB disease free zone.

Ongoing surveillance for bovine tuberculosis needs to occur in the bovine TB disease free zone of Michigan for the following reasons:

- Needed to move ahead in gaining split-state status and ultimately regaining TB free status.
- Part of strategic plan put forth by MDA to FDA permitting the marketing of milk from the disease free zone in Michigan without the need for an annual whole herd test of all dairies.
- Demonstrate continued disease free status to our trading partners.

### **Bovine TB surveillance plan for the disease free zone of Michigan**

A key issue in disease control is to develop a scientifically sound active surveillance plan that is economically feasible. Based on this premise, the following plan was developed and has been adopted. (continued on page 2)

### Bovine TB continued from page 1

Bovine TB surveillance will be based on whole herd testing of randomly selected herds from the disease free zone of Michigan. Based on the total number of cattle farms in Michigan, 1800 cattle herds will be tested every two years. To obtain these herds, a proportional sample of beef and dairy farms will be randomly selected from each county in the disease free zone of Michigan and a whole herd bovine TB test administered. This test will be done by MDA or USDA veterinarians or by accredited private practitioners certified by the State of Michigan. A 6-year surveillance program will be used consisting of three 2-year cycles. After each testing cycle, the surveillance strategy will be evaluated and adjusted accordingly. In conjunction with the whole herd TB test, a series of questions will be asked to help determine what risks may be associated with TB infection at the herd level.

This plan also does not eliminate the need for all cattle herds to have had a whole herd TB test by December 31, 2003 as mandated by state law. Herds yet to complete a whole herd test should schedule a test as soon as possible. This surveillance plan also does not affect the bovine TB infected and surveillance zones. Herds in the infected zone must still have an annual whole herd test and in the surveillance zone a whole herd test every 2 years.

More information on this plan can be obtained by calling MDA (517-373-1077) or at [www.bovinetb.com](http://www.bovinetb.com). CC

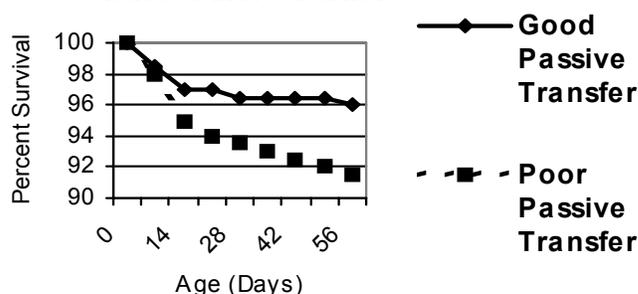
## The War Against Bad Bugs

Dan Grooms DVM, PHD  
MSU, College of Veterinary Medicine

Imagine going into battle with no protective armor and with a state of the art assault weapon that has no munitions! Sounds like an instant recipe for a trip to the hospital or worse! Essentially, this is the situation that faces baby calves when they are born. They are equipped with little resistance to disease (not much armor) and an immune system (weapon) that is very capable of protecting against disease but which has not been fully activated (no bullets). Because of this, it is essential that at birth, calves are equipped as soon as possible with armor, weapons and bullets that allow them the best chance to survive the battle against viruses and bacteria that will assault them immediately. The primary way this is done is through the intake of colostrum. The newborn calf is virtually devoid of circulating antibodies and thus relies on antibodies acquired from colostrum for protection against common bacteria and virus that cause diseases such as diarrhea, pneumonia, septicemia and swollen

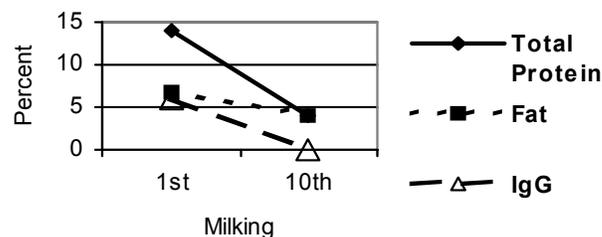
joints. If fed early enough, antibodies present in colostrum are transferred across the small intestine and into the blood during the first few hours of life. This is referred to as passive transfer. The absorbed antibodies protect against systemic invasion by pathogens while antibodies that are not absorbed play an important role in protection against intestinal disease. Calves that fail to get enough of these antibodies are said to be suffering from “failure of passive transfer” (FPT) and are at high risk for developing the disease conditions mentioned above (Figure 1).

**Figure 1. Failure of passive transfer leads to more deaths!**



The major factors influencing blood antibody levels are the antibody mass ingested and the interval after birth before colostrum is ingested. Antibody concentration is highest in first milking colostrum. The rapid fall in colostrum antibody concentration after calving and during subsequent milking is well recognized (Figure 2).

**Figure 2: Change in milk composition over time.**

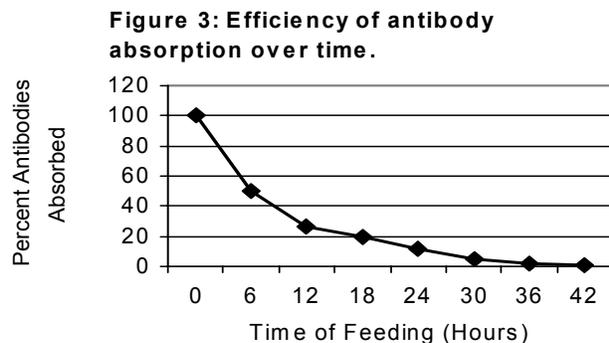


Studies have suggested that ingestion of 200-300 grams of IgG within 24-36 hours after birth is important to assure successful passive transfer. With average quality colostrum from adult cows, feeding approximately four quarts of colostrum will provide these concentrations. Even at this feeding level, some calves will have inadequate passive transfer because some cows are unable to produce colostrum with high antibody concentration. This is especially true of first calf heifers!

An estimation of the antibody concentration of colostrum (colostrum quality) can be obtained by measuring its specific

gravity with a commercial instrument called a colostrometer. Research has shown that the specific gravity of colostrum is correlated to the concentration of antibodies found in the colostrum. The colostrometer is calibrated to indicate if the colostrum is of good or poor quality. One important note, this measurement should be performed at room temperature (~70 F) as colostrum temperature will affect the accuracy of the measurement.

In most situations, the volume of colostrum available to the calf at nursing or during artificial feeding is not a limiting factor for successful passive transfer. However, age at first feeding is a critical issue. Colostral antibodies are absorbed through the calf's intestine during the first 24 to 36 hours after birth. Soon after birth, the efficiency which colostrum is absorbed decreases rapidly (Figure 3).



Therefore it is critical that colostrum be ingested as soon after birth as possible. A general rule of thumb is that calves should receive 4 quarts of good quality colostrum within 12 hours of birth.

### When should you give beef calves supplemental colostrum?

In the dairy industry, feeding colostrum at birth is a routine management practice. But in the beef industry, we often depend on the calf to nurse to get its colostrum. However, situations arise when human intervention is necessary. In general, calves should be force fed colostrum if the following situations arise:

1. If the calf has not risen within 1-2 hours of birth. Remember, within 6 hours the intestines have a 50% decrease in absorptive efficiency!
2. If the dam shows no interest in the calf
3. If the dam has no milk or evidence of mastitis
4. If the dam dies or has other medical problems that preclude her from nursing
5. Very valuable calves

The best source of colostrum is the dam of the calf. If unavailable, colostrum can be saved and frozen from herd mates or cows from other farms (dairy cows). Using colostrum from other farms needs to be considered carefully because of biosecurity concerns. Artificial colostrum supplements are available but should only be used as a colostrum supplement and not a sole source of passive antibody transfer.

### Monitoring Passive Transfer

The level of antibodies transferred from the colostrum to the blood can be determined by measuring the concentration of antibodies in the calf's serum. IgG is the predominant antibody in colostrum and thus it is most commonly measured when evaluating passive transfer efficiency. To provide a standard reference point, this measurement is most commonly done at 48 hours of age. Many methods can be used to measure blood serum antibody-containing immunoglobulins. Total serum protein can be measured and is correlated to the level of immunoglobulin transferred. The zinc sulfate turbidity test is easily and rapidly performed. Practicing veterinarians have frequently used this test. Accurate IgG levels can be determined using a laboratory based radial immuno diffusion (RID) test. Although generally run by diagnostic laboratories, many practicing veterinarians now run RID's in their clinic. There are also available calf side quick diagnostic tests that are similar to a "home pregnancy test." These are easy to use and give you a rapid picture of the IgG status of the calf, however they are relatively expensive. **CC**



## 2002 Michigan Cattlemen's Association Graded, Vaccinated Feeder Calf Sale

Kevin Gould, MCA Sale Committee Chairperson

The Michigan Cattlemen and MSU Extension Beef Team coordinated the fourth annual Graded Feeder Calf Sale. The goal of this marketing program is to provide a value-added market for uniform pre-conditioned calves to cattle feeders in Michigan. Through this program, Michigan cow-calf producers can package their calves in marketing units desired by cattle feeders in the state.

For the past five years, the MCA Sale Committee has taken consignments for calves that meet a strict weaning and pre-conditioning program for the December sale. 925 calves sold on December 13 in uniform lots averaging 15 head per lot. Calves are graded and sorted at the sale barn the day before the sale and penned according to weight, breed type, muscling/confirmation, and sex.

This sale offered no premium relative to the value offered, but if you compare this sale to many regular feeder sales across the state, the MCA sale calves consistently bring higher prices. This is simply extra value placed on these calves for additional management after weaning. The MCA sale committee is hopeful this type of management and pre-conditioning program becomes the industry standard for cow-calf producers. I would like to thank the consignor and buyers for their participation. Without each sector involved, our cattle industry in Michigan would not survive.

A breakdown of average prices are listed below for calves that graded number 1.

<u>400-499#</u>	<u>Black</u>	<u>Colored</u>
Steers:	\$96.00	\$85.00
Heifers:	\$82.88	\$82.00
<u>500-599#</u>		
Steers:	\$93.25	\$89.33
Heifers:	\$83.87	\$80.00
<u>600-699#</u>		
Steers:	\$89.95	\$85.25
Heifers:	\$83.38	\$78.67
<u>700-799#</u>		
Steers:	\$85.00	\$83.50
Heifers:	\$83.00	\$74.50

A huge thank you goes out to those MCA members and MSU Extension Staff that assisted in the grading and sorting and to United Producers or hosting this sale. Without the continued support from the many volunteers, this type of sale would not be possible. *CC*

## Michigan Hay Mountain Could Turn into Mole Hill by Spring

Jerry Lindquist

Osceola County, MSU Extension Director

For the previous three years Michigan had abundant hay harvests. Favorable rainfall in the springs made for a large first cutting harvest. This made for a mountain of surplus first cutting hay in the State. Drier weather in the late summer of 2001 began to lower this surplus of hay. Then the cool, wet spring of 2002 with accompanying late frosts, delayed first cutting harvest and used up extra supplies of forage in early June on many farms. The mountain really began to crumble in the summer of 2002 with poor 2<sup>nd</sup> and 3<sup>rd</sup> cutting yields across many areas of the State of Michigan. With increasing demand from out-state buyers as well as in-state, the large surplus of hay in Michigan could be gone by spring.

Markets are starting to reflect this increase in demand as prices are rising, even for lower quality, 1<sup>st</sup> cutting round-baled hay. The best demand and prices are for the high quality alfalfa hays in large square bale or small square bale forms. These bale types can be most economically trucked out of state to drought stricken areas in Ohio or into droughty areas of Colorado and the Dakotas. Timothy/alfalfa mixed horse hays are also in high demand and sell for favorable prices in Michigan and as far away as Florida.

The Michigan Hay Seller's List web site is reflecting this lower supply of hay as less hay is listed for sale on the site than in the past four years. Producers that are in need of forage are encouraged to start locking in their extra supplies. If necessary, make a down payment now so that the forage will be there when it is really needed.

To list hay, free of charge, on the Michigan Hay Sellers List go to [www.msue.msu.edu/hay](http://www.msue.msu.edu/hay) and follow the instructions. To receive, a free listing of hay for sale go to the same internet address and go to "entries." Those without internet access may request a copy of the listings of hay for sale from their local County MSU Extension. They should be specific as to what type of hay they are seeking, such as alfalfa/timothy, small square bales, 1<sup>st</sup> or 2<sup>nd</sup> cutting, in Southern Michigan. Being specific will make the printing task easier. The Michigan Hay Seller's List is also a great way to check hay prices as the "statistics" part of the website contains average asking prices for all of the various types of hay that are listed. The Hay Sellers List is sponsored by The Michigan Hay & Grazing Council and MSU Extension with support from the Michigan Department of Agriculture and Michigan Farm Bureau. For more information contact your local County MSU Extension Office. *CC*

## Beef Cow Body Condition Score Description

Dr. Ben Bartlett  
MSUE Beef Specialist,  
Michigan Upper Peninsula

It never hurts to review beef cow body condition parameters. Here is a description of what a cow should look like at each body condition score and a brief reminder what these numbers tell you.

- #1 Severely Emaciated: All ribs and bone structures easily visible. Very little visible muscle tissue. Physically weak. Rare
- #2 Very Thin: Some muscle tissue, animal not weak, bone structures visible but not sharp
- #3 Thin: No fat over ribs or brisket, more muscling along backbone. Some cover over foreribs.
- #4 Borderline: Foreribs not visible, 12<sup>th</sup> and 13<sup>th</sup> visible. Shoulder and hindquarters show modest muscling. Backbone visible but rounded.
- #5 Moderate: Good over all appearance. Some evidence of 12 and 13<sup>th</sup> rib, some fat around tail head, top line view from rear is round, not convex
- #6 High Moderate: Smooth appearance due to increased fat cover. Slight fat deposition in brisket and over tailhead.
- #7 Good: Brisket full, tailhead shows pockets of fat, topline well rounded,
- #8 Fat: Topline square or level due to heavy fat deposition over loin. Brisket distended and pockets of fat visible over pins and next to vulva
- #9 Obese: Obviously very fat, blocky overall appearance with protruding fat pockets, tailhead and hips buried in fat. Rare

### Summary:

- #2 & 3 Red flag, cow too thin to perform to expectations, take immediate action
- #4 Is a concern, increase feed
- #5&6 Cow in shape to meet expectations
- #7 Getting lots of feed or not working very hard
- #8 & 9 You can't afford these pets CC

## Joel Cowley Accepts Position With Certified Angus Beef



Mr. Joel Cowley, has been named Executive Account Manager of the International Division of Certified Angus Beef, LLC. He is based in Wooster, Ohio, but the majority of his work is with Canadian clientele. He was formerly an Academic Specialist in the Department of Animal Science at Michigan State University. His responsibilities included Integrated Resource Management programs for cow-calf and feedlot, as well as, coordinator of Five State Beef Initiative activities in Michigan.

He also served as editor of this newsletter since it began in 1996. The MSU Beef Team appreciates Joel's contribution and wishes him continued success in working with the retail and food service segment of the beef industry. CC

### Get Your Sires Five State Beef Initiative Certified

Certify your bulls to make sure they meet the standards of the Five State Beef Initiative. Certification requires that sires meet minimum levels of EPD's for performance (*birth, weaning, and yearling weights, and milk*) and carcass (*marbling and retail product*). There is no charge for certification. Call in or fax the owners' name, address, and phone number along with the sire breed, registration number, and registered name to:

Mark Scott  
Michigan State University  
Phone: 517-432-4906  
Fax: 517-432-0147

## Research Roundup

By Harlan Ritchie, Dan Buskirk and Steven Rust  
MSU Beef Cattle Specialists

### Commingling and In-Weight had Significant Effects on Health, Feedyard Performance and Carcass Quality

Data on 70 pens (202 head/pen) of feeder calves from seven states were analyzed by Montana State Univ. researchers to determine the effect of certain parameters on health, feedlot performance and carcass quality. Age at weaning averaged 220 days with a range of 148 to 290 days. After weaning, calves were backgrounded an average of 69 days with a range of zero to 135 days. Feedyard in-weight averaged 719 lb and ranged from 456 to 891 lb. The pens were on feed for an average of 167 days and had an average daily gain of 2.95 lb. Morbidity increased 7% when calves were commingled in the feedyard compared to those not commingled. Calves that entered the feedlot at heavier weights had less mortality, higher average daily gains, greater carcass weights and a higher percent of Choice carcasses than those entering at lighter weights. The authors stated these results indicated that commingling and in-weight were critical to health, feedlot performance and carcass quality (Fennewald et al. 2002. Montana Nutrition Conf., Bozeman, MT).

### Deposition of Marbling Was Accelerated at a Set Body Weight

Recently, there has been considerable interest in determining if and when there is a point at which marbling is accelerated in feedlot cattle. In a Univ. of Missouri trial, Angus crossbred steers (774 lb) were assigned to three treatment groups, representing a weight at which they

would enter the feedlot (800, 900, or 1000 lb). Before entering the feedlot they were grazed on pasture and supplemented to achieve a gain of 1.75 lb/day. In the feedlot, they were measured ultrasonically for intramuscular fat (marbling) every 28 days until they were harvested at approximately 1250 lb. There were no differences between treatments in daily gain on pasture or in the feedlot. Using broken-line statistical analysis, the authors determined the breakpoint at which deposition of intramuscular fat began to increase. Regardless of weight at feedlot entry, the breakpoint for increased intramuscular fat accretion rate was calculated as 64% of mature body weight in these steers. The authors indicated this type of information could enhance beef production efficiency by more accurately hitting a quality grade window and avoid overfeeding. They stated that further research is needed to determine the marbling breakpoint values for other breed types that vary in frame size and mature weight (Carter et al. 2002. Prof. Anim. Sci. 18:135).

### Zinc Proteinate Supplementation Improved Performance of Finishing Steers

In a growing-finishing trial to compare organic vs. inorganic sources of zinc, North Carolina State Univ. scientists allotted 60 individually-fed Angus and Angus x Hereford steers (542 lb) to four treatments; 1) control, no supplemental zinc (Zn); 2) zinc oxide (ZnO); 3) Zn proteinate-A; 4) Zn proteinate-B. Treatments 2, 3 and 4 provided 25 parts per million (ppm) of supplemental Zn. Steers were fed a corn silage-based diet during the 84-day growing phase and a high corn diet during the finishing phase. During the growing phase, all three Zn supplements significantly increased ADG over the Controls. In

the finishing phase, steers fed Zn proteinate tended to gain faster and more efficiently than ZnO or Control steers. Zinc proteinate steers had significantly heavier hot carcass weights and slightly higher dressing percentages than control or ZnO steers. Zinc supplementation, regardless of source, significantly increased quality grade, yield grade, marbling and backfat over Controls. Soluble concentrations of Zn in ruminal fluid were significantly higher in steers fed Zn proteinate than those fed ZnO. The authors concluded that Zn proteinate might improve performance of finishing steers above that observed with inorganic Zn supplementation (Spears and Kegley. 2002. J. Anim. Sci. 80: 2747).

### Feeding Melengesterol Acetate Failed to Suppress Reproduction Activity in Yearling Feedlot Bulls

When administered to male humans and monkeys, progestins have been shown to suppress libido and sexual behavior. In beef cattle, the orally active progestin melengesterol acetate (MGA) is routinely used to suppress estrous behavior in feedlot heifers. In a Univ. of Kentucky study, crossbred bull calves (317 days of age) were fed a daily dose of 0, 0.5, 1.0, or 2.0 mg MGA for 99 days to determine if MGA could suppress the sexual behavior of young feedlot bulls, thereby making them more suitable for finishing and subsequent harvest. Luteinizing hormone (LH) and testosterone concentrations were characterized on days 8, 36, 63, and 92. Mounting behavior was assessed on days 15, 43, 71, and 99. Overall, feeding MGA had little or no effect on hormone concentrations or mounting behavior. The authors concluded that these results fail to support the hypothesis that progestins suppress sexual behavior or fertility in beef bulls (Imwalle et al. 2002. J. Anim. Sci. 80: 1059).

### **An Online Video Image Analysis System More Accurately Predicted Carcass Cutout Yields than Online USDA Graders**

Colorado State Univ. researchers used 296 steer and heifer carcasses to evaluate the accuracy of four different methods of predicting fabricated yields of closely trimmed subprimals: 1) whole yield grade numbers assigned by USDA graders online at chain speed (10-12 seconds/carcass); 2) yield grades assigned offline to the nearest 0.1 by expert USDA graders at a comfortable rate of speed; 3) a video image analysis system, "Computer Vision System" (CVS), to estimate carcass yield at chain speed; 4) CVS measured ribeye area in conjunction with expert grader estimates of the remaining yield grade factors (fat thickness, carcass weight, and % KPH fat). Accuracies of the four systems were 39, 67, 64, and 65%, respectively. The authors concluded that prediction models using the CVS estimates—either alone or combined with some human grader estimates—more accurately predicted carcass cutout yields than did yield grades assigned by online graders (Cannell et al. 2002. *J. Anim. Sci.* 80:1195).

### **Combining Live Animal Data and Carcass Data Improved Accuracy of Breeding Values for Traits Related to Carcass Yield**

Scientists at the Lethbridge, Alberta Research Centre obtained live weight (LW) and real time ultrasound (RTU) measures of ribeye area (REA) and fat thickness (FT) on a total of 404 yearling bulls and 514 yearling heifers from three calf crops. Measures of carcass weight (CW), REA, and FT were also obtained on a total of 235 steers from these same calf crops. Estimated breeding values (EBV) were initially

determined for CW, REA, and FT using only the steer carcass data. EBV were also determined for LW, REA, and FT using live animal RTU data from the yearling bulls and heifers. Carcass and live animal data were also combined to determine EBV in a full animal model. Following is a summary of their results.

- EBV from the carcass data model were less accurate than those from the live animal data model.
- Adding live animal RTU data to the carcass model increased the average accuracy of carcass trait breeding values by 91, 75, and 51% for CW, REA, and FT, respectively.
- Rank correlations among breeding values were lower when estimated solely with carcass data vs. RTU data. The authors concluded that the addition of live animal data to carcass data for genetic evaluation of carcass traits is expected to result in EBV that are more accurate for potential replacements (Crews and Kemp. 2002. *J. Anim. Sci.* 80: 1809).

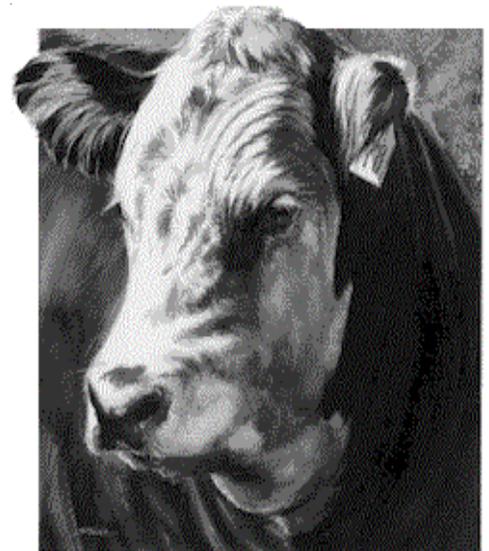
### **Concentrations of the Hormone IGF-1 Were Not Associated with Postpartum Follicular Development Among Various Genotypes of Cows**

An extended period of postpartum anestrus (failure to return to estrus on schedule) results in an extended calving season and loss of reproductive efficiency. Numerous studies on hormone changes during postpartum anestrus have been conducted over the past several decades. One hormone found to change during this period is insulin-like growth factor-1 (IGF-1). In a 2-year study, Oklahoma State Univ., USDA, and Univ. of Florida researchers hypothesized that differences in IGF-1 concentrations among various genotypes may be associated with differences in return to estrous cyclicity in postpartum cows. Serum concentrations of IGF-1, body condition score (BCS) and body weight

(BW) were determined between weeks 2 and 9 postpartum. As a measure of return to cyclicity, rectal ultrasound was used to determine days postpartum to first medium sized ovarian follicle (6-9 mm) and first large (e•10 mm) follicle.

- Averaged across genotypes, BCS decreased significantly from week 3 to week 6 postpartum, and BW decreased significantly from week 2 to week 9 postpartum.
- IGF-1 concentrations were greatest in Brahman (B); lowest in Angus (A), Charolais (C) and A x C; and intermediate in A x B and B x C cows.
- Average no. of days to first medium follicle and first large follicle did not differ among genotypes.
- Serum IGF-1 correlated significantly with BCS but not with days to first large follicle.
- Cows that lost BCS postpartum had lower serum IGF-1 concentrations.
- Cows that calved with adequate BCS had greater IGF-1 concentrations than those with inadequate BCS, but days to first medium and large follicle did not differ.

The authors concluded that serum IGF-1 concentrations differed among genotypes and were associated with BCS but not with days to first medium or large follicle in postpartum beef cows (Spicer et al. 2002. *J. Anim. Sci.* 80: 716).



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