INDUSTRY

Research Briefs

► *Compiled by* ***Kindra Gordon***

The latest revealed at ASAS

Each year, animal scientists from across the country gather to present their latest findings to be reviewed and discussed by their peers at four regional meetings and one national meeting of the American Society of Animal Science (ASAS). The research briefs presented at these meetings often reveal the topics of feature stories that you will read about two to three years from now.

More than 1,000 abstracts covering many species were presented at this year's annual meeting July 22-26, in Phoenix, Ariz. We'll summarize some of the most pertinent findings in regard to raising and marketing beef cattle from conception to consumption. Following is a sampling that we've categorized into reproduction, calf management and end product categories. In upcoming issues we will include herd management and feedlot management research.

Reproduction

Trace minerals are important for cow fertility, according to a large, two-year study conducted at Colorado State University (CSU). In the study, pregnancy rates tended to be higher for cows supplemented with trace minerals compared to those given no supplements.

Researchers observed 164 crossbred beef cows over a two-year period to determine the effect of trace mineral supplementation from approximately 90 days prior to calving through 120 days postcalving on cow performance.

Cows were initially evaluated for expected calving date, body weight, body condition score (BCS), and liver mineral status and were then assigned to one of three treatments:

1) control: no supplemental copper, zinc or manganese;

2) ORG: 50% organic and 50% inorganic copper, zinc and manganese; and

3) ING: 100% inorganic copper sulfate, zinc sulfate and manganese sulfate.

The mineral treatments were provided *ad libitum* in free-choice mineral feeders.

At the end of the first year, copper, zinc and manganese concentrations in the liver were higher in supplemented cows relative to control cows, and liver copper concentrations were higher in ORG cows relative to ING cows. At the end of the second year, supplemented cows had higher liver copper concentrations and lower liver manganese concentrations relative to controls.

The researchers observed that the overall 60-day pregnancy rate tended to be higher for supplemented cows relative to controls, 94% vs. 89%, respectively.

Pregnancy rates to artificial insemination (AI) were higher among supplemented cows. In the first year, there was a trend for ORG cows to have a higher pregnancy rate to AI than ING cows, 67% vs. 52%, respectively. In year two, supplemented cows had a higher pregnancy rate to AI vs. control cows, 57% vs. 34%, respectively. And, when AI was based on estrus, supplemented cows had a higher pregnancy rate (71%) than control cows (58%).

From this information, the researchers concluded that trace mineral supplementation and its source have an effect on fertility if copper, zinc and minerals are not supplemented for more than one year.

For more information contact Jason Ahola with CSU's Department of Animal Sciences at ahola@lamar.colostate.edu.

Fat supplementation to beef cows immediately postpartum does not appear to induce earlier resumption of estrus, says University of Wyoming (UW) animal scientist Bret Hess.

Increased accumulation of follicle-stimulating hormone (FSH) in beef cattle fed high-linoleate safflower seeds was not sufficient enough to enhance ovarian follicular development, Hess reports. Therefore, feeding fats high in linoleic acid to beef cows for 30-35 days postpartum may not influence resumption of estrus, he says.

These results are comparable to another UW study in which researchers targeted fat supplementation to cows during the same postcalving period.

For this study, 24 3-year-old beef cows were individually fed hay and either a low-fat control of beet pulp pellets or a high-fat linoleate safflower seed supplement from the first day of calving until 80 days postpartum. The high-fat supplement was formulated to provide 5% dietary fat.

Cows were treated with 100 milligrams (mg) gonadotropin-releasing hormone (GnRH) 40-45 days postpartum and were administered prostaglandin (PGF) seven days later.

Although the high-fat diet adequately met the cows nutritional needs, the researchers observed that the control cows gained body weight while the fat-supplemented cows only maintained body weight during the feeding trial. The researchers found that concentrations of progesterone did not differ between cows fed the two dietary treatments. However, first-service conception rates tended to be greater in the control group than in the fat-supplemented cows — 66.7% for control, compared to 33.3% among cows fed the high-linoleate safflower supplement. While conception rates were identical by the end of the breeding season, conception occurred earlier postpartum in the control cows than in the fat-supplemented cows, 60 days vs. 81 days on average.

The researchers concluded that fat supplementation with high-linoleate safflower seeds during the first month postpartum, detrimentally affected early postpartum fertility, resulting in cows conceiving later in breeding, possibly due to the elevated production of PGF.

For more information contact Hess at (307) 766-5173 or brethess@uwy.edu; or Gary Moss at (307) 766-5374 or gm@uwyo.edu.

Calf management

Corn distillers dried grains with solubles are an effective and economical protein source for creep feed, reports a group of University of Missouri (MU) researchers. The distillers dried grains are a byproduct of the ethanol milling process.

The study compared performance of 36 steer calves fed creep feed with either corn distillers dried grains with solubles (DDGS) or soybean meal (SBM) as the protein source. A control group of calves received no creep feed. The steers were allotted by age to one of six endophyte-free tall-fescue pastures with dams. Dietary supplements consisted of a cracked corn/soyhull mix with the protein source and were formulated to contain 14.2% crude protein (CP). The researchers also followed calves through the feedlot.

In the first year of this two-year study, the researchers found that the DDGS produced higher average daily gains (ADG) for less cost

CONTINUED ON PAGE 326

CONTINUED FROM PAGE 325

per gain. Steers fed the DDGS or SBM had greater ADG than the control [2.3 pounds (lb.), 2.2 lb. and 1.6 lb. per day, respectively].

"The advantage of creep feeding was largely that calves were heavier going into the feedlot, maintained the weight advantage at finishing and produced heavier carcass weights," says MU animal scientist Jim Williams.

In addition, the calves creep-fed DDGS yielded carcasses producing $50 more profit per head than the calves creep-fed SBM and the control group ($895 for DDGS, $875 for SBM and $815 for controls). Researchers attributed this to lower costs per gain for DDGS vs. SBM ($95 per ton vs. $298 per ton, respectively).

In this study, marbling favored the non-creep-fed calves. However, Williams says the numbers were very limiting, and the study is currently being repeated in hopes of more conclusive data. The researchers also plan to present final performance and carcass data at a later date.

Regarding management recommendations, Williams says, "Creep-feeding crossbred calves that have the genetic propensity to gain will favor retained ownership through the feedlot phase and lower cost of gains in the feedlot due to less days on feed and heavier carcasses at similar fat end points. As a protein source, dried distillers grains will be more cost-effective to feed when one considers net return to the feedlot."

For more information contact Williams at williamsje@missouri.edu.

Calves that were not weaned prior to shipping to the feedlot appear to perform similarly to their preweaned counterparts. Those are the findings of a South Dakota State University (SDSU) study that followed the performance of two groups of newly received feedlot calves.

The spring-born calves came from one ranch, but two different weaning strategies were used. All calves were raised on native range. One group of steers came from mature dams (older than 4 years of age), and calves were not weaned until being shipped. The second group of steers came from dams younger than 4 years of age, and calves were weaned one month prior to shipping.

At shipment in late October, tympanic temperature loggers were placed in 13 steers from each of the two management groups to track stress. All calves were transported to the feedlot. Then, 36 hours after arrival, they were vaccinated, dewormed and weighed individually. Weaning weights (WW) averaged 585 lb. and 579 lb. for previously weaned and the unweaned calves, respectively.

After a cracked-corn, grass-hay diet was fed for 21 days, average dry-matter intakes (DMI) and body weights were similar between previously weaned and unweaned steers. ADG and gain efficiency were higher in unweaned steers. Morbidity and mortality were at zero for both groups.

Tympanic temperature analysis revealed that the unweaned steers recorded higher temperatures than previously weaned steers during loading and transportation from the ranch, indicating a greater initial stress for these calves. However, tympanic temperature patterns of the unweaned calves began to mimic those of previously weaned calves within one hour of arrival at the feedlot. Therefore, the researchers conclude that this suggests recently weaned calves are able to rapidly adapt and that pre-transit weaning did not add sufficient stress to impact performance compared to previously weaned calves.

"Weaning calves from young dams one month prior to shipping and weaning calves from older dams at shipment is a common ranch management practice in South Dakota. However, these results suggest that calves weaned at shipment did not undergo any additional stress during the receiving period at the feedlot compared to those previously weaned," says SDSU researcher Simone Holt.

For more information contact Holt at (605) 688-5454 or simone_holt@sdstate.edu.

End product

Beef quality assurance (BQA) certification of producers matters to consumers. That's the finding of a study conducted by Penn State University and the Pennsylvania Beef Council.

The study, which utilized focus groups and individual interviews with consumers shopping at retail stores, found that 63% of those interviewed indicated that quality assurance (QA) information positively influenced their "confidence in buying beef."

Of the 168 consumers who were interviewed while shopping at the meatcase of one of nine retail food stores in central and eastern Pennsylvania, 74% thought QA labeling had "some importance" to them and 87% thought producers were concerned about the quality and safety of beef.

In the six focus group interviews, interviewees revealed that they were receptive to information about beef products after observing three separate informational posters about BQA training at a mock retail meatcase. However, implications of "advertisement" and the use of the terms "animal welfare" and "training of producers" were highly negative, while the terms "safety" and "quality" were viewed as neutral.

From these results, the researchers concluded that consumer confidence in the quality and safety of beef can be enhanced by providing BQA-certification labeling either on the meat package or within the meatcase.

For more information contact Paul Slayton at the Pennsylvania Beef Council at information@pabeef.org.

Slick bunk management does not appear to impact feedlot performance, but may compromise final marbling scores of steers, according to a New Mexico State University (NMSU) study.

In a 122-day finishing trial, researchers utilized 192 Angus steers under slick bunk and non-slick bunk management protocols to evaluate performance and carcass quality. The objective of the slick bunk treatment was for bunks to contain at least 0.5 lb. of feed per steer at 10:30 p.m. and 0 lb. of feed at 7 a.m., before feeding at 8 a.m. The objective of the non-slick bunk treatment was for bunks to contain approximately 0.5 lb. of feed per steer at 7 a.m. All cattle were fed the same 91%-concentrate diet (steam-flaked corn base with 9% alfalfa) at approximately 8 each morning.

The researchers found that daily DMI of cattle on the slick bunk treatment averaged 0.44 lb. per day less (20.9 lb. vs. 21.4 lb. per day) when discarded accumulated feed was subtracted from feed delivery data. Leaving discarded accumulated feed in the feed log, as would occur in a commercial feedyard, resulted in 0.55 lb. per day less DMI for cattle in the slick bunk pens. There were no differences in ADG for cattle in either the slick bunk or non-slick bunk treatments (4.0 lb. vs. 4.1 lb. per day, respectively).

However, marbling scores were lower for cattle in the slick bunk treatments, and the non-slick bunk managed cattle had a greater proportion of carcasses with a modest or higher degree of marbling.

From these data, the researchers concluded that it is possible to manage bunks to obtain the slick status (as described in this study) without adversely affecting performance. However, these researchers caution that marbling could be adversely affected by slick bunk management, possibly as a result of the slightly reduced DMI and/or effects on central energy metabolism.

For more information contact Paul Defoor at (505) 374-2566 or pdefoor@nmsu.edu.

AJ