

Beef Species Symposium: Keeping beef in the center of the plate— Meeting consumer demand in a period of reduced cattle numbers and increased prices

370 Reducing antibiotic use in cattle: Making healthier cattle starting at conception. Daniel Thomson*, *Kansas State University, Manhattan, KS.*

Antibiotic use creates antibiotic resistance. Claims and concerns suggest that modern animal agriculture is dependent on antibiotic usage to compensate for poor hygiene, poor health and poor management of animals. Regardless, there is still much debate in the scientific communities on how antibiotics in food animal production contribute to antibiotic resistance in humans. Many countries have increased antibiotic regulation in hopes of decreasing antibiotic usage to decrease antibiotic resistance. Producers and veterinarians will need to make a paradigm shift from antibiotic residue avoidance alone to prevention of both antibiotic residues and antibiotic resistance in our production units. The beef industry will need to develop antibiotic stewardship programs that monitor antibiotic usage on farms, antibiotic resistance in target pathogens and antibiotic resistance in foodborne pathogens. Complete removal of antibiotics from use in animal agriculture would not be prudent or practical for animal health and well-being. The antibiotics used in food animal medicine and important for human medicine recognized as potential resistance issues are macrolides, cephalosporins and fluoroquinolones. The most important foodborne pathogens in antibiotic resistance in human medicine are *Salmonella*, *E. coli* and *Campylobacter* species. The most common reasons for use of antibiotics in beef and dairy beef cattle production are bovine respiratory disease, neonatal calf scours, mastitis, foot rot and pink eye. The most common use of feed-grade antibiotics in beef cattle is prevention of liver abscesses and control of bovine respiratory disease. In the end, strategies that improve animal health will decrease antibiotic usage, which by theory will decrease antibiotic resistance. Antibiotic usage can be decreased in modern beef production systems if focus is applied to improvements in pre- and perinatal nutrition, neonatal calf housing and management, weaning calf management, marketing systems, transportation, receiving calf programs and nutritional management of finishing cattle.

Key Words: beef cattle, health, antibiotics

371 Can we produce more with less? A critical look at technology in the feedlot sector. Clint R. Krehbiel*¹, Casey L. Maxwell¹, Bryan C. Bernhard², Blake K. Wilson¹, Cathy L. Haviland¹, Michelle S. Calvo-Lorenzo¹, Sara E. Place¹, Deb L. VanOverbeke¹, Gretchen G. Mafi¹, Chris J. Richards¹, and D. L. Step¹, ¹*Oklahoma State University, Stillwater, OK*, ²*Texas Tech University, Lubbock, TX.*

Adoption of technologies has enhanced beef cattle production and efficiency. With the increasing world population, use of technologies that are economically, environmentally, and socially sustainable is needed to meet protein demand. Long-term use of growth-enhancing technologies (implants, ionophores, β -adrenergic agonists) in the feedlot sector has proven that compounds enhance lean-tissue deposition, and changes in performance result in an economic benefit to both consumers and producers. Land needed and environmental impact is decreased when growth technologies are used. We determined the effects of feedlot production systems with the use of growth technologies compared with an all-natural program on cattle performance and carcass characteristics.

Treatments consisted of an all-natural treatment (NAT; no technologies), a conventional treatment (CONV; ionophore and implant), and a CONV treatment with the addition of a β -adrenergic agonist (CONV-Z). There was a 35.7% increase in carcass gain and a 32.6% improvement in carcass efficiency for CONV-Z steers compared with NAT steers. Hot carcass weight was increased by 46 kg for CONV-Z steers compared with NAT steers. An increase in yield grade (YG) 1 and a decrease in YG 3 carcasses was observed for CONV-Z compared with CONV steers. Based on per capita beef consumption of 37.2 kg, added HCW for a single CONV-Z steer compared with a NAT steer would feed 1.2 more US Citizens per year. As society has concern over technologies used in animal production, it is imperative to communicate how increased animal productivity, reduced environmental impact and improved animal well-being are interrelated. Our results suggest that growth promoting products do not affect behavior, mobility, or the overall observed health and well-being of finishing beef steers. Food security depends on developing technologies for improving production efficiencies of beef cattle while adapting to climate change, protecting animal health, and improving the nutritional quality and safety of meat products for consumers. Developing technologies that can improve beef cattle production while minimizing environmental impact, enhancing animal well-being, and ensuring the health and safety of consumers should be our goal.

Key Words: beef cattle, growth-enhancing technologies, production

372 Keeping the eating experience enjoyable: Postmortem management of heavy carcasses. Chris Calkins*, *University of Nebraska, Lincoln, NE.*

Tenderness is one of the most important palatability traits for beef. As beef prices rise, the importance of palatability also increases. Consumer demand is a reflection of perceived value (including eating quality) compared with price. Although demand is increasing, consumers indicate that beef does not always perform on tenderness. Thus, postmortem changes that influence tenderness are critical to understand and control. The improvement in tenderness that occurs during cooler aging is well known and cannot be overlooked. Identifying carcasses with desirable tenderness characteristics offers the opportunity to assure consumers of beef quality. Many studies have shown the consumers are willing to pay a premium for beef that performs in tenderness. The USDA recently approved a marketing claim for beef tenderness, reflecting increased consumer interest. The ability to identify beef that meets consumer expectations is of increasing interest to the industry and may hold the key to sustained customer satisfaction. Branded beef is an attempt to provide that assurance. Similarly, optimal use of individual muscles increases the likelihood of a desirable eating experience. Projects such as muscle profiling have helped to identify potential value upgrade opportunities. Intermediately priced cuts provide the chance for consumers to continue to eat beef in the face of rising costs. Success is most likely when the marketplace puts a premium on tenderness and systems are in place to reward its presence. Clear links between consumer demands and producer compensation help to encourage production of high-quality, tender beef.

Key Words: beef, palatability, tenderness