Comparison of beef calves in conventional or natural systems for backgrounding and finishing

Results published in Applied Animal Science shed important light on the trade-offs between different production systems and the effects of these systems on animal performance, carcass quality, and production efficiency

Champaign, IL, April 15, 2024 — A consideration for many beef cattle producers in recent years has revolved around which production system to choose: conventional or natural? Although conventional production—involving performance-enhancing technologies such as hormonal implants and feed additives—has been adopted by many throughout the North American beef sector, many are examining a natural production system, especially in the face of consumer demand for natural beef products. Producers have many factors to consider when picking between management systems to ensure it is suited to their unique marketing and operational goals. A new study published in Applied Animal Science is helping to make a more informed decision.

“This study compared growth performance and carcass characteristics of weaned beef steers under conventional and natural management systems in three body-weight groups entering long or moderate backgrounding durations prior to finishing or direct finishing,” says David K. Beede, PhD, editor in chief of the journal. The results shed important light on the trade-offs between different production systems and the effects of these systems on animal performance, carcass quality, and production efficiency, which can ultimately provide a more informed decision.

Lead investigator of the study, Bart Lardner of the Department of Animal and Poultry Science, College of Agriculture and Bioresources, University of Saskatchewan, Saskatchewan, Canada, explained, “A lot of research has been done on the effects of removing or including individual performance-enhancing technologies in cattle production, but few studies have evaluated the common combinations used in conventional cattle production. We wanted to examine overall system performance at backgrounding and finishing, factoring in more real-life factors such as variability of starting weight, and including a true combination of conventional management tools compared to a natural approach.”
The researchers investigated the performance of 240 weaned beef steers divided into three weight groups (heavy, medium, and light) and assigned each to either a conventional or natural management system entering long or moderate backgrounding durations before finishing. Conventional cattle received a commonly used combination of hormonal implants and feed additives, while natural cattle did not.

The final results show that steers managed conventionally had greater average daily weight gain and feed efficiency compared to those managed naturally, particularly during the backgrounding phase. Conventionally managed steers also reached their target finished weight faster, with fewer days on feed.

However, the steers raised naturally produced the largest meat yield with higher marbling scores and a larger proportion of the highest quality grade (AAA) compared with conventionally managed steers. These same naturally managed steers also had a higher prevalence of liver abscesses.

Lardner explained, “These findings suggest that producers aiming for optimal growth performance and efficient production might favor conventional management, especially for heavier cattle. Conversely, producers seeking naturally raised beef with specific carcass characteristics, such as higher marbling and quality grade, may prioritize a natural management system with the understanding of potential trade-offs in performance and liver health.”

The article appears in the April issue of Applied Animal Science.

---

Notes for editors

This article is openly available at https://doi.org/10.15232/aas.2023-02425.
To schedule an interview with the author(s), please contact H. A. (Bart) Lardner at bart.lardner@usask.ca.

**About Applied Animal Science**

*Applied Animal Science* (AAS) is a gold open access, peer-reviewed scientific journal and the official publication of the American Registry of Professional Animal Scientists (ARPAS). In continuous publication since 1985, AAS is a leading outlet for animal science research and is indexed by Scopus and ESCI (Clarivate’s Emerging Sources Citation Index). The journal welcomes novel manuscripts on applied technology, reviews on the use or application of research-based information on animal agriculture, commentaries on contemporary issues, short communications, and technical notes. Topics that will be considered for publication include (but are not limited to) feed science, farm animal management and production, dairy science, meat science, animal nutrition, reproduction, animal physiology and behavior, disease control and prevention, microbiology, agricultural economics, and environmental issues related to agriculture. Themed special issues also will be considered for publication. [www.appliedanimalscience.org](http://www.appliedanimalscience.org)

**About the American Registry of Professional Animal Scientists (ARPAS)**

The American Registry of Professional Animal Scientists (ARPAS) is the organization that provides certification of animal scientists through examination, continuing education, and commitment to a code of ethics. Continual improvement of individual members is catalyzed through publications (including the AAS journal) and by providing information on educational opportunities. ARPAS is affiliated with five professional societies: American Dairy Science Association, American Meat Science Association, American Society of Animal Science, Equine Science Society, and Poultry Science Association. [www.arpas.org](http://www.arpas.org)

**About FASS**

FASS, the services division of the American Dairy Science Association, provides management services to nonprofit associations and societies with a mutual interest in supporting the advancement of animal agriculture and food systems through research and education. We support nonprofits by providing services for accounting, membership management, convention and meeting planning, information technology, and scientific publishing. The FASS publications department provides journal management, peer-review support, copyediting, composition, and proofreading; the staff includes several BELS-certified ([www.bels.org](http://www.bels.org)) technical editors and experienced composition staff. [www.fass.org](http://www.fass.org)

**About Elsevier**

As a global leader in information and analytics, Elsevier helps researchers and healthcare professionals advance science and improve health outcomes for the benefit of society. We do this by facilitating insights and critical decision-making for customers across the global research and health ecosystems.

In everything we publish, we uphold the highest standards of quality and integrity. We bring that same rigor to our information analytics solutions for researchers, health professionals, institutions and funders.

Elsevier employs 8,700 people worldwide. We have supported the work of our research and health partners for more than 140 years. Growing from our roots in publishing, we offer knowledge and valuable analytics that help our users make breakthroughs and drive societal progress. Digital solutions such as ScienceDirect, Scopus, SciVal, ClinicalKey and Sherpath support strategic research management, R&D performance, clinical decision support, and health education. Researchers and healthcare professionals rely on over 2,800 digitized journals, including The Lancet and Cell; our 46,000+ eBook titles; and our iconic reference works, such as Gray’s Anatomy. With the Elsevier Foundation and our external Inclusion & Diversity Advisory Board, we work in partnership with diverse stakeholders to advance inclusion and diversity in science, research and healthcare in developing countries and around the world.
Elsevier is part of RELX, a global provider of information-based analytics and decision tools for professional and business customers. www.elsevier.com