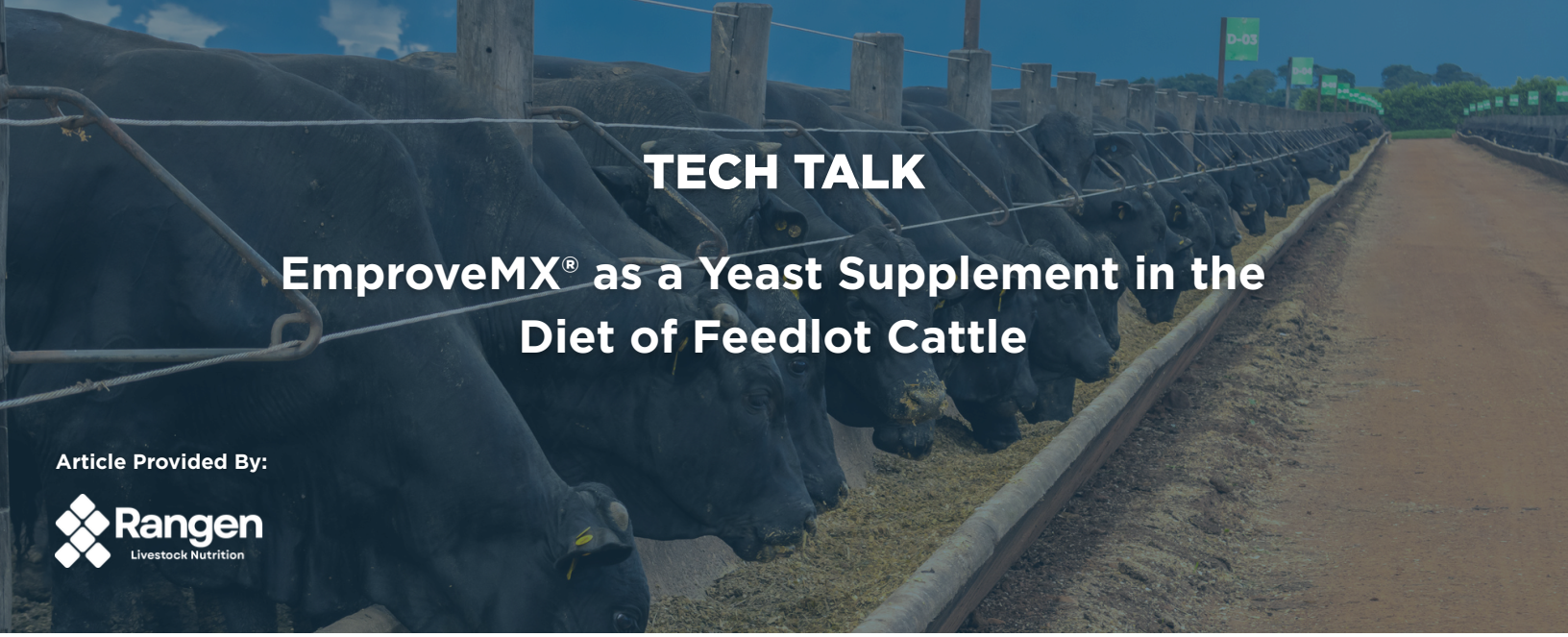

TECH TALK

EmproveMX® as a Yeast Supplement in the Diet of Feedlot Cattle

Article Provided By:

Rangen Livestock Nutrition

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Product & Study Summary

Product Overview

EmproveMX® (EMX) is a concentrated brewer's dried yeast supplement from a high-quality strain of Saccharomyces cerevisiae. It consists of inactivated brewer's yeast cells, yeast cell wall components, fermentation-derived metabolites, hop-derived compounds, and a functional canola meal carrier system.

The product is designed to support digestive stability, fermentation modulation, and physiological resilience under commercial production conditions

Study Outcomes

- **A commercial feedlot evaluation examined the performance of finishing feedlot cattle fed EmproveMX® brewer's dried yeast supplement compared to animals fed a diet without supplementation.**
  - **Cattle were separated into one of two treatments [control (CON), or EMX (14 g/hd/d for the first 56 days and then decreased to 7 g/hd/d)].**
  - **There were 14 lots in the CON group. There were 11 lots in the EMX group.**
- **Cost of gain was reduced by $42.59 per cwt of gain during Period 4 for cattle fed EmproveMX compared with the control treatment ($P < 0.05$). The EmproveMX® ration helped lower ($P = 0.0177$) cost of gain over time.**
- **Cattle fed EmproveMX® had fewer ($P < 0.05$) health-related pulls during the third weigh period.**
- **Between cattle fed EmproveMX® and cattle fed without supplementation; there was no difference in feed conversion or dry matter intake observed ($P = 0.9184$). Cattle fed EmproveMX® were numerically 94 lb heavier without consuming more feed or reducing feed efficiency.**

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Introduction

EmproveMX® is a concentrated brewer's dried yeast supplement with 40% protein. Benefits can be identified with a low inclusion rate (7 – 14 g/hd/d). This product does not rely on live microbial colonization, placing it within a postbiotic classification rather than probiotic or yeast culture categories (Salminen et al., 2021). EmproveMX® contains inactivated brewer's yeast cells, yeast cell wall structural fractions (β-glucans and mannans), fermentation-derived metabolites, hop-derived acids and polyphenols. Supplementation with postbiotics in finishing cattle diets has not been traditionally practiced in feedlot systems. Use of alternative yeast-derived supplements may support health and performance under commercial conditions. EmproveMX® has hop-derived acids that have been described in previous literature as phyto-ionophores, which have the potential to influence rumen fermentation (Flythe et al., 2017).

During serial repitching, repeated cycles through the brewing process, yeast cells undergo structural changes that result in thicker, more reinforced cell walls. These changes increase cell wall complexity through the accumulation of bud scars and structural polysaccharides, including β-glucans and mannoproteins.

This increased structural integrity enhances the ability of yeast cells to withstand the physical and microbial challenges of the digestive tract. Rather than being rapidly degraded in the rumen, these more robust yeast structures can persist further along the gastrointestinal tract. As a result, functional yeast components are more likely to reach distal regions of the gut, where they can be gradually released through natural breakdown processes such as autolysis. This supports interaction with the animal's digestive and microbial environment in areas where nutrient absorption and microbial activity remain highly active (Wang et al., 2018).

β-glucans and mannoproteins are recognized for their role in supporting normal immune function and maintaining microbial balance within the gut. β-glucans have been associated with supporting innate immune activity, while mannoproteins contribute to maintaining a favorable microbial environment (Avramia and Amariei, 2021). Together, this combination of structural durability and functional component delivery highlights an important distinction: the effectiveness of a yeast-based product is not solely dependent on the concentration of its components, but on their ability to remain intact and reach target regions of the digestive system in a functional form.

EmproveMX® utilizes canola meal as a functional carrier. Canola meal provides a consistent physical matrix that supports uniform blending and distribution of the product within the total mixed ration. Beyond its role as a carrier, canola meal is a well-established protein supplement in ruminant nutrition, supplying both rumen degradable protein (RDP) and a proportion of rumen undegradable protein (RUP), contributing to post-ruminal amino acid supply and overall protein efficiency in beef cattle diets (NRC, 2016; Canola Council of Canada, 2020). The fiber fraction of canola meal, composed largely of non-starch polysaccharides, may also influence rumen fermentation characteristics and microbial protein synthesis (Slominski, 2009; NRC, 2016). The brewer's yeast, hop compounds, and canola meal carrier function as an integrated system within the total mixed ration, with the carrier facilitating uniform delivery and distribution of the active components throughout the diet.

Experiment Design

The study involved 1,343 animals (average 650 lb) received from October to December 2024 to a commercial feedlot in Iowa. Included in the study were pens containing a diverse mix of steers, heifers, and crossbred cattle (including Holstein, beef x dairy, and native cattle). Cattle originated from across the United States. Due to the range of in-weights, cattle were harvested from May to August of 2025. Cattle were weighed individually upon arrival, d 30 – 45, d 90 and at the conclusion of the trial. Weekly dry matter intake (DMI), pull, health, treatment cost, and cost of gain were collected at the feedyard. Cattle were harvested at a commercial harvest facility. Performance data were analyzed using the MIXED procedure of SAS (SAS Institute Inc., Cary, NC). Pen was considered the experimental unit for all live performance analyses. The model included treatment as a fixed effect. Statistical significance was declared at $P < 0.05$, and tendencies were discussed at $0.05 \leq P \leq 0.10$.

Results

Performance

Cattle fed EMX consistently demonstrated a numerical advantage in live performance. EMX-fed cattle had higher body weights in every feeding period and completed the study with an average body weight of 1,378 lb, CON cattle averaged 1,285 lb at the completion of the study. Although not statistically significant (P = 0.1456), EMX had a total weight gain averaging 94 lb greater than cattle fed the CON treatment.

Figure 1

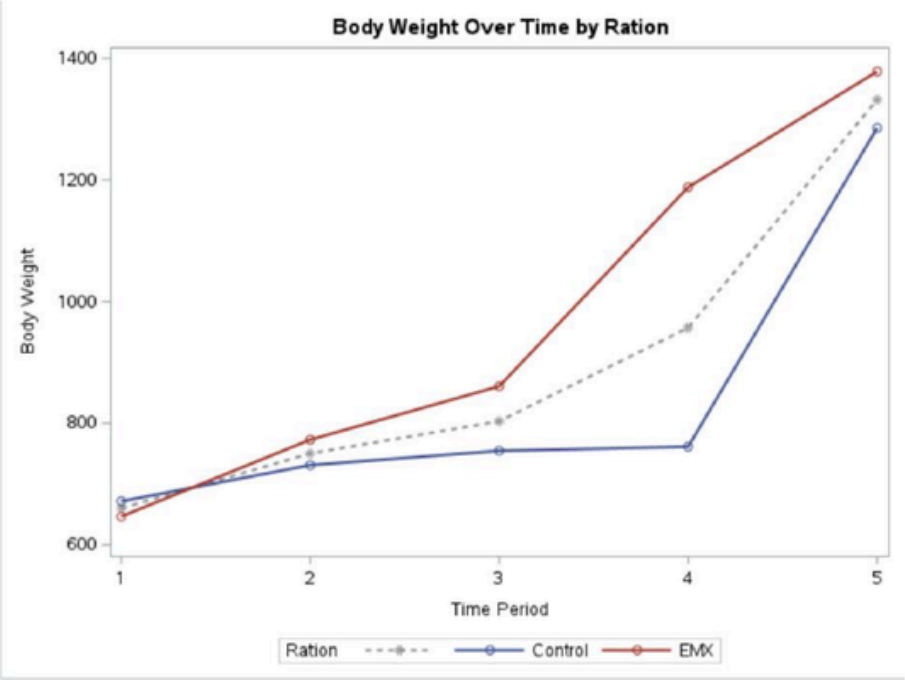
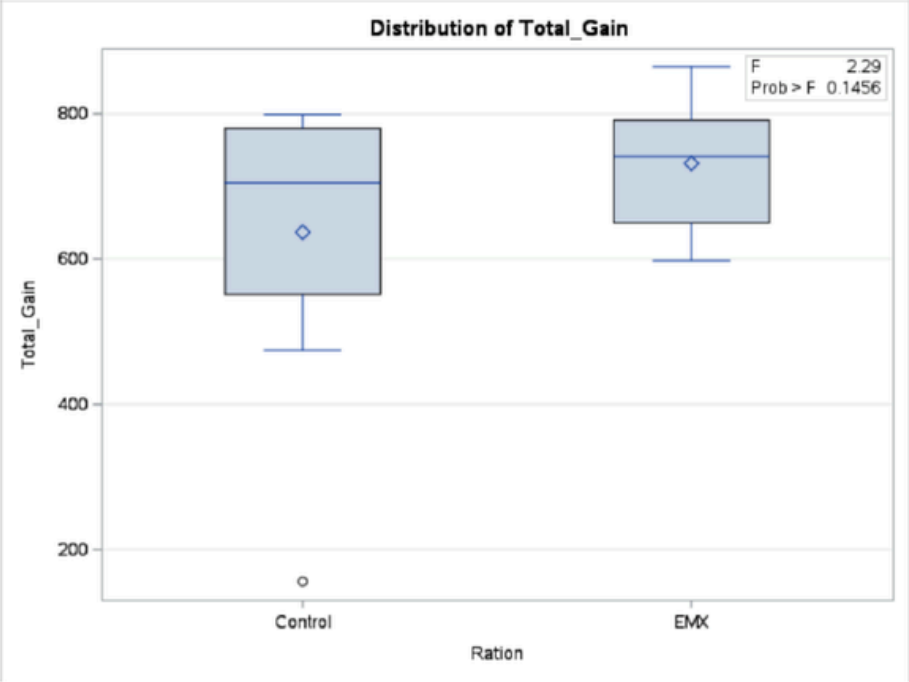


Figure 2



Total weight gain was affected by the Ration × Time interaction (P < 0.0001), indicating that changes in body weight over time differed between treatments. EMX and Control steers exhibited divergent growth trajectories across the feeding period.

Table 1 – Total Weight Gain (lb) by Ration and Time

Time	Control	EMX	SEM	P-value
1	671.5	646.6	~41	<0.0001
2	731	772.8	~41	<0.0001
3	754.5	860.6	~41	<0.0001
4	761.3	1188	~41	<0.0001
5	1303.2	1378.2	~42	<0.0001

DMI did not differ between ration treatments (P = 0.9184), indicating similar feed consumption levels. This suggests that the performance response seen in additional pounds gained on the EMX treatment was not intake-driven. While the present study was not designed to determine mechanism, the response may align with favorable fermentation effects observed in supporting in vitro evaluations (Rangen Data on File, 2022). Over time, DMI changed significantly (P < 0.0001), showing that both treatments followed comparable intake patterns. Dry matter conversion also did not differ between treatments, further solidifying that EMX cattle maintained numerically heavier body weights without increased feed intake or reduced efficiency. Throughout the feeding periods, average daily gain (ADG) varied and did not differ between treatments (P = 0.6498).

Health

During period 3, EMX cattle had significantly fewer pulls than CON cattle (P < 0.05), indicating improved health stability. EMX cattle also had greater body weight during this same period (P < 0.05), reinforcing the performance advantage that was observed throughout the entire trial. There was no difference observed between treatments for mortality rates and deaths per pull.

Economics

Both rations showed similar cost trends over time with average daily cost not differing overall between treatments. Although during period 2, average daily cost tended to be lower (P = 0.10) for EMX cattle. In period 4, EMX cattle had a lower cost of gain per CWT (P < 0.05). This indicates that cost efficiency improved during later feeding timelines.

Cost of gain exhibited a significant ration × time interaction (P = 0.0177). Control cattle steadily increased in cost of gain over time, while EMX cattle began with higher initial costs that declined early and stabilized in later feeding periods.

Figure 3

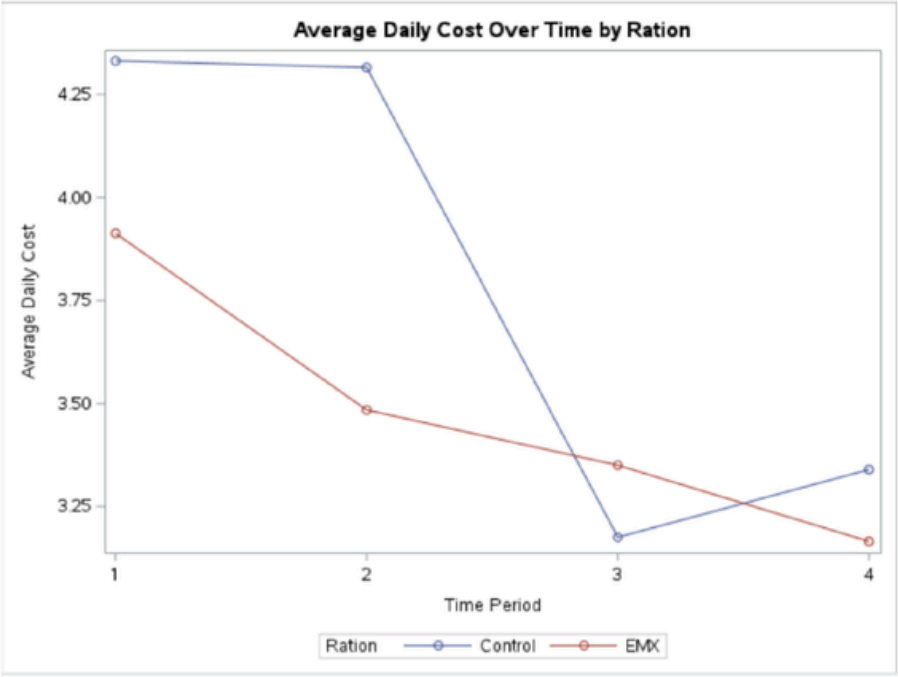
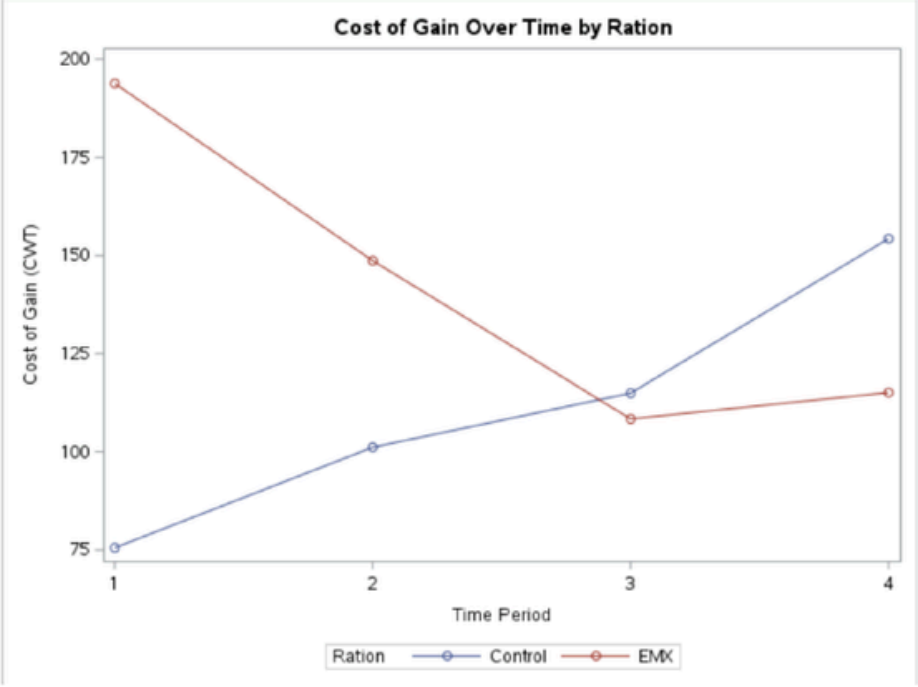


Figure 4



Conclusions

The study outcomes suggest that EmproveMX® is a valuable supplement for feedlot cattle. As consumers become more interested in understanding the background of how their food is sourced, the need for sustainable supplements continues to grow. Results of this study showed that the EMX ration produced numerical improvements in final body weight, total gain, health stability, and economic efficiency. These advantages were observed while still maintaining a comparable feed intake, feed efficiency, and mortality risk when compared to the CON ration. The pattern identified by the interaction of ration, cost of gain, and time suggests improved economic efficiency of the EMX ration during the finishing phase.

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Data on File

1. Rangen. 2022. Evaluation of novel yeast components on in vitro ruminal fermentation. Internal research report. Rangen Livestock Nutrition, Buhl, ID. Data on file.

2. Rangen. 2026. EmproveMX® as a yeast supplement in the diet of feedlot cattle. Internal technical bulletin. Rangen Livestock Nutrition, Buhl, ID. Data on file.

For More Information:

Learn more about EmproveMX® at:
www.rangen.com