

# RESEARCH FACTS



UNIVERSITY OF SASKATCHEWAN

Livestock and Forage  
Centre of Excellence

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## IN PROGRESS

### Field backgrounding of beef calves

#### PROJECT TITLE

Field backgrounding of beef calves

#### In progress:

*Results expected in fall of 2023*

#### RESEARCHERS

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#### Background:

- This project will demonstrate a potential feeding model that is economically feasible with the goal of more cattle being backgrounded in Saskatchewan.
- Early adopters are exploring backgrounding options outside of the traditional drylot system.
- Minimal infrastructure requirements make field backgrounding an attractive option for new or existing producers looking to diversify their operations or for cow-calf producers looking to extend ownership of their calves and sell at heavier weights with greater marketing flexibility.
- Producers are requesting information on field backgrounding as an alternative system but only anecdotal information is available. This project will fill that information gap.
- The Government of Saskatchewan Growth Plan identifies increased returns within the cattle industry as a priority. Expanding capacity for backgrounding within Saskatchewan would support this goal.
- With minimal facility investment, producers could see economic benefits including reduced yardage costs associated with facility investment and manure removal, reduced costs of commercial fertilizer for the crop grown on the feeding site and a reduction in drug costs.
- It is hypothesized that cattle backgrounded in a high density environment will experience higher morbidity and mortality than cattle fed in the field where cattle density is much lower. The Ministry of Agriculture has identified responsible use of antibiotics as a key concern of consumers. Backgrounding practices that may reduce antibiotic use would be an important practice in an effort to build public trust in the industry. Furthermore, reducing the need for antibiotic use would address the growing concern with antibiotic resistance developing in feedlot settings.

## Objectives:

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- This project will compare the backgrounding of calves in a traditional drylot environment (treatment 1) to the backgrounding of calves in a field environment (treatment 2).
- This project will monitor and compare the rates of morbidity, mortality, disease, antibiotic use, animal weight gain and associated soil nutrient benefit from the spread of excreted nutrients and the resulting crop production.
- An economic analysis will be completed to compare the operational costs of each management method: feed costs, delivery costs and facility costs. Analysis will also quantify the effects on yields of the crop grown on the feeding site in the following growing season compared to adjacent cropland where only drylot manure will be applied.

## What They Will Do:

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Two treatments will be compared. In treatment 1 (control), cattle will be backgrounded in a traditional drylot system. In treatment 2 (novel approach), cattle will initially be penned to allow a “settling” period and will be turned out into the field pens approximately two weeks later. Each treatment will have two replications in each of the three years with 100 calves per replication (400 calves per year). Calves will be purchased with an average induction weight of 250 kgs (550 lbs) and a weight gain of 0.9 kg/day (2 lbs/day) will be targeted. Calves will exit the trial at an approximate weight of 386 kgs (850 lbs). The feeding period will be from mid-October to mid-March each year. Rations will be based on barley silage and feed delivered to each group once per day.

The livestock density of the drylot treatment will be approximately 23 m<sup>2</sup> per animal based on industry recommendations. The field treatment will allow approximately 8,100 m<sup>2</sup> per animal with each field replication of 100 animals kept in an eight hectare (20 acre) field. The perimeter of the field paddocks will be fenced with a four-strand fence consisting of three strands of barbed wire and one strand of electrified high tensile wire. This fence will stay in place for the duration of the three-year project. Portable wind break panels and portable feed troughs will be provided for the field-fed calves (treatment 2) and moved around the paddock during the trial to evenly distribute manure and bedding.

Soil nutrient status will be assessed before and after the feeding period at the field testing site and on an adjacent field receiving the manure from the drylot for each year of the project. Six soil core samples partitioned into 0 to 15 cm and 15 to 30 cm depth increments will be taken from each of the field feeding sites as well as the field where drylot manure will be applied. These soil core samples will be analyzed for nitrogen, phosphorous, potassium and sulphur as well as micronutrients. Manure samples will be analyzed for the same nutrients prior to spreading.

## Implications:

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The research results will be:

- highlighted at field days held at the LFCE and at various ministry events including the annual Ranch Management Forum,
- published in a peer reviewed journal,
- published in a fact sheet that will serve as a guide for producers adopting this practice, and
- used to create videos on the proper technique and the proper injection sites for placing growth implants in cattle.

Ministry of Agriculture staff members will use social media to update producers during the three-year project. This will include drone images and videos posted on Twitter and Facebook.

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