

Measurements of Feed Efficiency and Growth Performance in Longhorn Steers

Prepared for:

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The Technology Access Centre for Livestock Production (TACLP) offers resources and services required to move the livestock industries technology needs forward. Olds College's vertically integrated beef program allows for technology and products to be tested at every step in production (seed stock, cow-calf, feedlot, processing). The Technology Access Centre for Livestock Production at Olds College helps address industry issues related to production efficiency, animal health and welfare, and environmental sustainability. These issues are addressed by giving livestock producers, technology developers, and small to medium enterprises access to expertise, facilities, testing services, training, and emerging smart agriculture technologies. To facilitate and accelerate the Canadian livestock industries adoption of new technology, The TACLP provides field-testing and improvement of emerging technologies in farm-like conditions, assisting companies with the testing of feed, genetics, and precision livestock farming technology.

The following test options are provided to Gordon Musgrove to distribute amongst ITLA members for consideration.

1. Whole-pen feed efficiency

Animals

A minimum of 15 and maximum of 60 longhorn steer calves can be tested under this option. It is anticipated that incoming steers will weigh between 600 and 800 lbs on arrival. Upon arrival, steers will be processed and vaccinated accordingly to be consistent with the Olds College herd health status.

Feed

Steers will begin on the Olds College Step 3 Steer ration (approx. 7 lbs barley/head/day), and gradually transitioned over a course of 12 weeks to the Olds College Finisher Steer ration (approx. 23 lbs barley/head/day). All rations are barley grain and barley silage-based. The steers will be fed twice daily (in the morning and afternoon) based on their intake requirements and will have access to feed at all times.

Animals and Housing

The pens each have an automatic waterer that is visually checked daily to ensure the steers have access to fresh water. Straw and wood chips will be used for bedding in the pens. Animal handling procedures for this trial will be developed and approved by the Olds College Animal Care and Use Committee prior to the start of the trial. All animals will be checked daily for signs of illness, distress, and injury. Animals that need treatment will be treated according to protocols of Olds College. Treatment information will be recorded and used to summarize animal health records.

Trial Period

Following a 14-day adaptation period to the Olds College Finisher ration, body weight and whole-pen feed intake recording will begin. Individual animal weights will be recorded on day 0 and every 14 days thereafter in order to determine average daily gain values (lbs/day). Daily feed weights will be recorded and leftover feed will be collected and weighed weekly. The weight of the leftover feed will be subtracted from the total feed supplied to provide a weekly feed consumption value. Body weight measurements and feed intake recording will last for 84 days in order to calculate individual growth performance and feed conversion values.

Upon completion of the test period, biweekly weights and feed intake monitoring will end, and steers will remain on the finisher ration until they reach a finished weight (approx. 1300 lbs). Due to inherent animal variability, steers will reach a finished weight at different times. For logistical purposes, it is likely that steers will range in weight from approximately 1300 - 1400 lbs when they are shipped for slaughter. Alternatively, several smaller steer shipments can be arranged in order to accommodate different finishing dates. Based on 3 lbs/day growth rate, steers are expected to reach a finished weight in the fall of 2020.

Steers will be shipped to a nearby slaughter facility and carcass characteristics will be measured. Depending on the client's preference, steers will be shipped all together or in several smaller groups based on finishing date. Logistics of shipping steers for slaughter and retrieving carcass characteristics are still being finalized, although the current COVID-19 situation creates a possible barrier to this option.

Estimated Budget (per head)

Estimated cost of gain (\$1.15/lb gained * 700 lbs gained)	\$805.00
<u>Measurements, data collection and reporting</u>	<u>\$150.00</u>
Total	\$955.00/head

2. Individual feed efficiency (residual feed intake) measurements

Animals

A minimum of 30 and maximum of 60 longhorn steer calves can be tested under this option. It is anticipated that incoming steers will weigh between 600 and 800 lbs on arrival. Upon arrival, steers will be processed and vaccinated accordingly to be consistent with the Olds College herd health status.

Feed

[same as option 1]

Animals and Housing

[same as option 1]

Trial Period

Following a 14-day adaptation period to the Olds College Finisher ration, body weight and whole-pen feed intake recording will begin. Individual animal weights will be recorded on days 0, 1, 25, 49 and 50 using chute weights. During the test period, animal weights will be recorded automatically using GrowSafe Beef watering station scale. Body weight measurements and feed intake recording will last for 50 days in order to calculate individual growth performance and residual feed intake.

Upon completion of the test period, feed intake monitoring will end and steers will remain on the finisher ration until they reach a finished weight (approx. 1300 lbs). Shipping and carcass assessment will be the same as option 1.

Estimated Budget (per head)

*Estimated cost of gain (\$1.15/lb gained * 570 lbs gained)	\$655.50
<u>Measurements, data collection and reporting</u>	<u>\$445.00</u>
Total	\$1100.50/head

*excludes time on GrowSafe test

Additional notes:

- Olds College will collect and submit DNA samples from participating animals for genotyping. The corresponding DNA testing fee is not included in the Olds College testing fees and will be charged directly to the producer by the laboratory.
- For Option #2 (GrowSafe test) all steers must be dehorned or tipped to a length no longer than 5 inches per horn.
- Each breeder is responsible for insurance on their steers.
- Steers will be marketed under Olds College name with proceeds paid to Olds College. Trial expenses will then be deducted and the difference returned to each producer.