



Winter Grazing Standing Corn in the Lakeland

A Summary of Yield and Quality Surveys, 2013-2016

The single most variable cost in beef production is feed, so it makes sense to experiment with different feeding strategies that could help to reduce costs—one of these being extending the grazing season. Extensive systems include stockpiled forages, swath grazing, bale grazing and, more recently, standing corn. ples were sent to A & L Canada Laboratories for wet chemistry analysis.

With the interest and acres of standing corn increasing over the last several years, LARA has been collecting information on corn utilized for winter grazing in the Lakeland.

Nutritional Quality

Previous research done at the Western Beef Development Center has shown that the nutritive value of corn is adequate to meet beef cow nutrient requirements and the reduced nutrient content of the leaves/stems later in the season is countered by the high value of the cobs produced.

Quality samples were taken in October, run through a wood chipper to reduce particle size and frozen until analysis. Frozen sam-

With the highest nutritional content found in the cobs, quality is heavily dependent on cob size and development at the time of freezing.

As a rule of thumb, gestating beef cattle require from 7% to 9% crude protein in early and late gestation, respectively, and this increases after calving. **The crude protein content of 8.55 % is adequate to meet gestating beef cow requirements, although falls short for the post-calving requirement of 11%.**

Quality Analysis Summary

Crude Protein (CP): 8.55 %
Total Digestible Nutrients (TDN): 68.23 %
Acid Detergent Fibre (ADF): 26.83 %
Neutral Detergent Fiber (NDF): 50.72 %

Minerals

Calcium: 0.32 %
Phosphorous: 0.22 %
Potassium: 0.97 %
Magnesium: 0.18 %



Crude protein ranged from 6.11 % to 10.19 % depending on cob development. Consequently, it is important to feed test if you are planning on utilizing standing corn for a calving pasture.

Total digestible nutrients (TDN) represent the digestible portion of the feed and is the easiest way to measure energy content. If energy is limiting, animals will be utilizing all available energy for maintenance and will put none towards growth or reproduction.



The general rule of thumb is 55% in early pregnancy, 60% in late pregnancy and 65% after calving. The majority of energy is contained in the cobs and the **average TDN of 68.23% is adequate to meet the requirements of gestating and calved cows.**

Neutral Detergent Fiber (NDF) and Acid Detergent Fiber (ADF) are a measure of the fiber content of the feed. It is recommended that NDF does not exceed 59% and ADF levels should not exceed 45%. Increased ADF and NDF levels can restrict feed intake and thus nutritional intake of beef cattle. **The average NDF of 50.72% and ADF of 26.83% over the last four years are well within recommended levels.**

Yield and Grazing Days

Corn is extremely uncompetitive not only with weeds but also itself. Consequently, row spacing becomes a deciding factor in overall yield.

A typical corn planter has 30 inch row spacing, which is over 15 inches greater than most common seed drills. In addition, a corn planter will result in more evenly spaced plants within a row also reducing competition. This allows for more optimum utilization of water, light and available nutrients.

Access to a corn planter can be limiting and, therefore, many producers are utilizing their own seed drills. In the fall of 2013, we took samples from two fields seeded side-by-side where one was seeded with 12 inch row spacing and the other with 30 inch row spacing. **The field seeded with 30 inch row spacing out-yielded the field seeded with 12 inch spacing by 37% on a dry matter basis.**

The increased yield translated into more grazing days. A herd of 550 cows was turned into each field in the fall. On 20 acres, 14 grazing days was achieved with the corn planter and only 6 grazing days was achieved with the conventional seed drill.

Utilization of a corn planter with 30 inch row spacing increased the number of grazing days achieved on 20 acres with 550 beef cows by over 50%.

To further investigate the impact of row spacing, two demonstration plots were seeded and harvested in 2014, one with 12 inch row spacing and the other with 27 inch row spacing. The plots were seeded utilizing a zero-till drill and only mimicked row spacing not spacing within a row seen with corn planters.

Similar to the results seen on the field scale, the **increased row spacing translated into a 24% yield increase over the 12 inch spacing on a dry matter basis.**

Over the past four years, on a dry matter basis, yields have ranged from 2.60 ton/acre to 8.41 ton/acre.

Yield and quality results will be impacted by environmental conditions and agronomic practices. Feed testing is the best way to ensure adequate nutrition for your livestock. *An appropriate mineral program should also be implemented to ensure adequate nutrition.*



Mycotoxin Analysis

In 2016, highly variable weather conditions led to the development of mold and production of mycotoxins in many corn fields in Alberta. The presence of certain toxins, such as deoxynivalenol (DON), can cause significant health issues in livestock. These toxins can also cause irritation in the mouth and can lead to reduced feed intake.

Feeds samples submitted in 2016 showed elevated levels of mycotoxins in a few fields in the Lakeland. However, the levels detected were not high enough to prevent grazing and only required alterations in management to prevent over consumption of the toxins present.

If you are concerned with the presence of mycotoxins, a telltale sign to look for is that the cattle are leaving the cobs behind as the toxins can produce an unpalatable taste. If there is any concern, a test should be done prior to feeding to ensure levels are acceptable.

Acidosis

Corn cobs are very high in energy and overconsumption can lead to acidosis. Cattle tend to eat the cobs before leaves and stems. Consequently, when introducing cattle to corn, you should always ensure the animals are full before entering the field to prevent gorging on the cobs.

Fencing

Cross fencing should be utilized to encourage consumption of the leaves and stems after the cobs and to reduce residue in the spring. Turning cows back in after snow melt can assist with residue cleanup in the spring.



Sampling

If you are interested in sampling your own field, a minimum of 10 individual corn plants should be cut randomly across the field to ensure a representative sample is taken. The plants can either be cut manually or run through a wood chipper to create uniform size.

A sub-sample should then be drawn from the composite sample and sent to an accredited lab for analysis. Samples should be kept cold or frozen until shipment to prevent deterioration of the sample before analysis.

Summary

Every operation is different and there is no one fits all system to corn grazing. Our survey results show significant variations in pasture size, turnout dates and agronomic management practices.

It is important to assess your own operation and determine what the best fit is for you.

Through a well managed program from crop establishment through to grazing, utilization of corn as an extensive winter grazing system can be a viable option for producers in the Lakeland to help reduce winter feeding costs.

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LARA will continue to monitor standing corn yield and quality over the next couple of years. Let us know if you are grazing standing corn and are interested in providing samples for our surveys.

Thank you to all of the farmers who participated in these surveys by allowing us to collect yield and quality samples from their fields.

