

# Agriculture Research and Development

## Beef Cattle Genetic Demonstration Project



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### Project Objectives

The overall objective of this demonstration project is to increase beef production in Newfoundland and Labrador through improved genetic diversity. Specific objectives are to:

- Compare growth rates between purebred beef breeds and local beef crosses;
- Create a local purebred stock of Hereford beef cattle;
- Compare the ease of calving in purebred Herefords to local beef crosses;
- Determine if introduced genetic diversity will improve carcass quality and grade of carcass produced; and
- Determine if purebred carcasses allow for an increased dark cut time as compared to local beef crosses.

Newfoundland and Labrador is in a unique agricultural situation due to its climate and growing conditions. Being an island has imposed restrictions associated with agriculture, including the high cost of imports such as livestock feed and breeding animals.

Increased shipping costs associated with bringing breeding stock in from mainland Canada has led many local livestock producers to decrease or eliminate their beef herds. This has been one of the main reasons for the substantial reduction in availability of genetic stock in Newfoundland and Labrador.

Currently, market trends for beef are once again rising, which has created renewed interest in local beef production. The

main hindrance to producers in the province is the availability of purebred breeding stock and genetics. Due to the costs aforementioned, local beef farmers have traditionally turned to genetic crosses, which often include dairy cattle breeds. These crossed herds have played a role in decreasing the quality of the end product and increased the cost of production as they require more time and feed to achieve marketable weights.

Herefords are a natural fit to Newfoundland and Labrador's beef industry because of their docile nature, hardiness, and natural ability to produce well-marbled carcasses. Bringing genetics to the province will eventually allow producers to look within the local industry to acquire breeding stock and produce quality beef without the high costs of transportation.

### Background

Genetics define the production potential of cattle and have a profound effect on the profitability of cattle enterprises. Animal performance is a profit driver for beef producers and weaning rate, cow survival rate, growth rate, calving ease, retail weight, retail yield, carcass fat depth, and marbling are all influenced by the genetic make-up of the herd. Favourable genetics may also improve management factors, such as reduced operational costs through limited requirements for supervision and easier management due to better temperament.

The Hereford breed was strategically selected due to its proven hardiness, docile nature, calving and mothering capabilities, and meat quality. Herefords have moderate sized calves which cost less to maintain but will still produce proportionately larger market steers with improved carcass quality.

Cows of this breed are hardy foragers suitable for pasture grazing and able to maintain their condition with fewer resources, thus reducing the cost of production. The longevity and docility associated with the Hereford breed also results in a lower replacement stocking rate and allows the producer to see more value per dollar spent.

Herefords, with their unique ability to produce top-quality beef from grass finishing, lend themselves nicely to Newfoundland and Labrador's beef industry, which prides itself on grass-finished cuts of beef. Herefords produce a naturally marbled meat known for a succulent and full-flavored product.

## Technical Details

This demonstration project involves placement of small purebred registered herds of Hereford cattle on local farms, which will be compared to local beef crosses currently being raised in the province.

Over a five-year period, data will be collected on cow productivity and compared to local beef crosses. Data to be collected over the project duration include:

- calving difficulty, date and weight of calf at calving;
- weaning date and weight of calves;
- weight and body condition score of the cow upon weaning rebreeding;
- weight of cattle at slaughter;
- carcass weight, grade and quality;
- taste of final product; and
- dark cut time.

Data collection begins when calves are born and continues until they are re-bred. Hereford bulls born during the five-year period will be advertised for sale and if not sold, will be slaughtered and evaluated as mentioned above.

## Preliminary Results

Preliminary results have shown that the Hereford calves born in early 2017 had a 12 per cent higher birthweight than the crossbred calves. At 10 days of age, the Hereford calves showed a 17 per cent higher weight, but by day 30 the crossbred animals had increased daily gains to only 6% lower than the Hereford calves.

Preliminary data suggests that calves will continue these rates of daily gain until approximately six months of age, when the Hereford calves once again start to show a marked increase in daily gain over the crosses.



Although daily gains were similar until the six-month mark, body composition of the calves differ. The Hereford calves are shorter with greater muscle accumulation than the comparison calves, which show dominant Holstein traits, being tall with a large frame rather than muscle accumulation.

The Hereford dams showed particularly keen mothering abilities with little to no help required during calving. All dams had sufficient milk production to feed calves to weaning, when they were removed from pasture without decline in body condition score. Although protective of their offspring, the cows were docile and easy to handle, making ease of management and husbandry of these animals an asset.

## Agriculture Industry Benefits

By introducing superior quality beef breeding stock to the province, a dramatic and positive effect on performance and profitability can be realized. Herefords show dominant maternal traits compared to traditionally crossed breeds and have high ease of calving and excellent handling abilities.

Although this program is still in the beginning stages and is increasing the availability of superior Hereford genetics throughout the province, there may be opportunities in the future to cross these pure Hereford cattle with other pure beef breeds to expand the local genetic diversity and create high-quality beef crosses which are known to exhibit hybrid vigor and combined strengths of the various breeds.

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