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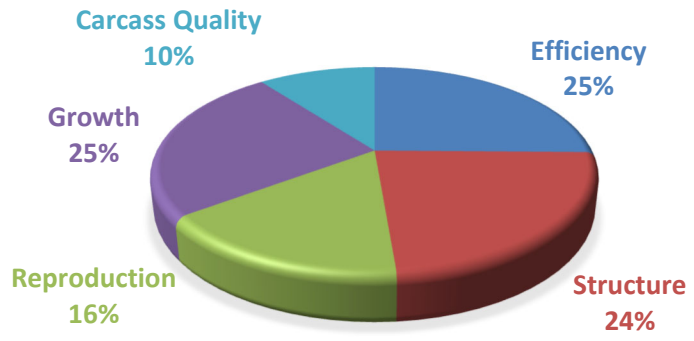
Development of Economic Selection Indexes for Canadian Angus Cattle

Expected progeny differences (EPDs) are estimates of an animal's genetic merit as a parent. The most effective use of EPDs is to incorporate relevant genetic-gain traits, weighted in accordance to producer needs and market values, into single indexes. The use of indexes allows for greater directed animal genetic gain per generation. Economic indexes, driven by market values, are difficult to develop and not readily available in the Canadian beef industry. The objective of this project is to develop economic selection indexes for the Canadian beef industry to use in their breeding programs. The indexes combine genomically-enhanced EPDs (gEPDs) for economically relevant traits and aim to facilitate greater adoption of gEPDs, genomic tools and the ability to select for more than one desirable trait at the time. The project will help Canadian beef producers make profitable genetic selection decisions.



The Canadian Balanced Index includes traits that contribute to Carcass Quality (e.g., marbling and rib eye area); Efficiency (e.g., residual feed intake); Growth (e.g., post weaning growth); Reproduction (e.g., heifer pregnancy), and Structure (e.g., foot angle).

FUNDING DETAILS

RECIPIENT:
Canadian Angus Association

PARTNERS:
AbacusBio

TOTAL BUDGET:
$149,000

AI FUNDING:
$45,000

PROJECT DATES:
March 2020 – December 2020

PROJECT TRL:
Start: 4
End: 6

APPLICATION

The project will develop three economic selection indexes: Balanced, Terminal and Maternal. The target market of the indexes are commercial producers, feedlots and the packing and distributing sectors. The indexes will be easy to adopt and will allow for simultaneous selection of desired genetic gain traits, without compromising other traits. They will also enable an easy-to-use platform for other trait evaluations. The indexes will be offered through the existing genetic evaluation available for Canadian Angus breeders and producers. Canadian Angus genetics are a significant proportion of the Canadian beef industry, and therefore, this project will have significant impact.

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PROJECT GOALS

- Develop economic selection indexes suitable for the Canadian beef industry that reflect priorities identified by Canadian seed stock and commercial producers, feedlots, and the processing and distribution sectors of the industry.
- Interrogate Canadian market economics to quantify the costs and benefits or revenue from each trait.
- Survey Canadian Angus Association members, commercial producers, feedlot operators, and packing plants to elucidate their priority traits.
- Develop a balanced, maternal, and terminal index to help guide Canadian beef producers to make profitable genetic selection decisions.
- Communicate about the index development, what indexes are and how to most successful adopt and apply indexes to existing genetic selection programs within the seed stock industry.

BENEFITS TO ALBERTA

- The developed economic indexes will help industry members to simultaneously consider multiple genetic-gain traits. This will increase their ability to identify breeding goals based on profitability.
- Increased use of genomic technology that contributes to more accurate genetic evaluation and genetic evaluation for expensive, difficult or late to measure traits.
- Increased adoption of gEPDs for new traits that impact animal health and welfare, such as high immune response and feet and leg structure.
- Multi-trait selection so that the overall cow herd is not compromised on a specific trait (such as fertility).
- Higher rates of genetic gain may provide Canadian producers with a competitive advantage in the global beef market.

5 Publications

1 Student Trained

3 New Products/Services

CURRENT STATUS

September 2020

Resources such as Canfax, BCRC and Government of Alberta benchmarking statistics were used to infer market costs and benefits of each trait. Economic estimates were reconciled against producer surveys. Over 500 survey participants identified traits that were of priority and economic impact to their operations. These inputs were used to model the costs and revenues of each trait on a per cow bred on a commercial beef operation in the Canadian beef market basis. A Canadian Balanced Index has been approved and is being rolled out to the industry this fall. A terminal index will be incorporated in the CAA AngusCONNECT beef program.

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