An Alternative Solution for Supporting Beef on Dairy Genetic Selection Decisions

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Introduction

• In the dairy industry, on farm genetic strategies have seen a major shift over the past decade

• The perfect trifecta effect:
  1. Genomics increases the accuracy for ranking females in the herd
  2. Sexed semen used on the top half of the herd optimizes the genetic quality of future replacement heifers
  3. Beef sire semen to breed the remaining females increases the sale value of resulting calves
Beef on Dairy in Canada

% Beef on Dairy

Year of Insemination
Multiple Lactanet activities touch the Beef on Dairy trend

For the Canadian dairy industry, Lactanet is the leading provider of:

- Data collection services
- Herd management software
- Dairy cattle traceability
- Knowledge mobilization
- Genetic/Genomic evaluation services (>100 traits across 7 dairy breeds)

Website used by dairy farmers across the country and internationally

- >30,000 unique users/month for genetics query tools
Genetic Evaluations for Beef on Dairy

- Performance data includes:
  - Calving ease and birth weight
  - Growth traits
  - Carcass yield and quality traits
  - Dry Matter Intake / Feed efficiency
Genetic Evaluations for Beef on Dairy

- Pedigree data includes:
  - Dams of the beef crossbred calves
  - Generations of pedigree data for the beef sires used in dairy herds
Genetic Evaluations for Beef on Dairy

- Genotypes include:
  - Beef crossbred calves and ideally their dairy dams
  - Beef sires used in dairy herds
Genetic Evaluations for Beef on Dairy

- Genetic evaluations include:
  - Development of a continuous data pipeline for access to phenotypes, pedigree and genotypes
  - Development of multiple single step genomic evaluation systems to cover the desired trait groups
Role of Lactanet

- Expand and improve the on-farm data collection for beef crossbred calves
- Grow our genetics expertise and knowledge transfer services in the area of genetic evaluations for beef traits
- **Not invest** in the development of genomic evaluations for the beef on dairy market segment
- Instead of creating new competition, establish a collaboration with existing beef evaluations service provider
Angus Genetics Inc.

- AGI is a globally recognized provider of the World Angus Evaluation for the Angus breed
  - [www.angus.org/AGI/](http://www.angus.org/AGI/)
  - Subsidiary of the American Angus Association

- Evaluations include data from United States, Canada and Australia
  - Key partner is the Canadian Angus Association ([www.cdnangus.ca](http://www.cdnangus.ca))
  - Weekly genomic updates
AGI calculates and publishes “Genomic Enhanced Expected Progeny Differences (EPD)”

- Key trait groups of interest include:
  - Calving ease
  - Birth, weaning, yearling and mature body weights
  - Dry Matter Intake / Feed efficiency
  - Carcass yield and quality

- Beef on Dairy selection indexes:
  - Angus-On-Holstein ($AxH)
  - Angus-On-Jersey ($AxJ)

<table>
<thead>
<tr>
<th>TRAIT</th>
<th>TRAIT</th>
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<tbody>
<tr>
<td>Calving Ease Direct</td>
<td>Pulmonary Arterial Pressure</td>
</tr>
<tr>
<td>Calving Ease Maternal</td>
<td>Hair Shed Score</td>
</tr>
<tr>
<td>Birth Weight</td>
<td>Heifer Pregnancy</td>
</tr>
<tr>
<td>Weaning Weight</td>
<td>Maternal Milk</td>
</tr>
<tr>
<td>Yearling Weight</td>
<td>Mature Weight</td>
</tr>
<tr>
<td>Yearling Height</td>
<td>Mature Height</td>
</tr>
<tr>
<td>Dry Matter Intake</td>
<td>Carcass Weight**</td>
</tr>
<tr>
<td>Scrotal Circumference</td>
<td>Marbling Score**</td>
</tr>
<tr>
<td>Docility</td>
<td>Ribeye Area**</td>
</tr>
<tr>
<td>Foot Claw Set</td>
<td>Backfat Thickness**</td>
</tr>
<tr>
<td>Foot Angle</td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td>For Lactanet</td>
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| Low cost | • Avoids duplication and competition  
• Timely implementation  
• Partnership with a global leader in genomic evaluations for beef traits  
• Allows for improvements and new traits over time  
• Angus represents over 75% of beef semen used in dairy herds, so helps with the largest market share | • Third party recognition  
• No cost  
• Wider scope of evaluation users  
• Example model for other dairy genetic evaluation centers  
• Potential for data on beef crossbred calves to be included in the future  
• Continuous assessment and improvement of $AxB$ and $AxBJ$ selection indexes |
Implementation

- Animal Search
- Group Search
- Inbreeding Calculator
- Beef-on-Dairy Search
Note: The Genomic Enhanced Expected Progeny Differences (GE-EPDs) are calculated and provided by Angus Genetics Inc.

<table>
<thead>
<tr>
<th>Bull Name</th>
<th>NAAB Code</th>
<th>Birth Year</th>
<th>Act.</th>
<th>Selection Indexes</th>
<th>Calving Ease Direct</th>
<th>Weight &amp; Growth</th>
<th>Dry Matter Intake</th>
<th>Carcass Yield &amp; Quality</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$AXH</td>
<td>$AXJ</td>
<td>BW</td>
<td>WW</td>
<td>YW</td>
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<td>Example A</td>
<td>xxxANxxxx x</td>
<td>2022</td>
<td>A</td>
<td>+230</td>
<td>+250</td>
<td>17</td>
<td>-1.6</td>
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<tr>
<td>Example B</td>
<td>xxxANxxxx x</td>
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<td>A</td>
<td>+220</td>
<td>+210</td>
<td>10</td>
<td>2.1</td>
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<tr>
<td>Example C</td>
<td>xxxANxxxx x</td>
<td>2023</td>
<td>Etc.</td>
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<td></td>
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<td></td>
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</tbody>
</table>

Convert EPDs to RBVs

Modify Query

Select 100 entries
Summary

- Growing trend towards beef on dairy, which is here to stay
- Dairy producers need tools to make good beef sire selection decisions
- Query tools on Lactanet website are widely used and can easily be expanded
- Building new genetic evaluation systems for this market requires a very significant investment
- Collaboration with key partners in the beef sector is logical and provides benefits to all parties involved

Lactanet is well-positioned to provide quality genetic information for Canadian dairy farmers to make selection decisions to optimize the value of beef crossbred calves for the beef value chain.
Thank You!