ABSTRACT: Genetic progress in the Canadian beef, sheep and goat herds has been limited by the diverse and often disconnected evaluation and information management systems available to producers. Building on a proven genetic evaluation system, BIO worked closely with producers to develop a multi-species, whole farm information management system. Called bioTrack, the system provides a high degree of user flexibility in terms of data capture, viewing and reporting. Users agree to share information on animals with previous and subsequent owners. Genetic evaluations for all species are across breed and updated weekly. The keys to adoption, and focus of development of bioTrack are ease of use and return on investment. BIO has bridged bioTrack with the Canadian Cattle Identification Agency and Beef InfoExchange systems to enable seamless flow of added information with no extra effort to users.

Key words: genetic progress; information management; bioTrack.

INTRODUCTION

Livestock producers in Canada choosing to use on-farm software and be involved with a genetic improvement program were frustrated with the need to purchase or use multiple systems/services. Making daily management decisions, including those that involve use of genetic evaluations should not require two systems. BIO set about to create a single system that made information management simple and yet was connected to other data bases and systems, including genetic evaluations.

BIO has been providing across breed genetic evaluations for beef cattle for twenty years. Evaluations are provided weekly to ensure that they are current. Beef evaluations are calculated by BIO using a model defined by Sullivan et al., 1999. In addition, BIO provides an economic index evaluation (BIOS) for bulls completing post weaning evaluation.

The opportunity to take a new approach occurred in 2008 when BIO was approached by the Ontario Cattlemen’s Association regarding the modification of our existing data base in order to meet the needs of producers wanting to become involved in a more structured value chain. This event began a journey that now has BIO offering a web based information management system (bioTrack) to meat and milk producers with three species (beef, sheep and goat), in four languages.

MATERIALS AND METHODS

The bioTrack system was developed in .NET using DevExpress. Users are given a great deal of ability to customize the system to meet their preferred style of using it as well as the ability to view and use different information at different times. Through bioTrack, producers can easily and immediately (in the barn or field) capture and manage phenotypes (pedigree, performance, health, breeding, costs, revenue, and animal movements). This can be done with a smart phone or any number of electronic devices. Historical data, and that captured with a scale head or handheld unit, can be easily transferred into bioTrack using a CSV export function that maps data fields accordingly.

Congruent with BIO’s philosophy regarding the value of data, bioTrack users must agree to information sharing through which information on an animal is shared with any previous or subsequent owner of that animal. Once bioTrack was available to beef producers, BIO was approached by the Ontario Sheep Marketing Agency and subsequently Ontario Goat regarding the possibility of modifying the system to meet the needs of sheep and goat producers. The system is now available for meat and milk producers in each of the three species. Table 1 shows the current beef data in the system.

<table>
<thead>
<tr>
<th>Table 1: Current record counts (beef) used in genetic evaluation:</th>
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<tbody>
<tr>
<td>Birth weights</td>
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<tr>
<td>Weaning weights</td>
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<tr>
<td>Post Weaning gain</td>
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<tr>
<td>Ultrasound (REA)</td>
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<td>Scrotal circumference</td>
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Producers want to use their time wisely and so we have build information bridges with a number of data bases and systems to allow producers the ability to use only one system. Through bioTrack, we export data to Canadian Cattle Identification every six hours and automatically retrieve carcass data from the national Beef InfoExchange system. In order to provide genetic evaluations for sheep and dairy goat producers, we move data to and retrieve evaluations from the Centre for Genetic Improvement of Livestock (Szkotnicki et al., 2010) and the Canadian Centre for Swine Improvement respectively.

Supporting the System

BIO works in partnership with both CGIL and Livestock Gentec at the University of Alberta in a number of research and development initiatives. The research beef herds at the Universities of Guelph and Alberta are on bioTrack. In addition, BIO has invested significantly in the field of genomics as it presents huge opportunity to the Canadian beef industry. BIO’s target is gEPD’s for a number of traits with particular emphasis on feed efficiency and tenderness. Our reference data set currently has approximately 6,000 genotypes (50K) while our effective reference data set is much higher through partnership with the Genome Canada project and with the Irish Cattle...
Breeders Federation. All of our work in the field of genomics is targeted at bringing more accurate genetic evaluations and evaluations on new traits to producers, all of which will be available through bioTrack.

BIO is set to further support the flow of valuable information as we release bioLinks, an innovative means for small and medium sized processing plants to capture and share carcass information. This system enables identity preservation from a carcass to individual products. It also enables capture of consumer feedback via a QR code on product.

Input Methods
Data can be entered into bioTrack in a number of ways. The most timely, and least prone to errors in real time done in the barn or in the field at the time an event happens. Historical data or current data collected using some form of hardware (electronic scale head, handheld) can be easily transferred into bioTrack using a data exchange with a CSV file. Some producers choose to capture data on paper and then either enter that into their bioTrack account when in the office or have BIO staff enter the data for an hourly fee.

Analysis and Reports
The bioTrack system provides several standard reports including:
- Genetic scorecard for an animal
- Cow Productivity
- Sire Summary
- Animal History (showing all events and movements)

In addition, producers can create their own customized reports by simply setting up a new information grid and saving the layout. This grid of information can be further customized by adding title of choice, farm information, corporate logo and even pictures of animals. Once finalized this can be saved as a PDF document or exported as an EXCEL file for further data manipulation.

CONCLUSIONS
1. The potential offered by genetic variation, including the more accurate estimation of genetic merit offered though genomics has been largely untapped in the Canadian beef industry.
2. Though important, genetic decisions (selection, mating) are a small part of whole farm management and can be enhanced if information relative to genetics is closely associated within a simple, user friendly information management system such as bioTrack.
3. As farmers have the opportunity to gather important data (e.g. carcass measurements) and also face increasing requirements for data collection and reporting (e.g. movements) there is tremendous value in having data flow seamlessly to and from their information system to organizations and agencies.

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Literature Cited