Three reasons why performance data will always be important for genetic improvement

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2014 marks five years of genomic evaluations in Canada, and has the world of genetic improvement ever changed! A common misconception brought to light over the past five years is that genomics will replace the need for traditional data recording systems such as those offered by DHI and breed associations. This is like saying because you use GPS technology in your tractor, you can sleep on the job. Yes, the technologies have improved by leaps and bounds, but this doesn't mean they can be relied on exclusively. The reality with genomics is that it requires more accurate and complete performance data to maintain the accuracy of genetic evaluations and allow for a wider list of traits to be evaluated.

1) The number of important traits continues to expand

Thanks to existing DHI data collection systems, the Canadian dairy industry has been able to make genetic decisions and realize gains for many traits including production yields, fat and protein percentages, somatic cell, longevity, fertility, calving ease, calf survival, milking speed and milking temperament. In addition, type classification data collected by Holstein Canada has allowed for selection and gain in terms of the various conformation traits.

While the list of routinely evaluated traits in Canada is extensive, it continues to grow as new and important traits are identified. Most recently, DHI's assistance in the collection of producer recorded health events has resulted in bull proofs for Mastitis Resistance that will be available starting August 2014. This new trait will provide producers the opportunity to select for increased resistance to this costly disease. In the near future, evaluations for resistance to metabolic diseases are also planned.

2) Proven bulls fuel the reference population

Genomic evaluations are more accurate than traditional evaluations thanks to a large reference population of genotyped progeny proven sires. Without a sizeable reference population, genomic evaluations would offer only small gains in accuracy.

The collection of performance data leads to a constant supply of new progeny proven bulls. Without these bulls continually fueling the reference population, young bulls selected for A.I. would get farther and farther away (less related) from the proven sires in the reference population. Over time, this would negatively affect the accuracy of genomic evaluations.

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3) Verified on-farm data increases the reliability of a cow's genetic evaluation

By now, most producers are well aware that genotyping is the fastest way to improve the reliability of a female's genetic prediction. What some don't realize is that reliability is enhanced even further when the animal's performance data is incorporated into these predictions.

Without test day records or a classification, a cow would maintain a Parent Average (PA) for all production and type traits. Milk recording and classification data are added to the cow's contribution from PA to produce an Estimated Breeding Value (EBV) that is more accurate. For example, consider a first lactation cow that was genotyped as a heifer. Upon classification, the reliability of this animal's Conformation index will increase from 68% to 75%. Once completing a lactation, the reliability of her production evaluation will increase from 73% to 78%. Despite the jump in reliability achieved by genotyping, the incorporation of performance data boosts the reliability, making the cow's evaluation even more accurate.

The success of genomics in Canada would not have been possible without a long history of performance recording. As we've learned, the future success of genomics depends largely on the same thing. Don't set the GPS and fall asleep in the tractor - continue to fuel the accuracy of this technology by participating in traditional performance data recording programs