

# Genomic evaluations earn their report card

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The cattle genetics industry welcomes technological advancements that help producers design production models for a stable and consistent food supply.

Sexed semen has been one such technology. Genomics has been another industry changing innovation.

Genomic technology introduces enhanced genetic progress within the dairy cattle industry by reducing the generation interval. While traditional sire procurement methods took about five years from the time an AI organisation purchased a bull calf until he entered the active sire lineup, genomic proven sires now enter the active lineup at about two years of age or as soon as the bull is able to produce enough semen for widespread distribution.

In addition, this early genetic information has a much higher reliability than genetic information based only on pedigree information.

This opportunity to accelerate genetics can be seen on the individual herd level too. Today, dairy producers are milking daughters of top genomic proven bulls. Under the former progeny test only (daughter proven) system, producers would only be starting to use those same bulls as service sires.

With the emphasis placed on genomic proven bulls (48% of 2011 USA Holstein breedings were to non-daughter proven bulls) it is important to evaluate the precision of genomic proofs.

The standard is to compare bulls' genomic genetic evaluations to their daughter proven evaluations. This provides a sort of 'report card' on genomic evaluations.

The report cards calculated by Cooperative Resources International show rather minimal changes in genetic evaluations as

**Table 1. Industry wide change for LNM, production and health traits as Holstein genomic bulls add milking daughters (comparing August 2010 to April 2012 proofs)<sup>1</sup>.**

No. of sires	Average no. of daughters	LNM	LNM Rel.	TPI	PTA milk	Fat	Protein	Prod. life	DPR
2123	105	-\$29	+12	-11	-47	-2	-1	-0.6	+0.2
<sup>1</sup> 40 daughter minimum requirement									

No. of sires	Average no. of daughters	PTA type	Udder composite
1504	59	-0.20	-0.10
<sup>2</sup> 10 daughter minimum requirement			

**Table 2. Industry wide change for conformation traits as Holstein genomic bulls add milking daughters (comparing August 2010 to April 2012 proofs)<sup>2</sup>.**

Holstein and Jersey sires go from genomic proven evaluations to proofs primarily based on daughters.

## Holsteins: any change?

Tables 1 and two show the average change as genomic proven Holstein sires add milking daughters.

No. of sires	Average no. of daughters	LNM	LNM Rel.	Cheese merit	JPI	PTA milk	Fat	Protein	Prod. life	DPR
265	73	+\$37	+12	+\$41	+10	+134	+9	+5	+0.0	+0.0
<sup>3</sup> 10 daughter minimum requirement										

**Table 3. Industry wide change for LNM, production and health traits as Jersey genomic bulls add milking daughters (comparing August 2010 to April 2012 proofs)<sup>3</sup>.**

The report includes Holstein bulls that were genomic proven in August 2010 and now have a minimum of 40 daughters in their production proof and a minimum of 10 daughters in their type proof.

As Table 1 shows, Holstein bulls industry-wide have averaged a \$29 decrease in Lifetime Net Merit (LNM) as they gained milking daughters.

This is based on data from more than 2,100 bulls that now average 105 daughters. Table 2 shows Holstein bulls have decreased 0.20 points in PTA Type as they

gained daughters. This data is based on more than 1,500 bulls that now average 59 daughters each.

## Jerseys: any change?

Tables 3 and 4 show the average change in genetic traits as genomic proven Jersey sires have added a significant number of milking daughters (10 daughter minimum requirement for production proof, 10 daughter minimum requirement for type data).

Table 3 shows as Jersey bulls have gained milking daughters their proof for cheese merit increased \$41.

This is based on data from 265 sires that average 73 milking daughters. Similarly, Table 4 shows that as Jersey bulls transitioned to daughter proven they have averaged a 0.13 increase in JUI.

Genomic proven bulls provide unmatched and documented opportunity to accelerate genetic progress and improve farm profitability. The recommended best practice for any producer is to use a group of genomic proven bulls that fit the herd's breeding goals. By using a group of bulls, producers will minimise impact of any one bull with significant changes in PTA and provide greater means to manage inbreeding and genetic diversity. ■

**Table 4. Industry wide change for conformation traits as Jersey genomic bulls add milking daughters (comparing August 2010 to April 2012 proofs)<sup>4</sup>.**

No. of sires	Average no. of daughters	PTA type	JUI
187	35	+0.04	+0.13
<sup>4</sup> 10 daughter minimum requirement			