GENOMICS: HOW HAS IT PERFORMED AND HOW BEST TO USE IT.

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Accelerated Genetics®

FACTS ABOUT ACCELERATED GENETICS

- Farmer Owned Cooperative – Based in Wisconsin
- Administrative Office – Baraboo, Wisconsin
- Production Facility – Westby, Wisconsin
- Founded in 1941
- Currently sample 120+ Holstein Sires Annually
- Also sample bulls from other popular US Breeds
- Jersey, Brown Swiss, Ayrshire, Guernsey and Milking Shorthorn

GENOMIC EVALUATIONS

- Introduced to the public in 2008.
- Uses SNP (single nucleotide polymorphisms) estimates to identify elite genetics among young bulls.
- Increases reliabilities of young bulls significantly.
- Now have substantial milking daughter data on bulls selected solely by genomics.

WHAT IS A SNP GENOTYPE WORTH?

Pedigree is equivalent to information on about 7 daughters

For the protein yield (h^2=0.30), the SNP genotype provides information equivalent to an additional 34 daughters

What is a SNP genotype worth?

And for daughter pregnancy rate (h^2=0.04), SNP = 131 daughters

COMPARISON OF 4/2010 GENOMIC EVALUATIONS WITH 4/2014 EVALUATIONS THAT INCLUDE MILKING DAUGHTER DATA.

- Compare genomic young sires that were available during the April 2010 genetic evaluation with their current April 2014 genetic evaluation. 339 bulls fit this criteria.
- These bulls all have milking daughters with considerable data to accurately compare genomic estimates with current proofs.
- All formula changes were taken into account for equal comparisons.
- Also, compare genomic sires from 4/2010 with best proven sires from that same time.

APRIL 2010 GENOMIC YOUNG SIRES

- 339 Bulls were designated available as young sires after the 4/2010 summary
- These bulls averaged a YGTPI of 1931
- As proven sires, they now average 1815 GTPI.
- On average, these bulls went down 116 GTPI points.

AVERAGE CHANGE FOR TRAITS OF BULLS FROM 4/10 TO 4/14

TRAIT	CHANGE
NET MERIT $	-98
MILK	-192
FAT	-9
PROTEIN	-6
TYPE	-0.43
UDC	-0.25
FLC	-0.21
PRODUCTIVE LIFE	-1.4
SOMATIC CELL SCORE	+0.02
DAUGHTER PREGNANCY RATE	+0.4
SERVICE SIRE CALVING EASE	+0.04
DAUGHTER CALVING EASE	-0.39
SIRE STILLBIRTH	-0.10
DAUGHTER STILLBIRTH	+0.23

TOP HOLSTEIN GENOMIC YOUNG SIRES APRIL 2010

Code	Name	Rank 4/10	YGTPI	Rank 4/14	GTPI	Change
7H10606	Observer	1	2324	3	2168	-156
147H1231	Domain	2	2264	110	1894	-370
14H6090	Bowser	3	2263	49	1988	-275
29H13846	Trigger	4	2253	24	2030	-223
7H10604	Osmond	5	2245	25	2022	-223
76H581	Explode	6	2244	29	2017	-227
7H10219	Boxer	7	2224	154	1840	-384
11H10675	Caliber	8	2223	15	2075	-148
147H2259	Shottbolt	9	2220	8	2117	-103
94H13666	Destry	10	2204	98	1910	-294
Average			2246		2006	-240

TOP HOLSTEIN GENOMIC YOUNG SIRES APRIL 2010

Code	Name	Rank 4/10	YGTPI	Rank 4/14	GTPI	Change
11H10681	Tonic	11	2195	48	1992	-203
7H10272	Fork	12	2190	46	1994	-196
1H2848	Parker	13	2190	126	1867	-323
1H2683	Sebastian	14	2183	45	1995	-192
14H6132	Digger	15	2179	21	2038	-141
29H14142	Dorcy	16	2169	1	2318	+149
7H10052	Time	17	2166	137	1855	-311
76H607	Elite	18	2162	31	2010	-152
11H10567	Gr8m8	19	2162	85	1928	-234
11H10653	Mars	20	2159	22	2036	-123
Top 20 Average			2211		2005	-206

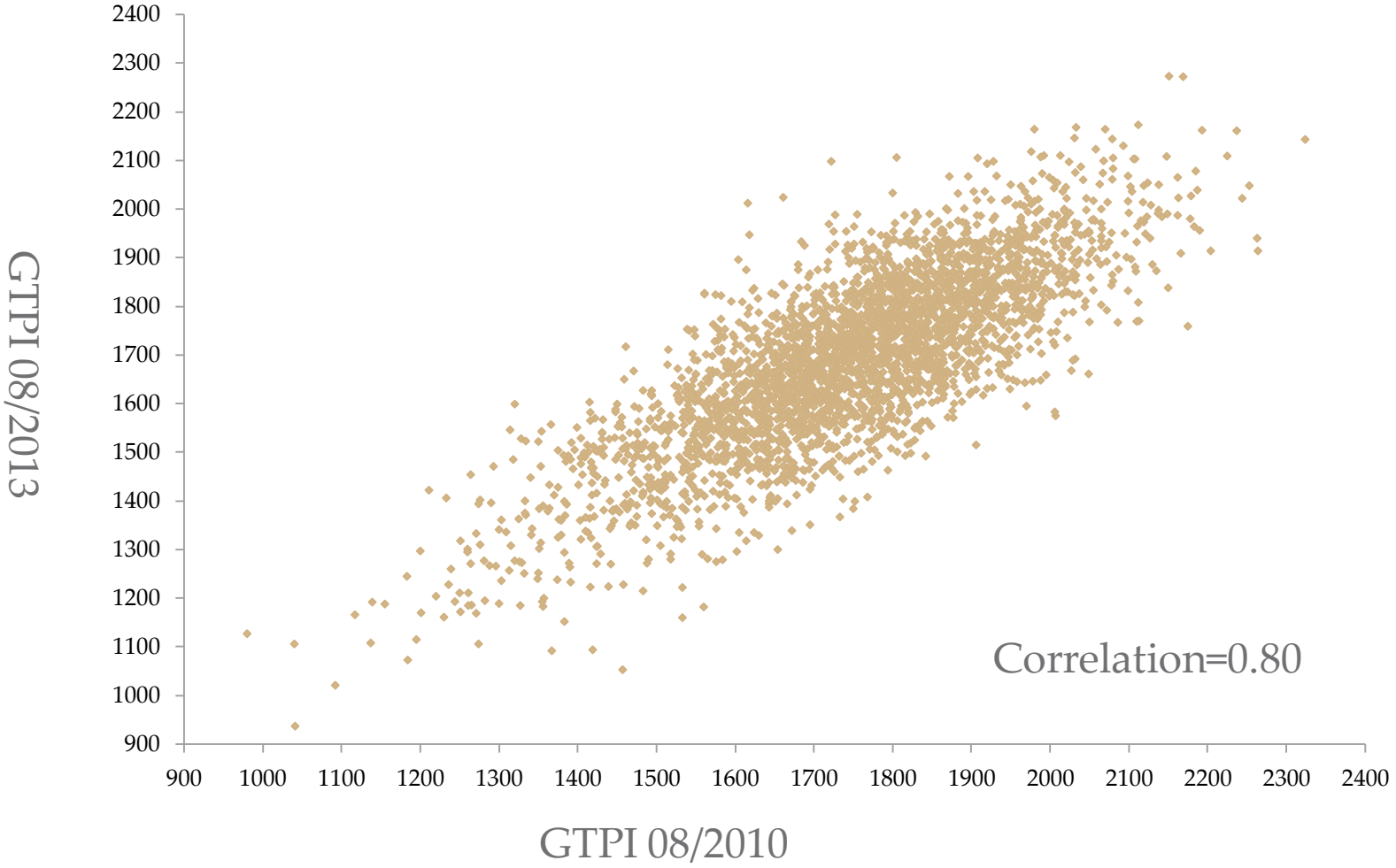
TOP TEN GTPI SIRES FROM 4/10 GROUP AFTER 4/14 SUMMARY

Code	Name	Rank 4/14	GTPI	Rank 4/10	YGTPI	Change
29H14142	Dorcy	1	2318	16	2169	+149
1H9527	Massey	2	2270	23	2151	+119
7H10606	Observer	3	2168	1	2324	-156
1H9753	Rankin	4	2161	80	2047	+114
1H2655	Latham	5	2129	85	2039	+90
11H10519	Maurauder	6	2121	51	2099	+21
54H548	Bevin	7	2119	120	1992	+127
147H2259	Shottbolt	8	2117	9	2270	-103
7H10297	McNuggets	9	2117	60	2080	+37
14H5936	Dom	10	2116	204	1908	+208
Average			2164		2103	+61

TOP TEN PROVEN SIRES FOR GTPI 4/10 AND HOW THEY RANK TODAY

CODE	NAME	GTPI TODAY
1H8784	FREDDIE	2239
1H8778	SUPER	2182
29H12209	SHOTTLE	1929
14H4929	MAN-O-MAN	2188
7H6417	O-MAN	1954
29H13366	BEACON	2103
7H8081	PLANET	2073
200H3205	GOLDWYN	1879
11H9703	ROSS	1811
7H8747	BRONCO	2155
AVERAGE		2051

GTPI 8/2010 VS 8/2013 WITH 3+ DAU EVALUATIONS



SUMMARY

- Top ten genomic young sires from 2010
  - Average YGTPI 4/10 = +2246
  - Average GTPI 4/14 = +2006
- Top twenty genomic young sires from 2010
  - Average YGTPI 4/10 = +2211
  - Average GTPI 4/14 = +2005
- Top ten proven sires from 2010
  - Average GTPI 4/14 = +2051
- Top ten young genomic sires for GTPI as proven sires in 2014
  - Average YGTPI 4/10 = +2103
  - Average GTPI 4/14 = +2164

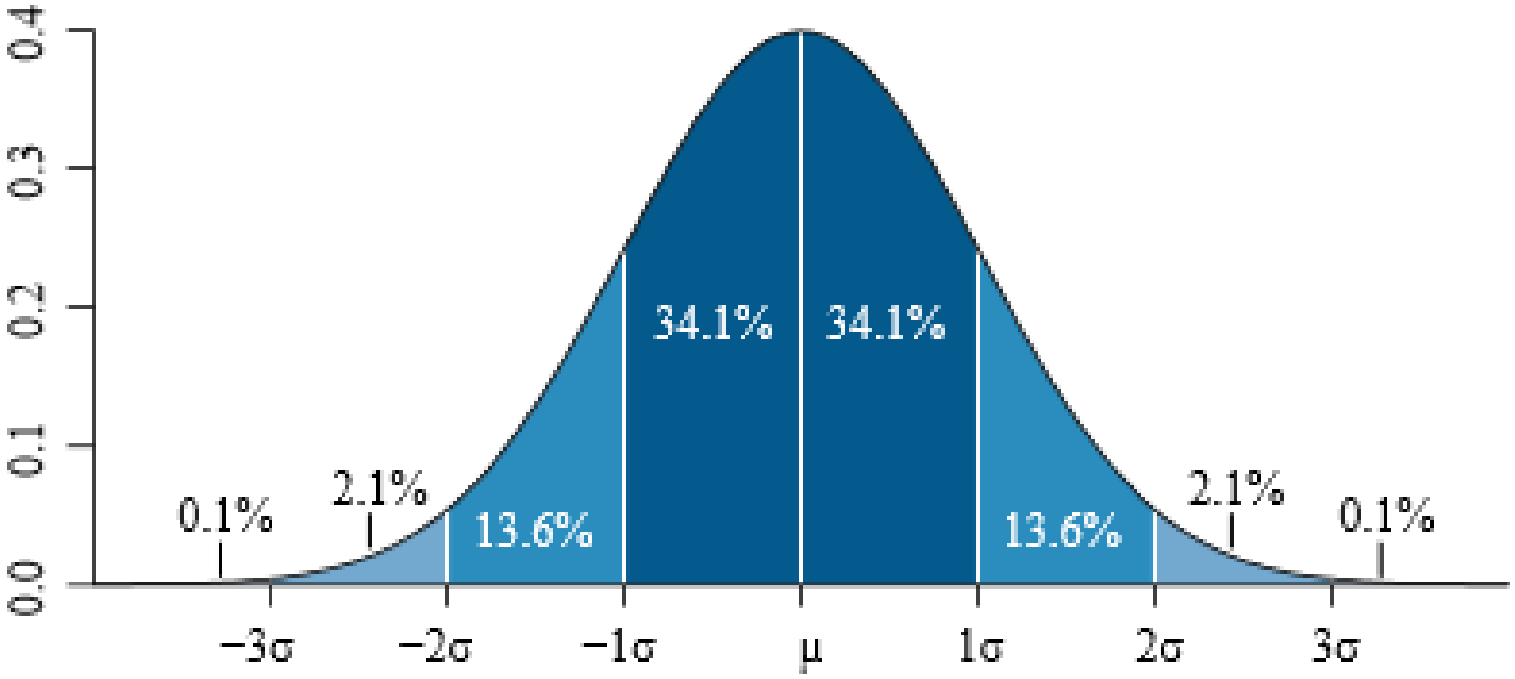
COMPARING PROVEN SIRES PROOFS

- Proven sires with milking daughters still have genomic influence in their proofs.
- Until a bull has many hundreds of daughters, this influence will move a bull up or down from his daughter data.
- Some bulls are significantly affected by this.

14H5936 DOM – GENOMIC VS. DAUGHTER PROOF

TRAIT	GENOMIC DATA	DAUGHTER DATA
MILK	+1506	+1576
FAT	+81	+83
PROTEIN	+46	+47
TYPE	+2.69	+2.79
UDC	+2.45	+2.49
FLC	+2.83	+2.98
PRODUCTIVE LIFE	+1.1	+2.2
SOMATIC CELL	3.06	3.11
DAUGHTER PREG RATE	-0.1	0.0
NET MERIT $	+483	+528
TPI	+2116	+2165
DOM RANKS 5TH	OUT OF THE 339 BULLS	IN THE GROUP FOR TTPI

AVERAGE DISTRIBUTION OF GENETICS



CONCLUSIONS

- Magnitude of change on Genomic bulls is significant.
- Although some re-ranking is to be expected, the overall ranking of the young bulls is not as bad as the magnitude of the drop.
- Not all genomic bulls drop but it is difficult to determine which will indeed go up.
- Important to know that proven sires hold their genomic values much better and compare very well on future evaluations.
- Many improvements to the evaluation system should improve the accuracy in the future. Top young animal evaluations should be more comparable to the top proven sires.

CONCLUSIONS

- The true value of using young genomic sires is a true measure of weighing the risk vs. the reward.
- More progress can be made using young genomic bulls but more movement in evaluations should be expected
- Higher use of proven sires will result in less risk, but also will result in less chance of getting real standout.


MINNESOTA
2013 Minnesota
4-H Dairy Showcase
19th
$750
Brown Co. 4-H Livestock
Houston Co. 4-H Federation
Rice Co. 4-H Boosters