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Dairy Update

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Slick Holstein Semen Now Widely Available

Pete Hansen

The slick mutation is a naturally occurring modification in the prolactin receptor gene that causes cattle to have unusually short hair. The mutation is a dominant trait so cattle that inherit one or two copies of the mutation have a sleek hair coat. An example of a cow inheriting the slick mutation is shown in the accompanying figure.

Slick cattle have superior ability to regulate body temperature during heat stress. Research from Florida and Wisconsin indicates that the effects of heat stress on milk yield and reproduction are reduced in slick Holsteins.

The mutation was originally introduced into Holstein cattle in Florida by Dr. Tim Olson of the University of Florida by crossing Holsteins with cattle of the Senepol breed in which the mutation is very prevalent. Backcrossing with Holstein since the original cross in the middle 1980s has resulted in animals that are essentially Holstein except for chromosomal regions near the prolactin receptor gene.

A variety of artificial insemination organizations have produced semen from slick Holstein bulls. All these animals can be traced back to the original cattle generated by Olson. The slick bulls whose semen is available today are heterozygous for the slick mutation. In other words, the bull has one copy of the slick mutation and one copy of the normal prolactin receptor gene. Half of the offspring will be slick, and half will have normal hair length.

The following table (next page) details slick Holstein bulls whose semen is currently commercially available. Contact the relevant organization for more information.

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A cow with the slick mutation (left) next to a cow with normal hair coat. The short hair coat is particularly apparent on the face and poll of the slick cow.

Slick Holstein bulls currently available from artificial insemination organizations.

NAAB Code	Sire Name	Organization	$Net Merit	TPI	Milk	DPR	Beta casein	Sexed?
9HO16849	Ice Cube-S	Select Sires	1116	3141	+2,113	-0.2	A2A2	conv/sexed
9HO16227	Chip	Select Sires	852	2865	+632	0.3	A2A2	conv/sexed
9HO16182	Inferno	Select Sires	785	2822	+1549	-0.2	A1A2	conv/sexed
097HO42791	Nippy-SL-P*RC[a]	CRV	650	2593	+1025	-1.2	A1A2	conv/sexed (limited)
097HO42603	Heersche-SL	CRV	553	2416	+648	-0.2	A1A1	conv/sexed (limited)
097HO42790	Polar-SL-PP-Red[b]	CRV	305	2220	+300	-1.7	A1A2	conv/sexed (limited)
047HO01029	Lone Ranger	Bovine Elite/Univ Florida	428	2218	-481	+2.6	A1A2	conv
29HO21302	Cooloff-Slick	ABS	730	2650	+599	-1.8	A2A2	conv/sexed
551HO05867	Jokic	STGenetics	955	2847	+1918	-1.2	A1A2	sexed
551HO04839	Slickdude-SL	STGenetics	810	2730	+525	+2.8	A2A2	conv/sexed
551HO04837	Slick Pro-SL	STGenetics	667	2551	+387	+0.5	A1A1	conv/sexed
551HO04838	LZ-SL	STGenetics	626	2491	+317	+0.9	A2A2	conv/sexed
551HO04261	Jose-SL	STGenetics	477	2343	-230	+1.6	A1A2	conv/sexed
551HO04260	Rolly-SL	STGenetics	489	2324	-320	+2.7	A2A2	conv/sexed
551HO03574	Blanco-SL	STGenetics	206	2099	-211	+0.8	A1A2	conv/sexed

[a] polled, red carrier
[b] polled, red
Conv=conventional

Birth Season Affects Cow Longevity

Izabella Toledo, Leticia Cattaneo, Jose Santos and Geoff Dahl

Dairy cow longevity is an important economic trait for producers. In modern dairy farming, longevity of dairy cows is the result of culling decisions, which are determined by several risk factors, including diseases, and reproductive and productive performance. Multiple studies have documented that seasonal changes affect health, behavior, and performance of dairy cows throughout their life cycle. Increasing cow comfort by making management adjustments to decrease exposure to high temperatures during the hot months gives farmers the opportunity to decrease culling risk factors and possibly increase cow productive life.

We performed a study, where we obtained the records of primiparous and multiparous Holstein cows from Florida (n = 10,812) and California (n = 8,197) during a 10-yr period (2012–2022). We analyzed the relationship between birth season and longevity (i.e., cows that remained in the herd for 5 or more lactations) in Florida (n = 1,567) and in California (n = 1,669). The number of cows dead, sold, the reasons why they were sold, and their relationship with birth season were also analyzed in the Florida dataset. The hypothesis of our study was that birth in a cool season will increase the length of herd productive life and decrease the number of cows sold or dead during all lactations. The birth seasons were cool (**CL**; cows born in December, January, February, or March) and hot (**HS**; cows born in June, July, August, or September).

Results showed that in Florida, most cows that remained in the herd for more than 5 lactations (i.e., 14.5% of total cow records) were born during CL compared with cows born during HS (1,129, 72% vs. 438, 28%). The same observations were made in California, where greater longevity (i.e., 5 or more lactations, representing 20.4% of total cow records) was attributed to cows born in CL compared with HS cows (939, 56.3% vs. 730, 43.7%). In Florida, a greater number of HS were sold compared with CL cows (765, 52.6% vs. 689, 47.4%). More HS cows were sold due to breeding, foot and leg, and mastitis issues in Florida. Increased cow death during the first 4 lactations was significantly associated with HS (107, 53.8% vs. 92, 46.2%).

To summarize, the results of this study show that in both Florida and California, the birth of dairy cows during the cool season is associated with increases in the length of productive life to more than 5 lactations. Additionally, birth season affects the number of cows sold and dead. These results may help farmers create opportunities to make management adjustments related to birth season, or alter negative seasonal factors (i.e., heat stress) to possibly increase cow longevity in dairy herds. For more information on this study, use this link: https://www.jdscommun.org/article/S2666-9102(24)00095-4/fulltext

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58th Annual Florida Dairy Production Conference Report

Izabella Toledo

The 58th Annual Florida Dairy Production Conference was held at the Straughn Extension Professional Development Center in Gainesville on Wednesday, October 23rd, 2024.

The conference brought together dairy industry leaders to present and discuss a variety of current relevant topics to an audience of about 130 participants, which included dairy producers, faculty, students and dairy industry partners.

Dr. Kevin Dhuyvetter, from Elanco, started the day off with a presentation entitled “Dairy economics- Factors affecting profitability”. Dr. Dhuyvetter presented interesting data that focused on a wide range of moving factors and economical strategies that influence profitability of dairy farms.

Dr. Kevin Dhuyvetter presenting at the 58th Annual Florida Dairy Production Conference

Next on the agenda was Dr. Jim Quigley, from Cargil. Dr. Quigley emphasized the importance of monitoring colostrum quality and quantity, as well as having a good system to record colostrum data to improve calf management.

Camila Cuellar’s presentation about genetic solutions to heat stress gave attendees a good insight into the use of genetics as an additional tool to possibly decrease the negative effects of heat stress in dairy cattle.

The afternoon started off with a talk from Katie Martin, from Zoetis, who brought a great, practical perspective on genetic testing in dairy operations.

The next speaker, Dr. Jared Schenkels, from Kansas Dairy Development, talked about management strategies behind heifer reproduction programs at the Kansas Dairy Development farm. Dr. Schenkels gave an overview of their farm and shared with attendees the strategies that were developed at their operation to improve reproductive programs and focus on simple and consistent practices.

Participants at the Florida Dairy Production Conference included dairy producers, faculty, students and dairy industry partners.

After the afternoon break, the conference concluded with three speakers from the University of Florida, who showed data on projects funded by the Southeast Milk Check-Off program. Dr. João Vendramini talked about evaluation of new forage cultivars in south and north central Florida, while Dr. Diwakar Vyas shared information on the potential to enhance silage quality to improve dairy cattle performance. Dr. Fernanda Rezende closed the conference by sharing important data in alternative genomic variation underlying health and fertility traits in Holstein cows. Presentations were followed by a reception.

Throughout the day, participants had the opportunity to interact and network with producers, faculty, students, and dairy industry representatives. The organizers thank all the speakers and sponsors: Elanco, Zoetis, Royal Consulting Services, AHV, Nano Discovery, Florida Dairy Farmers, Swannee Valley Feeds and Alliance Dairies.

Speakers and participant discuss dairy economics

Proceedings of the conference are available at https://animal.ifas.ufl.edu/media/animalifasufledu/dairy-website/2024-Proceedings.pdf

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Use of Stature in the Net Merit Lifetime Profit Index

Albert De Vries

Stature is defined as the height, in inches, of the cow at her hips. In genetic evaluations, the predicted transmitting ability (PTA) for stature is standardized to be able to directly compare it with other linear type traits such as strength and teat length. All standardized transmitting abilities (STA) are designed to have a mean of 0 and a standard deviation of 1. That means that 68% of the STA values are between -1.0 and +1.0 for any linear type trait, 95% of STA values are between -2.0 and +2.0 and 99% of all STAs are between -3.0 and +3.0. In 1% of the cases, the STA is outside of the -3 to 3 range.

What does the STA value of Stature mean in practice? Holstein Association USA reports the average mature daughter measurement corresponding to the STA of Stature of a sire when mated to breed average cows to vary between 56.4 inches when STA equals -3 to 58.6 inches when STA equals 3. When STA equals 0, Stature is 57.5 inches. One point STA change implies a change of 0.37 inches in height at the hip. To make shorter cows, the STA of Stature needs to negative. To make cows taller, use STA of Stature that are positive.

How is Stature used in the lifetime Net Merit (NM$) index? The NM$ index ranks dairy animals based on their combined genetic merit for economically important traits. The NM$ is an estimate of a dairy animal's lifetime profit, expressed in dollars, compared to an average cow born in 2015. There are 17 traits in the NM$ index, including several that are composite traits, which means they are themselves indices of underlying traits. Three of these composite traits, Body Weight Composite (BWC), Udder Composite (UDC) and Feet and Legs Composite (FLC), all include the STA of Stature. The BWC also includes 4 other linear type traits, the UDC includes 8 other linear type traits, and the FLC includes 4 other linear type traits.

What is the influence of Stature on the NM$ index? The weight of 1 point change in STA of Stature, say from 0 to -1, is 0.23 in the BWC, it is -0.2 x 1.16 = -0.232 in the UDC and -0.2 x 1.14 = -0.228 in the FLC. The original weights of -0.2 in the UDC and FLC are multiplied by 1.16 and 1.14 to standardize the STA values with the 2015 base population of cows.

The economic value of 1-unit BWC in the NM$ index is -$45. That means that when STA of Stature decreases by 1 point, and all other linear type traits in the BWC index do not change, then the NM$ index increases by $10.35 (= -1 x 0.23 x -$45). Similarly, one point increase of the UDC index is worth $19 in the NM$ index. Therefore, a decrease of 1 point in STA of Stature with other traits constant is worth an additional $4.41 (= -1 x -0.232 x $19) through the UDC index. A 1-point change in FLC is worth only $3 in the NM$ index. A decrease of 1 point in STA of Stature with other traits constant is worth $0.68 (= -1 x -0.228 x $3) through the FLC index. Taken together, a decrease of 1 point STA of Stature is worth $10.35 + $4.41 + $0.68 = $15.44 in the NM$ index. All three composite indexes imply that a cow shorter at the hips is more profitable, given all other traits are not changed.

There was no other reason to look at how Stature affects the NM$ index than the observation that Stature is used in three composite traits and therefore affects the NM$ index perhaps more than expected.

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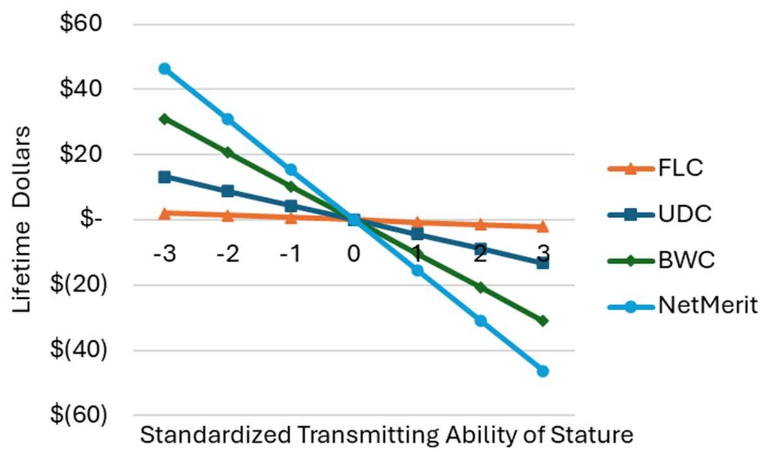

The figure shows the effect of a change in STA of Stature on the lifetime dollars in the FLC, UDC, BWC, and NM$ index.

Sources:

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