Different Approaches to Reach Similar Goals

No doubt Jersey breeders have spotted headlines such as "More Feed-Efficient Cows are on the Way" or "CDCB Net Merit to be Updated in August." A bit farther into these press releases and articles, the reader will learn that Jerseys were not a part of the research that led to the inclusion of residual feed intake (RFI) measured as the actual and expected feed intake in the August 2021 version of Net Merit (NM$).

Not to fret, emphasis on feed efficiency has been a part of the Jersey Performance Index (JPI) for more than 20 years through the relationship between body traits and lifetime profitability. More recently the JPI_{2020} predicts the efficiency of production by expressing lifetime production of fat and protein per unit of feed consumed. Although residual feed intake (RFI) are not in the JPI index for Jersey, there are other evaluated traits that have correlated genetic relationships that help improve feed efficiency. That has been the strategy employed with developing JPI.

While the approaches are different, JPI and Net Merit (NM$) share similar goals of selecting and developing more feed-efficient cows.

Because Jersey evaluations do not include Residual Feed Intake (RFI) and Calving Ability (CA$), the relative emphasis placed on those traits (6.3%- 6.8%) will be distributed to other traits in the merit indices.

The table (above) compares the relative emphasis on individual traits and composites included in Jersey version of the August 2021 Net Merit (Jersey NM$ 2021) and Jersey Performance Index 2020 (JPI_{2020}). Since Jersey CM$ and Jersey NM$ are now very similar, CDCB provided just the NM$ detail.

In general terms, both Jersey NM$ and JPI are similar. The emphasis on the production and fitness in each index only differs by 1.4%. The contrast is in the individual traits included and the emphasis given to each.

The major differences are that Jersey NM$ includes RFI and CA$ that are not available for the Jersey breed. RFI is not likely to be a part of Jersey genetic evaluations in the short term. Calving traits are continually monitored but have not risen to a level of concern in the Jersey breed.

Additionally, Jersey NM$ includes two fitness traits that relate to heifers—Early First Calving (EFC) and Heifer Livability (HLIV)—that are available for the Jersey breed. These traits will be considered for inclusion for future updates to JPI.

When comparing the two indices, more positive emphasis is given in Jersey NM$ to fat, productive life, livability and feet/legs. In JPI, more positive emphasis is given to protein, udder traits, the fertility traits DPR, HCR and CCR and Health Traits included in HTH$. More negative emphasis is given in JPI to the water in milk through milk density, somatic cell score and body size.

The indices will produce different groups of animals for selection as parents of the next generation. Variation in indices that have similar overall goals is healthy for the industry. NM$ and the highly correlated index CM$ continue to be extremely valuable tools for the Jersey breed. Combined with JPI, the genetic giants of the next generations will be identified and developed. More feed-efficient Jersey cows will be a part of the vital and sustainable dairy industry of the future.

Trait	Jersey NM$ 2021 (CDCB)	JPI_{2020}	NM$ compared to JPI
Milk NM$, Milk Density JPI	0.3	-3	3.3
Fat	27.0	19	8
Protein	23.1	27	-3.9
Production	**50.4**	**49**	**1.4**
Productive Life	19.7	5.0	14.7
Livablity	4.4	3.0	1.4
Somatic cell score (SCS)	-3.1	-4.5	1.4
Udder	2.6	9.2	-6.6
Feet/legs	0.5	0.2	0.3
Body size/Body Weight	-5.6	-10.0	4.4
Daughter pregnancy rate (DPR)	6.9	9.0	-2.1
Heifer conception rate (HCR)	0.7	2.0	-1.3
Cow conception rate (CCR)	1.6	3.5	-1.9
Health Traits (HTH$)	2.1	4.6	-2.5
Early First Calving (EFC)	1.4	0.0	1.4
Heifer Livability (HLIV)	1.0	0.0	1.0
Residual Feed Intake (RFI)	0.0	0.0	0.0
Calving Ability CA$	0.0	0.0	0.0
Fitness	**49.6**	**51**	**-1.4**

The third column contrasts and compares emphasis on various traits. Be mindful of the fact negative can be an indicator of the preferred direction. For example, the -6.6% on Udder indicates JPI places more emphasis on udder traits. In contrast, the emphasis on body weight composite in JPI is 4.4% greater, putting more emphasis on an efficient cow. Both are legitimate indicators of breed goals.