

Sire Evaluations for Defective Type Characteristics

Canada's type classification system evaluates a list of 24 descriptive type traits using a linear scale from 1 to 9. These traits subsequently establish the cow's classification for Mammary System, Feet & Legs, Dairy Strength and Rump as the four major scorecard sections, which are ultimately combined into the Final Class and Final Score. Another important, but often overlooked, component of the Canadian classification system is the recording of defective characteristics within each dairy cattle population. As each cow is appraised, the classifier also notes the presence (either minor or severe) of 29 various defective characteristics.

There are three main reasons why these defective characteristics are an integral part of Canada's type classification program. Firstly, cows showing a minor or severe degree of a given defective characteristic experience a specified deduction in their type classification score for the associated major scorecard trait, and therefore their overall Final Score. Secondly, monitoring the frequency of each defective characteristic within each round of classification helps identify trends within each breed and provides a quantitative measure of how selection affects these defective characteristics. Lastly, Canadian Dairy Network (CDN) uses the data recorded for each defective characteristic to compute sire evaluations that reflect the relative frequency that is recorded in their daughters compared to breed average. This analysis identifies specific sires that produce daughters with higher frequencies of the various defective characteristics and allows for genetic selection to reduce undesired frequencies.

Table 1 lists the defective characteristics currently recorded as part of the Canadian Multi-Breed Classification system, which has been uniform across all dairy breeds since August 2005. It also includes the frequency per 1000 animals classified that each defective characteristic was observed for each of the five main breeds. Clearly, not all of the recorded defective characteristics have the same frequency in all breeds. The main purpose that this list serves is to assist in the process of classifying cows in each breed for the descriptive and major scorecard type traits.

Evaluation of Sires

Published sire ratings for the defective characteristics are not actually genetic evaluations in the truest sense. Pedigree information (i.e.: Parent Averages and sibs) is not considered in these calculations and the observed data is not adjusted for any effects such as age at classification, stage of lactation at classification, lactation number or herd management. The analysis simply compares the frequency that each defective characteristic is observed in each sire's classified daughters relative to the overall frequency within the breed. These daughter frequency deviations form the basis for the published numerical ratings with negative values representing higher, undesired frequencies in their daughters compared to breed average. Conversely, positive ratings are assigned for defectives that appear less frequent in the sire's daughters relative to

the overall breed frequency. The actual numerical rating represents the expected percentage of daughters relative to breed average that will be double-ticked (severe presence) for the defective characteristic, which can also be translated to half the expected percentage of daughters relative to breed average that would receive a single tick (minor presence).

Table 1: Frequency of Defective Characteristics Recorded via Type Classifications since August 2005					
Defective Characteristic	Observed Frequency per 1000 Animals				
	HO	AY	JE	BS	GU
Mammary System:					
Tilted Udder	15	20	19	36	6
Reverse Tilt	38	16	19	5	11
Short Fore Udder	19	13	14	22	22
Short Rear Udder	31	31	14	41	25
Lacks Udder Shape	43	35	41	40	36
Unbalanced Quarter	78	74	97	74	91
Blind Quarter	14	14	15	10	6
Webbed Teat	4	3	3	2	3
Front Teats Back	3	1	1	3	3
Rear Teats Back	5	8	12	1	<1
Feet & Legs:					
Corkscrew Claw	2	2	1	2	<1
Weak Pasterns	22	34	22	5	58
Boggy Hocks	21	10	7	14	<1
Lacks Bone	4	2	6	2	<1
Crampy	3	4	1	1	3
Thurls Back/Low	60	24	20	15	28
Toes Out Front	49	36	47	30	17
Dairy Strength:					
Wry Face	1	1	5	<1	<1
Malformed Jaw	1	<1	3	<1	<1
Shallow Fore Rib	20	20	13	12	17
Weak Crops	57	72	21	25	105
Weak Back	12	6	32	28	11
Not Well Sprung	7	4	3	3	11
Lacks Balance	16	16	8	11	22
Rump:					
Advanced Anus	46	20	6	42	19
Advanced Tailhead	60	76	28	55	74
Recessed Tailhead	18	11	11	2	3
High Tailhead	28	57	25	93	58
Wry Tail	6	11	11	20	50

To indicate the most undesirable tendencies, an asterisk (*) is also displayed next to negative numerical ratings once they significantly (i.e.: one standard deviation) deviate from the overall breed frequency for the given defective characteristic. Since the level of significance varies from one defective to another, the presence of an asterisk helps show a consistent level of deviation from breed average.

Emphasis and Use

Sire ratings for the defective characteristics are supplementary information to the bull proofs published for the list of 29 type traits. They are not meant to receive major consideration in sire selection since they are simple calculations of daughter frequency deviations rather than true genetic evaluations. All detailed information related to each bull's type evaluation is accessible through the link to its "Type Evaluation Details" page on the CDN web site. Sire analysts and keen breeders may wish to consider this information for specific matings or for avoiding problems that may already exist in the herd.

Summary

Canada's type classification system is well respected nationally and internationally for providing a complete and accurate appraisal of each cow's body conformation. In addition to the 24 descriptive traits, four major scorecard traits and Final Score, the recording of 29 defective characteristics, when observed, is also a key component of this highly recognized system. Using this information, CDN publishes simple daughter frequency deviations for each sire compared to the overall frequency of each defective characteristic in the breed. The presence of an asterisk next to negative sire ratings reflects significant undesirable deviations from breed average given the variation in daughter frequencies across sires. This supplementary type evaluation data may be considered for avoiding specific matings but should not play a major role in sire selection decisions.

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