Extension
UNIVERSITY OF WISCONSIN-MADISON

Quick Reference: Reading Dairy Sire Proofs

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Advances in dairy genetic research have created an ever-increasing amount of information for dairy farmers to take into consideration for sire selection. Dairy sire proofs contain a mix of numbers, acronyms, and other terminology. This reference guide covers common sire proof information and what it means.

What are your goals?

A good place to start thinking about sire selection is identifying a few main goals you want to improve in your herd. Not sure where to start? Consider the following information.

- Production: How are you paid for your milk? Some regions of the country value volume over total solids. In the Upper Midwest our markets tend to place a greater value on components that add to cheese yield, such as fat and protein.
- Fitness: Are there common health or longevity issues you would like to address? Productive life, somatic cell score, and daughter pregnancy rate are a few examples of health and fitness traits that can be incorporated into selection.
- Type: Are there common structural issues in your herd limiting production or longevity? Udder conformation, foot and leg conformation, and body size are examples.
- Other considerations: Calving ease emphasis will be dependent upon whether mature cows or heifers are being mated. Are you looking for sires available in sexed semen or conventional? What is the average price per unit of semen that fits your budget?

Traits, Abbreviations, and Definitions

Selection indexes: A combination of production, fitness, fertility, and type into one sire ranking number.

Production traits: Pounds of milk, fat, and protein, residual feed intake and feed saved; these traits measure the productivity and efficiency of your herd.

Health, fitness, & fertility traits: These measure the health and longevity of the animal.

Productive Life (PL): Measurement of longevity, including yield information. Higher numbers indicate staying in the herd longer (a related trait is Livability).

Daughter Pregnancy Rate (DPR): The percentage of non-pregnant cows that become pregnant during each 21-day period. A bull with a DPR of 1 indicates that his daughters have 1% higher pregnancy rate than a bull with a DPR of 0 (related traits are cow conception rate and heifer conception rate).

Somatic Cell Score (SCS) is an indicator trait for mastitis resistance based on the direct measure of somatic cells in milk samples.

Sire Calving Ease (SCE) is the percent of difficult births in first-lactation heifers.

Additional Health & Fitness Traits: Early lactation health traits are also being developed and released for sire proofs and may vary depending on the entity evaluating these traits. The Council on Dairy Cattle Breeding (CDCB) wellness traits include mastitis, metritis, retained placenta, displaced abomasum, ketosis, and milk fever. Be aware that reliability may be low when evaluating these traits.

Linear Type Traits:

0 = Breed average for that base year; 1 point = one standard deviation above or below average; 2 points = two standard deviations above or below average.

Stature	(-) Short ⇔ (+) Tall	**Fore Udder Attachment**	(-) Weak ⇔ (+) Strong
Strength	(-) Frail ⇔ (+) Strong	**Rear Udder Height**	(-) Low ⇔ (+) High
Body Depth	(-) Shallow ⇔ (+) Deep	**Rear Udder Width**	(-) Narrow ⇔ (+) Wide
Dairy Form	(-) Tight ⇔ (+) Open	**Udder Cleft**	(-) Weak ⇔ (+) Strong
Rump Angle	(-) High ⇔ (+) Sloped	**Udder Depth**	(-) Deep ⇔ (+) Shallow
Rear Legs - Side	(-) Posty ⇔ (+) Sickled	**Front Teat Placement**	(-) Wide ⇔ (+) Close
Rear Legs - Rear	(-) Hock-in ⇔ (+) Straight	**Rear Teat Placement**	(-) Wide ⇔ (+) Close
Foot Angle	(-) Low ⇔ (+) Steep	**Teat Length**	(-) Short ⇔ (+) Long

Type and conformation composites:

Predicted Transmitting Ability Type (PTAT): Overall type score.

Breed Udder Indexes: Combined look at udder traits, such as udder depth and attachments. Weighting of traits is breed dependent.

Feet & Leg Composite: Index of foot angle, rear legs - side view & rear view, feet & leg score, with the weighting of traits varying by breed.

Additional composites for Dairy Capacity and Body Capacity may also be published, depending upon breed.

Genetic Codes & Haplotypes:

You may see letter codes associated with pedigree information or genetic proofs. Often times, these codes refer to an animal's status as a carrier or tested free of a genetic recessive. For example, animals tested for Complex Vertebral Malformation, an undesirable recessive condition, are designated as CVM for carriers and TV if tested negative.

Genetics codes are also published for polled, horned, and hair coat color traits. "RC" designates a carrier of the red hair coat gene, whereas "TR" would designate a non-carrier. The polled trait can be designated as PO for observed polled, PP for tested homozygous polled, PC for tested heterozygous polled, or TP for carriers of both horned genes.

Haplotypes represent a DNA sequence. Genomic testing has uncovered certain haplotypes that are lethal or highly detrimental when combined. Mating programs may take haplotype information (carrier vs non-carrier) into consideration when making a recommendation. New haplotypes are being researched and released specific to individual breeds.

The CDCB maintains a list of haplotypes and recessive genes being tested for, specific to breed at: https://uscdcb.com/haplotypes/

This factsheet has been peer-reviewed by Jackie McCarville and Lyssa Seefeldt, Extension Regional Dairy Educators