Réseau laitier canadien
Canadian Dairy Network

Qualifying for Genetic Evaluations in Canada

Canadian Dairy Network provides genetic evaluations of bulls and cows in each dairy breeds for a lengthy list of traits. Producers often ask why a specific cow did not receive an official genetic index, say for production or type, and therefore does not have an LPI value. The following is a review of the minimum requirements that need to be respected in order for a cow to qualify for inclusion in genetic evaluations and to receive an official genetic index.

Animal Identification

The first requirement for inclusion in any genetic evaluation system in Canada is registration in a breed association herdbook. The level of purity can vary from 50% to purebred but only animals with a known sire identification in the herdbook can be included in the genetic evaluation calculations.

Requirements at the Herd Level

The genetic evaluation system for production traits imposes some special minimum requirements at the herd level. Firstly, all milk metres used to record production yields in the herd must be approved and their accuracy must be verified at least once a year. Secondly, at least half of the first lactation cows on test day must have a unique identification number recorded by milk recording in order for the test day information for any animal in that herd to be used for genetic evaluation. For production data to be used for genetic evaluation, there is no minimum number of times per year that the herd must be tested. To qualify for young sire incentives offered by various A.I. organizations, however, most programs require regular milk recording at intervals that do not exceed two months, which translates to a minimum of six herd tests per year including the analysis of milk samples for determining fat and protein percentages and somatic cell counts.

Data Validation

Even though a cow may have her performance recorded in terms of production, type classification and auxiliary traits such as calving ease, milking speed and milking temperament, the recorded information may be excluded for genetic evaluation due to various data validation checks. For production, all information recorded on test day must meet the industry standards for herds enrolled on supervised milk recording or herds qualifying for inclusion in genetic evaluation. The various milk-recording agencies apply a series of data validation checks to identify cows and/or herds for which a retest is required. In addition, procedures are used by milk recording to identify test day yields that may be abnormally high or low, which get confirmed as acceptable or rejected based on subsequent test information. Test day records that are rejected or identified as questionable are excluded from genetic evaluation calculations. For all genetic evaluation systems other data checks are applied to validate various pieces of information such as calving dates, lactation number and completeness of recording.

Official Publication of Cow Indexes

For cows with production information that is included in the genetic evaluation calculations, their resulting genetic index will be identified as either “Publishable” or “Unpublishable”. Generally speaking, herds enrolled on a milk recording program that includes either (a) 8 or more 24-hour supervised tests per year, (b) 10 or more AM-PM supervised tests per year or (c) 10 or more tests per year that alternate between supervised and unsupervised, will receive publishable genetic indexes for the vast majority of their herdbook-registered cows as long as normal testing intervals are respected. For any cow on any milk recording program to receive a publishable genetic index for production, that index must be based on at least two supervised tests and at least one test beyond 60 days in milk. Cows in herds on the “alternating” milk-recording program have a higher risk of not meeting the requirements for a publishable genetic index, especially when supervised test day results require validation or are rejected through the milk recording data validation checks. Cows qualifying for genetic evaluation and enrolled on unsupervised milk recording as well as cows not meeting the criteria for a publishable genetic index will receive an unpublishable genetic index for each production trait. This information is available to herd owners for making selection and mating decisions but it is excluded from top lists or awards and may not be used for marketing purposes.

Herd Mates

In any genetic evaluation system, the performance of each cow must be compared to a group of other herd mates. Normally, herd mate groups are defined by lactation number such that first lactation cows are compared against others in first lactation and the same is true for later lactations. For type evaluations, herd mates are defined as all first lactation cows in the herd classified for the first time by the same classifier in the given round of classification. Cows without any herd mates when milk recorded or when classified will not receive an official genetic evaluation since there is no other cow to which their performance can be compared.

Minimum Accuracy

Just like bull proofs, each genetic index for a cow has an associated level of accuracy, which is reflected by the Reliability value. In addition to having their own performance included in the genetic evaluation system, cows must also attain a minimum Reliability of 30 percent before their genetic index will be official.

Genetic Herd Inventory

All herds that qualify for genetic evaluations will automatically receive a Genetic Herd Inventory following the February genetic evaluation release of each year from their milk-recording agency. Herd owners wishing to receive this complimentary report following each quarterly genetic evaluation release should simply inform their milk-recording representative. The Genetic Herd Inventory report provides genetic information for all cows on the herd inventory as well as herd averages that can be compared to provincial and national benchmarks available on the CDN web site. Cows with “Publishable” production indexes are listed separately from those that are “Unpublishable”. All official genetic indexes are provided to the respective breed association for inclusion on pedigrees, web queries and other official documents as well as to milk recording agencies.