Réseau laitier canadien
Canadian Dairy Network

International Evaluations of Foreign Bulls in Canada

Many people involved in dairy cattle breeding speak of the "globalization" of dairy genetics. This term generally refers to the growing tendency towards the use of top bulls regardless in which country they were proven. There is no doubt that the availability of MACE evaluations calculated by Interbull for foreign proven sires has significantly contributed to this trend. Thanks to the development of this methodology, Canadian dairy producers have access to genetic evaluations for tens of thousands of bulls tested and proven outside of Canada. Although MACE proofs ***look*** the same as those for bulls proven in Canada, there are some important differences which should be remembered when using them for sire selection.

Stability

MACE evaluations are less stable over time compared to domestic proofs. This is true mainly because there are more factors which affect these international evaluations compared to Canadian proofs. Of course there are the usual reasons for proof changes, such as more daughters or lactations and enhancements to methods used to compute genetic evaluations in each country. MACE evaluations, on the other hand, are also subject to changes in estimates of genetic correlations across countries as well as other genetic parameters and approaches in methodology used by Interbull.

Accuracy

Bulls with MACE evaluations in Canada have few or no daughters with actual performance in Canadian herds. They were tested and proven in at least one of over twenty other countries and the MACE proof represents what the bull is ***expected*** to do genetically in Canada. Although this approach is currently the best method for providing a proof on the Canadian scale, it is recognized that greater accuracy is achieved once the bull has a Canadian proof based on several daughters performing in Canadian herds. The challenge is to find the appropriate balance between the accuracy of a MACE evaluation, which may be based on several thousand progeny all outside of Canada, and

a domestic proof based on fewer daughters which are in Canadian herds.

Reliability

As with domestic evaluations, MACE proofs are accompanied by a Reliability figure which represents its relative accuracy. Before a Holstein bull can receive an official proof in Canada a Reliability of at least 60% is required. MACE evaluations are published for all foreign proven bulls regardless of their Reliability value. On listings prepared by Canadian Dairy Network and printed in the Holstein Journal each run, a "Low Reliability" column is provided to indicate those bulls below the domestic requirement of 60%.

Interpretation

Since February 1999, production proofs in Canada have been calculated using the Canadian Test Day Model. This advanced genetic evaluation system actually provides every bull with a proof for each trait (ie: milk, fat, protein and somatic cell score) specific for each of first, second and third lactation even if the bull's daughters are currently all in first lactation. These individual lactation proofs are published for each bull by Canadian Dairy Network and are available on the Internet (http://www.cdn.ca). In order that more simplified information can also be provided to Canadian producers a "combined" proof for each trait is also published. For milk, fat and protein yields, the combined EBV is simply the average of the three lactation proofs. In other words, production proofs for bulls with daughters in Canada represent the genetic potential of those bulls for the average performance of their daughters over the first three lactations.

MACE evaluations produced by Interbull must be interpreted differently. If the foreign bull has been recently proven in any country other than Canada and Germany where a three-lactation test day model approach is used, then that bull's MACE evaluation reflects only the first lactation daughter performance. As the first crop daughters in the foreign country progress from first lactation to second and then to third, that bull's MACE proof eventually reflects the average daughter performance across those three lactations. Only at that stage does the MACE evaluation have the same interpretation as the domestic proof for any bull in Canada.

This difference of interpretation is relatively minor for bulls which produce daughters with consistent genetic potential across lactations. The Canadian Test Day Model allows the trend for each bull across lactations to be predicted from the time the daughters start their first lactation. It has been shown that some bloodlines have the genetic ability to increase their level of production each lactation while other bloodlines start high in first lactation and decline afterwards. In these bloodlines, sons proven in Canada (or Germany) are given a proof

which reflects the average expected performance of their daughters across the first three lactations while their brothers proven in any other country receive a MACE evaluation in Canada which initially only reflects their first lactation daughter performance. This comparison of "apples and oranges" is important to remember when interpreting MACE proofs.

What's Next ?

The next level of international evaluations consists of using lactations from several countries and calculating genetic evaluations for all bulls and cows directly at the same time. Research is currently ongoing in this area. The bottom line, however, is that MACE evaluations remain the best tool for providing an estimate of what those foreign bulls will do in Canada but extra attention is required prior to selecting which bull to use and how heavily they should be used in your genetic program.