Maternal Productivity Index

It would be difficult to argue that Herefords are not a maternal breed. Most beef producers have a story to tell about their old Hereford cow that still hangs around and just keeps weaning a calf every year. It is for this reason that the Canadian Hereford Association entered into a research project with Agriculture and Agri-Food Canada's Lethbridge Research Centre (LRC) to investigate the maternal characteristics of the breed and produce an objective measure of maternal ability.

The results of this research have led to the Maternal Productivity Index or MPI. The MPI combines various traits of economic importance into a combined maternal value.

When we think about what makes a cow valuable to us, we can come up with a long list of things. Basically what it all boils down to in the commercial world is that a good cow will consistently:
1. take care of her calf
2. wean a heavy calf
3. not cost much to feed
4. stay productive in our cowherd for a long time

If we put these characteristics into terms of EPDs, these traits are Milk (mothering), Weaning Weight, Cow Weight and Survival (stayability). Milk EPD shows the ability of a cow to add weight to her calf by providing milk and mothering. Weaning Weight shows the genetics for growth the cow can put into her calf. Cow Weight gives an indication of maintenance costs and Survival shows the probability that a cow will be in the herd to produce 3 consecutive calves. These are EPDs that are calculated on Hereford cattle by ABRI and LRC.

Trying to figure out how all of these traits interrelate and impact the profitability of a cow is a difficult task. That's where the MPI comes in.

Researchers used the Hereford data to assign a weighting to each of the traits involved based on their relative economic importance. Then the MPI is produced by evaluating the animal using the combination of these traits and their relative importance. To put it somewhat simplistically the end result of selecting on MPI should result in improved milk yields, increased weaning weight, maintained or slightly reduced cow weights and increased length of time that females are retained in the herd.
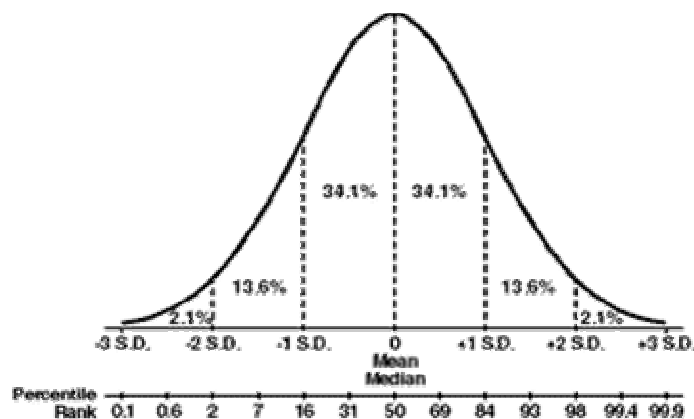
The MPI is expressed as a standardised index. The average MPI is 100 (Mean Median) and each standard deviation (S.D.) is set at 25. The graph represents a standard curve. The values under the curve (2.1%, 13.6%, 34.1%) represent the portion of the Hereford population in each category. As an example, a cow with an MPI of 150 would be 2 standard deviations above the average (+2 S.D.), or in the 98th percentile of the Hereford breed. 2.1% of the cows in the breed

would have higher MPI values.

Standardising of the MPI allows for rapid comparison of animals and an easy assessment of where an animal stacks up within the breed.

The MPI is a robust index. This is very important. It means that economic conditions can change significantly, but the animals in the index will still rank the same. For example, the price of calves or the cost of feed may change considerably, but the animals will still rank the same. Basically this means that what makes a valuable cow today will make a valuable cow tomorrow.

The MPI has recently been sent out to directors and pilot herds for review and so far the response has been quite positive. As well, the American Hereford Association is very interested in the index value and the possibility of a joint MPI evaluation is being investigated.

If there are any specific questions, comments or concerns with the MPI information presented in this article, please do not hesitate to contact the Canadian Hereford Association.

Sean McGrath