New Cow Model

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Under the MCC system that started in 1975, herdmates were compared with daughters of a bull. These herdmates were determined on a five-month season--the freshing month, two months before and two months after the freshing month. The new cow model will use six two month seasons so that herdmates will all start lactations much closer together for the proof. In addition, grade animals will be treated separately from registered animals in the herd.

Offspring of the animal and her sisters will also be included in the cow model. This is possible only because of the increased capability of large computers in recent years. In the Holstein breed alone, you have 23 million simultaneous equations available to get the solution you need. The system is so comlex that you could not accomplish the cow model until recently.

Specht doesn't think you will see a lot of change in bull rankings, especially in those animals that have been proven through the bull stud systems where the daughters of a bull are recorded from a large number of different herds.

While Dick Barth, executive director of Pennsylvania DHIA, said they use the information given to them, the cow model is undoubtedly a step in the right direction. "I've been told by animal geneticists that it will be a significant improvement." Barth said. "The records will be more authentic and will more truly reflect the genetic background of the pedigrees."

Specht agrees. "Improvements have been made over the years as new programs were put into place," he said. "From 1962 to 1974 we had a herdmate system that had a lot of loopholes. And before that, from 1935 on, we had a daughter/dam system that got a proof if we had five daughers from five dams. Now we are not sure of a proof if we have hundreds and hundreds of records. But each advancement has improved our record system," Specht said.

In a National DHIA handbook, written by G.R. Wiggans and P.M. VanRaden from the Ag Research Service, USDA, Beltsville, MD, the mathematical description of the model includes: 1, identification of the factors that contribute to the amount of milk produced in a particular lactation; 2, an indication of how much of the variation betweeen records is contributed by each factor, and 3, an indication of how closely factors are related to each other. The model is the blueprint for the evaluations. It determines how the data will be translated into rankings.

The USDA-DHIA cow model describes a cow's lactation record as the sum of the effects of her management group, genetic merit, permanent environment, interaction of her herd and sire and unexplained residual. The new model does not include effects of age, length of lactation and number of milkings per day, because lactation records are adjusted for these factors prior to genetic evaluation.

Some of the information generated from the cow model includes: predicted transmitting ability; average standardized yield, averaged over lactations for cows and over daughters for bulls; predicted producting ability that factors in predictions of a cow's performance in future lactations, predictions of breeding value and permanent environmental and herd-sire interaction effects.

In addition, the cow model includes: yield deviation adjusted for management groups and daughter yield; parent average; reliability and an economic index that combines evaluations for milk and components weighted by product value calculated for modified contemporary comparision.

The animal model allows simultaneous genetic evaluation of bulls and cows with all relationships included. Previously computing constraints limited this approach to evaluation within herd.

Computers can aid greatly in breeding decisions, but subjective judgment on credibility of original data still is required. For data that follows the assumptions of the model, evaluations computed with the cow model offer the best predictions of future performance.

According to the most recent ABS Breeders Journal, the National Holstein Association will implement a new formula for Total Performance Index (TPI) which will include an udder composite score for the new 1989 sire summary.

This new method of calculation will have a ratio of 2:2:1:1 for fat pounds, protein pounds, type (PDT), and udder composite score, respectively. The new formula will replace the current TPI formula of 2:2:1 for fat pounds protein pounds and PDT. The TPI change will reduce emphasis on production from 80 percent to 67 percent while emphasis on type increases from 20 percent to 33 percent.

The udder composite score is relatively new and may be unfamiliar to many dairy prodeucers. Essentially, udder composite scores allow easier comparison of bulls for total udder improvement. Udder traits included in the composite score are: depth, front teat placement, cleft, rear udder height, rear udder width and fore udder attachment.

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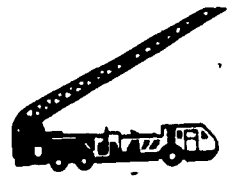

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