# The Presentation of Calving Survey Information on Holstein Friesian Sires

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### Introduction

Calving ease information is of interest to most producers, especially when selecting a sire for use on heifers. However, countries currently present sire prediction for calving ease in a variety of ways. This presents particular problems in the UK, where a high proportion of the dairy semen used is imported.

In the Report of the EEC/EAAP Working Group on sire evaluation standards for dystocia and stillbirth, Philipsson, Foulley, Lederer, Liburiussen and Osinga (1979) proposed that sire predictions be presented as Breeding Values, and that these be expressed in five classes, based on standard deviations around the population mean. Unfortunately very few countries have adopted this system. UK farmers are most familiar with predictions for US and Dutch sires, which describe the predicted incidence of difficult calvings for that sire.

Genetic evaluations for calving ease have only just begun in the UK (see McGuirk, Going and Gilmour, 1995), and then only for bulls from the largest stud. Before a national scheme is established, it is timely to consider how the resulting sire predictions are to be presented. Given UK farmers' familiarity with US and Dutch figures, that would seem to be the logical form of presentation to adopt. Nevetheless, such forms of presentation need to be understood.

#### Evaluation of calving ease in the UK

Data on calving ease are obtained by calving survey forms, which are distributed and collected by National Milk records (NMR), the largest milk recording organisation in

England and Wales, and previously part of the MMB. Data are only obtained on bulls in the Genus Sire Improvement Programme (GSIP). Farmers participating in the progeny testing programme are not able to nominate which test sires they use, and their identity is disclosed after the insemination. only Currently, 400 straws of test semen are distributed, which are expected to yield 200 usable calving records. Only data on single, non-induced births from Holstein Friesian cows are included in the analysis, and calvings must also fall within 15 days of the modal gestation length for a particular sex of calf \* cow age (heifer or mature) category.

Farmers are asked to classify calvings as Easy (1), or presenting Slight (2) or Serious Difficulty (3). In the most recent analysis of almost 110 thousand valid records, 84.2 percent were classed as Easy, 13.3 percent presented Slight Difficulty, and 2.5 percent were Seriously Difficult.

The data are then analysed using a univariate sire threshold model, with a heritability on the underlying scale of 12 percent (see McGuirk et al., 1995 for details). Non-genetic effects included in the model are geographical region, cow age (heifer or mature), calf sex, percent Holstein in the sire, a six monthly year\*season effect, plus linear trends on month within season. Herd effects cannot be fitted, because of the very small number of records per herd. The resulting sire predictions are in underlying scale units.

# Sire predictions in the US and the Netherlands

Procedures for predicting sire genetic merit in the US (Berger, 1994) are similar to those adopted in the UK. Again a threshold model form of analysis is used, with an assumed heritability on the underlying scale of 12 percent. The resulting prediction are then backtransformed, to give a predicted incidence of difficult calvings for heifers (Figure 1). The prediction relates to difficult calvings to heifers, and a recent figure for the average of sire predictions was 9.3 per cent difficult births (Holstein Association, 1996).

The form of presentation used in the Netherlands is broadly similar to that used in the US, except that sire predictions are expressed relative to the average of all bulls tested. For the UK farmer, this format is more attractive that that employed for US sires, as UK farmers would not readily consider that a figure of 9.3 percent difficult calvings was average. In the GSIP programme, the average incidence of seriously difficult calvings is 2.4 percent for cows, and 6.0 percent for heifers.

If the UK adopted the Dutch form of presentation, with sire predictions expressed relative to the population average, does it affect the result if the incidences of difficult the measure of difficulty used varies between countries? For example, in the Netherlands, the incidence of difficult calvings is approximately 9.4 per cent (G. de Jong, personal communication).

## Simulation study

To look at this question, we have simulated an expected distribution of sire Transmitting Abilities on the underlying scale, assuming a heritability of 12 percent, a standard deviation of one, and varying reliability levels. The resulting predictions sire were then backtransformed, assuming various population incidences of difficult calving, and then expressed the sire predicitions as deviations from the population average.

The results of this study can be summarised as follows:

- \* At each incidence, average sire predictions were higher then the population incidence, with distributions skewed to the right.
- \* With increasing incidence, the standard deviation of predictions increases.

\* At low incidences, distributions tend to be leptokurtic.

An example of these sire predictions is shown in Figure 2, which describes sire predictions at 3 and 9 percent incidences. At the higher incidence, the span of sire proofs is greater. However, given that there is a marketing advantage in identifying easy calving sires, perhaps those with a calving ease value of -2 or less, the number of bulls in the "easy calving" category is much greater, when a higher population incidence is used.

In view of the above results, sire predictions for Genus sires in the UK are based on an assumed population incidence of 9 percent, and predictions for a recent sample of 328 purebred Holstein bulls are shown in Figure 3. This assumption about the UK incidence of difficult calvings simplifies direct comparison with US and Dutch bulls, and should mean that approximately equal proportions in each population will qualify as easy calving. For convenience, a similar proportion of easy calving sires are assumed to be bred in all countries supplying semen to the UK market.

## References

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Distribution of Calving Ease Evaluations for UK Hoistein Bulis

Figure 3