

6.0 SUMMARY

The exchange of genetic material on a global scale has increased considerably during the last two decades. Thus, there is a need to predict a bull's breeding value in one country from a progeny test result in another country. The International Dairy Federation (IDF) recommended a formula for the conversion of breeding values:

$$\text{converted proof} = a + b (\text{proof in exporting country})$$

Procedures applied at present for the estimation of **a** and **b** are reviewed and compared in a simulation study. The desired method should give unbiased estimates of **a** and **b**, consider differences in repeatabilities of proofs in importing and exporting countries, allow for a possible genetic correlation between true values of less than one, and minimize the variance of differences between transformed proofs and true values in the importing country. The simulation study showed that methods utilizing the repeatabilities of proofs in the importing countries should be used for the estimation of **a** and **b** values in order to eliminate effects of incomplete reliabilities of the proofs.

An alternative method is described, where sires from many countries could be evaluated simultaneously by a linear model provided linkages between countries are present. This method would give comparable sire proofs and estimates of genetic differences as well as base differences. At present, however, there are no practical experiences from applying the method on large scale data of dairy sires.

Results presented so far from analyses of sire proofs obtained in two or more countries for the same bulls generally indicate high correlations, usually 0.8 to 0.9, provided the bulls are rather accurately evaluated in each country.