Introduction

Extensive exchange of dairy cattle germ-plasm (semen, embryos, live animals) currently takes place among countries of the European Community (EC). Breeders in the various EC countries who import foreign germ-plasm are facing the problem of ranking imported bulls in relation to locally evaluated bulls, before the imported bulls receive an official evaluation in the importing country.

At present the problem is being addressed by converting evaluations from the exporting country to figures equivalent to evaluations in the importing country, as suggested by Goddard (1985) and Wilmink et al (1986), among others (conversion method). The International Bull Evaluation Service (INTERBULL, 1990) has produced recommendation documents with regards to the use of conversions. The advantage of this method is that it accounts for a genetic correlation of less than 1 between countries. The disadvantages are: 1) is often based on a small number of selected bulls; 2) uses evaluations in the importing country which are based on imported semen and are potentially biased; 3) allows only pairwise comparisons.

An alternative to within country conversions is to combine information from different countries, in form of national proofs, analyze them with a linear model, and obtain an international estimate of the bulls' genetic merit (linear model method). Such a simultaneous evaluation across several countries was first suggested by Schaeffer (1985) and has since been investigated by Rozzi et al (1990), Jacques and Klemetsdal (1990), and Banos et al (1991). The advantages of this method are: 1) uses all information (evaluations) available; 2) utilizes all known male relationships; 3) produces a unique international ranking across all participating countries. The disadvantage of this method is that it still assumes genetic correlation of 1 among countries. This assumption seems to hold in the intensive breeding systems of Western Europe and North America.

The objective of this project is to investigate the feasibility of implementing the linear model method to achieve a joint ranking of dairy bulls, with regards to production traits, across the EC countries. In this report, the methodology and results from a pilot evaluation run including Black-and-White bull populations in four EC countries, are presented. Comparisons with the conversion method are also made.