SHOULD WE ATTACH MORE IMPORTANCE TO FEED EFFICIENCY IN CATTLE BREEDING

T. AURAN

Dept Animal Genetics and Breeding Agricultural University of Norway, Ås-N.L.M.

The actual knowledge ascertain that feed efficiency is indirectly improved when selecting for growth and milk production. We know, however, very little about the relations between feed efficiency in growth and feed efficiency in milk production.

In this paper, the plan for an experiment concerning the feed efficiency both in growth and in milk production is presented. Progeny groups from 20 bulls will be recorded during a two years periode for food intake, growth and milk production. The experiment will least for eight years and will contain altogether about 600 animals.

MILK YIELD AS A SELECTION CRITERION IN THE PEDIGREE HERDS

A. ZARNECKI and J. R. ONDRUSZ

Department of Genetics and Animal Breeding Academy of Agriculture, 30059 Krakow, Poland

The relation ship between first lactation milk and fat production and survival of cows up to five lactations in the Polish Pedigree Herds has been studied. The preliminary analysis indicated that the survival rates were relatively low and average herd life short. Selection differentials were much lower than the relative survival coefficients within progeny groups of progeny tested sires. This was probably due, in part, to retaining cows in the herds not because of their performance but because they were daughters of more popular bulls.

HYBRID VIGOUR FOR MILK PRODUCTION IN COMMERCIAL DAIRY HERDS

P. M. HOCKING and J. C. BOWMAN

Department of Agriculture University of Reading, Early Gate, Reading, England RG6 2AT

The lactation performance of 4227 *Dairy Shorthorn* (*DS*), 394 *Red Friesian* (*RF*), 1040 $RF \times DS$, 51 $DS \times (RF \times DS)$ and 209 $RF \times (RF \times DS)$ heifers in 106 herds was evaluated. A model including effects for herd-year-seasons and sires was analysed by least squares. Sire values were averaged within breed groups. Relative to contemporary *Dairy Shorthorns*, the fat yields (kg) of the groups and weightings (effective daughters) were $RF + 29$ (248), $RF \times DS + 25$ (568), $DS \times (RF \times DS) + 16$ (36), $RF \times (RF \times DS) + 32$ (155). The relative protein yields (kg) and weightings were $RF + 17$ (107), $RF \times DS + 16$ (265), $DS \times (RF \times DS) + 14$ (21), $RF \times (RF \times DS) + 23$ (134). Percentage heterosis for milk, fat and protein yield and fat and protein composition in the F_1 was 6.3, 7.5, 6.0, 0.7 and — 0.8 respectively. Heterosis estimated in the backcrosses on the basis of an additive-dominance model was twice that in the F_1. The value of heterosis in commercial milk production is emphasised and methods of exploiting it discussed.

THE BREEDING VALUE OF *HOLSTEIN-FRIESIAN* AND *JERSEY* SIRES TRANSMITTING HIGH MILK PRODUCING ABILITY IN OTHER ECONOMICALLY IMPORTANT CHARACTERS

S. BOZO, A. DUNAY, E. SIK

Research Institute for Animal Husbandry, 2053 Herceghalom Ungarn

Studying the PD's for milk, kg fat, percent fat, conformation score and income ($) of *Holstein-Friesian* ($n = 331$) and *Jersey* ($n = 61$) bulls qualified as top sires on a PD dollar basis being used in the USA, a close correlation ($r = 0.8$ to 0.9) has been established between PD-

dollar and PD milk, while a negative effect of PD dollar on percent fat has been observed. However an extremely close negative correlation (— 0.59 and — 0.73) has been found between the PD milk and PD percent fat for sires with high PD milk estimates both in the *Holstein-Friesian* and particularly in the Jersey breed. This is indicating a non-linear negative relationship between the two characters which is extremely close in the studied bull population and at the same time it is decreasing the level of correlation between PD milk and PD kg fat /and probably between PD milk and kg protein as well ($r = 0.16$ and $r = 0.31$) for the *Holstein-Friesian* and the *Jersey* breeds respectively. 60 per cent of the *Holstein-Friesian* sires caused a decline in PD conformation score and only 14 per cent of the bulls has improved both percent fat and conformation score. PD kg fat is the only character which has shown a more or less positive relationship to the PD estimates of the four other characters.

COW EVALUATION WITH BLUP

H. U. GRASER

Abt. für Tierzucht, Universität Hohenheim, Stuttgart

Two different models for cow-indexing with BLUP were investigated. Model 1, known as "repeatability model" used second and higher lactations as a repeat of the first one. It was assumed that all heritabilities were equal as were all correlations between any two lactations. In the second model, the "multiple trait model", each lactation was a different trait. With this model different heritabilities and correlations were applied. Both models were tested with datas of the Braunvieh population in Baden-Württemberg. The results were compared with each other. The overall correlation between the two breeding-values was 0.95, ranging from 0.88 for the oldest group of cows to 0.98 for cows with only one lactation.

INTERACTION BETWEEN ENVIRONMENTAL INTENSITY AND *HOLSTEIN* UPGRADING IN GERMAN *FRIESIANS*

C. JONGELING, S. MOKHTAR, H. J. LANGHOLZ

Institut f. Tierzucht und Haustiergenetik, 3400 Göttingen, Germany

About 60 000 first lactation milk records of different *Holstein Friesian* crosses were analyzed in order to quantify interactions between genetic group and environmental intensity. It was found that the interaction "HF-group × ecological region" is not important, whereas interactions "sires within genetic group × ecological zone" seem to be significant. On the other hand there are substantial interactions between HF-group and herd level so that utilization of the benefits of HF-crosses for milk production is obviously much greater at a high production level.

INFLUENCE OF DIFFERENT LACTATION DISEASES ON AVERAGE HERD MILK PRODUCTION

H. SOLBU

Dep. of Animal Genetics and Breeding, Agricultural University of Norway, Ås-NLH

In this paper, analyses, with the purpose of estimating the influence of different lactation diseases on average herd milk production, have been described.

The following results were obtained :

1. The frequency of cows in the herds treated for mastitis, ketosis, milk fever, fertility diseases, and all diseases accounted for 7 per cent of the total variance in average herd milk yield, when only these effects were included.
2. When including other "herd discribing" variables in the analyses, the "disease variables" accounted for an increase in the described part of the total variance of only 0.7 per cent units.