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THE RELATIONSHIP OF GENETIC MERIT TO BETWEEN HERD DIFFERENCES IN MILK PRODUCTION

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THE RESULTS of a project that is yet incomplete were presented for discussion purposes.

Two inter-related experiments were reported. In the first, details of the growth and milk production of approximately 140 heifers were described. These heifers were a sample of young stock taken to Ruakura as calves from 20 high- and 20 low-producing New Zealand dairy herds. In the second experiment, the growth and milk production characteristics of some 80 pairs of identical twin heifers were described. These twins, when young calves, were split between the same 20 high- and 20 low-producing herds and reared and milked along with the farmers' own young stock.

The evidence reported indicated that the average milk yield of the herds in these experiments were almost solely determined by non-genetical causes, that roughly one half of the differences that occurred among herds in fat test were due to genetic differences, and that as a result of this difference in test, about 10 per cent. of the differences among herds in butterfat yield proved to be genetic in origin.

The implications of these results to field advisory work and to the design of a sire survey system were discussed.

DISCUSSION

J. W. STICHBURY: Farmers might interpret the data just presented as proof that breeding is unimportant as a method of raising herd production and that feeding is all important. There could be quite a number of reasons apart from nutrition which could explain differences between high and low producing herds. These results do not, therefore, show that low producing herds can be converted into high producing ones merely by improved feeding of the herd. It is important, from the point of view of increased production, to achieve a more accurate definition of the causes of low production in dairy herds.

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Q.: *What progress has been made in isolating causes for the differences between the high and low producing herds?*

A.: I endeavoured to stress in my concluding remarks that the results presented do not suggest for one moment that breeding for increased milk yields is unimportant. What they do show is that these high producing herds contain on average, cattle little different in breeding value from those in the low herds. I also stressed that nutrition alone did not appear to be the sole determinant of low average herd yields. We are endeavouring to clarify this problem by undertaking detailed farm and shed management surveys on the farms involved in the experiment. As yet this work is not far enough advanced for useful comment to be made.

DR W. M. HAMILTON: There is a suggestion in one of the tables that production from one of the low producing farms was starting to improve. If this experiment continues for some time it may be found that the low producing farms will not remain as low producing units.

A.: The average difference in yield between the two-year-olds of the high and low groups during the seven years preceding the start of the experiment amounted to 131 lb of butterfat. During the first two seasons of the experiment the differences were 136 and 114 lb respectively. The yearly differences in production between the two groups have been reasonably constant.

Q.: *Were there any differences in the breeding plans used in the two groups of herds?*

A.: The majority of the high herds contained some pedigree cattle whereas few of the low herds did so. As most pedigree breeders claim their cattle are line bred one might say the breeding plans of the two groups differed.

Q.: *Were the breeds of cattle the same in the two groups of herds, and was fat production per acre similar in these herds? Did soil types differ?*

A.: Breeds of cattle were the same in each case. The fat production averaged about 200 lb/acre in the high group and about 100 lb/acre in the low group. There were, however, big differences amongst farms of either group. Soil types varied from farm to farm and it is difficult to compare the two groups on this basis.

Q.: *Was a comparison made between the two groups of herds for the age distribution of the cows and were calving dates similar for these herds?*

A.: Age composition analyses indicated more aged cows in the high herds than the low. The high herds also had a much greater stability of replacement rate and age composition. Cattle in the high herds calved approximately one week earlier than those in the low herds.