QUANTITATIVE AND QUALITATIVE CHANGES IN SOME CARCASS TISSUES AND THEIR RELATION TO MEAT PRODUCTION

By

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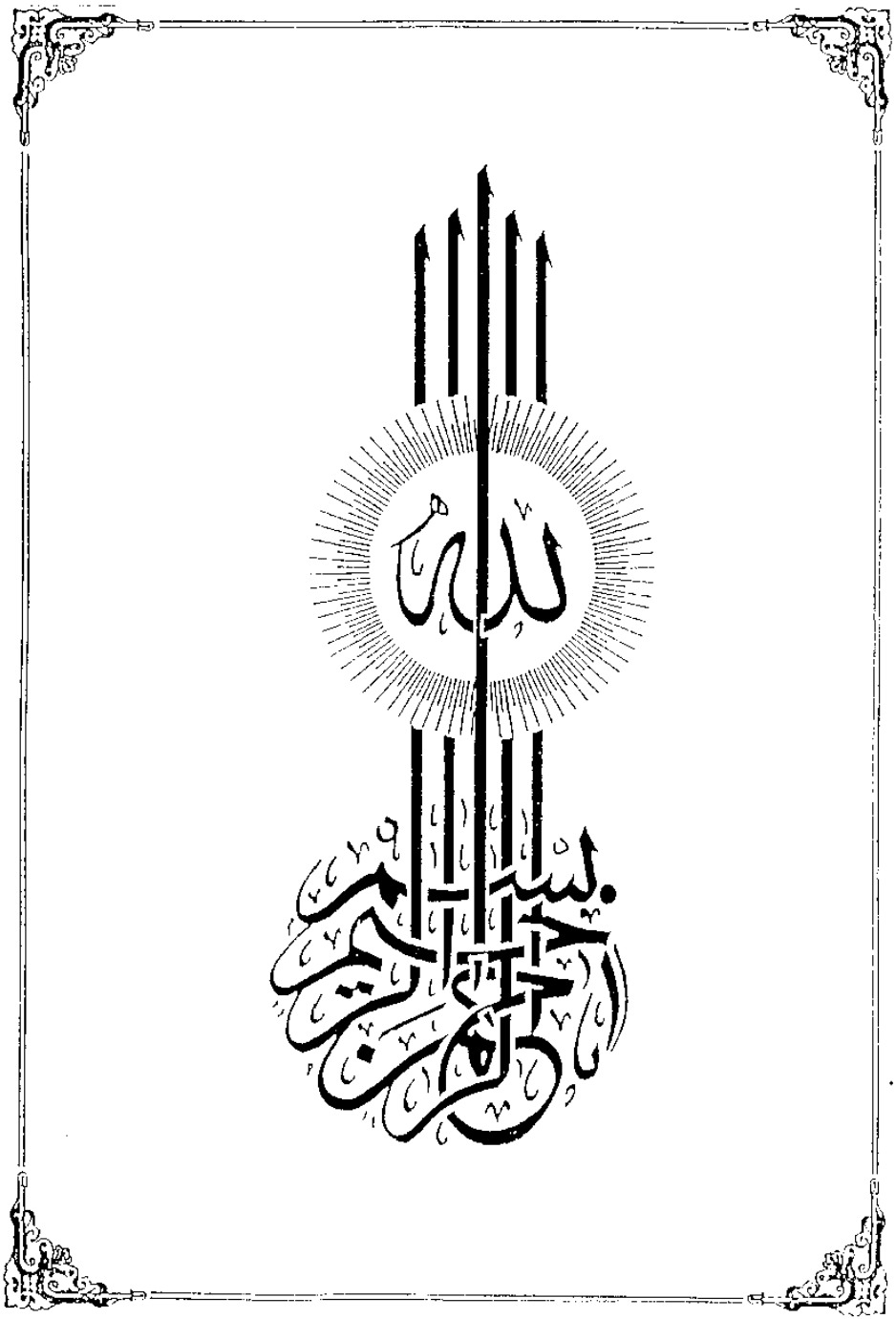

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ABSTRACT

In one experiment, the genetic and phenotypic parameters of those traits interesting the bull fatteners (live performance), the meat traders (carcass attributes) and the consumers (meat qualities) were estimated from Danish data on 650 dairy X dual-purpose young bulls. These parameters were used in constructing eleven selection indices for the use in the performance test of the future A.I. bulls in Denmark. The selection objective was to maximize the net income (revenue - production costs), taken into consideration the unfavourable correlated changes in birth weight and dressing-percentage by using restricted

indices. The aggregate genotype comprised growth rate, feed conversion ratio, dressing-percentage and carcass conformation grade. The full index included growth rate, feed conversion ratio, *L. dorsi* area and 28-day weight. Results showed that selection on the indices considered would cause improvement in the performance of the live animal and in the conformation, composition and components weight-distribution of the carcass and reduction in the eating qualities of the meat.

In a second experiment, a detailed evaluation was made of live performance, carcass and meat attributes and economics of fattened young bulls born to Danish Friesian dams and sired by Danish Friesian and 8 European breeds (Charolais, Limousin, Blonde d'Aquitaine, Simmental, Belgian Blue, Piemontese, Hereford and Angus). While the purebreds were at disadvantage in live and carcass performance and economics of the fattening operation, they produced meat with similar consumer's acceptability. The advantage of young bulls sired by Charolais, Belgian Blue, Limousin and Piemontese was clear-cut. Justification for the increasing interest in Limousin has been emphasized.

Key words: Dairy X dual-purpose and beef X dairy young bulls; genetic and phenotypic parameters, selection indices and sire-breed evaluation; Live performance, carcass and meat attributes and economics of fattening.

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I. INTRODUCTION

Genetic and phenotypic parameters and selection indices for efficient beef production from Danish young bulls

In Denmark where cattle production for both milk and beef is based on dual purpose breeds, sales of culled cows and fattened young bulls and steers are considered (Andersen, 1978) to contribute significantly (40 %) to the total income. However, it has been foreseen (Andersen and Andersen, 1975) that genetic improvement of milk and milk fat yield in these breeds would, ultimately, lead to high growth potential and increased mature size, but carcass qualities would then be unfavorably affected. Indications of such a trend have already been reported in dairy X dual purpose crossbreeding experiments (Andersen, 1978; Bailey *et al.*, 1985a; Bailey *et al.*, 1985b).

With the import of genes of North American Holstein Friesian and Brown Swiss breeds, it is necessary to determine the genetic parameters of variability in and relationships between live performance, carcass attributes and meat qualities. This step is of paramount importance for setting national improvement programs based on the evaluation and, possibly, the control of the correlated long-term effects on birth weight, mature weight, growth rate, feed efficiency and qualities of the carcass and its containing meat.

The first component of this part is concerned with the genetic parameters of those traits interesting bull fatteners (live performance), meat wholesalers (carcass attributes) and meat consumers (meat qualities).

The genetic and phenotypic parameters obtained were used in constructing selection indices for use in the performance test of future A.I. bulls in Denmark. In this country,