SELECTION INDICES FOR IMPROVING SOME BEEF CHARACTERISTICS IN FRIESIAN CATTLE IN EGYPT

Ghoneim, E. M.; M. A. El-Saied; F. H. Abdou and E. Faid-Allah
Dept. of Animal Production, Fac. of Agric., Minufiya University, Egypt

ABSTRACT

The main purpose of this paper is to construct different selection indices (general index, reduced indices, and sub-indices) to improve some beef characteristics in Frisian bull calves by using collected data during 10 years (1995-2004) for body weights at 12 (w12), 15 (w15), 18 (w18) months of age and four years (2001-2004) for slaughter weight (SLW) at the experimental farm of Faculty of Agriculture, Minufiya University. The secondary objective is to evaluate and predict genetic parameter estimates of body weights at 12, 15, 18 months of age and SLW. Overall means for the previous body weights were 291.97, 358.74, 418, 17 and 540.35 kg respectively. Heritability estimates for the previous traits were 0.59, 0.74, 0.71 and 0.46, respectively. All estimates of genetic (r_G) and phenotypic (r_P) correlations among different body weights were positive. Fifteen selection indices were constructed, indices (I_2), (I_5) and (I_9) gave high (R_{IH}) and (RE) values compare with general index (I_1). Therefore, it could be suggested that to use (I_2), (I_5) and (I_9) to improve beef traits in Friesian bull calves under the large scale.
Keywords: Body weight, Genetic parameters, Selection indices

INTRODUCTION

Several investigators have shown that live weight preceding slaughter is the most important variable for predicting carcass weight. Henningsson et al. (1986) reported that live weight was the most important explanatory factor for weight of carcass and muscle for beef bull. Beef production traits used in genetic evaluation in dairy sires varies widely between countries. Lately some European countries have started to use the routinely collected data from slaughter houses on progeny carcass in the genetic evaluation of dairy bulls (Liinamo and Van Arendonk 1999). Growth in dairy cattle has not been studied extensively, particularly the genetic component of growth (Coffey et al., 2006).

In Egypt beef production from dairy cattle is obtained mainly from bull calves that passed the veal stage in addition to young and old cows or bulls culled from the breeding stocks of dairy cattle herds after being fattened (Farrag et al., 2001). Friesian cattle are the most reputed dairy cattle in Egypt and they are potential dual-purpose animals (Abdel-Glil and Elbanna, 2001).

Selection for many traits simultaneously saves time and effort. Selection index was developed by Hazel and Lush (1942) and Hazel (1943) as a method of selection for more than one trait at the same time. This method helps breeders to rank and evaluate the individuals on their total breeding values by condensing and summarizing the breeding values of the different economic traits in one total score for each one.

Multiple trait selection requires the definition of a breeding goal including individual traits weighted according to their relative contribution to efficiency of production as expressed by economic values (Hazel, 1943).The