

“StockTake” – GENETIC AUDIT SOFTWARE FOR AUSTRALIAN SEEDSTOCK BEEF PRODUCERS

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SUMMARY

New software called StockTake has been developed as a tool to assist beef cattle breeders assess and improve the rate of genetic progress in their breed and herds. StockTake uses existing data, recorded by each breed on their NBRS databases, to compute descriptive statistics for the breed that are used to describe and monitor changes in the basic “genetic” structure of the breed. Secondly, stepwise regression is used to determine key variables that explain differences in the rate of genetic progress, for a given period, across herds within a breed. Herds are rated for their performance in these variables to provide a benchmark of their breeding program against the average of other herds recorded in the breed.

Key words: beef cattle, selection, genetic progress, key performance indicators

INTRODUCTION

Selection of beef cattle has allowed beef producers to breed more profitable cattle. Genetic trends in individual estimated breeding values (EBV) or selection indexes can be used to assess genetic change in a breed, or individual herd. However it is often difficult to determine the reason for different rates of genetic progress across herds. Therefore the aim of developing StockTake was to use existing files to compute variables associated with the theoretical prediction of genetic progress (e.g. selection differentials and generation interval) and determine which variables explain differences in genetic progress across herds, within a breed.

STOCKTAKE SOFTWARE

StockTake is written in Fortran 90 and is compatible with the BREEDPLAN system (Reverter 2002). It is used to generate results for a breed and also for individual herds. The program uses data recorded by each breed on their national pedigree/performance databases and their EBV files from BREEDPLAN evaluations, including breed standard BreedObject \$Indexes. StockTake uses breed specific controller files to remove herds with insufficient structure (e.g. too few animals, too few years of recording). Breed results are described using a set of variables to characterize the genetic structure of a breed, and the changes that occur over time. Results at the herd level are computed using a reduced set of variables and stepwise regression is used to determine which variables (if any) significantly explain differences between herds in rate of genetic gain in a given \$Index. These significant variables ($P < 0.01$) are termed key performance indicators (KPI). Genetic progress is computed as the regression of each \$Index on a 5 year period e.g. 1999 to 2004. The software has the capacity to define 2 periods to compute results. However it is only the second period that is used in the stepwise regression analysis.

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