

# GENETIC AND PHENOTYPIC CORRELATIONS FOR SEVERAL PRODUCTIVE TRAITS ON MADURA CATTLE

HUBUNGAN GENETIK DAN FENOTIPIK  
TERHADAP BEBERAPA SIFAT PRODUKTIF SAPI MADURA

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## ABSTRACT

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The objective of this research was to investigate the genetic and phenotypic correlations for several productive traits on Madura cattle. The results were expected as a fundamental consideration in selection programme. The research was conducted in Bangkalan Madura for a year. Hundred and eighty calves were analysed from 9 sires sampled using stratified random analysis. At the end of the research 3 bulls were sold thus in the final analysis 120 calves from 6 sires were analysed using resemblance between relatives. The results indicated that genetic and phenotypic correlations between birth weight and weaning weight were  $0.43 \pm 0.31$  and  $0.32 \pm 0.18$ , respectively. Genetic and phenotypic correlations between birth weight and pre weaning gain were  $0.38 \pm 0.28$  and  $0.32 \pm 0.18$ , respectively. Genetic and phenotypic correlations between weaning weight and yearling weight were  $0.59 \pm 0.11$  and  $0.31 \pm 0.27$ , respectively, and finally genetic and phenotypic correlations between weaning weight and post weaning gain were  $0.43 \pm 0.13$  and  $0.47 \pm 0.24$ , respectively. Based on the correlations, a selection will be able to be conducted based on birth and weaning weight.

**Key words:** genetic and phenotypic correlation, productive straits, Madura cattle

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Penelitian ini bertujuan untuk mempelajari korelasi genetik dengan fenotipik beberapa sifat produktif sapi Madura. Penelitian dilakukan di Bangkalan, Madura dengan mempergunakan 180 ekor sapi betina dari 9 ekor induk. Hasil penelitian menunjukkan bahwa korelasi genetik dengan fenotipik diantara berat lahir dan berat masa sapih masing-masing adalah  $0,43 \pm 0,31$  dan  $0,32 \pm 0,18$ , sedangkan diantara berat lahir dan berat sebelum masa sapih masing-masing adalah  $0,38 \pm 0,28$  dan  $0,32 \pm 0,18$ . Korelasi genetik dengan fenotipik diantara berat sapih dengan berat umur satu tahun masing-masing adalah  $0,59 \pm 0,11$  dan  $0,31 \pm 0,27$ ; sedangkan diantara berat sapih dengan berat setelah lepas sapih masing-masing

adalah  $0,43 \pm 0,13$  dan  $0,47 \pm 0,24$ . Atas dasar korelasi tersebut, dapat dilakukan seleksi berdasarkan berat lahir dan berat sapih.

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## INTRODUCTION

Various efforts to improve livestock productivity, especially Madura cattle, have been conducted by Indonesian government. The results, however, have not shown a desirable performance. One of the problems might be due to a decrease in genetic potential as well merited bulls are usually slaughtered for meat production. Decline in genetic potential is observable with decreases in body weight, calving rate, body measurements and service per conception (Suhadji, 1991).

Traits can be independent or correlated. In additive genes, there is a positive correlation between genes, thus phenotype of genes is able to be a fundamental consideration in selection programmes. However, in dominant and epistatic genes have not been investigated in addition. In addition, genetic correlation results from pleiotropy or linkage genes.

The statement above indicates that selection can be conducted based on genetic correlation, instead of heritability. If genetic correlation between two traits are positive and have high heritabilities, selection based on the first trait will be effective.

Reality showed that estimates of genetic and phenotypic correlation between productive traits are of interest in selection programmes. However, lack of information concerned on productive traits on Madura cattle. It will be useful to investigate such correlation on Madura cattle. The purposes of this research, therefore, were to investigate genetic and phenotypic correlations on Madura cattle.

## MATERIALS AND METHODS

The research used 180 calves from 9 bulls owed by farmers in Bangkalan Madura. Inbreeding was avoided in this study. After estimation of birth heritability, three bulls