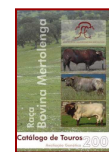


INTRODUCTION

- Alentejana (23000♀), Barrosã (6900♀) and Mertolenga (21000♀) are the major native cattle breeds in Portugal
- Autochthonous breeds are normally kept under extensive range conditions – Alentejana and Mertolenga with 100♀/herd and Barrosã with 3-4♀/herd
- Calf output produced annually is a key component of profitability
- Selection programs are in course for the three breeds
- Improving reproductive performance is one of the major priorities for Portuguese autochthonous breeds of cattle

OBJECTIVES

Estimate genetic parameters for calving interval (CI) and assess the possibility of selection for this trait



MATERIAL & METHODS

- Herdbook information from 1940 to 2009

	Alentejana	Barrosã	Mertolenga
CI records	80746	69385	89720
Cows	21037	18067	22991
Herds	123	6174	256
Years	1943-2009	1982-2008	1981-2009
CI mean (days)	456.1±145.5	444.7±108.8	441.3 ±136.6

- Data analysis

- Genetic parameters estimated by Restricted Maximum Likelihood, using the MTDREML package
- Data analyzed separately for each breed through the following univariate Animal Model:

$$y = Xb + Z_1a + Z_2pe + e$$

y - vector of CI observations;

b - vector of fixed effects; a - vector of random animal genetic effects; pe - vector of permanent environmental effects; e - vector of residual errors;

X , Z_1 and Z_2 - known incidence matrices relating respectively fixed, random animal genetic and permanent environmental effects with CI observations.

Fixed Effects ⇒ Herd-year, month of calving, calf sex, calf genotype and age at calving (linear and quadratic covariable)

RESULTS

Genetic parameters estimated

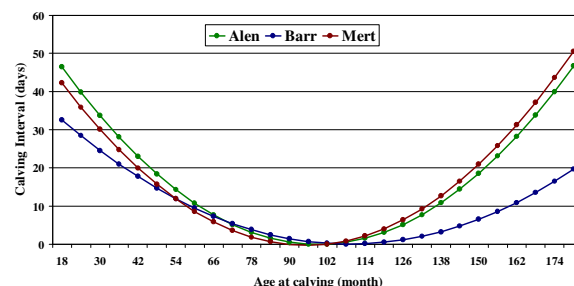
	Alentejana	Barrosã	Mertolenga
σ^2_a	574.3	1004.9	885.1
σ^2_{pe}	792.9	256.9	576.1
σ^2_e	15703.2	9529.2	12004.6
σ^2_p	17070.4	10791.06	13465.8
h^2	0.03±0.004	0.09±0.008	0.07±0.006
c^2	0.05±0.004	0.02±0.008	0.04±0.004

- Estimated heritability tends to be low
- Variability observed is quite large
- Important effect of age and month at calving on calving interval

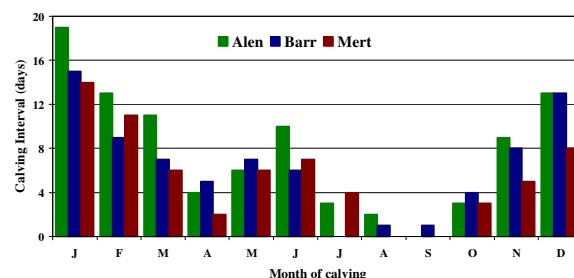
CONCLUSIONS

- Even though the estimated heritability tends to be low, the variability observed is quite large, indicating that it is feasible to select for reproductive performance in these breeds.
- Selection response can be improved by expanding the use of artificial insemination, which will also provide better genetic connectedness among herds.

Age at calving effect on Calving Interval



Month of calving effect on Calving Interval



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