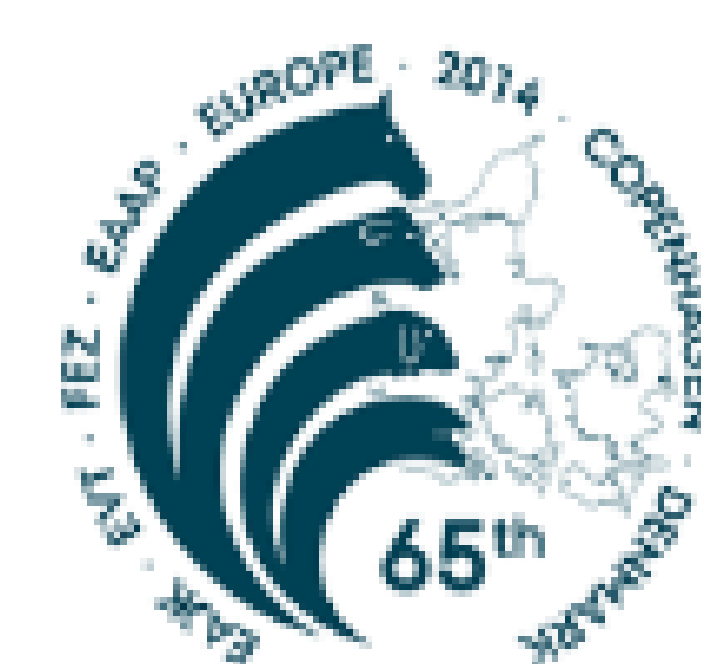


# Genetic parameters for milk traits using multi-trait fixed regression model for Alpine goat in Croatia

HPA



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## Introduction

- Alpine goat is a dominant breed in Croatia specialised for milk production
- The selection emphasis has been on milk traits that result in more efficient milk production
- The objective of this study was to estimate (co)variance components for milk traits using test-day records

## Material and method

- Daily milk (DMY), fat (FC), and protein content (PC)
- Number of test-day records: 267,773 for 2,320 does
- Number of animals in pedigree: 20,468
- Central database of the Croatian Agricultural Agency
- Residual Maximum Likelihood method



## Results

Heritability estimates and genetic correlations for milk traits

Trait	1	2	3
DMY (kg) - 1	0.33±0.02	-0.26±0.04	-0.27±0.04
FC (%) - 2		0.18±0.01	0.59±0.04
PC (%) - 3			0.27±0.01

Estimated ratios for common flock-test-day environment ( $c^2$ ), permanent environment ( $p^2$ ), and residual ( $e^2$ )

Trait	$c^2$	$p^2$	$e^2$
DMY (kg)	0.25±0.02	0.19±0.01	0.23±0.02
FC (%)	0.36±0.02	0.04±0.01	0.42±0.02
PC (%)	0.34±0.01	0.06±0.01	0.33±0.04

## Conclusions

- Estimated heritabilities for milk traits are in agreement to the estimates reported in the studies using the same type of the test-day model
- Results indicate possibility of using multi-trait test-day model for genetic evaluation due to improved accuracy of evaluation by accounting genetic correlations among traits

## Model

Multi-trait repeatability fixed regression test-day model

$$y = Xb + Z_c c + Z_a a + Z_p p + e$$

Trait ←  $y$       Residual ←  $e$

- Parity  
 - Litter size  
 - Year and month of kidding  
 - Flock  
 - Days in milk (Legendre polynomial of order 4 nested within parity and litter size)

- Flock-test-day  
 - Direct additive genetic effect  
 - Permanent environmental effect of does within parity