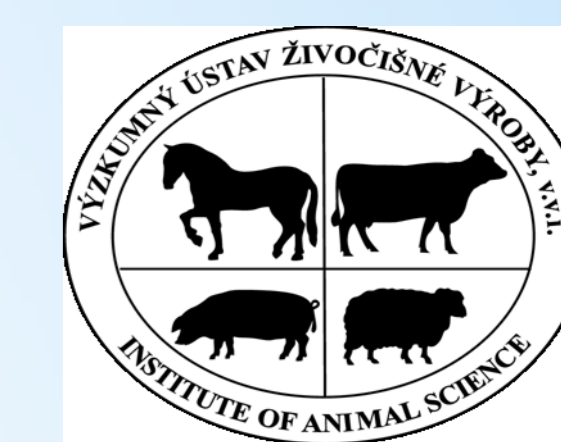


# Genetic parameters for fertility, production and longevity of Holstein cow in the Czech Republic

L. Zavadilová, M. Štípková

Institute of Animal Science, Přátelství 815, 10401 Praha - Uhřetěves, Czech Republic



## Objective:

Estimate genetic correlations between functional longevity, fertility and production traits in first lactation of Holstein cows.

## Heritability ( $h^2$ ) of functional longevity, fertility and production traits

Trait	$h^2$
Functional longevity	0.08
Interval from parturition to first service (iPS)	0.05
Days open (DO)	0.05
Interval from first service to conception (iFC)	0.03
Milk yield in first lactation (MY)	0.34
Fat yield in first lactation (FY)	0.29
Protein yield in first lactation (PY)	0.29

## Genetic correlations ( $r_g$ ) between functional longevity, fertility and production traits

Trait	$r_g$
iPS	-0.39
DO	-0.44
iFC	-0.37
MY	0.01
FY	-0.18
PY	-0.15

## Genetic correlations between fertility and production traits

Trait	iPS	DO	iFC	MY	FY	PY
DO	0.82					
iFC	0.51	0.92				
MY	0.52	0.65	0.59			
FY	0.48	0.59	0.54	0.68		
PY	0.49	0.63	0.59	0.91	0.77	

## Material:

Data set - 364 705 first lactations of Holstein cows . Four subsets were randomly made based on herd identification: analyzed files contained 103 499, 75 541, 92 211 and 91 261 observations, corresponding pedigree files included 267 363, 238 820, 230 343, 267 363 animals.

**Functional longevity** was defined as the number of days between the first calving and culling; that is, length of productive life.

## Methods:

In 21 bivariate analyses, the linear animal model accounted for fixed effect of year-month, regression on age at first calving, regression on milk yield (only longevity) and for random effects year-herd, animal and residual.

Data were analyzed using the DMU package (Madsen and Jansen 2008).

## Conclusion:

- Genetic correlations between fertility traits and longevity were moderate and favorable, ranging from -0.37 to -0.44.
- By contrast, genetic correlations between fertility and production traits were moderate and unfavorable, ranging from 0.48 to 0.65.