Session 28, zavadilova.ludmila@vuzv.cz

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 - Uhříněves, Czech Republic

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

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.

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

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).

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

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.

Supported by the Ministry of Agriculture of the Czech Republic, Project No. MZE0002701404