

THE VARIANCE COMPONENTS ESTIMATION FOR GROWTH TRAITS OF KIDS IN SLOVENIA

M.BIZJAK, M.ŠPEHAR, K.POTOČNIK, M.ŠTEPEC,
G.GORJANC, M.SIMČIČ

OBJECTIVE

- to estimate variance components for growth traits of kids in 2 breeds
 - birth weight, weaning weight, daily gain

AUTOCHTHONOUS

vs.

COSMOPOLITAN



Drežnica goat



Boer goat

MATERIAL

- **Central Database for Small Ruminants in Slovenia**
- Records of **birth weight (BW) and weaning weight (WW)**
 - Collected on-farms according to the breeding programs
 - **Daily gain** = (weaning weight – birth weight) / age at weaning
- **12,296 kids** (9,853 Boer goat + 2,443 Drežnica goat)
- From the year 2004 to 2019
- **Pedigree** information (**15,224 animals**)

METHODS

- **Fixed effects**
 - **GLM procedure in SAS/STAT (SAS, 2014)**
- **Variance components estimation**
 - **Restricted Maximum Likelihood (REML) method**
 - **Implemented in VCE-6 program (Groeneveld et al., 2010)**
- **2 different statistical models**
 - **Birth weight, daily gain**
 - **Weaning weight**

MODELS

	Effects	Birth weight	Weaning weight	Daily gain
Fixed effects	Breed (i = Drežnica, Boer)	√	√	√
	Gender (j = male, female)	√	√	√
	Dam parity (k = 1, 2, ..., 10+)	√	√	√
	Litter size (l = 1, 2, 3+)	√	√	√
	Season (m = 1, 2, ..., 63)	√	√	√
	Birth weight		√	
	Age at weighing		√	
Random effects	Flock (n = 1, 2, 3, ..., 142)	√	√	√
	Additive genetic effect	√	√	√

RESULTS

(LSM \pm SE)

Effect	Trait	Birth weight (kg)	Weaning weight (kg)	Daily gain (g/day)
Breed	Boer goat	3.64 \pm 0.01 ^a	15.87 \pm 0.07 ^a	177 \pm 1 ^a
	Drežnica goat	3.18 \pm 0.02 ^b	15.44 \pm 0.10 ^b	182 \pm 1 ^b
Gender	Male	3.53 \pm 0.02 ^a	16.03 \pm 0.08 ^a	189 \pm 1 ^a
	Female	3.30 \pm 0.02 ^b	15.28 \pm 0.08 ^b	173 \pm 1 ^b
Litter size	1	3.68 \pm 0.02 ^a	16.18 \pm 0.08 ^a	190 \pm 1 ^a
	2	3.43 \pm 0.02 ^b	15.48 \pm 0.08 ^b	178 \pm 1 ^b
	3 +	3.13 \pm 0.02 ^c	15.31 \pm 0.11 ^b	171 \pm 2 ^c
R ²		0.13	0.33	0.08



RESULTS

ESTIMATED VARIANCE COMPONENTS

	Additive genetic effect (h^2)	Flock	Residual
Birth weight (kg)	0.25	0.46	0.29
Weaning weight (kg)	0.27	0.34	0.39
Daily gain (g/day)	0.31	0.35	0.34



CONCLUSION

- **Growth traits of kids were affected by several fixed effects**
- **Heritabilities for growth traits were in expected range, similar than reported in the literature**
- **Variance components will be used in the breeding value prediction of growth traits of kids from this year onwards**

THANK YOU FOR YOUR ATTENTION!



Foto: K. Kancler



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