



Heritability and Genetic Evaluation of Black Bengal Goats for Growth Traits



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Background and Objective

- Bangladesh has 26.07 million goats constituting 11.89% of world total goat population.
- Despite of it, there is shortage for animal protein which is a threat to national health.
- Better understanding of influencing factors and genetic principles could ensure optimal breeding and selection, thus production.
- This study estimated heritability with variance components and predicted breeding values (PBVs) of growth traits (birth weight, weaning weight and body weight at 6-month).

Materials and Methods

- Retrieval and collection of data (Jan, 2017 to Dec, 2020)
- Analysis with SPSS (23.0), later heritability and variance components with VCE 4.2.5 following REML fitted in individual animal model.
- Estimation of predicted breeding value with PEST program by BLUP procedure.

Results

- Highest predicted breeding value (PBV) was found for body weight at 6-month with a wide range of PBV for all traits (Fig. 1).
- High additive genetic variance and less environmental variance (Tab. 2)

Tab. 2: Variance components and heritability of growth traits

Body weight at	Variance components		h ² (±SE)
	σ ² a	σ ² e	
Birth	0.33	0.005	0.46±0.02
Weaning	0.69	0.23	0.42±0.05
6-month	1.77	0.17	0.47±0.03

σ²a: additive genetic variance, σ²e: environmental variance
SE: standard error, h²= heritability

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Conclusions

- Selection for better growth should be based on post-weaning body weight preferably at 6-month of age.
- Planning of kidding season would facilitate further growth.
- Improvement in production is possible through mass selection on growth traits.

Results

Table 1: Test of significance of various influencing factors on body weight at different ages

Factor	Birth weight	Weaning weight	Body weight at 6-month
Parity of dam	**	NS	NS
Season of birth	NS	**	**
Type of birth	**	**	**
Year of birth	***	NS	**

NS: non-significant (P>0.05); **: significant at P<0.01; ***: significant at P<0.001

- Birth weight differed significantly among various parity of dam, also increased with progress of parity (Tab.1).
- Kids born in winter (Nov. to Feb.) showed better growth compared to rainy (July to Oct.) and summer (Mar. to Jan.) born kids up to weaning.
- Proper nutrition supply of does during gestation period resulted in higher birth weight and pre-weaning growth of single born kids (Tab.1).
- Varying management system and climatic conditions attributed to changes in body weights in different years.

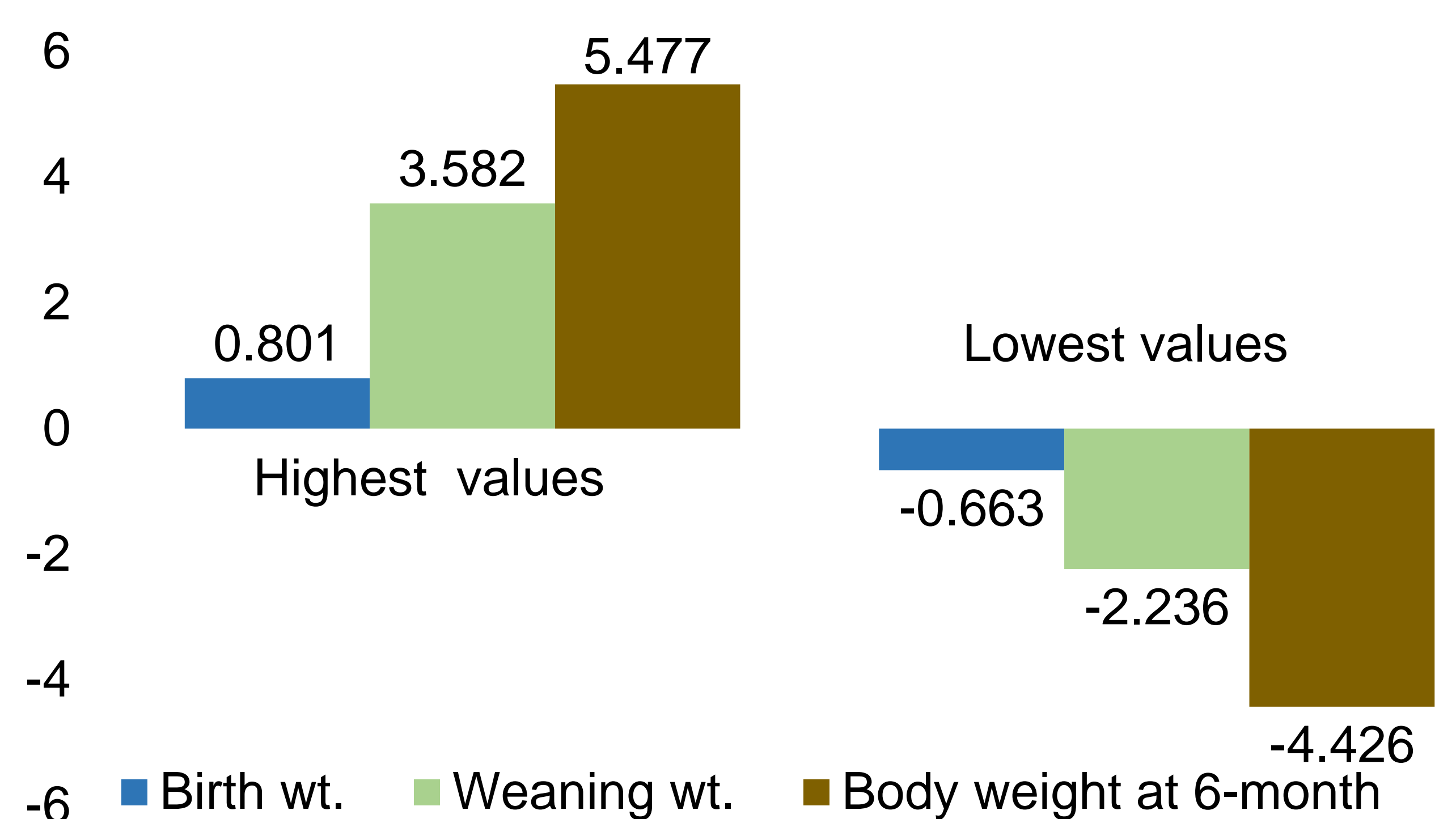


Fig. 1: Predicted breeding values (PBVs) of goats for body weight traits

