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Estimation of Heritability and Repeatability for Pre-Weaning Body Weights of Domestic Rabbits Raised in Derived Savanna Zone of Nigeria

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Abstract : Heritability and repeatability estimates are needed for the genetic evaluation of livestock populations and consequently for the purpose of upgrading or improvement. Pooled data on 604 progeny from three consecutive parities of purebred rabbit breeds (Chinchilla, Dutch and New Zealand white) raised in Derived Savanna Zone of Nigeria were used to estimate heritability and repeatability for pre-weaning body weights between 1st and 8th week of age. Traits studied include Individual kit weight at birth (IKWB), 2nd week (IK2W), 4th week (IK4W), 6th week (IK6W) and 8th week (IK8W). Nested random effects analysis of (Co)variances as described by Statistical Analysis System (SAS) were employed in the estimation. Respective heritability estimates from the sire component (h2s) and repeatability (R) as intra-class correlations of repeated measurements from the three parties for IKWB, IK2W, IK4W and IK8W are 0.59±0.24, 0.55±0.24, 0.93±0.31, 0.28±0.17, 0.64±0.26 and 0.12±0.14, 0.05±0.14, 0.58±0.02, 0.60±0.11, 0.20±0.14. Heritability and repeatability (except R for IKWB and IK2W) estimates are moderate to high. In conclusion, since pre-weaning body weights in the present study tended to be moderately to highly heritable and repeatable, improvement of rabbits raised in derived savanna zone can be realized through genetic selection criterions.

Keywords : heritability, nested design, parity, pooled data, repeatability
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