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Comparison of West African Dwarf (WAD) Sheep and F1 Crosses of West African Long Legged (WALL) Rams with Wad Ewes: Growth and Survival Traits

Armand Bienvenu Gbangboche[1], François Adébayo Abiola[2], Pascal L. Leroy[1]

[1] *University of Liege, Faculty of Veterinary Medicine, Department of Animal Production, Belgium*
[2] *Inter State of Veterinary Sciences and Medicine School, Toxicology and Environment, Senegal*

Abstract

The crossbreeding of West African Long Legged (WALL) with West African Dwarf (WAD) sheep was initiated in West Africa to boost meat production. Indeed, the survivability of productive animals is an important economic trait that needs to be taken into account.

The objective of this study was to compare growth (i.e. birth weight, pre and post weaning weight, average daily gain) and survival traits of purebred WAD sheep versus F1 crosses of WAL) rams with WAD ewes in the sub-humid region of Benin (West Africa). Effects of sheep breed, year and season of birth, sex of lamb, ewe parity and birth type were estimated, using the general linear model (GLM) procedure and Cox Proportional Hazards Regression, respectively for growth and survival traits analysis. Data were collected on 359 WAD and 183 F1 (WAD × WALL) lambs.

The following breed differences WAD lambs versus F1 (WALL × WAD) lambs) in growth and survival traits were detected. F1 (WALL × WAD) lambs performed better ($p<0.05$) than purebred WAD lambs at a constant age, namely at birth weight, BW (+1.2 kg), 3-month weight, W3 (+1.6 kg), 6-month weight W6 (+3.6 kg), 9-month weight, W9 (+7.5 kg and 12-month weight, W12 (+10.2 kg). consequently, the average daily gain between W3 and W6, ADG2 (+19.5 g/d), between W6 and W9, ADG3 (+44.3 g/d) and between W9 and W12, ADG4 (+29.2 g/d), was better ($p < 0.05$) for F1 (WALL × WAD) than for WAD lambs. All fixed effects were significant in WAD sheep. For F1 (WALL × WAD) sheep, significant effects were recorded in: season of birth for BW; ewe parity for BW, W3, W12 and ADG3; birth type for BW, W3 and W12, ADG1 and ADG3 and sex of lamb for BW to 12W and for ADG4. Comparison plots of the Kaplan-Meier estimate of survival function, from birth to 360 days of age, was not significantly different between F1 (WALL × WAD) and WAD sheep. The Cox Proportional Hazards showed significant effects of year of birth and ewe parity in the instantaneous mortality rate of WAD and F1 (WALL × WAD) sheep, respectively.

These results provide information about environmental effects on growth and survival traits of these sheep breeds and their potential use in crossbreeding systems.

Keywords: Crossbreeding, Growth, Survival traits, West African Dwarf Sheep, West African Long Legged Sheep

Contact Address: Armand Bienvenu Gbangboche, University of Liege, Faculty of Veterinary Medicine, Department of Animal Production, Boulevard of Colonster 20-Bât 43, B 4000 Liege, Belgium, e-mail: agbangboche@student.ulg.ac.be