Goat crossbreeding for sustainable production and livelihoods in West Africa: Empirical evidence from Benin

Kossi Helliot Dosseh & Luc Hippolyte Dossa

Department of Sciences and Technics of Animal Production, Faculty of Agricultural Sciences, University of Abomey-Calavi, Benin

Introduction

- Goats sustain millions of West African households.
- West African Dwarf (WAD) thrives under low-input conditions and shows strong resistance to disease.
- Productivity remains limited, with low milk yield and modest growth performance.
- Uncontrolled crossbreeding with Sahelian breeds, particularly Red Maradi (RMG) and Long-Legged (LLG), is rising.
- Its impact on productivity versus reproduction remains unproven.

→ Objective: compare reproductive and growth performance of WAD, RMG, LLG and their crossbreds under semi-intensive management in Benin.

Materials and Methods

- Experimental farm, University of Parakou, Benin (9°18′41.8″ N, 2°42′37.4″ E)
- A randomized block (Fig. 1 & 2)

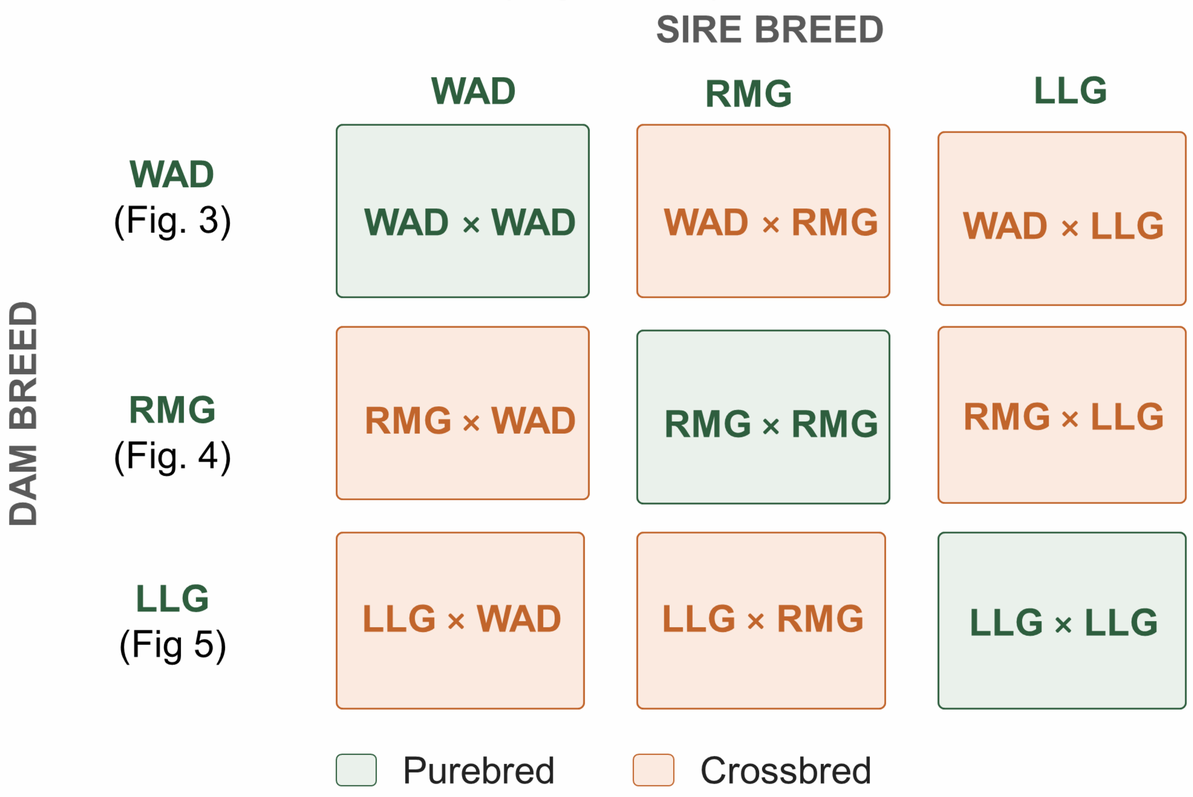

Fig.1. Breeding design- A randomized complete block

- 48 goats (15 does + 1 buck per breed)/ pen in semi-intensive production system
- Reproductive traits were recorded from mating through to 90-day weaning
- GLM / GLMM / Linear Mixed-Effects Models (R), Tukey HSD & Wilcoxon tests

Recommandations

Structured, evidence-based breeding programs using adapted local breeds, paired with better parasite control and lactation support, for sustainable goat productivity in West Africa.

Highlights

- Reproductive traits improved with parity across genotypes
- Kid mortality mainly caused by parasites and lactational deficiencies
- Crosses involving RMG sires showed elevated kid mortality, irrespective of the dam breed.
- Strategic crossbreeding boosts growth while preserving WAD resilience, particularly in WAD × LLG and LLG × WAD crosses (Fig.2)

Fig.2. Breeding design- A randomized complete block

Key results

- Parturition rate was 68.5%, with no significant breed effect.
- Abortion rate was 13.4%, which curtailed kidding success.
- Prolificacy was 149.5%, increasing with parity.
- Overall fecundity reached 212.4%
- Kidding interval averaged 210 days.
- Kid mortality was 43.3%, primarily associated with parasitic infestations and agalactia.

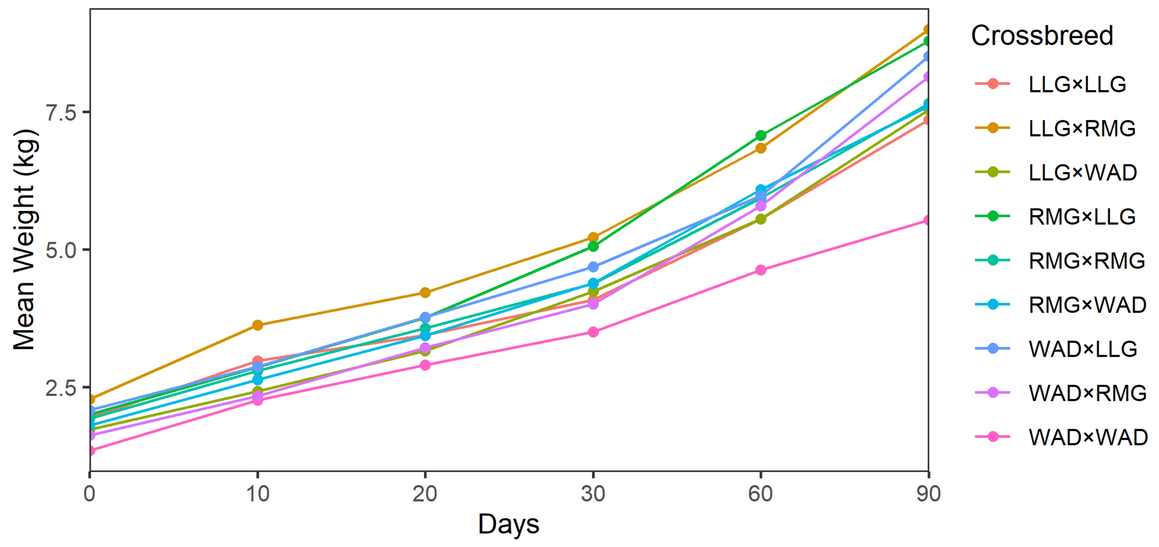

Fig.6. Kid weight trend across stages by crossbreed

Fig.3. WAD

Fig.4. RMG

Fig.5. LLG

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Kossi Helliot DOSSEH

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