

Breed and crossbreeding effects on birth and weaning weight, lamb survival and tick count in Dorper and South African Mutton Merino sheep

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Aim

To compare the performance of purebred Dorper and South African Mutton Merino (SAMM) sheep with their reciprocal cross in an extensive environment

Methodology

- Data (700-1147 records) of Dorper and SAMM resource flock and their reciprocal cross were recorded between 2009 and 2017 on Northern research farm in the S teamdivel region on the West Coast of South Africa
- Ewes of the respective breeds were randomly mated to 3-4 rams in single sire groups create four genetic groups; purebred Dorper and SAMM lambs as well as their reciprocal crosses (Dorper X SAMM and SAMM X Dorper)
- Lambs grazed with their dams until weaning at an average (±SD) age of 116± 16 days
- One all lamb survival from birth to weaning was deduced from the birth and weaning record
- Total full-body tick counts were a bio records for lambs within 1-4 days of weaning for the period from 2010 to 2017
- All data were analysed with ASREML software

Results and Discussion

- Birth weight: Dorper X SAMM lambs were below an 6.7% and 8.6% heavier ($P < 0.05$) compared to the other three genetic groups
- Weaning weight: Crossbred progeny had a clear advantage relative to purebred performance ($P < 0.05$)
- Crossbred performance: Direct heterosis was estimated at 6.3% for weaning weight when compared to the mid-parent value of the pure breeds
- Other traits: Weaning weight and tick counts were independent to genetic group

Least-squares means (± SE) depicting the effect of breed combination on the traits considered with contrasts depicting additive breed, heterosis and dam breed

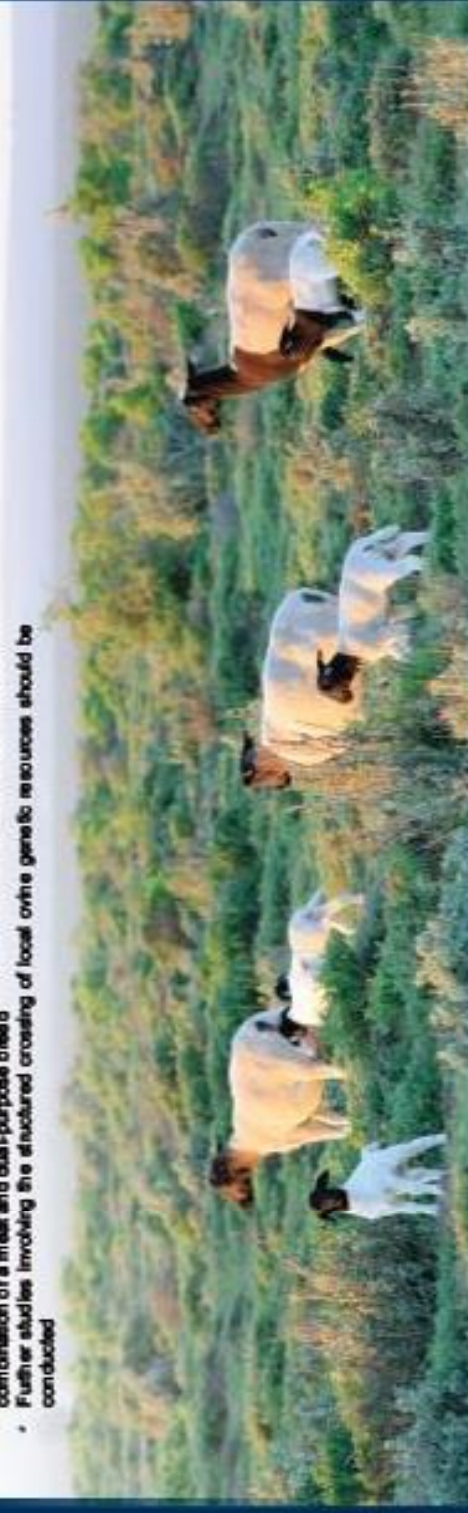
Breed combination	Table		
	Birth weight (kg)	Survived	Weaning weight (kg)
Dorper	4.16 ± 0.10	0.76 ± 0.03	32.5 ± 0.9
SAMM	4.12 ± 0.10	0.62 ± 0.06	32.2 ± 1.0
Dorper x SAMM	4.44 ± 0.12	0.71 ± 0.06	33.6 ± 0.8
SAMM x Dorper	4.00 ± 0.14	0.60 ± 0.06	34.8 ± 0.9
Contrasts (%)			
Breed	-0.29 ¹	-0.12 ¹	0.27 ¹
Heterosis	2.04 ¹	0.04 ¹	0.33 ¹
Dam breed	3.18 ¹	0.04 ¹	-5.24 ¹

¹ $P < 0.05$, ² $P < 0.01$; ³ Significant - adjusted significance for $P < 0.05$ SAMM - South African Mutton Merino

¹ - Transformed mean ± SE with given all 6 means on the observed scale in brackets

Conclusions and Recommendations

- No conclusive advantage for either pure breed was found for any of the traits considered
- Significant non-additive genetic variation was demonstrated for weaning weight
- Results indicate that commercial operations may benefit from crossbreeding using a combination of a meat and dual purpose breed
- Further studies involving the structured crossing of local ovine genetic resources should be conducted



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