REPRODUCTIVE PERFORMANCE OF INDIGENOUS SHEEP AND THEIR CROSSES

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SUMMARY

THE reproductive performance of the indigenous Uda and Yankasa Sheep and their crosses with Suffolk were studied using data from 661 ewes bred, 791 lambs born and 614 lambs weaned. Single lambs survived better from birth to weaning than twin lambs. For the indigenous purebred mating, the Yankasa were fertile while the Udas were more prolific. Fertility, livability and overall production efficiency were generally higher in the crossbreds than for the indigenous breeds. Single lambs and ram lambs were heavier at birth and at weaning than twin lambs and ewe lambs respectively. On the whole, crossbreeding seems to have improved the performance of the indigenous breed in terms of the indices of production reported in this study.

INTRODUCTION

WITH the decline in animal numbers and the continuous decline in meat supplies, it is becoming increasingly necessary to increase not only the numbers but also the efficiency of production in our livestock.

Reproductive performance is undoubtedly an important economic trait and information on it is essential for proper evaluation and selection of the available local breeds of sheep in Nigeria. Apart from the recent work of Dettmers, Igoche and Akinkuolie (1976) on the West African Dwarf Sheep there is no readily documented information on the other indigenous breeds of sheep, particularly the Uda and Yankasa, in Nigeria.

This paper describes the available data on crossbreeding work at the National Animal Production Research Institute with respect to the productivity of the ewes and the performance of their lambs.

MATERIALS AND METHODS

The study involves crossbreeding data from two indigenous breeds of sheep, Uda and Yankasa, and their crosses with an exotic breed (Suffolk). The breeding programme of the National Animal Production Research Institute has been reported (Adu and Brinckman, 1977). The location, vegetation and climate of Shika have been described (I.A.R., 1968).

The data included a total of 661 ewes bred, 791 lambs born and 614 lambs weaned during the years 1974 to 1977. The genetic composition of the crossbred animals was approximately 50% exotic (Table 1).

The ewes were mated on pasture between June and July for a period equivalent to the duration of two or three heat cycles so that lambing was restricted to the dry season period. At lambing, ewes that lambed were put in pens with their newborn lambs. The lambs were weighed and identified with a permanent plastic ear tag. All animals were weighed at two weekly intervals. Lambs were weaned at an arbitrarily chosen liveweight of 18 kg at ages ranging from 90 to 140 days.

Five measures of reproductive efficiency were used, namely fertility (percent ewes lambing of ewes bred); prolificacy (percent lambs born of ewes lambing); average litter size (number of lambs born alive or dead per ewe lambing); Livability (percent lambs weaned of lambs born alive) and overall productivity (percent of lambs weaned of ewes bred) to assess reproductive performance.

REPRODUCTIVE PERFORMANCE OF INDIGENOUS SHEEP

TABLE 1

Number of Ewes Bred 1974 — 1977

Breed*	1974	Year 1975	1976	1977*
UU	39	63	28	34
YY	33	67	39	37
UC	39	—	39	36
YC..	43	—	26	31
CC	21	22	33	31

* UU — Uda X Uda
 YY — Yankasa X Yankasa
 UC — Uda X Crossbred Suffolk
 YC — Yankasa X Crossbred Suffolk
 CC — Crossbred X Crossbred Suffolk

RESULTS AND DISCUSSION

Table 2 shows the figures for the reproductive traits studied for each year and the breeds while Table 3 shows the analysis of variance of these traits and the effect of breed and type of birth.

The comparatively low fertility figure for 1974 might be due to the fact that the 1974 flock consisted mainly of unselected ewes bought from the open market in the earlier years. For the indigenous breeds, the Yankasa were more fertile while the Uda were more prolific. Cross-breeding tended to improve the fertility of the indigenous breeds. Fertility, livability and overall productivity of the ewe showed considerable improvement after 1974. This is probably due to better experience

in the management (particularly feeding and health care) of these animals with the years. The CC group exhibited the highest overall production rate. Of the indigenous breeds, the Uda showed higher overall production rate than the Yankasa. Type of birth had highly significant ($P < 0.01$) effect on livability.

Table 4 shows the number of lambs born with respect to type of birth and sex as well as the means and standard efforts for birth weight, average daily gain from birth to weaning and the factors affecting these traits namely type of birth, sex and breed.

Of the 791 lambs born, about 80.5% were singles, while 56% were males. The ratio of ram to ewe lambs was 1.3:1.

TABLE 2

Fertility, Prolificacy of Ewes and Lamb Livability

Classification	No of ewes bred	Fertility %	Prolificacy %	Average Litter size	Lamb Livability	Overall Productivity of ewe %
Overall Year	661	75.3	119.6	1.19	77.65	75.43
1974 ..	175	52.6	115.2	1.15	63.20	38.30
1975 ..	152	85.5	117.7	1.18	86.90	87.50
1976 ..	165	81.2	126.1	1.23	68.60	70.30
1977 ..	169	71.0	119.7	1.20	78.70	81.02
Breeds						
UU ..	175	73.8	123.4	1.05	71.90	70.80
YY ..	186	81.3	115.8	1.20	76.80	69.10
UC ..	101	79.8	116.5	1.19	74.20	68.90
YC ..	113	81.9	123.3	1.22	71.40	65.70
CC ..	86	86.7	122.7	1.33	90.90	88.90

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TABLE 3

Analysis of variance for reproductive traits (Mean Squares only)

Sources of error	Fertility		Prolificacy		Lamb Livability		Overall Productivity	
	df	MS	df	MS	df	MS	df	MS
Year	3	2.03*	3	0.37n.s	3	0.62*	3	3.10**
Type of birth	—	—	—	—	1	1.87**	—	—
Breeds	4	1.34**	4	1.23**	4	1.63**	4	4.07**
Error	653	0.34	475	0.29	485	0.41	653	1.03

- * Significant differences ($P < 0.05$).
 ** Highly significant differences ($P < 0.01$).
 n.s. No significant differences ($P < 0.05$).

TABLE 4

Number of lambs born, birth weight and average daily gain

Classification	No of Lambs born	Average Birth weight (kg)	Average daily gain (Birth to weaning)* (g) *
Overall	791	3.29 ± 0.86	134.4 ± 4.09
Type of Birth			
Singles	637	3.48 ± 0.42	153.3 ± 3.21
Twins	154	3.03 ± 0.33	121.7 ± 2.78
Sex of Lamb			
Male	444	3.41 ± 0.23	142.8 ± 3.56
Female	347	3.05 ± 0.11	127.2 ± 2.11
Breeds			
UU	216	3.24 ± 0.36	126.3 ± 0.84
YY	214	2.80 ± 0.19	107.8 ± 3.14
UC	118	3.38 ± 0.24	128.4 ± 1.43
YC	138	3.20 ± 0.47	118.7 ± 1.96
CC	105	3.42 ± 0.13	162.2 ± 2.01

- * Lambs were weaned at 18 kg liveweight.
 + Standard Error of means.

The Uda gave birth to heavier lambs which also had faster growth than the Yankasa lambs from birth to weaning. As expected single lambs were heavier at birth and gained faster than twin lambs. Ram lambs were also heavier at birth and retained this initial advantage till weaning. The findings in this study are in general agreement with the earlier report of Ferguson (1964) on the Uda and Yankasa and their crosses with Merino. Crossbreeding improved the birth weight and rate of gain of the indigenous breed.

It would appear from the results of this study that under conditions of improved Management, the indigenous sheep particularly the Uda and Yankasa, have good reproductive potentials which can further be enhanced by strict selection (culling)

procedure. A knowledge of the changes in the performance of ewes with year and hence age may be a useful basis for a regular culling policy.

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