EFFECT OF SOME HOST INTRINSIC FACTORS ON THE REPRODUCTIVE STATUS OF SHEEP SLAUGHTERED AT BAUCHI ABATTOIR, NIGERIA

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Abstract

This study was undertaken to determine the effect of some intrinsic factors on reproductive status of sheep slaughtered at Bauchi Municipal abattoir. A total of two hundred and twenty (220) sheep, comprising 195 Yankasa and 25 Uda were used. The study was conducted between February 2001 and February 2002. There was no significant breed difference in all the traits observed. Age had significant effect on follicular number (P<0.001) and diameter (P<0.01) in Yankasa than in Uda sheep, but showed no effect on all parameters studied in both breeds. Body condition score (BCS) had significant (p<0.001) effect on follicular number, diameter, weight of the right ovary, both ovaries and percentage of corpora lutea (p< 0.05), in both breeds. BCS also had significant (P<0.001) effect on follicular number and diameter in Yankasa than in Uda and on the right and both ovaries (P< 0.05) in both breeds and left ovary (P< 0.05) in Uda than Yankasa sheep. It was concluded that breed, Age and BCS have detrimental effect on efficient reproductive performance on sheep. The general management practices in the abattoir should be improved, including the housing and sanitary conditions in order to produce good quality and wholesome mutton for human consumption. Slaughter of reproductively active sheep as well as suckling ewes should be discouraged.

Sneep production provides among others, a major source of protein for human consumption, skin and wool for industries, and manure for crop production and foreign exchange. The sheep with a population of 22.1 million in Nigeria (RIM, 1992) plays significant socioeconomic and socio-cultural roles in developing counties through provision of mutton in convenient amount for ceremonial occasions and religious obligations. It is a source of income and security in rural areas (Ndamakong *et al* 1989 Sheep management in Nigeria is usually through family labour and the use of crop residue. Traditional management of sheep also varies from free range grazing where sheep and goats are reared along with cattle, and browsing during the dry season to tethering with little supplementary feeds. The sheep has a unique ability to adapt and maintain itself in a harsh environment such as the tropics resulting in high populations. Uncontrolled breeding in rural flocks however, leads to indiscriminate mating by younger animal giving rise to poor body development, reproductive inefficiency and low life time productivity (Peters *et al* 1981). Other management factors which limit productivity in sheep include inbreeding,

insufficient nutrition for lactating ewes and does, poor sanitary conditions in shades especially for newly bom lambs, and inadequate disease control and prevention (Peters *etal* 1981).

Some variables have been shown to affect reproduction particularly ovulation rate in sheep. These include are age (Lindsay et al 1975). Body weight (Lindsay et al 1975) season (Wheeler and Land, 1977), breed (Scraranuzzi and Radford, 1983), treatment with pregnant mare serum gonadotropphin (PMSG) (Robinson, 1950) and immunization against steroid (Scraranuzzi *et al* 1977., Land *etal* 1982)

Reproductive performance mainly depends on the understanding of the aforementioned factors and the application of sound principles and techniques by the farmer to improve reproductive indices. There is dearth of information on the effect of these variables on the reproductive activity of sheep in Nigeria This study was therefore undertaken to evaluate the effect of some host intrinsic factors on the reproductive efficiency of sheep slaughtered at Bauchi municipal abattoir.

Materials and Method

Bauchi State is located in the Northeastern part of Nigeria and in the Sudan Savanna ecological zone. The state is located between latitude 8° 42'E and 9° 49' E, longitude 9° 30'N and 12° 13' N and altitude 690.3m above sea level and with an annual rainfall of 1231.5mm. There are four seasons in the year. Early rainy season (April- June), late rainy season (July-September, early dry season (October-December) and late dry season (January- March) The hottest months is April with temperature reaching 41°c and coldest month is December with temperature of about 6°c. Agaeba (1993) and Ajayi (1995) reported that Bauchi state has the highest livestock population, with over 5 million sheep and goats. The Bauchi abattoir is the largest and representative site of all the locations within the state since livestock are brought from various parts of the state to the abattoir. Yankasa and Uda breeds of sheep were used in this study. All the sheep were obtained from the Bauchi Municipal abattoir. The ages of the animals were determined by dentition (Sastry and Thomas, 1980). The body condition scores (BCS) were obtained before slaughter as described by Jefferies (1961).

A total of 220 sheep comprising 195 Yankasa and 25 Uda were used in this study from February, 2001 to February, 2002 Ovaries and fetuses were collected from all the sheep brought to the abattoir and slaughtered.

Weight of ovaries in milligrams and fetuses in grammes were determined using Analytical Balance and Galaxy 400D respectively. Ovaries with more man 50% atretic cells were considered inactive and vise versa (Butswat 1994). The corpora lutea, number of follicles and average size of follicles were recorded. The diameters of the follicles greater than 2mm in each ovary were determined as previously described (Driancourt and Cahill, 1984) using a pair of dividers.

Some of the data generated were analyzed using the general linear model (GLM) analysis of variance procedure in the statistical analysis package (Minitab) Breed, age and BCS were considered. Relevant means were separated using LSD (Snedector, 1959).

Results

There was no significant difference in foetal weight, foliicular number follicular diameter, corpora lutea number, weights of the right, left and both ovaries between the two breeds studied (Table 1).

Age had significant effect on follicular number (P< 0.001) and follicular diameter (P< 0.01) in Yankasa (Table 2), but has no effect on these parameters in Uda (Table 3). Further more, age had no effect on foetal weight, corpora lutea number and weights of the right, left and both ovaries in Yankasa and Uda breeds (Table 1).

Body condition score (BCS) had significant effect on follicular number and diameter (P< 0.001). BCS also showed significant effect (P< 0.05) on the right and both ovaries in Yankasa and Uda breeds (Table I) and the left ovaries in Uda (Table 2). In addition follicular number and diameter, weight of the right and both ovaries differ significant with BCS being 0.03, 0.19, 0.16 and 0.34 for animals with BCS 0; 0.21, 0.75,0.44 and 0.50 for animals BCS 1; 0.29,1.64, 0.67 and 0.83 for animals with BCS 2; 0.29, 2.03,0.85 and 0.88 for animals with BCS 3; 0.70, 3.33, 0.64 and 0.69 for animals with BCS 5 respectively (Table 1).

Furthermore, corpora lutea differ significantly (P< 0.05) with BCS, being 0(0.00%) for animal with BCS 0; 13(25.00%) for animals with BCS 1; 51(54.84%) for animals with BCS 2; 35(68.68%) for animals with BCS 3; 11(61.1%) for animals with BCS 4; 2(50.00%) for animals with BCS 5 respectively (Table 1).

Table 1: The Effects of Host Intristic Factors on Reproductive performance in Yankasa and Uda Sheep

		Total number Examined	FW	FN	FD	CL	RTOV	LTOV	BOV
Breed			NS	NS	NS	NS	NS	NS	NS
	Yankasa	195	101.58	0.55	2.32	100(51.28)	0.56	0.63	0.60
	Uda	25	30.32	0.53	2.76	12(48.00)	0.63	0.95	0.79
LSD									
			NS	NS	NS	NS	NS	NS	NS
Age	6-10	7	93.49	0.34	1.55	3(42.85)	0.35	0.44	0.40
(months)	14-20	67	65.64	0.51	2.51	40(50.70)	0.58	0.90	0.74
	21-25	71	50.75	0.62	2.73	36(50.70)	0.63	0.80	0.71
	26-30	35	34.53	0.79	3.73	17(48.57)	0.73	0.72	0.72
	30-40	40	85.34	0.45	2.18	16(40.00)	0.69	1.96	0.89
			NS	***	***	*x^2= 11.7	***	NS	***
BCS	0	2	-68.52	0.03	0.19	0(0.00)	0.16	0.52	0.34
	1	52	20.17	0.21	0.75	13(25.00)	0.44	0.56	0.50
	2	93	38.49	0.29	1.64	51(54.84)	0.67	0.97	0.83
	3	51	137.67	0.29	2.03	35(68.63)	0.85	0.91	0.88
	4	18	214.03	0.70	3.33	11(61.11)	0.64	0.75	0.69

	5	4	53.01	1.73	7.31	2(50.00)	0.77	1.05	0.91
LSD				0.11	0.46		0.08		0.09

Key Parenthesis indicate percentages

CL -	Corpora lutea	FW -	Fetal Weight, (g)	**= p<0.01
BCS -	Body condition score	BOV -	Both Ovaries (g)	**=P<0.001
FD -	Follicular diameter, (mm)	LTOV – Left ovary, (g)		
RTOV-	Right ovary, (g)	FN – Follicular number		

Tabel 2: The Effects of Host Intrinsic Factors on the Reproductive Performance in Yankasa Sheep

		Number examined	FW	FN	FD	CL	RTOV	LTOV	BOV
Age			NS	***	**	NS	NS	NS	NS
(months),	6-10	7	7.14	0.14	0.71	3(42.85)	0.49	0.48	1.20
	14-20	60	131.03	0.30	1.47	37(61.66)	0.66	0.85	1.49
	21-25	64	120.51	0.42	1.84	33(51.56)	0.74	0.72	1.48
	26-30	32	66.67	0.62	2.84	15(46.87)	0.81	0.65	1.43
	30-40	32	101.81	0.13	0.53	12(37.50)	0.74	0.80	1.54
				0.11	0.49				
LSD			NS	***	***	NS	*	NS	*
BCS									
	0	2	0.00	0.00	0.00	0(0.00)	0.42	0.90	1.32
	1	41	38.8	0.17	0.68	11(26.82)	0.53	0.48	1.00
	2	87	109.87	0.30	1.36	46(53.48)	0.71	0.86	1.58
	3	48	123.33	0.46	2.19	33(68.75)	0.90	0.77	1.67
	4	16	247.50	0.75	3.22	9(56.25)	0.66	0.83	1.50
	5	2	0.00	2.50	8.25	1(50.00).	0.84	0.70	1.53
						0.11	0.49		0.09
LSD									

Key Parenthesis indicate percentages

BOV -Both Ovaries (g)	CL- Corpora lutea	**= P<0.01
FW - Fetal weight, (g)	BCS - Body condition score	***=p< 0.001
FD - Follicular diameter,(mm)	LTOV -Left ovary,(g)	
RTOV - Right ovary,(g)	FN- Follicular number	

Table 3: The Effects of Host Intrinsic Factors on the Reproductive Performance in Uda Sheep

		Total Number examined	FW	FN	FD	CL	RTOV	LTOV	BOV
Age			NS	NS	NS	NS	NS	NS	NS
(months)	14-20	7	0.49	0.29	1.29	3(42.85)	0.48	0.59	1.08
	21-25	7	17.71	0.29	1.58	3(42.85)	0.72	0.63	1.35
	26-30	3	0.00	1.00	4.33	*2(66.67)*	0.80	0.40	1.20
	30-40	8	1.25	0.50	3.19	4(50.00)	0.72	1.12	1.84
			NS	NS	NS	NS	*	*	*

BCS								
1	11	0.00	0.36	1.73	2(18.18)	0.55	0.49	1.04
2	7	12.50	0.50	2.75	5(62.50)	0.68	0.71	1.39
3	3	1.70	0.00	0.00	2(100.00)	0.65	1.66	2.30
4	2	12.00	0.50	2.00	2(100.00)	1.18	0.67	1.84
5	2	5.00	1.00	6.75	1(50.00)	0.73	1.51	2.23
						0.14	0.29	0.35
LSD								

Key Parenthesis indicate percentages *=P<0.05
CL Corpora Lutea W -Fetal weight, (g)
BCS - Body condition score RTOV - Right ovary,(g)
BOV-Both Ovaries (g) LTO Left ovary,(g)
FD - Foilicular diameter,(mm)

Discussion

The non significant difference in some reproductive traits such as follicular number, follicular diameter, corpora lutea number, weight of the right ovary, left ovary and both ovaries between the Yankasa and Uda breeds (Table 1) in this study is in contrast to other reports by Adu et aj (1979) and Tukur and Gana (2000), who indicated that Yankasa sheep are more prolific and more fertile.

Moderate follicular number and diameter were found within the age range of 6-10 months and the least within the age range of 30-40 months (Table 1). This is in agreement with studies by Balogun et al (1993), who reported that litter size increases from first to the fifth parity and declines at sixth parity. Similarly, Adu et al (1979) demonstrated that the age of dam, which is a factor of parity, influences litter size. Highest follicular number and diameter in animals with BCS of 5 and highest ovarian weight in animals with BCS of 3 and above obtained in this study (Table 1). This concurs with Rhind and McNeilly (1986) that ovaries from ewe with high BCS had more follicles > 4mm in diameter and concludes that BCS affect ovulation rate. The highest percentage corpora lutea number in animals with BCS of 3 and the least with BCS of 0 (Table 1) ,agrees with Wallace (1961) who showed that substantial part of the difference in corpora lutea number were related to differences in ewe live weight.

Cycling Yankasa sheep ranging from 6-10 months of age (Table 2) recorded in this study tend to concur with Bizelis et aj (1990), who concluded that most of the mean values for age at puberty are within the range of 6 -18 months with the first oestrus cycle recurring at an average age of 9.5 months.

Highest ovarian weight of both ovaries in Uda with BCS of 3 and above obtained in this study (Table 3). This is slightly higher than values reported elsewhere (Yahaya *et al,* 1997). Similar reasons on the ovarian weight were reported above.

Conclusion

From the current study it was concluded that there was no difference between the Yankasa and Uda breeds for all the reproductive parameters considered. Age had more influence on Yankasa; attaining puberty earlier than Uda Majority of the

sheep slaughtered had low BCS which influenced the reproductive parameters of both breeds. The findings also revealed a considerable foetal wastage due to slaughtered of the pregnant ewes.

Recommendations

The general management practices in the abattoir should be improved, including the housing and sanitary conditions in order to produce good quality and wholesome mutton for human consumption. Slaughter of reproductively active sheep as well as suckling ewes should be discouraged.

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