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Effect of management and feed supplementation on the reproductive performance of Hammari sheep under range conditions in North Kordofan, Sudan

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Abstract

The study used (80) Hammari desert ewes and they were divided into four equal groups (each with 20 ewes). The first group left grazing and watered once every 3 days, the second group allowed grazing, drank daily. The third group was kept on natural grazing, drank daily and offered concentrate at the rate of 1 kg/ewe/day, while lambs in the same group were offered concentrate at the rate of 250 g/head / day. The fourth group was left on the natural grazing and watered once every five days as followed traditionally representing the control. The birth weights, weekly body weights and body measurements were monthly recorded. Also the number of pregnant and non pregnant ewes and the number of delivery and abortion ewes were recorded.

The results showed that the third group (C) supplemented ewes recorded higher fertility rates, number of twins, weaning percentage and low abortion percentage compared with the control. The results also revealed that the third group (C) lambs that their dams were supplemented recorded the highest birth weight. Type and sex of birth of lambs had positive effects on birth weights so that single birth was higher than twins and weight of male birth was higher than female birth.

Keywords: Feed supplementation, Fertility, Kordofan, management, Performance

Introduction

Sudan is the second largest livestock owning country in Africa. Its animal wealth was estimated in 2007 to be 50.944, 42.987, 41.404 and 4.250 million heads of sheep, goats, cattle and camels, respectively (FAO, 2009). North Kordofan is the home land of Hammari and Kabashi tribal desert sheep. They included about 8.89 million heads that represent 41.9% of total animals in the State and 17.4% of national sheep (MAWF 2006).

Traditional natural grazing is the main source of feed for the livestock species in Sudan. Sheep are herded in flocks of about 200 heads. Most females raised are needed as breeding replacements and breeding rams are usually selected with great care with major emphasis on conformation, color and the milk production records of dam. Lambs may be flocked alone or sometimes left to run with dams until weaning at about four months. Sheep watering frequency is 3-5 days during the dry season (LADCO 1999). The objective of this study was to evaluate the reproductive performance of Hammari desert sheep kept under traditional production system or improved management practices.

Material and Methods

This study was conducted in north Kordofan state in latitudes 11° 5′ - 13° 75′ N and longitudes 27°-29° 5′ E in Sudan. Eighty ewes and three rams of Desert sheep subtype Hammari were used in this study. They were divided randomly into four groups and they were left under the following management groups. Croup A: Grazing on natural pasture over night , water access every 3 days. Group B: Grazing on natural pasture over night (from 6: pm to 7: am), stayed under roof in shade from 8: am to 5: pm, watered daily. Group C: Grazing on natural pasture over night (from 6: pm to 7: am), stayed under roof in shade from 8: am to 5: pm, water access daily and supplementation of 1 kg concentrate ewe/day over the whole experimental period. The lambs in the same group were offered concentrate at rate of 250 g / lambs. Group D: Grazing on natural pasture from 7: am to 12: am and from 6: pm to 12: pm, stayed under trees from 12: am to 5: pm and water access after 5 days.

Results and Discussion

In this study night grazing and shade during day reduced heat stress, increased feed intake and improved animal performance. This result is in line with Mufarrih (1991) and Ayantunde et al. (2000). A change in the different management practices resulted in a positive influence of lambing rate, pregnancy rate, litter size and lambs losses compared to the control group (table 1), Similar results were obtained by Njoya et al (2005).). Lassoued et al. (2004) indicated that, higher levels of nutrition prior to and during mating were associated with improved reproductive performance. Lambs borne from ewes of group C had significant ($P<0.05$) heavier birth weight than those of the other groups. Traditional grazing at day and watering every 5 days showed the lowest birth weight (table 2). Male lambs were heavier than the females. Similar results reported by Cloete et al 2007 and Macit et al. 2001. The highest birth weight and weaning weight (120 days) in this group indicated the higher milk yield of ewes due to the feed supplementation during the whole weaning period as a result of the good condition of the ewes. After 120 days the weight of lambs were significantly higher for all experimental groups compared to the control group D. Figure 1 showed the daily growth rate of lambs in monthly periods during the whole experimental period of 180 days. Before 120 days, lambs in the control group recorded less weight compared with the other groups. After 120 days lambs in group A had the best growth rate.

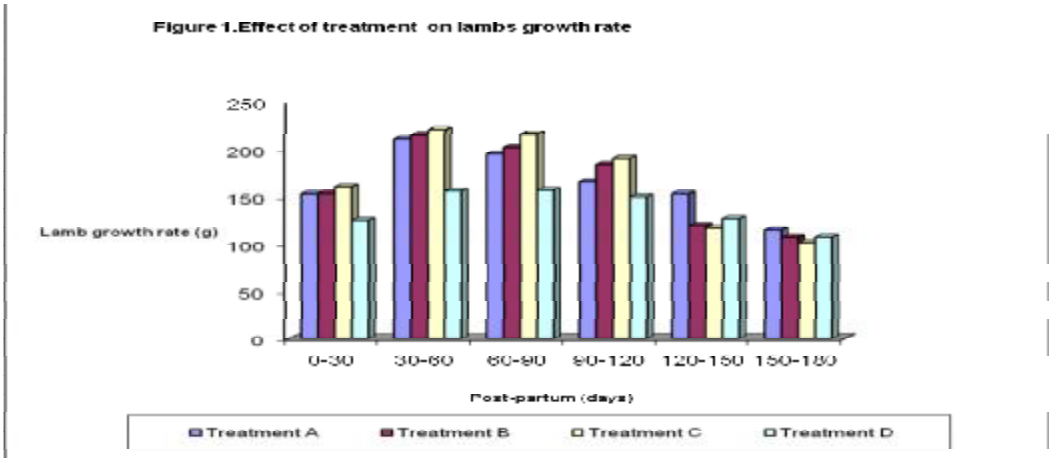
Table 1. Effects of treatment on ewe reproductive performance

Factor		Lambing rate (%)	Pregnancy rate (%)	Litter size (%)	Lambs loss (%)
Treatment	Group A	95 b	95 b	1.11 b	5 b
	Group B	100 a	100 a	1.05 c	5 b
	Group C	100 a	100 a	1.45 a	0 a
	Control D	85 c	85 c	1.00 d	25 c

abcd: Means in the same column bearing different superscripts are significantly ($P<0.05$) different.

Table 2. Effect of pre-partum supplementary feeding and age on lamb body weight (mean± S.E) kg

Factor		Birth weight	120 days	180 days
Treatment	Group A	3.00±0.28 [b]	25.00±1.19 [a]	31.30±1.12 [a]
	Group B	3.20±0.26 [b]	26.20±1.97 [a]	32.30±1.02 [a]
	Group C	4.00±0.19 [a]	28.00±0.79 [a]	33.40±0.74 [a]
	Control D	2.30±0.29 [c]	19.50±1.17 [b]	25.70±1.08 [b]
sex	Male	3.40±0.29 [a]	25.60±1.21	30.00±0.89
	Female	2.40±0.23 [b]	23.90±0.96	31.40±1.12
Type of birth	Single	4.30±0.11 [a]	28.30±0.43 [a]	34.20±0.40 [a]
	Twin	3.00±0.22 [b]	24.80±0.92 [b]	31.00±0.86 [b]
	Triple	2.10±0.50 [c]	21.00±2.10 [c]	26.80±1.95 [c]
abc :Means in the same column bearing different superscripts are significantly (P<0.05) different. NS: not significant at (P<0.05). M=Male F=Female				



Conclusions and Outlook

The study concluded that supplementary feeding of desert ewes with concentrates could increase their opportunity for twins, decrease abortion percentage, give best weight at birth weight and weaning as well as and growth rates of lambs.

References

Ayantunde, A. A, Williams, T. O., Udo, H. M., Rivera, S. F., Hiernaux, P. and Kerulen, H. V. 2000 Herders' perception, practice, and problems of night grazing in Sahel: case studies from Niger. Human Ecology, Vol.28, No.1, 2000.

Cloete, J. J. E., Cloete, S. WP., Oliver, J. J. and Hoffman, L .C .,2007. Terminal crossbreeding of Doper ewe to LLe de France, Merino Land sheep and SA Mutton Merino sires: Ewe production and lamp performance. Small Ruminant Research 69:28-35.

FAO. 2009 .Quarterly Bulletin of Statistics, Food and Agriculture Organization, Rome.Italy.www.fao.org/docrep/HYPERLINK ao.org/docrep/012/i0680e/i0680e.pdf"e.pdf.

LADCO. 1999. Annual report. Livestock and Agriculture.

Macit, M., Karaoglum M., Esenbuga,N., Kopuzlum, S. and Dayioglu, H. 2001 .Growth performance and carcass characteristics of Awassi, Morkaraman and Tushin Iambs. MAWF Ministry of Animal Wealth and Fishers 2006 Report. Khartoum, Sudan 2-3.

Mufarrih, M. 1991 Sudan desert sheep on their origin, ecology and production potential World Animal Review 66:23-31.

Njoya, A., Awa, N. D. and Chupamom, J. 2005. The effect of strategic supplementation and prophylaxis on the reproductive performance of premiparous ewes in the semi-arid area zone of Cameroon. Small Ruminant Research 56:21-29.

Lassoued, N., Rakia M, Mahouachi M and Ben Hamouda M 2004 .The effect of nutrition prior to and during mating on ovulation rate reproductive wastage, and lambing rate in three sheep breeds. Small Ruminant Research 52: 117-12.