The Effect of Feed Supplementation on the Productive and Reproductive Performance of Desert Ewes in Rangeland of Kordofan, Sudan

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Tropentag, October 5 - 7, 2011, University of Bonn, Germany

Introduction:

Sudan is the second largest livestock owning country in Africa. Its animal wealth was estimated to be 50.944, 42.987, 41.404 and 4.250 million heads of sheep, goats, cattle and camels, respectively (FAOSTAT 2009) , Sudan desert sheep are raised mainly under harsh dry land farming conditions for meat production. the nutritional limitation, low nutritive value of the range, high ambient temperature, scarcity of feed and water have great effect on the production of the sheep in semi arid area of Kordofan state.

The most critical period for grazing sheep in the semi desert zone of Sudan is from February to June, when the ambient temperature becomes hot and range grazing is scanty and depleted of nutrients. Shortage of feed during the mating season is the main factor, which affect the sheep production in the range land of Kordofan. Taking into account that natural pasture is poor in their quality, the problem of over grazing, especially near the water recourses, is strong and performance is low, an improvement needs practicable treatments.

Objective:

Evaluation of the productive and reproductive performance of desert sheep kept under traditional production system conditions or under improved management practice.

Material and Methods:

Study area

The study was conducted at Agricultural Research station, El-Obeid, North Kordofan state,(latitude11˚:15̀-16˚:30̀ N and longitudes 27˚-32˚ E), Sudan. Most of North Kordofan state lies within arid and semi-arid ecological zones.

Experimental animals and feeding

A total of 341 ewes and 18 rams of Desert sheep subtype Hammari were used in this study. After a two weeks adaptation period the animals were divided randomly into four groups. The breeding is controlled with application of "Kunan" Figure 1; during the breeding season (February to March) the rams were allowed to mate the ewes. The birth of lambs occurred in the rainy season.

Experimental feed for animals

One group (60 ewes) was used as a control (CTL) (like in farmer traditional practice).The second group (92 ewes) was supplemented with ration A that composed of ground nut cake (GNC), the third group (97 ewes) was supplement with ration B which composed of ground nut cake and molasses (GNC-M) and the fourth group (92 ewes) was supplemented with ration C that composed of Roselle seeds and molasses (RS-M).

Animals were then allowed to graze normally under range conditions. Ewes were offered 450 g / head of the ration every three days at the watering periods and the rams 600 g / head for three days, Supplementary feeding practices were imposed on ewes prior to mating (flashing)for 45 days and during late pregnancy (Steaming-up) for 45 days.

Mature 18 rams introduced to all experimental ewes, the ratio of the sex were 1:20 . The rams were supplemented with same ration B (GNC-M) at the rate of 600 g/ram every three days. Rams were allowed to mix with the ewes twice daily. The watering stock after three days (Figure :2).

Ewes were monitored for signs of behaviour estrous and those detected were serviced naturally, those returned to estrous were serviced again, ewes demonstrating were naturally mated twice daily.

Figure 1: Control the breeding with application of "Kunan"

Figure 2: Watering stock after three days

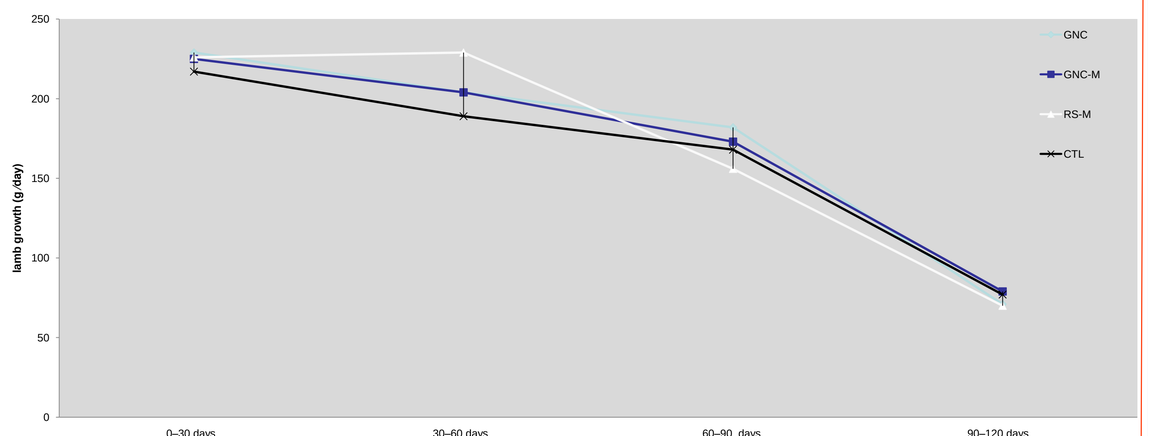

Figure 1:Effect of pre-partum supplementary feeding on lamb growth

Results:

Reproductive performance of ewes

Supplementation had considerably improved the percent of ewes that get pregnant in the first service. The conception from the first service were highest on ewes fed with GNC-M and RS-M, the control group recorded highest none pregnant ewes (Table 1).

Supplementation improved the reproductive performance, ewes on GNC-M recording the best reproductive performance (Table 2).

Growth rate of lambs

Figure 1 Illustrates the daily growth rate of lambs in monthly periods during the whole experimental period of 120 days, Lambs borne from ewes of control group had less body weight gain compared with supplemented groups. Lambs of RS-M were recorded best growth rate in before weaning and recorded less weight after weaning Single lambs recorded significantly heavier weight than twin lambs (figure 2). Male lambs recorded higher growth rate before weaning (figure3).

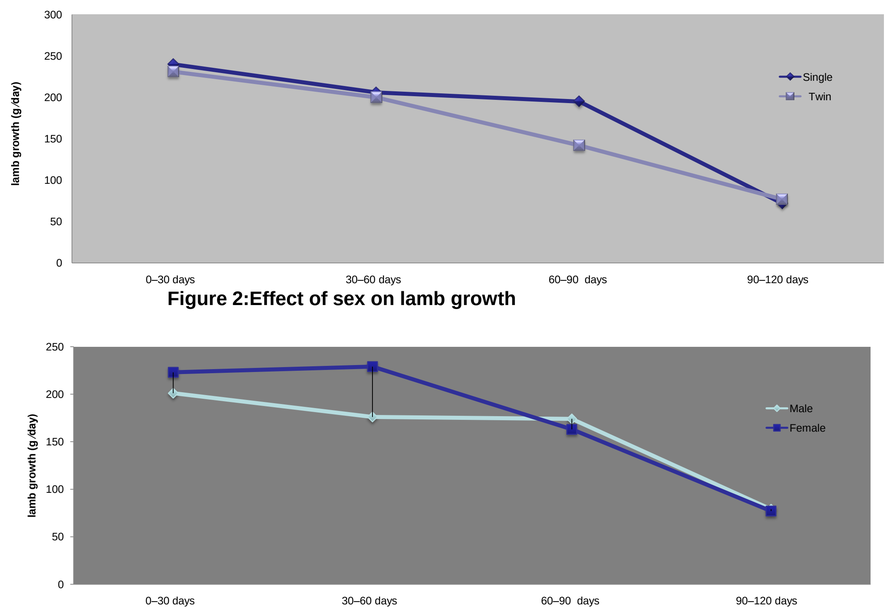

Figure 2:Effect of sex on lamb growth

Figure 3: The effect of birth type on lamb growth

Table 2. Effects of supplementation and age on ewe reproductive performance.

Factor		Lambing rate %	Fertility rate %	Prolificacy %	Weaning rate (a) %	Weaning rate (b) %	Fecundity %	Abortion %	Pregnancy %
Treatments	GNC	75 b	82 b	116 a	66 b	76 c	87 b	2 a	82 c
	GNC-M	91 a	94 a	109 a	91 a	92 a	99 a	2 a	94 a
	RS-M	82 b	87 b	108 a	73 b	83 b	88 b	5 b	87 b
	CTL	53 c	75 b	103 b	47 c	85 b	55 c	15 c	75 d
Age group	≤ 2years	70 b	80 b	106 b	65 b	88	75 b	8 c	80 ab
	2-4 years	82 a	87 ab	110 ab	77 a	85	90 a	5 b	72 b
	≥ 4 years	81a	90 a	113 a	73a	91	91 a	3 a	83 a

abcd means in the same column bearing different superscripts are significantly different (P<0.05)

GNC Ground nut cake; GNC-M Ground nut cake and Molasses ; RS-M Roselle seeds and Molasses ; CTL Control

Table 1. Effect of diet and age on reproductive performance (number of services)

Factor		Pregnancy rate at different service number							
		1st service		2nd service		≥ 3rd service		not pregnant	
		n	% of total	n	% of total	n	% of total	n	% of total
Treatments	GNC	61	67 b	10	11 bc	4	4 b	16	18 b
	GNC-M	72	74 a	13	13 b	6	6 b	6	6 c
	RS-M	66	72 a	7	8 c	7	8 b	12	13 b
	CTL	28	47 c	10	17 a	7	12 a	15	25 a

abc means in the same column bearing different superscripts are significantly different (P<0.05)

GNC Ground nut cake; GNC-M Ground nut cake and Molasses ; RS-M Roselle seeds and Molasses ; CTL Control

Conclusion:

The result of the present study indicated that, supplementation of desert ewes during the dry season is very important .

• The study indicated the importance of the nutritional status of dams during mating and late pregnancy to improve production and reproduction performance of the animals. .

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