COMPARATIVE STUDY OF BODY WEIGHT GAIN IN SHEEP OF DIFFERENT AGE GROUPS RAISED SEMI-INTENSIVELY IN MINNA, NIGERIA

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ABSTRACT

A twelve week old experiment was conducted on the comparative study of body weight gain in sheep of different age groups raised semi-intensively. Twelve sheep of different age groups were allocated to three treatments of four replicates: treatment one (0 – 6 months), treatment two (1 – 2 years) and treatment three (2 years above) respectively. The animals were weighed weekly using mechanical weighing scale before they were allowed to go out for grazing in the morning. There were highly significant differences in body weight gains at 5% (p<0.05) and 1% (p<0.01) levels respectively between the three treatment groups. The level of variability in standard error of means is higher in treatment two (T₂). It was concluded that body weight gain differs significantly in different age groups of sheep raised semi-intensively.

INTRODUCTION

Production of sheep is a specialized business since its operations require some management skills like good feeding, proper health and grazing management, a deviation from such skills (managements) may lead to variety of problems such as disease outbreak, parasitic infestation, reduction in weight gain, reduction in milk yield and poor skin production (Adegbola, 2002).

The potentials for improved small ruminant production in Niger State appears very high given wide distribution of forage species for utilization as food and availability of abundant water bodies for optimum productivity by these small ruminants (Adama, 2008).

Growth, usually defined as increase in size or body weight at a given age is one of the important selection criteria for the improvement of small ruminants such as sheep. The indigenous bread of sheep mainly kept for meat in Nigeria, Yankasa sheep is the most numerous and most widely distributed throughout the various ecological zones particularly Guinea and Sudan savanna vegetation belts (Afolayan, 1996).

There is often a great need for livestock herdsmen to know how much their animals weigh in order to make some management decisions on how much feed to give, when to breed, determination of dosages of various medications and most importantly when to market either as a weaner, growers or for slaughter (Sigh et al, 2004). It is in the light of all these, that this study seeks to determine the body weight gain in sheep of different age groups raised semi-intensively which could provide a reference baseline data that could be of benefit to the livestock farmers within the immediate environment.

MATERIAL AND METHODS

Location of study area

This study was carried out at the Research Farm of Federal University of Technology, Minna, Gidan-Kwano campus in Bosso Local Government Area of Niger State which is located in the Southern Guinea savanna zone. Minna has a land mass of 28.5km square and lies between longitude $6° 29^{i}E$ and latitude $9° 31^{i}N$. The average temperature ranges over the period is $27 – 39°C$ with an average monthly rainfall of 1200mm (students hand book, 2008).

Experimental animals and management

Twelve (12) heads of sheep were used for this study. They were randomly selected from a total of 26 heads of sheep in the farm. The experiment was conducted between the months of April – June, 2009. Each animal was properly identified with a tag. They were randomly assigned into three treatment groups of four replicates per group respectively. The groups comprised of young animals i.e. lambs of 0 – 6 months (T₁), adults of 1 -2 years of age (T₂) and those above 2 years of age (T₃) respectively. They were designated T₁, T₂ and T₃ and managed semi-intensively.

Body weight gain measurement

The body weight was taken for a period of twelve (12) weeks using mechanical weighing scale before they are allowed to go out for grazing between 8:00am to 9:00am. Four animals were weighed per

treatment group in a week which translates to a total of 144 readings throughout the study period. The data obtained were preliminarily analyzed using analysis of variance (SPSS, 2005). A further analysis was carried out to separate the means using Ducan multiple range test (DMRT, 1955).

Table 1: Body weight gain in sheep of different age groups raised semi-intensively

Weekly weight gain	0-6	1-2 years	2 years above	LS	SEM
Week 1	11.125 ± 1.297^c	$24.250 + 2.175^b$	37.50 ± 1.041^a	**	3.35
Week 2	11.50 ± 1.04^c	24.00 ± 1.78^b	36.75 ± 1.31^a	**	3.19
Week 3	11.63 ± 0.99^c	23.75 ± 1.70^b	36.25 ± 1.03^a	**	3.10
Week 4	12.00 ± 1.137^c	24.25 ± 1.75^b	36.125 ± 1.087^a	**	3.053
Week 5	11.63 ± 1.14^c	24.13 ± 1.59^b	36.00 ± 1.15^a	**	3.08
Week 6	12.00 ± 1.22^c	24.88 ± 1.59^b	37.50 ± 1.19^a	**	3.22
Week 7	14.13 ± 1.66^i	25.00 ± 1.58^b	37.75 ± 1.03^a	**	3.01
Week 8	12.75 ± 1.23^c	25.13 ± 1.85^b	37.38 ± 0.94^a	**	3.12
Week 9	13.25 ± 1.16^c	27.38 ± 1.78^b	37.75 ± 1.03^a	**	3.11
Week 10	14.00 ± 0.98^c	26.75 ± 2.15^b	38.50 ± 1.02^a	**	3.12
Week 11	14.25 ± 1.051^c	26.63 ± 2.14^b	38.13 ± 0.88^a	**	3.04
Week 12	14.13 ± 0.97^c	26.75 ± 2.37^b	$38.75 + 0.609^a$	**	3.13

* Level of significance at 5% (p<0.05) level
** Significant at 1% (p<0.01) level
Means followed by same letters indicated in rows are not significantly different at 5%.

RESULTS AND DISCUSSION

The preliminary analysis was carried out using analysis of variance indicated that there is highly significant difference between the group means even at 5 and 1% respectively. A further analysis was carried out to separate the means using DMRT and the ranks of the means are indicated in superscripts following the means. The "a" rank indicated that body weight gain is higher in treatment three (T₃) followed by treatment two (T₂) and treatment one (T₁) respectively.

Throughout the experimental period (12 weeks), the trend in body weight gain followed the same pattern, showing weight gain to be more pronounced in treatment three (T₃) while treatment one (T₁) recorded the lowest weight gain. In all, body weight gain was significantly different among the three treatment groups. The level of variability of the standard error of means (SEM) was highest in treatment two (T₂).

The significant differences in body weight gains observed in the three treatment groups is worthy of note. This is because the three groups involved animals of different ages whose feed intake, nutrient requirements, nutrient digestibility and utilization differs (Richard et al, 1999; Coffey et al, 2004). Similarly, feed intake and requirements at adult age in small ruminants is higher, this is because adequate nutrition is required for growth and reproductive functions such as improved conception rates which may translate into young birth weights (Alexander, 1984; Mukasa, 1994). At adult age in small ruminants, the body physiology performs at optimal level which allows for optimum feed in take and nutrient digestibility as a result of a well developed gastrointestinal tract particularly rumen.

The weight gains observed at the early part of the experiment (April - May), were much lower than in the later past of the study. This confirms the findings of (Leng, 1990; Bayracktar, 2003) that the period being a dry season, it is possible that a low protein: energy ratio obtained from the feeds, pastures and crop residues at this period translates into high heat increament in the rumen and high metabolic heat production in the body, which at times interacts with the climate to produce heat stress which inturn reduces feed intake.

Environmental factors of rainfall and available pasture as well as regular deworming against helminth worms might have influenced the appreciable body weight gains obtained in the later past of the study. The grazing land around the experimentally farm where the animals were kept is under restriction to entry and grazing by livestocks from the neighbouring communities. As such, experimental animals had opportunity to graze

optimally on the available pastures in the grazing land.

Variability observed in the standard error of means (SEM) observed in treatment two (T_2) maybe due to the fact that animals in this group are transiting from young age to the age of puberty. As such, high level nutrition is needed for their body growth and reproduction at this age (Parr et al, 1986).

In conclusion, the result of this study showed that body weight gain in sheep kept semi-intensively differs significantly with age and seasons of the year.

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