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EFFECT OF FEED UTILIZATION ON THE BODY CONDITION SCORE OF WEST AFRICAN DWARF (WAD) AND SAHEL DOES USING LIKERT SCALE ANALYSIS IN BALI, TARABA STATE

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Abstract

The study evaluated the influence of feed utilization on body condition score of West African Dwarf and Sahel does at the Teaching and Research farm of the Federal Polytechnic Bali, Taraba State. A total of 24 does of the two breeds were used for the experiment. They were fed Gmelina and cassava peel meal, Gmelina and cowpea husk, Ficus and cassava peel meal and, Ficus and cowpea husk as experimental treatments (T1-T4), respectively. The body condition was scored from 1 to 5. The backbone, loin and rump areas were palpated to determine the degree of sharpness or roundness and therefore the muscles and fat under the skin were evaluated. The study was aimed at determining the management tool that can be used to evaluate the nutritional status of animals. In conclusion therefore, the likert rated moderate BCS for WAD while thick was rated for Sahel breed of goats. Animals fed diet containing Gmelina leaves gives a higher (thick at average) BCS.

Key words; - Feeds, body condition score, Gmelina leaves, Ficus leaves, Likert scale.

Introduction

Body Condition Score (BCS) is defines or referred to as factors quantifying the degree of fatness or condition of the live animal (Russel, 1984). Body Condition Score was reported to be the best simple and indicator of body fat reserves which can be used by the animal itself in the periods of high energy demands, various stresses or under nutrition condition, and thus widely accepted indicator of post nutritional status (Calddeira and Portugal, 2007). The technique can be used for various species of animal like cattle, sheep and goat as well. Body Condition Score is used for evaluating the adequacy of previous feed supply, determining the future feed requirements, assessing the health status of individual animals, establishing the condition of animals during routine animal management and welfare inspections (Mauvya *et al.*, 2008) and in meat production systems (John, 1994).

The body weight of the goat generally has two components, the basic skeletal size and the degree of fatness (body condition) of the animal. Due to the variation in skeletal size between does, body weight alone cannot indicate the degree of fatness. Body Condition Score is thus an estimation of muscle and fat development of an animal and is correlated with the direct measurement of back fat depth or the proportion of fat in the animal body—providing a better estimate than body weight alone (Russel *et al.*, 1969).

Furthermore, it was reported (Kate *et al.* 2015) that body condition scoring is a management tool that can be used to evaluate the nutritional status of animals. Body condition scoring for goats uses a range from 1.0 to 5.0, with 0.5 increments. Healthy goats should have a body condition scoring between 2.5 to 4.0. Goats with a body condition scoring of 1.0, 1.5 or 2.0 indicate a management or health problem. A body condition scoring of 4.5 or 5 indicate an excessive amount of condition that could be detrimental to the goat's health; these scores are very rarely observed in goat herds under a standard management system.



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Martials and Methods

The body condition was scored from 1 to 5, as described by Allen (1990) and Steele (1996). The backbone, loin and rump areas were palpated to determine the degree of sharpness or roundness and therefore the muscles and fat under the skin were evaluated as described by Jefferies, (1961).

Very thin: Individual ribs had thin flesh covering; bones of the chine, loin and rump region were prominent. Hook and pin bones protruded sharply, with very thin covering of flesh and deep depressions between bones. Bony structure protruded sharply and ligaments were prominent.

Thin: Individual ribs could be felt but were not prominent. Each rib was sharp to touch but had thicker covering of flesh. Ribs did not have as distinct an overhanging shelf effect. Individual bone, of the chine, loin and rump regions were not visually distinct but easily distinguishable by touch. Hook and pin bones were prominent but the depression between them was less severe. The area below the tail head and between pin bones was somewhat depressed but the bony structure had some covering of flesh.

Moderate: Ribs could be felt by applying slight pressure. Altogether, ribs appeared smooth and the overhanging effect was not noticeable. The backbone appeared as a rounded ridge; firm pressure was necessary to feel individual bones. Hook and pin bones were rounded and smooth. Area between the pin bone and around tail head appeared smooth without sign of fat deposit.

Fat: Individual ribs were distinguishable only by firm palpation. Ribs appeared flat or rounded, with no overhanging shelf effect. Ridge formed by backbone in spine region was rounded and smooth. Loin and rump region appeared flat; hooks were rounded and the space between them flat. Areas of tail, head and pin bones were rounded with evidence of fat deposit.

Obese: Bony structures of backbone, ribs hooks and pin bones were not apparent; subcutaneous fat deposit very evident. Tail head appeared to be buried in fat tissue.

Results and Discussions

Body condition scores of WAD goats are presented in Table 1. The WAD goats fed on Gm +Cpm had moderate scores; those on Fs +Cph were thin, while the overall score for the breed was moderate. For Sahel does, are presented in Table 2. Gm +Cpm and Gm +Cph resulted in thick BCS; Fs+ Cpm and Fs+ Cph made them to have moderate BCS with the overall of thick for the breed.

Body condition score gives a measure of the nutritional status of the animal. It is somehow a measure of the management the animal had been exposed to (Taiwo *et al.*, 2005). It was rated 1, 2, 3, 4, 5 corresponding to very thin, thin, moderate, fat/thick and obese/very thick. In WAD, Gm + Cpm resulted in the next to the highest animal condition fat/thick and Fs + Cph produced thin animals condition. This probably means that Gm +Cpm were the most nutritious/palatable diet combination. Thus, highly consumed leading to fat animals which are not desirable for reproduction. Fat impedes reproduction (Yugal *et al.*, 2013). The Fs +Cph diet should be used sparingly as it resulted in lowest body condition score (thin), which is unlikely to sustain high productivity.

Generally, therefore, in normal animal production and for good results whether in terms of reproduction, milk or meat, animals are not expected to be fat/obese or thin/very thin. Thus, the moderate condition of WAD due to Gm + Cph and Fs + Cpm would be preferred. Feeding of these diets should therefore be encouraged above the others for acceptable body condition (in WAD). Overall, the BCS for WAD was moderate which means on the average, the diet combinations were suitable for the breed.

For Sahel does, only FS + Cpm and Fs + Cph resulted into moderate body condition which has already stated is most desirable in good animal production. The overall body condition for Sahel was thick which



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is slightly above the most desirable condition (moderate). Thus, the diet combinations when taken together were above optimum for Sahel. The Sahel is a desert/arid breed; when exposed to the lush browse and crop residue of the study area can result in overfed flock.

For good reproduction therefore, the diet required for Sahel should be lower than the average of the diet combinations in this study.

The effects of the body condition on birth weight, litter size and kids survival was reported among red Sokoto goats (Taiwo *et al.*, 2005). The does were flushed by grazing on cultivated pastures and served 500gm of concentrate ration per head per day. Their body conditions were assessed and fall within 1 (mean body weight of 20.7kg) and 2(mean weight of 24.1kg) indicating poor and fair conditions respectively. They further reported that all does on condition score 2 significantly had higher litter size (1.74), more kids to weaning (0.68), higher number of kids weaned (89.21 vs 45.85%) and or weight of kids weaned per doe kidding (4.92 vs 2.40kg), therefore it is necessary to invest in better nutrition in breeding does prior to mating.

Tizhe *et al* (2016), also reported on the influence of **body condition score (BCS) on litter size of Red Sokoto and Sahel goats**. The BCS had significant influence on the litter size measured by ovulation rate and foetal recovery. Does with BCS of 3 and 4 point cores were better than those of 1, 2 and 5 point score in litter size.

Table 1: Body condition score of WAD does according to treatment

Variable Feeds	Very Thick	Thick	Moderate	Thin	Very thin	Total freq.	Total Likert sum	Likert Mean (5+4+3+2+1)/5=3 (Accepted minimum Standard)	Remark
Ratings	5	4	3	2	1				
T1(Gm+cpm)	0	2	2	0	0	3	11	3.7	Thick
T2(Gm+cph)	0	0	3	0	0	3	9	3.0	Moderate
T3(Fs+cpm)	0	0	3	0	0	3	9	3.0	Moderate
T4(Fs+cph)	0	0	1	2	0	3	7	2.3	Thin
Total	0	2	9	2	0	12	36	3.0	Moderate

Table 2: Body condition score of Sahel does according to treatment

Variable Feeds	Very Thick	Thick	Moderate	Thin	Very thin	Total freq.	Total Likert sum	Likert Mean (5+4+3+2+1)/5=3 (Accepted minimum Standard)	Remark
Ratings	5	4	3	2	1				
T1(Gm+cpm)	0	3	0	0	0	3	12	4.0	Thick
T2(Gm+cph)	0	2	1	0	0	3	11	3.7	Thick
T3(Fs+cpm)	0	1	2	0	0	3	10	3.3	Moderate



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T4(Fs+cpm)	0	1	2	0	0	3	10	3.3	Moderate
Total	0	7	5	0	0	12	43	3.6	Thick

Conclusion and recommendation

The study was aimed at determining the management tool that can be used to evaluate the nutritional status of animals. In conclusion therefore, the likert rated moderate BCS for WAD while thick was rated for Sahel breeds of goats. Animals fed diet containing Gmelina leaves gives a higher (thick) BCS.

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