



Tropentag, September 20-22, 2017, Bonn

“Future Agriculture:
Socio-ecological transitions and bio-cultural shifts”

Graded *Enterolobium cyclocarpum* Seed Meal in Total Mixed Rations for West African Dwarf Rams

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Abstract

Globally, urbanisation has resulted into dwindling grazing lands, and this calls for agricultural practices that will be less dependent on large expanse of land. Apart from foliage, seeds from multi-purpose tree species are potential sources of nutrients for ruminant animals. Thus, they can be included in rations to improve intake and performance of intensively managed animals and serve as source of year-round cheap feed. This study was carried out to determine the intake and performance of West African Dwarf Rams fed graded levels of toasted *Enterolobium cyclocarpum* (Jacq. Griseb) seed meal (TECSM) in total mixed rations (TMR) Five diets were formulated to contain TECSM at 0 (control), 10, 20, 30 and 40 % inclusion levels using 25 rams averaging 11.40 ± 0.20 kg and aged 10–12 months. In a completely randomised design, the rams were assigned to 5 treatment groups of 5 rams each, housed in individual pens and fed their respective diet over 16 weeks. Data collected included dry matter and nutrients intake, weight gain, nutrient digestibilities, nitrogen utilisation, feed conversion ratio, feed efficiency and haematological indices. Rams fed TECSM had higher dry matter intakes than those fed the control diet while those fed at 20 and 30 % levels had higher crude protein intakes. Rams fed 0 % TECSM had higher neutral detergent fiber, acid detergent fiber, lignin and hemicellulose intakes (289, 172, 80.1 and 110 gd^{-1}). Nutrient digestibilities were significantly higher ($p < 0.05$) in rams fed TECSM at 30 and 40 % levels than others but the two treatments were similar. Rams fed ration containing 30 % TECSM had improved ($p < 0.05$) feed conversion ratio and feed efficiency. The glucose level was highest in the blood of rams fed 30 % TECSM (112 mg.dl^{-1}) but, total protein, albumin, globulin and cholesterol levels were similar ($p > 0.05$) in all the treatments. Incorporating TECSM in TMR is a promising feeding strategy especially during the dry season when there is scarcity of high quality forages and when grazing resources are limited. It is recommended that TECSM could be used as a plant protein source in TMR for small ruminants up to 30 % inclusion level for optimum performance.

Keywords: Digestibility, haematology, nitrogen utilisation, performance, voluntary intake