

12. THE EFFECT OF SUBSTITUTING *LEUCAENA LEUCOCEPHALA* FOR COTTON SEED CAKE AS PROTEIN SUPPLEMENT FOR UREA TREATED MAIZE STOVER ON PERFORMANCE OF GOAT WEANERS

Kimbi, E. F. C., MSc. (Agric.)(1997)

Supervisors: Dr. Ndemanisho, E.E. and Prof. Kimambo A.E.

Three experiments were conducted to evaluate feeding value of *Leucaena leucocephala* as a protein supplement to urea treated maize stover for goat weaners. Chopped maize stover was treated with urea (30g urea in 600 mls of water kg^{-1} DM maize stover and ensiled for 14 days. Treated maize stover was given as basal diet while dried *Leucaena* leaves (DLL), cotton seed cake (CSC), hominy meal (HM) and mineral mixture were used as components of supplementary rations. Four treatment rations based on DLL and CSC as a protein supplements were formulated such that DLL replaced 0, 57, 75 and 100% of CSC yielding treatment rations containing 0, 15, 30 and 45% of DLL. In experiment 1, 24 goat weaners (12 males and 12 females) with mean initial body weight of 12.6 ± 2.6 were randomly allocated to four treatment diets. Feed intake and growth performance were recorded for 63 days. In experiment 2, digestibility trial to evaluate the effect of dietary treatment on nutrients digestibility and nitrogen utilization was performed using 12 male goats from experiment 1. In experiment 3m degradability studies using 3 fistulated steers was performed to evaluate degradability of feedstuffs used in this experiment. From experiment 1 mean dry matter (DM), crude protein (CP) and energy (E) intake ranged from 58.65 – 63.08, 6.06 – 6.47 $\text{g/kgw}^{0.75}$, and 0.63 – 0.69 ME MJ/ $\text{kgw}^{0.75}$ respectively. The DM, CP and E intake were not significantly ($P>0.05$) different between treatments. The mean daily gains were not significant ($P>0.05$) affected by treatment diets. Digestibility coefficients of DM, OM and CP decreased with increasing levels of leucaena in the diets, however the difference was not significant ($P>0.05$). Digestibility coefficients of NDF and ADF were significantly ($P<0.05$) reduced when CSC was wholly replaced with DLL. Nitrogen retention when CSC was wholly replaced with DLL. Nitrogen retention was significantly ($P<0.05$) lower for goats on treatment 4 (1.47 ± 0.3) than those on treatments 1

(2.7 ± 0.3) and 3 (2.77 ± 0.3). The highest efficiency of N utilization ($68.97 \pm 5.14\%$) was shown by goats on treatment 3. Treatment of maize stover with 3% urea increased CP content from 2.9 (US) to 5.13% (UTS). Potential degradable material a + bDM were significantly ($P < 0.01$) increased from 80.38 (US) to 87.19% (UTS). The 48 h DM degradability was significantly ($P < 0.001$) improved from 59.8 (US) to 70.43% (UTS). Among the components of supplementary rations, HM was most degraded followed by DLL and lastly CSC. It was deduced from this study that DLL can substitute up to 75% of CSC as a protein supplement to goat weaners without a reduction in performance. Some recommendations are given.