5. FORMULATION OF TOTAL MIXED RATION FOR URBAN DAIRY COWS IN TANGA

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A feeding experiment, in-vitro DM digestibility, In-sacco DM degradability and rumen environment studies were conducted to asses the feeding value of total mixed ration (TMR) fed to dairy animals. In the feeding experiment 15 Brown Swiss/Sahiwal crosses were allotted randomly to three rations. Ration 1 (R1) contained grass hay (GH) offered *ad libitum* and concentrates (59% Maize bran, 20% Leucaena hay, 20%, copra cake, and 1% bayslick). Ration II (R2) and ration III (R3) were formulated to contain 19.9% Grass hay, 15% Leucaena hay, 15.33% Maize bran, 20% sisal waste, 23.77% copra cake, 5% sunflower cake, and 1% bayslick. R2 offered *ad libitum* in two portions, grass hay (GH) portion and mixed portion (R2MP) in which all other components were blended. R3 in which all ingredients were mixed together was fed *ad libitum*. Two fistulated steers were used to asses the effect of the 3 rations on ruminal pH, NH_3-N, volatile fatty acids (VFA) concentrations and in sacco DM degradability of grass hay. The average daily DM intakes were 8.15 kg, 8.80 kg, 8.39 kg; Crude protein 855.75 g, 1348.63 g, 1290.63 g and energy 76.93 MJ ME, 102.48 MJ ME, 102.34 MJ ME for R1, R2 and R3 respectively, Protein intake being significantly higher ($P<0.05$) for R2. The same was true for DM and energy intake. The mean rumen pH and NH3-N values were 6.8, 6.6., 6.6 and 92.8 g/1, 93.5 g/1 and 58.0 g/1 for R1, R2 and R3 respectively. Significantly ($P<0.05$) higher values of rumen NH3-N being recorded in R2. The VFA production was similar for R2 and R3, both of which were significantly ($P<0.05$) higher than in R1. GH was degraded better in steers fed R1 than R2 and R3. The 48 hour DM disappearance of concentrates (CC) in R1 (81.78%) was significantly ($P<0.05$) higher than that of R2MP and R3 (68.6% and 63.94% respectively). The costs (shs) per kg feed and per kg potential milk yield were: 34.90, 46.60, 56.00 and 41.00, 34.80, 40.25 respectively for rations R1, R2 and R3. It is concluded that TMR production and use is feasible both biologically and economically.