

Improvement of Plantain Leaves Nutritive Value in Goats by Urea Treatment and Nitrogen Supplements

Authors : Marie Lesly Fontin, Audalbert Bien-Aimé, Didier Marlier, Yves Beckers

Abstract : Fecal digestibility of mature plantain leaves was determined in castrated Creole goats in order to better assess them. Five diets made from plantain leaves were used in an in vivo digestibility study on 20 castrated Creole goats over three periods using a completely random design in order to assess their apparent fecal digestibility (Dg). These diets consisted of sun-dried leaves (DL), sun-dried urea treated leaves (DUTL, 5kg of urea per 100kg of raw product ensilaged during 90 days with 60 kg of water), sun-dried leaves + hoopvine (Trichostigma octandrum, L)(DLH, DL: 61.4% + Hoopvine: 38.6%), sun-dried leaves + urea (DLU, DL: 98.2%+ U: 1.8%), and fresh leaves. (FL). 0.5% of salt diluted with water was added to diets before distribution to the goats. A mineral lick block was available for each goat in its digestibility cage. During each period, diets were distributed to meet the maintenance needs of the goats for 21 days, including 14 days of adaptation and 7 days of measurement. Offered and refused diets and feces were weighed every day, and samples were taken for laboratory analysis. Results showed that the urea treatment increased CP (Crude Protein) content of DL by 44% (from 10.4% for DL to 15.0% for DUTL) and decreased their NDF (Neutral Detergent Fiber) content (55.5% to 52.4%). Large amounts of refused feed (around 40%) were observed in goats fed with FL, DLU, and DL diets, for which no significant difference was observed for DM (Dry Matter) intakes (40.3; 36.6 and 35.1g/kg0.75 respectively) ($p>0.05$). DM intakes of DUTL (59.9 g/kg0.75) were significantly ($p<0.05$) greater than DLH (50.2 g/kg0.75). DM Dg of DL was very low (29.2%). However, supplementation with hoopvine and urea treatment resulted in a significant increase of DM Dg (40.3% and 42.1%, respectively), but the addition of urea (DLU) had no effect on it. FL showed a DM Dg similar to DLH and DUTL diets (39.0%). OM (Organic Matter) Dg was higher for the DUTL diet (45.1%), followed by DLH (40.9%), then by DLU and FL (32.9% and 40.7% respectively) and finally by DL (29.8%). CP Dg was higher for the FL diet (65.7%) and lower for the DL diet (39.9%). NDF Dg was also increased with urea treatment (54.8% for DUTL) and with the addition of hoopvine (41.4%) compared to the DL diet (31.0% for DLH). In conclusion, urea treatment and complementation with hoopvine of plantain leaves are the best treatments among those tested for increasing the nutritive value of this forage in the castrated Creole goats.

Keywords : apparent fecal digestibility, nitrogen supplements, plantain leaves, urea treatment

Conference Title : ICAAS 2022 : International Conference on Agriculture and Animal Sciences

Conference Location : Miami, United States

Conference Dates : March 11-12, 2022