

Effects of supplementing rice straw with two fodder tree leaves and their combinations on voluntary feed intake, growth, and nitrogen utilization in sheep

Abstract

Fodder tree leaves (FTL) are limitless nutrient resources that provide high-quality feed, particularly during the dry season, improving animal diets, and reducing the use of concentrates in ruminant livestock farming. In order to determine the benefits of FTL, two experiments were conducted to measure the voluntary feed intake, growth performance, and nitrogen utilization of forest-type (FT) sheep fed rice straw (RS) and supplemented with either *Leucaena leucocephala* (LEU) or *Samanea saman* (SAM) or their equal combination (LS). For the growth trial (Experiment 1), 12 male FT sheep with mean initial body weight (BW) of 17.0 ± 1.0 kg (mean \pm SD) were randomly assigned to one of four dietary treatments in a Completely Randomized Design. The diets were Urea-treated RS (UTS) (Control), RS + L (LEU), RS + S (SAM), and RS + 50% L + 50% S (LS). After 14 d of adjustment period, feed intakes and refusals were recorded daily, whereas BW was recorded bi-weekly for 12 wk. Four rams weighing 17.0 ± 1.0 kg BW were randomly assigned to the four treatments over a four period in a repeated (4×4) Latin square design to estimate the nitrogen (N) balance study (Experiment 2). Treatment diets were the same as that of Experiment 1. Dry matter intake of straw was highest ($P = 0.0001$) for sheep fed UTS. However, combining L with S increased ($P = 0.0001$) straw DM intake compared to feeding L or S alone. There was no significant difference ($P > 0.05$) in total feed intake between sheep offered UTS and LS, but both were significantly higher ($P = 0.0001$) than those offered LEU and SAM. Body weight gain (3.70 kg) and growth rate (196.15 g/d) were highest ($P = 0.0001$) for sheep offered LS compared to the other treatment groups. Values for N balance differed ($P = 0.0001$) among treatment diets. N balance for LUE and LS supplemented diets were higher than that of SAM but all were higher ($P = 0.0001$) than those offered UTS. *Leucaena* and *Samanea* leaves could, therefore, be utilized as supplement to poor-quality straws to improve the productivity of small ruminants especially during the long dry seasons in the tropics. © 2023 The Author(s). Published by Oxford University Press on behalf of the American Society of Animal Science.