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Nutrient Fluxes in Intensive Urban Sheep Production in Niamey, Niger

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Abstract

Sheep fattening is an important economic activity in the West African Sahel, especially before the Islamic festival of Eid-al-Kabir. This study therefore, focused on the nutrient intake of Sahelian type sheep during the cool dry, hot dry and rainy season in 8 intensive urban sheep production enterprises in Niamey, Niger. In the selected households animals were offered bush feeds, concentrates and cultivated feeds. Intake of dry matter (DM), nitrogen (N), potassium (K) and phosphorus (P) was quantified every 6 weeks and the effect on animal performance was assessed for the weight categories I: ≤ 10 , II: $>10 \leq 20$, III: $>20 \leq 40$ and IV: $>40 \leq 60$ kg. Average daily dry matter intake per animal of cultivated feeds was $1102 \text{ g} \pm 286.5$ in the cold dry season and differed ($p < 0.05$) from that of the hot dry season ($269 \text{ g} \pm 77.9$) and rainy season ($238 \text{ g} \pm 132.8$). For concentrates and bush feeds, no differences ($p > 0.05$) were found in DM intake across seasons. Daily intake (g) of N, K and P averaged 37 ± 10.4 , 34 ± 8.8 and 8.7 ± 3.6 per animal during the rainy season and 32 ± 5.8 , 29 ± 5.8 and 5.6 ± 1.0 during the cool dry season ($p > 0.05$ in all cases). In the hot dry season, N, K and P intake (g) decreased to 12 ± 2.4 , 13 ± 1.8 and 2 ± 0.3 per animal ($p < 0.05$ in all cases). The animals' average daily weight gain (AVDG, g) in categories I, II, III and IV was 92 ± 8.8 , 54 ± 6.1 and 43 ± 6.2 and -15 ± 15.5 in the cool dry season as opposed to 72 ± 14.4 , 54 ± 8.0 , 5 ± 6.7 and -39 ± 16.4 in the hot dry season ($p > 0.05$ for I, II, IV, $p < 0.05$ for III) and 74 ± 27.2 , 42 ± 7.3 , 33 ± 8.1 and 3 ± 29.0 in the rainy season ($p > 0.05$ in all cases). The results indicate that, irrespective of season, fattening sheep above a live weight of 40 kg is inefficient under the given feeding practices and underline the need for a change in fattening rations if sheep of higher live weight are to be produced for specific marketing occasions such as Eid-al-Kabir.

Keywords: Nutrient fluxes, animal performance, sheep, urban agriculture