

Productivity and nutritive values of different fractions of oil palm (*Elaeis guineensis*) frond

ABSTRACT

Productivity, nutrient contents, in vitro gas production and in sacco degradability of different fractions and whole OPF were determined to assess the feeding value of OPF as a ruminant feed. An in vivo digestibility trial was also carried out using goat. Freshly harvested OPF was randomly collected, partitioned and weighed. An OPF from 21 years older palm weighed 13.4 kg and the annual fresh matter yield of petiole, leaflet and midrib was 46.5, 11.8 and 3.4 ton/ha, respectively. Leaflet contained 439, 926, 698, 501, 168, 196, 748 and 52 (g/kg) of dry matter (DM), organic matter (OM), neutral detergent fiber (NDF), acid detergent fiber (ADF), cellulose (CE), hemicellulose (HC), total carbohydrate (TC) and non fiber carbohydrate (NFC), respectively. Petiole contained lower ($p<0.01$) DM, CP and EE contents than leaflet. Organic matter, CE and TC contents were higher ($p<0.01$) in petiole compared to leaflet. Silica and lignin contents were highest ($p<0.01$) in midrib followed by leaflet, whole OPF and least in petiole. The Ca, P, Na, K and Mg contents (g/100 g DM) of leaflet were 0.529, 0.182, 0.039, 0.876, and 0.168, respectively. In vitro DM digestibility (g/100 g) at 48 h of leaflet, petiole and midrib was 32.7, 38.7 and 30.2, respectively. The in sacco DM degradation (g/100 g) at 48 h of leaflet was higher than that of whole OPF, petiole and midrib. The in vivo digestibility of DM, OM, CP and ADF of whole OPF was 52, 56, 43 and 26%, respectively. It can be concluded that leaflet is the most nutritious fraction of OPF and midrib is the least. The nutrient content and digestibility of the whole OPF showed that OPF could be an alternative roughage source for ruminant diets.

Keyword: In sacco degradability; In vivo digestibility; In vitro gas production; Nutrient contents; Oil palm frond; Productivity