

Effect of urea-molasses treatment on chemical composition and in vitro digestibility of maize cobs

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pp 98-105

Abstract

An experiment was conducted to evaluate changes in the chemical composition and in vitro digestibility of urea-molasses treated maize cobs. Maize cob (*Zea mays*) was treated with fertilizer grade urea and molasses dissolved in water equivalent to 0.5 % (T2), 1.0% (T3), 1.5% (T4) and 2% (T5) (w/v) to which was added 500g of molasses and sprayed on 100g quadruplicate samples on Dry Matter (DM) basis while the untreated cobs represent the control (T1). The resulting products were sundried and kept in polythene bags for further investigation. Samples from the untreated (T1) and the treated (T2 to T5) were investigated for proximate composition, in vitro gas production characteristic, estimated organic matter digestibility (OMD, %), metabolisable energy (MJ/Kg DM) and short chain fatty acid (SCFA, μmol). Changes in the mineral composition were also determined. Results obtained showed a wide variation in the proximate composition (%) with crude protein ranging from 1.50 (T1) to 12.81 (T5). The contents of Neutral Detergent fibre (NDF), Acid detergent fibre (ADF) and Acid detergent lignin (ADL) differed (significantly $P < 0.05$) with values ranging from 26.50% (T5) to 70.25% (T1). Fermentation of the insoluble but degradable fraction (b, ml) was best in T4 (36.0) with the least observed in T2 (22.0). The estimated OMD and ME were highest in T5 (55.30% and 14.47 MJ/kg) respectively. In conclusion, treatment of maize cobs with urea and molasses could be an effective way of upgrading the nutritive value low of maize cobs. Maize cobs treated with 2% urea recorded the best content of crude protein, ME, calcium, magnesium, and zinc and can be exploited as a feedstuff in ruminant production systems.

Keywords: maize cob, urea, molasses, chemical composition, in vitro gas, digestibility

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Target audience: Researchers, Small ruminants, Farmers and Animal scientists