Studies on the nutritive value for pigs of New Cocoyam (Xanthosoma sagittifolium)

Digestibility and nitrogen balance with different levels of ensiled leaves in a basal diet of sugar cane juice

Abstract

Four crossbred (Yorkshire*Landrace*Pietran) castrated male pigs with initial weight of 18.7±3.2 kg (mean ± SD) received varying proportions of ensiled New Cocoyam (Xanthosoma sagittifolium) leaves (ENCL) and fresh sugar cane juice in two consecutive periods to provide different levels of crude protein in the range of 80 to 160 g/kg of diet DM. In period 1, the planned levels were: 100, 120, 140 and 160 g/kg DM; in period 2 these were changed to 90, 110, 130 and 150 g/kg DM. The fresh sugar cane juice contained 20 to 21% total sugars. The Cocoyam leaves were macerated in a high-speed mechanical chopping machine and ensiled with addition of 10% (fresh basis) of sugar cane juice.

The leaf silage was of excellent quality as judged by smell and colour and the rapid fall in pH (< 4) within 3 days of ensiling the leaves. Recorded proportions of ENCL in diet DM were 0.49, 0.56, 0.67 and 0.76 in period 1 and 0.46, 0.48, 0.57 and 0.67 in period 2. DM intake was high on all diets (range from 32 to 53 g/kg LW) and showed a curvilinear response to increasing proportions of ENCL in the diet, with a maximum value at 0.55 of ENCL in diet DM. Apparent digestibility of DM decreased, and that of crude protein increased, as the proportion of ENCL in the diet DM increased. N retention increased with increasing proportion of ENCL in the diet, the relationship being curvilinear with the maximum value at 0.67 ENCL, equivalent to 130 g crude protein per kg of diet DM.

Key words:
Curvilinear response, dry matter intake, N intake, production function design

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