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

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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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