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Use of fresh stylosanthes (*Styosanthes guianensis, CIAT 184*) and cassava foliage (*Manihot esculenta,* Crantz) as a protein source for crossbred pigs

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Introduction

In view of the predicted world shortage of cereal grains because of competing needs of the expanding human population, the availability and supply of grains and protein feedstuffs for livestock is likely to become more limited (Close, 1993). There is thus an urgent need for research to develop alternative feed resources, especially for pigs and poultry.

Cassava, or tapioca, (*Manihot esculenta*, Crantz) is an annual tuber crop grown widely in tropical and sup-tropical areas. Its thrives in sandy-loam soils with low organic matter, and in areas receiving low rainfall and with high temperatures It is therefore a cash crop cultivated by small-holder farmers within the existing farming systems in many countries (Wanapat *et al.,* 2000). Considerable amounts of cassava leaves are readily available as a by-product at the time of harvesting the roots. However, in the rainy season it is difficult to sun-dry the leaves and extending the drying period diminishes the nutritional quality of the product (Phuc, 2001).

Among the potentially valuable unconventional feeds, cassava leaves have attracted the attention of many researchers because their high protein content (170 to 400g /kg CP on a dry matter basis) (Ravindran, 1993). While cassava leaf protein is low in sulphur amino acids (Gomez and Valdivieso, 1984), the content of most other essential amino acids is higher than in soya bean meal (Eggum, 1970). The higher protein content and relatively good profile of essential amino acids are reasons for believing that cassava leaves could be a potentially valuable protein source for monogastric animals.

One plant that has also been given much attention is stylo (*Stylosanthes guianensis*), which is a perennial fodder legume of Latin American and Central American origin, introduced into other areas throughout the world. It is a sub-shrub, semi-erect or erect, with strong tap root and small round root nodules. Its stem has many branches, is herbaceous or lignified at the base, and grows to a height of 1 m.

Leaves are trifoliate, leaflets elliptical to lanceoelate. Inflorescence is a loosely capitates spike, terminal or auxiliary, with more than 4 flowers (Mannetje and Jones, 1992).

Stylo, CIAT 184 grows well and is well-adapted to a wide range of environmental conditions. It was initially widely used for ruminants, but in Laos is now more commonly fed to pigs rather than ruminants. Legumes can provide extra protein, as they have much higher levels of protein in their leaves than grasses; legume leaves also provide essential minerals and vitamins for animal growth. Stylo was introduced to small farmers in Laos as a feed for ruminants, but it was soon realized that farmers were feeding it to their pigs (Horne and Sture, 2000).