



Excellent forage quality improves weight gain and feed efficiency in farm animals

Introduction

Leaf meals (LM) are leaves and twigs dried, ground, and used as livestock feed and are an important management tool during the dry months when fresh fodder is in limited supply. *Leucaena leucocephala* (wild tamarind) is the best-known source of LM in Jamaica because of its high nutritive value. In other tropical countries studies have been conducted on the use of *Gliricidia sepium* (gliricidia); *Samanea saman* (acacia); *Stylosanthes guianensis* (stylo); and *Moringa oleifera* (moringa) for LM production.

Preparing the leaf meals

In preparing LM, leaves and browseable twigs of these fodder trees/shrubs are sun-dried for seven hours or air-dried under a roof for five days, and then ground and stored in sacks. For proper storage and to avoid spoilage, the leaves and twigs should be dried to 10-13% moisture content.

Effectiveness

The crude protein (CP) contents of the leaf meals derived from legumes and cassava are higher than the recommended 11% dietary CP required for favourable microbial synthesis and activity in the rumen and therefore should not be fed at 100%.

Some of Our Other Publications

- Goat Care and Management
- The Mulberry Plant
- Forage Fact Sheet : *Morus spp.* (Mulberry) and *Trichanthera gigantea*
- Multi-Nutrient Blocks

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Forage Fact Sheet

Stylosanthes guianensis
and
Cassava Leaf Meal

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Ministry of Agriculture & Fisheries
Research & Development Division
Livestock Research & Improvement Division
Animal Nutrition and Forage Research

Potential High Protein Feed Supplements for the Tropics

Stylosanthes guianensis

Stylosanthes guianensis (stylo) is a legume that is adapted to acid infertile soils, has a low P demand, is easily established from cuttings or seeds, and is drought tolerant; making it an excellent protein source during the dry season. In Asian countries it is intercropped with rice and acts as a ground cover to prevent erosion in orchards.



Establishment

To ensure germination, seeds need to be scarified by soaking in water at 55°C for 25 minutes or mechanically using sand paper. Stem cuttings harvested in the wet season are cut 15-20 cm long and lower leaves removed, the stems are then buried with less than half exposed above ground.

Palatability/acceptability

Not readily eaten by ruminants early in the growing season but becomes relatively more palatable than associated grasses later into the dry season.

Table 1. Nutrient composition of *Stylosanthes guianensis*, as fed basis

Nutrient	Values
Dry Matter, %	19.8
Crude Protein, %	19.9
Crude Fibre, %	13.3
Ash, %	9.4
Total P, %	0.3
Calcium, %	1.3
Gross Energy (kcal/g)	4.1

Cassava Leaf Meal as an Animal Feed



The leaves of the cassava plant are rich in protein, minerals, vitamins B₁, B₂, C and carotenes, but lower in methionine and lysine compared to soybean meal. Researchers have reported that feeding non-ruminants fed 60% cassava leaf protein concentrate has no adverse effects on growth.

For non-ruminant feeding, the leaves must be stripped, dried and ground into a meal, 100kg of fresh cassava leaves produces 20-25kg of meal. Leaves can be reaped after tuber harvesting or while the plant is growing.

Establishment

Cassava is propagated from stem cuttings of plants at least ten months old and 2.5 to 3.5 cm thick. Stems are stored in a dry place until planting. Cuttings about 25 cm long should be taken from the lower 75 to 150 cm of the stem after the first 20 cm have been discarded. Cuttings from the upper part of the stem will grow faster, but their final yield is less.

Hand planting is done vertically, flat below the soil surface or tilted 45° from ground level. In dry climates use flat planting 5-10 cm below the soil surface and in rainy areas use vertical planting and tilted planting in semi-rainy areas.

Table 3. Nutrient composition of cassava leaves and chips, as fed basis

Nutrient	Leaves	Chips
Dry Matter, %	88-93	86.44
Crude Protein, %	21	1.88
Crude Fibre, %	20	2.99
Ash, %	8.5	2.58
Total P, %	0.45	0.15
Calcium, %	1.45	0.20
Gross Energy (kcal/g)	3.01	3.98

Table 3. Cassava varieties held in the germplasm at Bodles Research Station¹

Varieties	Cyanide content %	Starch %	Moisture %
CM 849	0.05	23	68
CM 516	0.06	23	67
Prison Farm	0.03	30	66
MColl 22	0.08	35	57
Real Sweet	-	-	-
Blue Bud	-	28	61
Cuba Sweet	-	-	-

¹ All varieties have a maturation period of 9-12 month

Courtesy of Mr. Morris Taylor, Agronomist, Bodles Research Station