

## Legumes an Ideal Fodder in the Dry Season

The leaves of tree legumes such as *Gliricidia sepium* or *Leucaena leucocephala* show considerable promise as forage supplements for feeding to ruminants, especially in the dry season. Forage tree legumes provide a cheap and readily available source of high quality protein and can improve animal productivity. Legume forages containing protein which cannot be degraded in the rumen are able to supply ruminant livestock with amino acids at the small intestine.

Increasing the dietary level of such forages increases total nutrient intake and improves overall animal productivity. During the dry season, supplementation with dried leaf meal in the range of 15-20 percent of the overall diet will allow animals to continue to grow and produce during the whole year without comprising body conditioning.

At Livestock Research and Improvement Division we are currently investing the use of *Leucaena* as a lamb fattening ration in conjunction with cassava as part of our commitment to find locally available fodder resources that can replace concentrate feed.

### Some of Our Other Publications

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

For more information please contact  
the Livestock Research and  
Improvement Division  
Phone: 983-2842-3  
Fax: 983-2822



## Forage Fact Sheet

*Gliricidia sepium,*  
*Moringa oleifera* and  
*Leucaena leucocephala*

### Ministry of Agriculture and Fisheries

Bodles Research Station  
Old Harbour, P. O.  
St. Catherine, Jamaica



### Ministry of Agriculture & Fisheries

Research & Development Division  
Livestock Research & Improvement Division  
Animal Nutrition and Forage Research

# Legumes: High Protein Forages for Ruminant Production

## *Gliricidia sepium* (Quick Stick)

*Gliricidia* is used as a high protein supplement to low quality basal feeds such as grass, straw and other crop residues. Supplementation levels of *Gliricidia* usually fall in the range 20-40% and it has been suggested that *G. sepium* may be used as a sole protein source for ruminants especially during the dry season; providing all livestock mineral requirements if fed as sole feed, except for Cu and P which may need to be supplemented.



### Establishment

Sowing depth for seeding is 2 cm. Trees can also be established from cuttings, using stakes of 5-6 months of age, 1.5 m long and with a diameter of 3.5-4.0 cm. For living fences, use stakes 1.5-2.5 m long with diameters of 5-10 cm, planted 1.5-5.0 m apart to 20 cm depth. For densely planted protein banks, use stakes 50 cm long and six months of age.

**Table 1.** Nutrient composition of *Gliricidia sepium*, as fed basis

Nutrient	Values
Dry Matter, %	21.6-34.5
Crude Protein, %	20.69
Crude Fibre, %	23.08
Ash, %	7.69
Total P, %	0.30
Calcium, %	0.95
Gross Energy (kcal/g)	4.35

## *Moringa oleifera*

*Moringa* has a high biomass and is useful as forage for cattle in areas prone to droughts and has a high productivity of fresh material per unit area compared with other forage crops. This grossly underexploited plant source which is used for everything from water purification to animal feed has a lot to offer as a food and fodder resource in Jamaica.



### Establishment

Spacing for leaf production is 0.75 m (2.5 ft) within rows and 1 m (3 ft) between rows. Leaves can be produced intensively in beds with seeds spaced 10 cm x 10 cm (4 in x 4 in). Spacings of at least 2 m x 3 m (6.6 ft x 10 ft) are recommended when planting moringa with companion crops, depending on the shade tolerance and other requirements of the companion crops.

**Table 2.** Nutrient composition of *Moringa oleifera*, as fed basis

Nutrient	Values
Dry Matter, %	18.7
Crude Protein, %	27.5
Crude Fibre, %	19.1
Ash, %	11.5
Total P, %	0.2
Calcium	2.1
Gross Energy (kcal/g)	4.47

## *Leucaena leucocephala*

*L. leucocephala* is noted for its excellent palatability, digestibility, balanced amino acid profile, low fiber content and moderate tannin content that promotes the bypassing of protein from the rumen. *Leucaena* contains the anti-nutritional amino acid mimosine, a non-protein that has adverse effects on animals (if fed > 30% of the total diet) when the anaerobic rumen bacteria, *Synergistes jonesii*, is not present (mainly in Asian countries).



### Establishment

Plant in well-drained soils with pH >5.5 and maintain a weed-free area of at least 2 m during establishment. Seed must be scarified by soaking overnight. Seedlings can be raised in beds and removed for planting. Seeding rates of 1-2 kg/ha at depths of 2-3 cm are usually recommended in rows 3-10 m apart.

**Table 3.** Nutrient composition of *Leucaena leucocephala*, as fed basis

Nutrient	Values
Dry Matter, %	28.6
Crude Protein, %	22.8
Crude Fibre, %	15.1
Ash, %	7.7
Total P, %	0.2
Calcium	2.1
Gross Energy (kcal/g)	4.8