Caribbean Agricultural Research and Development Institute

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Factsheet

GROWING FORAGE LEGUMES

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Siratro: a versatile, productive forage legume.

FORAGE LEGUMES ARE THE KEY TO ECONOMICAL LIVESTOCK PRODUCTION.

INTRODUCTION

Legumes are a group of plants with special qualities. Their deep tap roots allow them to grow better than grasses during the dry season. They are of better feeding quality than grasses because they have higher levels of both protein and minerals which are essential for animal growth and production. Legumes can provide the same feeding quality as concentrates, but are much cheaper. They can be grown alone in pure stands (protein banks) to provide feed reserves for use in the dry season when grassses are at their poorest, or they can be sown in association with grasses in conventional mixed pastures. They do not require expensive nitrogen fertilizers, but must be carefully managed to remain productive year after year.

ESTABLISHMENT

Except for a few tree legumes such as Quickstick *(Gliricidia)* which will establish easily from stakes, forage legumes are all grown from seed. They should be sown at the start of the wet season. For normal sowing, the land preparation is the same as for most crops – usually one or two ploughings or a single ploughing and rotavating followed by one or two harrowings in order to produce a fine seed bed. Legume seed, either alone or mixed with seed of grasses such as Guinea grass, Chrysopogon, etc. can be sown mechanically or broadcast and lightly covered with soil. Care should be taken to avoid burying the seed deeper than about 1 cm (0.5 in).

Legumes can be established into an existing pasture without destroying all of the grass. The area should be heavily grazed (preferably by sheep or goats) or burnt prior to sowing. Legume seed can then be broadcast over the whole area, or sown in strips prepared by ploughing and harrowing. The strips should cover about a quarter of the area of the whole field. When broadcasting, the seeding rate should be increased to about twice the normal rate to ensure good establishment.

The seedlings should appear within about a week of sowing, but may not be obvious for another fortnight. If grass weeds are a severe problem in a pure stand of legumes, a selective herbicide such as "Fusilade" can be used after the legumes start to branch.

The species of legumes to be sown must be chosen according to the soil type and the rainfall pattern, but in general, small seeded types (Stylo, *Desmanthus)* should be sown at about 2–3 kg per ha (2-3 lb per ac) while larger seeded species (Siratro, Gylcine) should be sown at 4–5 kg per ha (4–5 lb per ac).

MAINTENANCE

If livestock are allowed to graze the newly sown legumes they will destroy most of the young plants. Grazing should therefore be delayed until about 3–4 months after sowing. If the legume population is low it would be better to allow the plants to flower and set seed (usually about 6 months after sowing) before allowing animals to enter the field.

Legumes do not need nitrogen fertilizer, and since they can enrich the soil with nitrogen, they will cause the grass to grow better. They do, however, need regular fertilizing with phosphorus (super or triple super phosphate) and potassium (muriate of Potash) on infertile soils. Farmyard manure is very good for all pastures. The local agricultural adviser will be able to suggest a suitable fertilizer programme.

If grass weeds become a problem, further applications of selective herbicides will help, but chemicals which kill broad-leaved weeds will also kill the legumes. These weeds can be controlled on large areas by mechanical brush-cutting, while on smaller areas, a cutlass can be used to selectively control species such as Cassie bushes *(Acacia* spp.).

GRAZING MANAGEMENT

Rotational grazing management is ideal for legume pastures where the farm is sub-divided into a sufficient number of different fields. Under this system, the area should be grazed down to a height of about 15 cm (16 in) and then rested for at least 4 weeks (wet season) to 6 weeks (dry season) before the animals are allowed to return. Where this is not possible, the stocking rate should be limited to about 2.5 cows per ha (1 cow per ac) to avoid over-grazing and destruction of the legumes. Special care needs to be taken where the pastures are grazed by sheep and goats, because these animals can graze closer to the ground than cattle. Legume pastures should not be grazed to a height of less than 15 cm (6 in) at any time, because this will reduce the legume content and damage the stand.

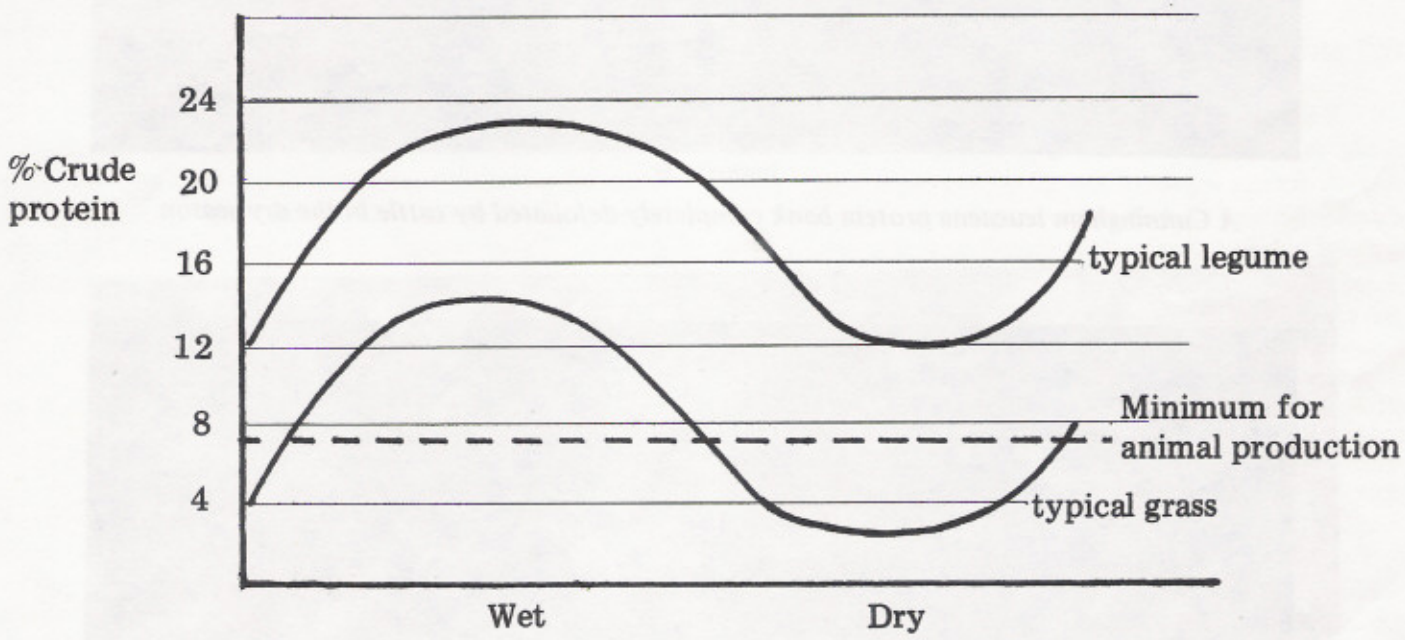
PASTURE QUALITY

A dry cow requires about 7 per cent crude protein in its diet to be able to maintain itself. If the protein content falls below this, the cow will lose weight. If it is to grow, or produce milk, it needs more than 7

per cent protein in its diet. Some grasses may have up to about 14 per cent protein when they are at their best during the wet season, but in a long dry season, after flowering, the protein content of most grasses falls to about 5 to 6 per cent, or less. Legumes, on the other hand, can have over 20 per cent protein during the best time of the year, falling to a minimum of about 12 per cent. This is why the combination of grass (to provide quantity) and a legume (to give quality) is the best way to feed ruminants.

The changes that occur in the protein content of pastures are shown in the diagram:

Crude protein content of tropical pastures



GENERAL

It is essential to have control over the entry of livestock into an area which is sown to legumes, because uncontrolled grazing will destroy the stand of legumes within a year or two. Good management, on the other hand, will allow them to persist for ten years or more. The species of legume to choose will depend upon the soil type in the field to be sown. The local agricultural adviser, or the nearest office of CARDI should be able to help to obtain seed of the most suitable legumes. It must be remembered, however, that in general, legumes will tolerate dry conditions much better than water-logging, so it is best to put them in well-drained areas. They will not usually tolerate the competition from very aggressive, creeping grasses such as Tanner, or even Pangola grass, if grown in very fertile soils. They are best grown with bunch grasses such as Guinea or Chrysopogon, or those which form an open sward, such as Bermuda or Star grasses.

If legumes are used wisely, they will save money and increase profit, because they will reduce the cost of both supplementary feeds (concentrates) and fertilizers.

A Cunningham leucaena protein bank completely defoliated by cattle in the dry season.

The same protein bank 6 weeks later after the cattle had been moved to another pasture.

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