Producing Elephant Grass for a ‘Cut & Carry’ System

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Elephant Grass

One of the major constraints in livestock production in the Eastern Caribbean is inadequate nutrient intake. Most cattle, sheep and goats, either free-graze or are tethered on native grasses along roadsides, on fallow lands, or under coconut trees. There is some irregular feeding of chopped sugar cane stalks and tops, and other crop by-products and residues including banana pseudostem and fruit, lime and grapefruit pulp, coconut meal, wheat/rice bran and molasses.

Improved grasses although rarely seen or utilized are a cost effective solution to increasing nutrient intake. CARDI’s work in Dominica and the Eastern Caribbean has shown that Elephant grass (Pennisetum purpureum), is one of the most suitable grasses to grow in a ‘cut and carry’ system for ruminant production.

Characteristics

Elephant grass is an erect grass which resembles sugar cane and grows in clumps. It has very tough, strong stems and grows up to 4.5 m (15 ft) tall. The grass shows a strong response to fertilizer, providing soil moisture is adequate, and high yields of a good to fair quality forage are obtained under a 5 - 8 week cutting sequence in areas receiving more than 1000 mm (40 in) annual rainfall. It can be grazed but is best adapted to feeding fresh (‘cut and carry’) or preserved (silage). It grows best on fertile soils of moderate to heavy texture and shows good tolerance to drought and periodic waterlogging. The seeds are of low viability necessitating propagation by stem cuttings.

Establishment

Location

For convenience in transportation, plots should be located as close as possible to the animal feeding area.

Land Preparation

In new pasture establishment the land should be thoroughly prepared before planting. On flat lands and where a tractor is available, the existing vegetation should be reduced through close grazing, brush cutting and/or spraying (Gramoxone®, Fusilade® or Round-up®) followed by ploughing then harrowing or rotovating. On sloping land or in areas where a tractor is not available, the existing vegetation should be removed as described above followed by use of a mattox, or a similar type of tool to dig shallow 2.5 - 5 cm (1 - 2 in) furrows 30 cm (1 ft) apart across the slope. Alternatively, the soil should be thoroughly tilled followed by furrowing.
Planting

Elephant grass is mostly planted from cuttings, which are best selected from hard stems about 6 months old. Several planting methods can be used:
- 3 - 5 node cuttings (or complete stems) can be laid in furrows 30 cm (1 ft) apart and covered completely with 2.5 - 5 cm (1 - 2 in) of soil.
- Rooted tillers can be planted upright.
- Clusters of three 3-node cuttings can be planted 30 cm (1 ft) apart at an angle with two nodes below ground. Within each cluster cuttings should be 8 - 15 cm (3 - 6 in) apart. This method is currently used by CARDI in Dominica.

Time to Plant

The best time to plant Elephant grass cuttings is shortly after the first rains at the beginning of the wet season. The earlier in the season the grass is planted the sooner the forage can be cut.

Management

Good grass management is equally as important as selecting the right species and establishing them correctly in the proper location.

Weed Control

An early application of fertilizer directed to the grass will allow for rapid establishment and reduced weed competition in the first 6 weeks. When the grass is fully established it restricts the growth of weeds by forming a canopy.

Fertilizing

Elephant grass, like any other crop, grows best when it has an adequate supply of all the necessary nutrients. Therefore application of fertilizer and/or manure is important. A basal application of NPK fertilizer (15:15:10 or 16:8:24) at a rate of up to 100 - 150 kg per ha (lb per acre) should be given, and ammonium sulphate at 150 kg per ha 2 - 3 weeks after planting. Ideally further fertilizer (up to 200 kg per ha) should be applied after every cutting. Because of financial and other constraints this may not be possible. However, an effort should be made to fertilize after every other cutting. Fertilizer should not be applied during prolonged dry weather.

Harvesting

The total yield of Elephant grass increases with age, but it becomes less nutritious. Therefore it is important to select a correct cutting interval. A cutting interval of 5 - 8 weeks will provide a reasonable balance between high yield and high nutritive value. Enough grass should be cut on a daily basis to provide for the needs of the animals. In order to avoid having too much mature fodder at the same time it is desirable to stagger the plantings. Where the growing season is long enough, 3 or 4 plantings could be done at intervals of 3 - 4 weeks.

Height of Cutting

The height to which Elephant grass is repeatedly cut can seriously affect yields and even its survival. Higher yields are obtained with a low rather than with a high cut. Cutting heights have no apparent effect on the protein content of the grass. The first cutting should be about 15 cm (6 in) above ground; subsequent cuttings can be at 5 cm (2 in). However too frequent low cuttings (5 cm) can sometimes cause grass clumps to die back. Therefore it is wise to alternate with an 15 cm (6 in) cutting after two 5 cm (2 in) cuttings.

Feeding

Animals should be supplied with fresh-cut, wilted or ensiled grass two to three times per day. The grass may be chopped to reduce wastage. Concentrates and minerals may be added to improve feed value. The feed should preferably be placed on a rack or bush rather than on the ground. A 300 kg animal will require about 36 kg of fresh, or about 25 kg of wilted grass or silage per day. The amount of Elephant grass fed will depend on other available grazing.

STOCKING RATE FOR CATTLE FED CUT ELEPHANT GRASS GROWN UNDER A MODERATE FERTILIZER REGIME.

<table>
<thead>
<tr>
<th>Area of grass planted (Hectares)</th>
<th>Numbers of cattle* that can be maintained</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>3.4</td>
</tr>
<tr>
<td>0.4</td>
<td>3</td>
</tr>
<tr>
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<td>2</td>
</tr>
<tr>
<td>0.15</td>
<td>1</td>
</tr>
<tr>
<td>0.08</td>
<td>0.7 - 1</td>
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</tbody>
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* Animals weighing 300 kg (660 lb)

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