

THE REPUBLIC OF UGANDA

IMPROVING ANIMAL PRODUCTIVITY

WITH

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Introduction

In Uganda smallholder dairy farming contributes substantially to the country's milk and meat supply, especially in urban areas where there is land shortage. The major feed resource base used by the urban smallholder includes: Elephant grass,(Pennisetum purpureum), crop residues and forage legumes such as Labalab purpureus; Siratro (Macroptilium atropurpureum) and Centro (Centrosema pubescens). There is more room for improvement, although the potential of animals under these systems is rarely realized because of a number of constraints.

Most of the required fodder particularly Elephant grass for livestock feeding comes from fallowed cropland, range-land and road-sides. These sources rarely meet livestock requirements particularly during the dry season. An adequate nutrient supply is further hindered by qualitative deficiencies, as a result of peculiar growth characteristics of pastures; they grow and mature rapidly with the onset of the rains. This rapid growth and early maturity lead to a rapid deposition of fibrous components, a decline in protein content, and increases in stem:leaf ratio of the forage, with stems containing the less digestible materials. Intake and digestibility in turn fall below the minimum required for maintenance of the animals.

Some forage legumes like Lablab purpureus which is already adapted in the farming systems of the smallholder dairy farmers produce a lot of biomass during the growing seasons which is often in excess of immediate requirements of livestock. This excess forage legumes could be harvested and preserved either as hay or silage to expand the feed base, and ensure year round supply of good quality fodder.

Supplementing a basal diet of Elephant grass or any other pasture grass with lablab hay improves milk production, prevents weight losses and thereafter improves fertility.

Importance of *Lablab purpureus* in the farming system.

There are two major cultivars of lablab bean found in Uganda:

(i) **Cultivar Rongai**

Has white flowers with brown seeds and produces more green material than Highworth.

(ii) **Cultivar Highworth**

Has purple flowers with black seeds. It produces more seed but very low fibrous green material and is not palatable to cows.

Green pods and dried seeds are an important item in the human diet. Lablab bean is used as pulse, shelled beans and green pods as vegetable. In Egypt, Lablab beans are used to make bean cakes by soaking, shelling and making into a paste, which is then fried with spices. Leaves and flowers are cooked and eaten like spinach. The young leaves are collected, dried and used in the same way as the cow pea leaves.

Husk and broken bits of the seeds during splitting are valuable feed for milking cows (dairy cows). The plant is grazed by cattle, sheep, goats and pigs and also eaten by poultry. The leaves have 28 percent protein while the whole plant has 13.5 to 22 percent protein. Lablab

hay is palatable and if cut at a young leafy stage it is chemically comparable to alfalfa, although less digestible. It also makes good silage. Incorporating this crop into grass pasture improves the quality, palatability, and digestibility of the pasture.

The varieties with quick growing and of spreading habit, can be used as good green manure as well as cover crop in plantations particularly in coffee, fruits, coconuts etc. Besides it remains green during drought periods and hence it is suitable for drought-hit areas. It is effective for erosion control and soil protection. It can be used as a nitrogen-fixing crop when grown alone, inter-planted with field crops, or grown in rotation with these crops, and may be grazed after the primary crop is harvested. In Sudan it has been used with some success to suppress the Pernicious sedge, Cyprus rotundas. Populations of this weed were reduced by 92 percent, and many others were completely suppressed.

Establishment of *Lablab* Forage Legume

Soil Requirements:

Lablab is extremely tolerant to soil texture, growing in deep sands to heavy clays, provided drainage is good. It grows in a wide range of pH, from 5.0 to 7.5 Good seed-bed free from weeds is required.

Inoculation

Lablab establishes well without being inoculated as long as the field has previously been established with a legume crop. Good nodulation is however obtained when the seeds are inoculated with a cow-pea inoculant.

Seed rates/spacing/sowing depth

A seed rate of 7.5kg/ha (with 2seeds per hole); spacing of 1 m x 1 m and a sowing depth of 2cm is recommended. It does not establish well with natural pastures. It is often undersown in maize and sorghum crops after the second weeding.

Fertilizer requirements:

Lablab crop nodulates well with an application of 250 kg/ha of Single Super Phosphate before sowing and an annual top-dressing of 125 kg/ha. Weeds must be removed before the top-dressing is done.

It is excellent once established, but its early growth is slow and so should not be subjected to weed competition at this stage.

Utilisation of *Lablab* during Dry-season

The ideal stage of growth for harvesting lablab fodder for use as hay, silage or green crop for improving animal production is at the beginning of flowering. The exact time at which the crop is harvested must be a compromise for two reasons:

(i) Early harvesting gives small biomass yields of readily digestible matter, whereas late harvesting provides more fodder at the cost of diminished digestibility in both leaf and stem.

(ii) The type of animal for which the conserved fodder is required must be taken into account.

The high protein content of Lablab crop associated with high dry matter yield, high protein and mineral contents shows that the use of lablab fodder as a protein supplement with low quality fodder grass like elephant grass is a practical approach for dry-season feeding of lactating cows.

The harvested plants should be left in the field for at least two days to allow the plants to wilt before transporting them to a drying place. This can be on top of a roof or in a shade.

The plants can be dried using tripods. This allows minimum dry-matter loss due to leaf shattering, mouldiness or termite damage.

The major problem in drying Lablab is the time it takes for the stems to dry. The leaves dry within three days while the stems can take as long as three weeks to dry. This problem can be overcome by chopping the plants into small pieces of 5-10mm before drying them or by removing the stems and drying them separately.

The dried fodder can be baled and stored for use during the dry season. Baling can be done using locally made wooden boxes and bound with sisal strings.

It is very important to ensure that the hay is stored in a well-ventilated place free from any moisture to prevent moulding.

Supplementing Elephant Grass Fodder with *Lablab* Hay During the Dry Season

Proper animal Nutrition should aim at:

(i) Feeding an animal a diet with Lablab hay containing more leaves than the stems because the leaves are always more nutritious than the stems.

(ii) The cow should get clean water and mineral lick throughout the day. Dairy meal should also be offered to the cow before milking. This enables the cow to utilize the hay and any other feed more efficiently. The dairy meal or any other concentrate provides a source of energy for the rumen microbes.

(iii) The animal should be dewormed and vaccinated regularly.

(iv) It should be provided with enough grass like elephant grass and some crop residues to be able to meet its maintenance and production requirements.

Lablab hay which is damaged by rain (mouldy) should never be fed to cows. Cows take time to adjust to a new feed, molasses or slated water can be sprinkled on the hay before offering it to the cows.

The Elephant grass and Lablab hay must be chopped before offering it to the animal. This increases intake of the pasture and makes it easy for the rumen microbes to break down the feed.

When lactating cows are supplemented with lablab hay:

- Milk production is improved
- Weight loss is minimized
- Forage intake is increased
- Animals become less susceptible to diseases
- Calving intervals are reduced.

Limitations in the use of *Lablab purpureus*

When introduced to Lablab bean, cattle take about a week to adapt. After that they graze its leaves, flowers, young and mature pods, and soft stems. Coarse stems are not eaten. Lablab bean has a fairly high content of phytic acid. This high content of phytate is of nutritional significance as is not only that phytate phosporous is unavailable to humans but also lowers the availability of many other essential minerals. The phytate could, however be substantially eliminated by processing methods such as soaking and cooking.