USE OF *GLIRICIDIA* AS AN ANIMAL FEED IN COCONUT LANDS

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One of the major limitations for improvement of dairy under coconut is the poor quality of available natural grasses under coconut and the fluctuating feed supply due to bi-modal rainfall pattern. Feeding concentrates has become unprofitable due to the low farm gate price of milk in comparison to the cost of production. Therefore, emphasis should be given for low cost feeding systems with locally available feeds. The value of Gliricidia as an animal feed is important in the effort to develop low cost feeding systems.

Gliricidia sepium, commonly known as *Wetahiriya* or *Ginisiriya* is a deep rooting medium sized multipurpose perennial which has the ability to fix atmospheric nitrogen, tolerate shade, and withstand repeated pruning. *Gliricidia* is well adapted to adverse conditions and grow well in wet as well as dry areas of the coconut triangle. It can also tolerate prolonged dry conditions and can withstand low fertile acidic and lateritic soils. Leaves, tender sterns and bark of *Gliricidia* are consumed by ruminants. As a result 77% of the biomass is edible leaving only 23% matured stem inedible by ruminants. *Gliricidia* is such a useful source of feed, which can be effectively used to enhance the quality of the ration of farm animals. In order to discuss the possible ways of incorporating the quality of the manipulating low quality feeds with *Gliricidia*, it is important to have a clear idea about the digestion of fibrous feed in ruminant.

Digestion of fibrous feeds in ruminants

The digestion of fibrous feeds take place in the fore-stomach of the ruminants aided by microbes inhabiting the rumen. Thus the ruminants are able to convert roughage materials such as grass,

leaves of tree fodder into invaluable final products such as meat and milk with the help of microbes. Efficiency of digestion in the rumen depends on the level of activity of the microbes. The feed consumed therefore has to be nutrient rich for microbial growth. One of the factors that influence microbial activity in the rumen is rumen ammonia nitrogen concentration. When the animal eats more of poor quality feeds low in rumen degradable protein, rumen nitrogen concentration goes down and slows down the digestion making feeds remain for longer periods in the rumen. But, if feeds of poor quality can be supplemented with feedstuff rich in protein enhance the efficient the changes efficiency of digestion. *Gliricidia* is high quality forage, which meet the above requirement.

Nutritive value of *Gliricidia*

Gliricidia has been identified as an excellent quality forage in many tropical countries due to its' nutritive value and chemical composition. Important characteristic of *Gliricidia* is the higher content of crude protein (20- 25%) that readily digests in the rumen. *Gliricidia* supplements the protein requirement of ruminants to a great extent. Further it is a good substitute for expensive protein supplements such as coconut meal, Soya bean meal etc. Dry matter and other nutrient digestibilities are higher in *Gliricidia* compared to other common tree fodders. But many farmers believe that feeding of *Gliricidia* results in "thin milk" or "watery milk". Thick or thinness of milk is decided by the amount of total solid in the milk, which depends on non-fat solubles such as lactose and casine. But according to research evidence, feeding of *Gliricidia* 0-100% in the ration of cattle does not alter the amount of butter fat or solid non-fat in milk.

Gliricidia is low in sapponin and doesn't cause bloat in animals even an excessive amounts are fed. Research have shown that feeding of *Gliricidia* in higher proportion in the diet even at 100% show no toxic effects. But there is evidence that inclusion of *Gliricidia* more than 50% in the ration results in "tainted" milk and therefore adding *Gliricidia* up to 50% is safe and cause no adverse effects.

Enhancing quality of ration with supplementation of *Gliricidia*

- Paddy straw (Preferably chopped) mixed with *Gliricidia* in 2:1 ratio on weight basis increases the feed intake forming a good dry season feed.

- Mixing 4 % urea treated straw (e.g. dissolve 40g of urea in one liter of water) with *Gliricidia* lopping at the ratio of 3:1 on weight basis, is another good dry season feed.

- Gliricidia foliage either mixed with *Brachiria miliiformis / B. brizantha* or natural grasses at the ratio of 1:1 (on weight basis) also enhances quality of the ration and increases the feed intake

Establishment of *Gliricidia* in coconut lands

Coconut Research Institute has demonstrated the value of *Gliricidia* as an animal feed and how *Gliricidia* can be established in coconut lands without having adverse effect on coconut. *Gliricidia* can be planted in between coconut in double rows at the

spacing of 2m x 1m (2500 ha^{-1}) as a fodder bank and along the fences. For smallholdings it can be planted along the fences in 1m apart. It can be established from seedlings or cuttings. In intermediate and dry zones *Gliricidia* is preferably establish from seedlings planted in polythene bags after collecting seed. Planting should be commenced with the on set of rain and initial pruning should start at 1-1.5 m height. On an average 5-6 kg of leaf biomass (on fresh basis) could be obtained per plant per year. The study carried out in the Pannala AGA division revealed that planting *Gliricidia* in the fences of individual land holdings, 2m apart, and by using them as animal feed the milk production can be increased by 50%.