

## **GLIRICIDIA- Fourth Plantation Crop of Sri Lanka**

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The three traditional major cash crops in Sri Lanka; Tea, Rubber and Coconut were introduced during the colonial period. Since then the economic potential of a number of other crops has been exploited: pepper, cinnamon, cardamom, sugarcane etc; but none of them has had a large enough economic impact to be declared the Fourth Cash Crop of Sri Lanka.

On June 30<sup>th</sup>, 2005 the Cabinet of Ministers of Sri Lanka took the decision to introduce Gliricidia as the country's Fourth Plantation Crop, based on a cabinet memorandum of the Ministry of Plantation Industries. The scientific name of this crop is *Gliricidia sepium* and it is widely known as Ginisiriya, with other local names such as Wetahiriya, Wetamara, Ladappa, Nanchi, Sevana, Kola Pohora, Makulatha, and Albesia.

Gliricidia is widely used as boundary fences in rural areas and has a variety of uses in Tea and Coconut Plantations. It is a hardy, fast growing tree that can withstand even the most adverse weather conditions. It grows in a variety of soil conditions and it is free from disease and pests. It is used as supports for vegetable cultivation and pepper vines. It is a legume that can greatly enrich the soil and hence its green matter forms an ideal base for organic fertilizer. The leaves are an attractive fodder for goats and cattle.

The Coconut Research Institute (CRI) has carried out extensive research into the use of Gliricidia in coconut plantations, their findings are as follows:

- The ability of soil to retain moisture content is enhanced by approximately 50% when Gliricidia is grown as a multi-crop under coconut plantations
- Gliricidia multi-cropping improves the organic matter content of soil by 40% at a depth of 15cm
- 50kg of processed Gliricidia leaves can reduce annual chemical fertilizer requirements, yielding the equivalent of 0.8kg Urea, 0.25kg Eppawala Phosphate, 0.6kg Mu of Potash and 0.5kg Dolomite
- Solar radiation utilization on a plantation is increased from 6% to 94% in the presence of Gliricidia.

(Source: Dr Jayantha Gunethilaka)

In addition to its applications in the cultivation of Sri Lanka's major crops, Gliricidia is an energy crop in its own right, sticks can be harvested every eight months, and used as dendro fuel. The generation of 1 unit of electrical energy requires 0.5kg coal or 1kg of wood. The difference in raw fuel requirements is offset by a number of other advantages of using Gliricidia dendro power.

Gliricidia is a renewable resource; it can be cultivated within a few kilometers of a dendro power plant, thereby reducing transport costs, both financial and environmental. A 1MW dendro power plant can be sustained by 2 million Gliricidia trees, occupying an area of 400 Ha. Dendro plants can be connected to existing medium-low voltage lines, thus requiring no significant capital expenditure on new distribution infrastructures. Furthermore, decentralized production of electricity near to load centres minimizes energy losses during transmission. The efficiency of a dendro power plant can be increased two-fold if the waste heat can be harnessed and used for satisfying industrial heat requirements; this is easily achievable if dendro plants are established in the vicinity of industrial parks.

When all factors are considered, Gliricidia energy would be a cheaper alternative to coal energy.

Gliricidia cultivation can easily be adopted by farmers, integrating it with the existing agricultural pattern. An out-grower system, modeled on the system currently in wide-spread use within the sugar and tea industries, would be the ideal mechanism for dendro power plants, providing a greater margin of profit to the industry. Small-scale home gardens island-wide can supply Gliricidia wood to decentralized power plants

Introducing Gliricidia to the community agro forestry programs of the Forest Department is also possible. National land use statistics indicate the availability of more than 1,700,000 Ha of degraded, unproductive, sparse and abandoned lands, mostly in the dry zone. These areas could readily be used for the establishment of Gliricidia plantations. The potential for establishing Gliricidia plantations is enormous and the Government has entrusted the Coconut Cultivation Board with the responsibility of promoting Gliricidia as the 4<sup>th</sup> plantation crop in Sri Lanka. In addition, the government has taken steps to establish the Sri Lanka Sustainable Energy Authority (SLSEA) to remove barriers for mainstreaming renewable energy technologies including Dendro power. Accordingly SLSEA has introduced a cost reflective power purchasing tariff for Dendro power inviting private sector firms to establish dendro power plants.

Despite these Government initiatives, Gliricidia has not thus far earned its designation as 4<sup>th</sup> plantation crop of Sri Lanka. It is necessary look back and examine what has happened in the Gliricidia plantation sector since June 2005. To be frank, the impact of Gliricidia is minimal. What are the issues behind this lack of progress, and how can they be addressed?

In order to promote using Gliricidia leaves as a substitute to chemical fertilizer it is important to give a part of the chemical fertilizer subsidy for using Gliricidia leaves as organic fertilizer. To popularize Gliricidia as an animal feed it is necessary to discourage the importation of milk and to provide incentives for cattle rearing. The private sector is reluctant to establishing dendro power plants without having a guaranteed fuel wood supply. Farmers are reluctant to establish Gliricidia plantations with having a guaranteed market for fuel wood. Like the Chicken and Egg situation: which comes first?

The government should intervene at this stage. The first step is to establish the inter-ministerial unit comprising the secretaries of the Ministry of Power and Energy, Ministry of Agriculture Land Irrigation, Ministry Rural and Small Scale Industries, and the Ministry of Plantation Industries to determine policy directives, to monitor the project and to formulate effective institutional framework for utilization of crops, as recommended by the cabinet in June 2005. Further the government should implement the cabinet decision which highlighted the need for the government to obtain foreign donor assistance for cultivation and power generation and distribution.

It is important for the state owned plantation companies to recognize the emerging market for Gliricidia wood and leaves and to invest on establishing Gliricidia as a multi crop. The state owned agricultural extension services should be properly used to propagate the message of Gliricidia being the fourth plantation crop of the country, highlighting the benefits to farmers.

Having an integrated plan for promoting Gliricidia as the fourth plantation crop is essential for the country to ensure water, food and energy security. There is no other way for Sri Lanka to face the global water, food and energy crisis of the coming decade. The cabinet decision was a timely move; unfortunately there was no follow up program for realizing the goal of making Gliricidia the fourth plantation crop. We have already wasted four valuable years since the cabinet decision. We cannot further postpone this initiative; we must act fast.