

Project to establish a dedicated feedstock plantation for production of high quality Biochar

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Gliricidia Facts

Gliricidia is an introduced plant species brought to the country by Christian Missionaries over 400 years ago. Subsequently it was used extensively as a shade provider when plantation crops such as Tea, Coffee and Cocoa were grown as commercial crops. Later still it was planted as live stakes for Trailing crops as Vanilla and Pepper. It is extensively planted in Coconut estates as an avenue crop due to its Nitrogen Fixing capacity providing N rich biomass as a green mulch. The most wide spread use is seen in villages through out the country as live fence boundary markers.

Gliricidia is a semi deciduous multi purpose plant with a medium canopy, growing equally well from seeds as well as cuttings and has adapted into most climatic zones in the country. It is rarely if ever affected by diseases and requires little fertilizer.

It is recommended that at the time of planting the cutting, the top cut end be treated with a ball of wet clay covered and tied in place with a piece of polythene material. This will not only prevent the cutting from drying out, but also retains available moisture and encourages shoot burst from the top of the cutting

However it does not tolerate "wet feet" for too long a period and does well on well drained soils. Elevation is the sole restriction to be noted in gliricidia cultivation, not doing well enough for the purpose under consideration above 1500 meters above sea level.

An annual well spread rainfall regime ranging from 900 mm to 1800 mm is considered most suitable. However drought periods extending beyond 6 – 8 months can retard growth.

Gliricidia is known to grow well in tropical and sub – tropical countries spread from Costa Rica in the west to Indonesia in the east.

The Sri Lanka Coconut Research Institute was tasked by the government to conduct detailed research on the plant as a fuel wood source for Gasifier power plants and after a 20 year study Gliricidia was gazetted as the fourth

plantation crop after Tea, Rubber & Coconut. Details on planting, care & maintenance, Harvesting, and processing as fuel wood for gasifiers, has been well recorded.

The value of gliricidia as a feedstock for power generation by gasification is due to its short rotation coppicing ability and the relatively low smoke & soot released during gasification. The long, straight branching habit can be induced by the close spacing of plants as recommended, which encourages the plant to compete for sunlight and thereby growing straight and long rather than spreading sideways and therefore is admirably suited for harvesting, cutting into sticks to feed gasifiers or hand\ mechanical chipping for pyrolysis.

All outspread branches are cut off at 1.0 to 1.5 meters above ground at harvest, which encourages uniform re - growth. The cutting height allows harvesting by machete or motorized saw, standing upright on the ground without any climbing aid, thereby saving on time. The harvested branches are left in the field for the short period required for the leaf to fall. The green colored immature end of the branch is lopped off and along with a portion of the leaf is applied at the tree base as thatching and mulch to provide nutrients and also reduce the bulk which needs to be transported to the chip processing point. When harvesting, care should be taken not to cause any splitting of the tree end of the cut, as such damage could reduce the economic life span of the tree itself.

At the time of harvest the moisture of the cutting is around 50% During the period that the cuttings are kept in the field to allow leaf fall (7 – 12 days) the moisture will come down to 35%. After chipping to size and packing in 50 KG net bags and kept to air dry in the shade for another two weeks, the moisture will come down to 25%. The chips are ready for pyrolysing when moisture reduces to 20%.

The potential of gliricidia as a feedstock for pyrolysis into biochar for agriculture applications is yet to be recognized in the country and is the reason for this abstract.