

**(ID 300)****Introducing *Gliricidia sepium* as a Fuel Wood in Rubber Smallholdings of Sri Lanka:  
A Case Study in Kalutara District****Gunarathne, P.K.K.S.***Rubber Research Institute of Sri Lanka, Agalawatta, Sri Lanka*  
[kapila.s.gunarathne@gmail.com](mailto:kapila.s.gunarathne@gmail.com)**Abstract**

A pilot project has been initiated to introduce *Gliricidia sepium* with *Hevea brasiliensis* under three different spatial arrangements ((i.)8'×27', (ii.)8'×40', and (iii.)88'×60') as a fuel wood to improve the income status of rubber smallholders in Kalutara District by Rubber Research Institute of Sri Lanka in 2018. Primary data were collected through a questionnaire survey and field observations. The financial analysis was done for one hectare of smallholding. Certain assumptions were made in the financial feasibility analysis as financial analysis was done for 30 years giving consideration to the 30 year life span of rubber. Costs and benefits were discounted at 10% discount rate as practiced by the Department of National Planning to obtain 2019 market prices. The farm gate prices of 1kg of rubber and *Gliricidia* were considered as LKR 280.00 and LKR 4.00. The cost for hired labour was considered LKR 1,500.00 per day. Period of intercropping of *Gliricidia* under rubber in the 88'×40' and 88'×60' models was considered as 30 years and in the 88'×27' model, it was considered as eight years. Financial feasibility of models was tested using the indices of Net Present Value (NPV) and Benefit Cost Ratio (BCR). A qualitative SWOT was conducted to identify the strengths, weaknesses, opportunities and threats relevant to introduction of *Gliricidia* as an intercrop in rubber plantations based on a thorough documentation review and on the opinions of Rubber Extension Officers. From the three models introduced, the highest fuel wood value can be obtained by intercropping *Gliricidia* with rubber under the spacing of 88'×60'. NPV for growing *gliricidia* with rubber under three different spatial arrangements, (i.)88'×27', (ii.)88'×40' and (iii.)88'×60' would be LKR 0.74 million, LKR 5.47 million and LKR 5.89 million respectively. The values obtain for BCR for growing *gliricidia* with rubber under three different spatial arrangements, (i.)88'×27', (ii.)88'×40' and (iii.)88'×60' would be 1.37, 2.26 and 2.27, respectively. All fuel wood growing models indicated positive NPV and BC Ratios were greater than one, suggesting that these introduced models are economically viable. Although there are no established market channels available for fuel wood especially in the smallholder rubber sector of Sri Lanka, there is a demand for *Gliricidia* which is fulfilled through adhoc markets. Also, development of sustainable supply chains through setting up of Pilot Biomass Energy Terminals with the objective of collection and distribution of fuel wood under the Project of Promoting Sustainable Biomass Energy Production and Modern Bio-Energy Technologies has widened the opportunity of using *Gliricidia* as a promising fuel wood species *Gliricidia* with rubber has the potential to improve income generation of rubber smallholders substantially especially during the immature stage of rubber and provide a solution to overcome uncertainty in rubber prices and low productivity of rubber lands.

**Keywords:** Fuel wood growing models, Rubber farming