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Chemical composition and fuel wood characteristics of fast growing tree species in India

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India is one of the growing economy in the world and energy is a critical input to sustain the growth of development. Country aims at security and efficiency of energy. Though fossil fuel will continue to play a dominant role in energy scenario but country is committed to global environmental well being thus stressing on environment friendly technologies. Concerns of energy security in this changing climatic situation have led to increasing support for the development of new renewable source of energy. Government though is determined to facilitate bio-energy and many projects have been established but initial after-affects more specifically on the domestic fuelwood are evident. Even the biomass power generating units are facing biomass crisis and accordingly the prices are going up. The CDM projects are supporting the viability of these units resultantly the Indian basket has a large number of biomass projects (144 out of total 506 with 28 per cent CERs). The use for fuelwood as a primary source of energy for domestic purpose by the poor people (approx. 80 per cent) and establishment of bio-energy plants may lead to deforestation to a great extent and only solution to this dilemma is to shift the wood harvest from the natural forests to energy plantations. However, there is conspicuous lack of knowledge with regards to the fuelwood characteristics of fast growing tree species for their selection for energy plantations. The calorific value of the species is important criteria for selection for fuel but it is affected by the proportions of biochemical constituents present in them. The aim of the present work was to study the biomass production, calorific value and chemical composition of different short rotation tree species. The study was done from the perspective of using the fast growing tree species for energy production at short rotation and the study concluded that short rotation tree species like Gmelina arborea, Eucalyptus tereticornis, Pongamia pinnata,Terminalia arjuna, Toona ciliate, etc. have better fuelwood properties and can be considered for inclusion in the energy plantation programme to minimize pressure on the traditional forests.

Key words: Short rotation tree species, bio-energy, calorific value, bio-chemicals