

Estimation of the Bioenergy Production Potential by Expansion of Energy Crop Plantation in the Northern Thailand

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Abstract

In recent years, biomass utilization for energy in Southeast Asian countries has attracted the world's attention due to availability of abundant biomass resources and a high rate of primary productivity in these countries. Thailand has emerged as one of the largest biofuel producing countries in Southeast Asia and the country is now planning to promote more and more biomass utilization. However, there are only a few studies on how much biomass is expected to be utilized for energy in the future and whether it could reduce Green House Gases (GHG) emissions, particularly in terms of expansion of energy crop plantation rather than unused biomass utilization. In order to find these, estimation of crops' yield is required by taking into account both geographical and climatic conditions as well as land availability for crop cultivation. This study focuses on bioenergy production from energy crop plantation in the northern region of Thailand. It estimates the land areas suitable for crop plantation and calculates the biomass energy production in the country. It also analyzes reduction of GHG emissions from life cycle point of view and finally discusses the possible increase in biomass utilization and the reductions in GHG emissions.

Keywords: *Bioenergy, Biofuel, Energy Crop, Plantation, Thailand, Sugarcane, Cassava, Jatropha, Acacia, Life Cycle GHG Emissions.*