

Addressing The Food-Biofuel Dilemma; using *Paraserianthes falcataria* as A Bioethanol Feedstock in An Integrated Cropping Approach

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The Indonesian Government has set ambitious targets for utilizing its extensive natural resource base for the development of bio-fuels. It views bio-fuels as one of the strategic opportunities at its disposal to regain balance in its domestic energy supply, as well as a potentially high-profit export product for the country. To date bio-fuel development in Indonesia is based primarily on the utilization of food crops.

The aim of 2nd generation bio-fuels is in addressing the food vs. energy dilemma associated with current bio-fuels. However, 2nd generation bio-fuels do not by definition eliminate conflicting interest in natural resource management and have the potential of adding to existing problems associated with industrial plantation development and industries. This paper suggest that in the development of 2nd generation bio-fuels in Indonesia, socio-economic and ecological circumstances should be given similar consideration to economic, production technological and feedstock availability factors when assessing the sustainability of bio-fuel production.

For Indonesia, it may prove worthwhile to return to existing agro-forestry practices such as mixed species gardens and mixed species plantations to identify species that can be used in the production of sustainable bio-fuels. The basic premise is that the chosen species are capable of being sustainably integrated with a variety of other species and crops, being able to cultivate species for both food and energy purposes on a single plot of land.

Paraserianthes falcataria or sengon has been tentatively identified as having the ecological and socio-economic characteristics to potentially fulfill these requirements. It is a common choice in mixed species cultivation systems in Indonesia, and is increasingly associated with reforestation projects. Initial results on the technological potential to develop timber based bio-ethanol from sengon appear equally positive. Using sengon, an initial model for the development of sustainable timber based bio-ethanol production in Indonesia has been constructed.