

## Potential of fast growing tree plantation for Thailand energy security and farmer livelihood enhancement

Maliwan Haruthaithanasan, Kasetsart University, Thailand

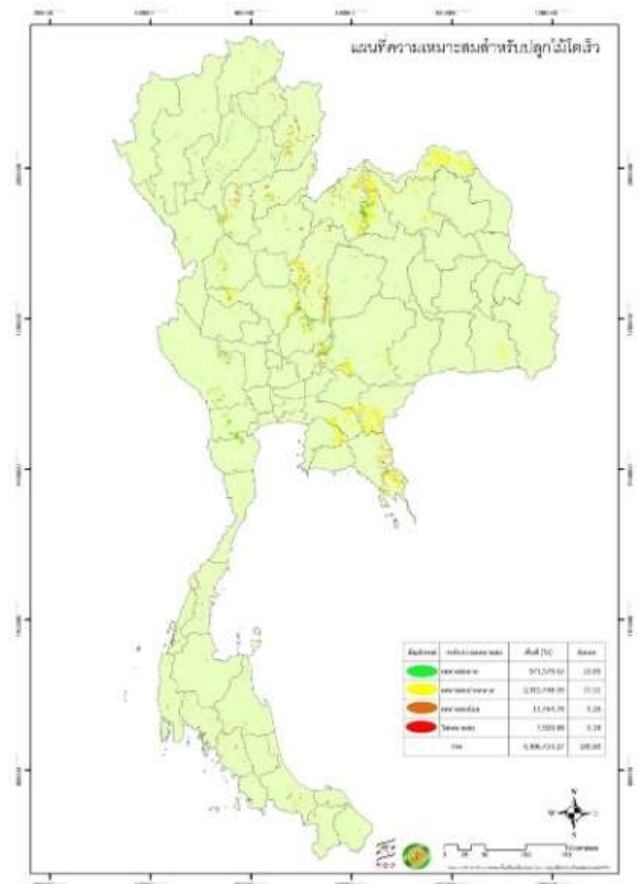
### Abstract (300 word limit)

According to National Alternative Energy Development Plan (AEDP 2015-2036) was launched to increase the renewable energy utilization that would help to secure energy which is produced domestically. Biomass energy is one of the potential energy in Thailand. In order to manage biomass raw material continuously and sustainably, one possible strategy is to promote fast growing tree plantation without problem of food security by focus on degraded land which is about 20 % of the whole country. This study determined the study area as soil degradation area in severe and critical level of agricultural land reform area without irrigation system to avoid land competition with food cultivation area. The land suitability for fast growing tree was evaluated by GIS technique with weighted sum method.

It was found that the potential areas for fast growing tree plantation is Thailand is 4,406,414.27 Rai (705,026.3 ha). Most of the areas locate in the northern Thailand at 39.63 percent of the total potential areas. The land suitability of total potential area was classified into 4 categories, good, fair, low and not suitable, at 22.05%, 77.51%, 0.26% and 0.18%, respectively. This potential area can provide income for farmers who own the lands 352 – 586 USD/ha/year depends on productivity of each land suitability level. Besides, wood produced from this potential area can use as biofuel to generate electricity about 2,283.8 MW.

From the mathematic model under the hypothesis of productivity condition, cost and benefit analysis, among fast growing trees that normally plant in Thailand, Eucalyptus is the most suitable follow by Acacia, Leuceana and Casuarina, respectively. However to mitigate impacts which may occur from monoculture for examples pests and diseases, mix plantation should be recommended. Moreover, agroforestry system was also the good practice to reduce those impacts, and instantly implement to farmers in this potential areas.

### Image (if any)



### Biography (150 word limit)

Dr Maliwan Haruthaithanasan is a director of Kasetsart Agricultural and Agro-industrial Product Improvement Institute (KAPI), research institute of Kasetsart University, Bangkok, Thailand. She obtained bachelor and master degrees in forestry from Kasetsart University, and a PhD in agroforestry from Kochi University in Japan. Dr Maliwan's specialization is fast growing tree species for energy plantation. She is active in international forestry research and development. She is currently a deputy coordinator of IUFRO working party, Impacts of Air Pollution and Climate Change on Forest Ecosystems, and Forest Biomass Network task force.