

Thanyarat Pattamapongsa 2007: A Feasibility Study on Producing *Jatropha curcas* (Physic Nut) Seeds and Oil to Substitute Diesel for Farm Machineries at Ban Khlongplalai Village in Changwat Chai Nat. Master of Science (Resource Management), Major Field: Resource Management, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Supachat Sukharomana, Ph.D. 147 pages.

The Department of Agricultural Extension establish pilot projects to promote the physic nut oil user group in some provinces in Thailand, Ban Khlongplalai village is one of the project site. The main objective of this thesis is to study the feasibility in producing physic nut seeds and oil to substitute diesel for farm machineries at Ban Khlongplalai village. The study use the concept of cost-benefit analysis to evaluate if it is suitable to allocate land to grow physic nut plant in the village.

Information from 30 farmers showed that the average diesel requirements for farm machineries is about 43.36 litre/rai/year. The total demand for diesel of the whole village is about 58,970 litre/year. The total output of physic nut oil produced in the village which is about 587.5 litre/year, so, the domestically physic nut oil can substitute diesel only one percent. Planting area is limited to abandoned land, unoccupied land, rice bundle and road side space; it is difficult to expand planting area of physic nut. Most of farmers don't want to plant physic nut because they don't have space and high opportunity cost of land if they have to use farm land to grow physic nut. Furthermore physic nut give a small amount of seed and the way in processing seed to oil is very complicated.

The financial cost benefit analysis showed that at price of diesel by 25.69 baht/litre, the present value of benefit is lower than costs. It is not profitable to invest on physic nut production to produce oil to substitute diesel. The average incremental cost in producing physic nut seed is 16.58 baht/kg. This cost can be reduced to 1.38 baht/kg. if the opportunity cost of labor is not included. At these unit costs, the cost of physic nut oil is 106.55 and 8.28 baht/litre respectively.

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