

Eucalyptus: For Whom and For What?

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In attempting to meet the National Forest Policy target of 40 percent forest cover, the government has been encouraging the private business sector and local people to participate in tree growing. Many incentive measures—such as BOI privileges and the right to lease public land at a relatively low price—have been given to companies and individuals who are interested in the reforestation scheme. Among the promising fast-growing species recommended by Thai forestry experts, *Eucalyptus camaldulensis* has become a dominant commercial species. The government's policy of using private eucalyptus plantations as a means of reforestation has created many controversial issues. Some of these are: Can eucalyptus plantations be considered forest? Do eucalyptus plantations have net positive environmental impacts? Can eucalyptus plantations be used as a means of rural development and income distribution improvement? Can eucalyptus be used as a means of protecting the remaining natural forests?

To shed some light on these issues, TDR I has carried out field research and analysis specifically focussed on:

1. the determinants of eucalyptus adoption vis-a-vis the average Thai farmer's conditions;
2. private profitability of eucalyptus vis-a-vis its economic and social profitability;
3. local people's perception of eucalyptus vis-a-vis existing scientific evidence;
4. public promotion of eucalyptus vis-a-vis the public interest.

Data were obtained from a field survey of 103 households in 19 villages in Sanamchiket, Plangyao, and Panomsarakam districts of Chachoengsao province. This is the country's first and prime eucalyptus-growing area, and it has the necessary scale and experience for obtaining information on the economic, social and environmental impacts of eucalyptus planting. Moreover, this area was identified by TDR I (1989) and the Asian Development Bank (1989) as a physically appropriate area for eucalyptus plantations but with the caveat that a socioeconomic survey should be carried out prior to eucalyptus promotion. This survey is a response to this need assessment.

MAJOR FACTORS AFFECTING EUCALYPTUS ADOPTION

Non-corporate eucalyptus plantations range between five and 1,000 rai. Eucalyptus planters (less than 100 rai) are on the average, younger in age yet more educated and experienced in growing tree crops than non-planters are. Our findings support the general belief that tree planting is usually a business for relatively wealthy farmers, who have large enough land holdings and the capital to diversify their farming activity and experiment with new crops. Small farmers find it difficult to adopt tree growing because of the tree's lengthy production period and the high initial establishment cost. The lack of capital and large land holdings make it impossible for small farmers to diversify their cropping patterns. Larger holdings, more farm assets, higher off-farm income, and access to low-cost credit allow larger planters a better chance to accept the risk of adopting new crops with a relatively long gestation.

Large-scale planters (over 100 rai) are mainly landlords, and most of them have other businesses besides eucalyptus planting. These businesses range from selling eucalyptus saplings to smaller planters, to non-agricultural activities, such as operating gas stations, grocery stores, hotels or other businesses. Prior to entering the eucalyptus business, they rented out their land to small or landless farmers at the rate of 150-200 baht per rai. This fairly low opportunity cost of the land and the fact that part of such land is occasionally encroached and occupied illegally by farmers nearby make planting eucalyptus the best option of land management and use for large land owners.

PROFITABILITY AND IMPLICATIONS OF THE IMPACT ON INCOME DISTRIBUTION

The profitability of eucalyptus planting by individual farmers varies with the farm gate prices and yields of the trees, which in turn depend on the quality of the soil, the spacing, and the technology of production. Information obtained from the field survey indicates that there are significant differences in production technique, input use, and cost of production among the corporate, large-scale, and small-scale planters. The representative average financial cost per rai of each group exhibits a positive relationship between cost and yield variables. The existing market system of eucalyptus wood affords a larger benefit for large-scale planters through higher prices from buyers (mainly, related industries such as woodchip plants, fibreboard plants, etc.). Corporate eucalyptus planting also has the added advantage of economies of scale in the nursery and planting operation and in research and development.

The opportunity cost of the land is an important factor affecting the net return to the planters. Under the base case, we have used the net return of cassava on land with fairly poor soil (353 baht per rai per year) as a proxy of the opportunity cost of land for small-scale planters and the market rate of land rent as a proxy for large-scale (150 baht per rai) planters. For companies, we assumed that they buy the land for their plantation business (at an average price of 6,000 baht per rai).

Based on the survey data on cost structure, yields, and farm gate prices, we found that company and larger-scale planters are likely to receive a higher profit than the smaller-scale planters. While large-scale planters and companies make a healthy profit of 450-540 baht per rai per year, small-scale planters suffer losses of 48 baht per rai per year on the average. Even with low-cost credit from the Agricultural Land Reform Office, small-scale planters barely break even. Under the normal circumstances of small-scale farmers—especially those with no secure land title, who have access to only non-institutional credit at an average interest rate of 36 percent per year—losses as high as 550 baht per rai are likely.

LOCAL PEOPLE'S PERCEPTIONS OF THE ENVIRONMENTAL IMPACTS OF EUCALYPTUS VIS-A-VIS THE SCIENTIFIC EVIDENCE

Most farmers surveyed, including small-scale eucalyptus planters, complain about the negative environmental impacts of eucalyptus—such as damage to their crops and a reduction in soil moisture and the water supply in the vicinity of eucalyptus plantations. However, they think that the land used for planting eucalyptus can still be used for other crops after the stumps have been removed. Farmers do not think that eucalyptus will help to improve soil, climate and water conditions. So far, they can see only the adverse effects of eucalyptus. Most of the farmers in the study area want the government to promote tree species other than eucalyptus in reforestation projects.

They perceive eucalyptus as having economic rather than ecological benefits, and they complain that such economic benefits go to the companies and to the wealthier farmers.

The main conclusions of scientific research, both Thai and international, is that eucalyptus, like acacia and a number of other tree crops, reduces the water table and affects neighboring crops, where moisture and nutrients are in short supply. Eucalyptus is not recommended for protection of watersheds, for regulation of water flows, or as a crop for good soil. Eucalyptus is suitable for degraded areas; it should be planted in small plots, blocked by other species. When planted on a large scale, agroforestry practices should be used, and the environmental and social impacts should be assessed.

PUBLIC PROMOTION VIS-A-VIS THE PUBLIC INTEREST

Eucalyptus plantations receive generous incentives from the Board of Investment—such as duty exemptions on imported machinery and raw materials, and various tax holidays and tax exemptions for extended periods. These incentives put eucalyptus at an advantage compared to other agricultural crops (including perennials), which receive no such promotion. The presumption is that eucalyptus is a forest crop that, unlike other crops, has positive environmental impacts that benefit the public, which ultimately pays for this promotion. This presumption is reinforced by the concessionary lease (at 10 baht per rai per year), in contrast to a market rental (of 150-200 baht per rai per year) of reserved forest land to companies and individuals for eucalyptus plantations. While companies often have to buy the land from squatters, an element of public subsidy to eucalyptus plantations is still involved, since untitled land is bought at one-half to one-third of its price.

A second element of hidden subsidy is the implicit "guarantee" or perception of the lessees that the land will not be taken away by RFD. This is evidenced by the fact that no stump removal is required of the lessees at the end of the 15-to-20-year lease; alternative uses of land, even for eucalyptus plantations, would require such stump removal at the cost of about 1,000 baht per rai, based on 1990 prices. There is a certain inconsistency between the lessees' expectations for eventual ownership of leased/purchased land and the RFD's expectation of repossession of encroached land by proxy.

CONCLUSIONS

- Eucalyptus is a potentially profitable crop for large-scale agroindustry. It is also a potentially appropriate crop for rehabilitating degraded land overrun by imperata grass, which has no viable alternative uses, even under secure ownership and improved management.
- Farmers have negative perceptions of eucalyptus plantations, which they consider detrimental to neighboring crops, to soil moisture, and to the water table and water supply in a plantation's general vicinity. While villagers point to the circumstantial evidence of dried wells or the poor conditions of nearby crops, their case is far from conclusive. Yet, negative perceptions are sufficiently strong and widespread to pose a serious threat to the government's reforestation efforts and agroindustry investments that focus on eucalyptus.
- Eucalyptus plantations require large land holdings and access to long-term credit because of economies of scale, long gestation periods, and relatively high risk. These conditions are more suited to large-scale farmers and the corporate sector than to small farmers—who can ill-afford to plant their small holdings with eucalyptus and then wait four to five years to receive a return. Small farmers are less likely to adopt eucalyptus, and when they do, they suffer losses unless they receive government assistance. Even then, their income is marginal.
- In managing enclosed forest reserves, the burden of responsibility lies with the government. The present practice of relying on the private sector to secure large plots of land prior to seeking official permission is not acceptable and may lead to future conflicts with farmers. With the availability of the new technologies of remote sensing and geographic information systems it is possible for the government to identify degraded land that is potentially suitable for eucalyptus. The willingness of the farmers who are already occupying this degraded land should never be imposed upon, and it should be their choice whether to plant eucalyptus or other cash crops.
- The time is ripe to critically reexamine the objectives and instruments of national forest policy, with the priority to preserve the remaining natural forest, to reforest critical watersheds, and to determine whether the target of 25 percent economic forest is beneficial to the country.

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