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EUCALYPTUS PLANTATION IN THAILAND

Bunvong Thaiutsa[1] **and Siripun Taweesuk**[2]

บทคัดย่อ

จากหลักฐานที่พอค้นหาได้ในขณะนี้ปรากฏว่า ได้มีการนำไม้ยูคาลิปตัสเข้ามาปลูกในประเทศไทยเป็นครั้งแรกที่จังหวัดแพร่ เมื่อปี พ.ศ. ๒๔๘๙ แต่การปลูกยูคาลิปตัสในเชิงพาณิชย์ เพิ่งกระทำกันอย่างจริงจังเมื่อไม่ถึง ๑๐ ปีที่ผ่านมานี้เอง และยูคาลิปตัสที่ปลูกกันอย่างแพร่หลายในประเทศไทยก็มีเพียงยูคาลิปตัส คามาลดูเลนซีสชนิดเดียวเท่านั้น เนื้อที่สวนป่ายูคาลิปตัสในประเทศนับจนถึงสิ้นปี พ.ศ. ๒๕๒๙ มีทั้งสิ้นประมาณ ๓๓๔,๕๓๒ ไร่ หรือเกือบ ๑๐ เปอร์เซนต์ของพื้นที่สวนป่าทั้งประเทศ สวนป่ายูคาลิปตัสส่วนใหญ่อยู่ในภาคตะวันออกเฉียงเหนือ (๑๕๒,๒๔๒ ไร่) รองลงมาคือภาคกลาง (๘๒,๕๘๑ ไร่) ภาคเหนือ (๕๐,๘๕๓ ไร่) และภาคใต้ (๔๘,๘๕๖ ไร่) โดยแยกเป็นสวนป่ารัฐบาล ๒๒๙,๒๘๒ ไร่ และสวนป่าเอกชน ๑๐๕,๒๕๐ ไร่ พื้นที่ปลูกโดยภาคเอกชนในปี พ.ศ. ๒๕๒๙ มีเพียง ๒ ใน ๓ ของปี พ.ศ. ๒๕๒๘ เท่านั้น ทั้งนี้เนื่องจากในช่วงนั้นมีกระแสการคัดค้านเรื่องพิษภัยของไม้ยูคาลิปตัสกันมาก อย่างไรก็ตาม เมื่อที่ประชุมทางวิชาการเมื่อกลางปี พ.ศ. ๒๕๓๐ สรุปว่ายูคาลิปตัสไม่เป็นพิษเป็นภัยสำหรับสภาพแวดล้อมของประเทศไทย แต่การจัดการที่เหมาะสมก็จำเป็นต้องมีเช่นเดียวกับพืชเศรษฐกิจอื่น ๆ ประกอบกับกระทรวงเกษตรและสหกรณ์ได้ส่งเสริมการปลูกสร้างสวนป่าไม้ชนิดนี้อย่างกว้างขวางโดยเฉพาะอย่างยิ่งในที่ดินเสื่อมโทรม เพื่อสนองความต้องการของตลาดชั้นไม้สับในต่างประเทศ จึงคาดว่าเนื้อที่สวนป่ายูคาลิปตัสของภาคเอกชนในอนาคตจะทวีจำนวนขึ้นแน่นอน ค่าใช้จ่ายในการปลูกและบำรุงรักษาสำหรับไม้ที่มีรอบตัดฟัน ๕ ปีนั้น ไร่ละ ๒,๖๗๗ บาท โดยร้อยละ ๖๐ เป็นค่าใช้จ่ายในปีแรก ผลผลิตของเนื้อไม้เฉลี่ยไร่ละ ๑๕ ตัน จึงทำให้ผู้ปลูกได้กำไรสุทธิประมาณไร่ละ ๘๑๕ บาทต่อปี หรือมีอัตราส่วนระหว่างผลตอบแทนต่อต้นทุนเท่ากับ ๒.๕๒ อย่างไรก็ตาม หากยึดเอาราคาไม้ที่ซื้อขายกันที่สวนป่าในปีจุบันตันละ ๔๕๐ บาทเป็นเกณฑ์แล้ว เฉพาะสวนป่ายูคาลิปตัสที่อยู่ห่างจากโรงงานชั้นไม้สับ หรือท่าเรือน้ำลึกในรัศมี ๒๐๐ กิโลเมตรเท่านั้นที่ให้ผลตอบแทนคุ้มค่าในเชิงเศรษฐศาสตร์ ดังนั้นแม้ว่าด้านการตลาดของไม้ยูคาลิปตัสจะไม่เป็นปัญหา แต่การเลือกทำเลที่ตั้งสวนป่าที่เหมาะสมนั้นเป็นปัจจัยที่จะต้องคำนึงถึงให้มาก

ABSTRACT

Althrough eucalypt was introduced to be planted at Prae province in the North in 1946, large–scale plantations were established less than a decade. *Eucalyptus* species in Thailand has been referred only to *Eucalyptus camaldulensis.* The total areas planted up to the end of 1986 were of 334,532 rai, nearly 10 percent of the country's man–made forest. Almost one third of the existing eucalyptus plantation owned by private sector, mainly for export as woodchip. Based on the current stumpage price of 450 baht per ton of wood, only plantation located within the radius of 200 km from woodchip factory would be economically viable. Cost of plantation for 5–year rotation was found to be 2,677 baht per rai with an annual net profit of 815 baht per rai. It was a policy of the Ministry of Agriculture and Cooperatives to continue promoting eucalyptus planting, especially on unproductive sites.

[1] Faculty of Forestry, Kasetsart University Bangkok 10903

[2] Graduate student, Department of Silviculture, Kasetsart University.

INTRODUCTION

Forest area in Thailand was sharply decreased during the last ten years. It was dropped from 194,984 km^2, equivalent to 38 percent of total land area, in 1973 to 175,229 km^2 (34.15 percent) in 1978 ; 156, 600 km^2 (30.52 percent) in 1982 ; and 149,053 km^2 (29.05 percent) in 1985 (Royal Forest Department, 1986). Roughly speaking, the area of 45,931 km^2 lossed during 1973–1985 was about 7 times greater than the country's total reforestation area established throughout the 81–year period of reforestation history.

The first forest plantation in Thailand was recorded in 1906 by seed dibbling of teak at Prae province in the North. Teak planting has consecutively been carried out by Royal Forest Department (RFD) since 1941. Due to its long rotation period, Forest Industry Organization (FIO) is the only state–owned enterprise, together with Royal Forest Department, to be engaged in teak planting since 1967.

However, it is obvious that reforestation solely done by the governmental sector cannot succeed in arresting deforestation. It is also too far to reach the target set by the National Forest Policy in maintaining 25 percent of the total land area or about 12.83 million ha under economic forest. Hence, it is a landmark policy of the Government to encourage private investment in reforestation of fast–growing trees as well as to promote tree planting surrounding individual houses and for village woodlots. *Eucalyptus camaldulensis* is an outstanding fast–growing trees planted by private sector. The planted area accounted for 56.73 percent of the total private plantation area (Arupeepatanapong *et al.*, 1985).

Thus, the objective of this article is to overview eucalypt plantation in Thailand.

EUCALYPT AS AN EXOTIC TREE

Eucalypt is generally regarded as an Australian tree. The genus *Eucalyptus* consists of almost 600 species. From economic points of view, it plays greater

roles outside Australia rather than its natural range. Aside from *Eucalyptus camaldulensis*, *E. citriodora*, *E. deglupta*, *E. grandis*, *E. globulus*, *E. tereticornis*, and *E. urophylla* are among principal species of commercial plantation in the Tropics.

The earliest record on eucalypt introduction to Thailand might be a photograph of 5–year–old *Eucalyptus camaldulensis* shown at Forestry Library of Kasetsart University. It revealed that this eucalypt tree was planted at Prae province in 1946 by Prof. Dr. Sa-ard Boonkird of Kasetsart University. However, an official information of Royal Forest Department recorded that the first introduction of eucalypts from Australia to Thailand was made in 1950. Several *Eucalyptus* species including *E. alba*, *E. citriodora*, *E. paniculata*, *E. saligna* and *E. grandis* were introduced to Doi Suthep Experimental Plot of Chiangmai Province.

Through the RFD/FAO project on surveying raw materials for pulp and paper industry, fifteen species of *Eucalyptus* were introduced from Queensland to be planted at Surathani in the South, Kanchanaburi in the West, Chiangmai in the North and Srisaket in the Northeast in 1964. Species and provenance trials of *Eucalyptus* were repeated at those planting sites in the following years. *E. camaldulensis* was recorded to be included in the later trials. Another extensive *Eucalyptus* species trials were carried out in 1973 through Thai/Dannish Tree Improvement Project on pines and fast–growing trees by introducing more than forty species of *Eucalyptus* to be planted at various sites.

In 1978, the Silvicultural Research Section of RFD started a field research on agroforestry in the Northeast. The findings showed that *E. camaldulensis* grew faster than *Acacia auriculiformis*, *Leucaena leucocephala*, *and Peltophorum dasyrachis*. Yields of upland crops intercroped with *E. camaldulensis* were also found to be higher than those gained from the remaining treatments. Experiences gained from these long–term

experiments made the Village Woodlot Project, a project financially supported by NEA/USAID aiming to overcome fuelwood shortage in the Northeast, consider *E. camaldulensis* as a suitable tree to be planted. Since then, *E. camaldulensis* has been vigorously promoted by RFD.

A DECADE OF EUCALYPT

Due to its ability to grow successfully in a wide range of environments, including different altitudes, soil types, rainfall regimes, and terrain as well as ability to coppice with rapid growth, *E. camaldulensis* was planted extensively during the last decade. The Office of Private Plantation Promotion of RED reported recently that the total areas planted up to the end of 1986 were of 334,532 rai (6.25 rai = 1 ha), almost 10 percent of existing man-made forests in Thailand. Eucalypt plantation is more common in the Northeast (45.51 percent) in comparison to the Central (24.69 percent), the North (15.20 percent) and the South (14.60 percent). Areas by region are given in Table 1.

Table 1. Areas by region of eucalypt plantation in Thailand

Region	Area planted, rai		Total, rai
	State	Private	
North	34,194	16,659	50,853
Northeast	112,440	39,802	152,242
Central	35,572	47,009	82,581
South	47,076	1,780	48,856
Total	229,282	105,250	334,532

Source : Sanitprachakorn *et al.*, 1986

Moreover, figures in details revealed that the maximum area planted on the basis of province was recorded for Chachoengsao, about 60 km East of Bangkok, followed by Nakhornratchasima and Khon Kaen. It was also estimated that at least 75,822 rai of plantation are available within the radius of 300 km from Bangkok.

Although eucalypt was introduced to Thailand forty years ago, history of commercial plantation of *E. camaldulensis* in this country is still young. It was widely planted less than 10 years, private sector in particular (Table 2). The highest area of private plantation was recorded for 1985, having the figures of 30,926 rai. The area planted in 1986 dropped sharply, due mostly to the ecological controversy especially its silvical characteristics on soil and water consumption.

Table 2 Areas of state and private plantations of eucalypt in Thailand

Year	Area planted (rai)		Total (rai)
	Government	Private	
Before 1978	3,390	—	3,390
1978	4,605	1	4,606
1979	10,931	177	11,108
1980	20,615	1,680	22,295
1981	13,004	1,728	14,732
1982	17,807	4,636	22,443
1983	33,775	15,385	49,160
1984	28,767	30,908	59,675
1985	46,388*/	30,926	77,314
1986	50,000*/	19,809	69,809
Total	229,282	105,250	334,532

*/ Approximate

However, the contrary was proved by local ecology–oriented investigators on the basis of environmental conditions of planting sites in Thailand. It was concluded in the technological Conference on Ecological Impacts of Eucalyptus held in Bangkok in June 1987 that *E. camaldulensis* planted in Thailand had no obviously negative effects on soil, water, vegetation, animals, and human beings. Large–scale monoculture of *E. camaldulensis* plantation might result to unfavorably ecological impacts in a manner similar to monoculture of such economic crops as cassava, sugar cane, and maize. Soil fertility, nutrient balance and site productivity can be monitored with proper fertilization techniques and a good management of the rotation period.

Thus, it is expected that the areas planted in future should be increased, not only because of that proved contrary but also the new movement of government. It is now the policy of the Ministry of Agriculture and Cooperatives to continue promoting eucalyptus planting particularly on degraded lands. Phantumvanit and Sathirathai (1987) stressed that marketability of forest products is the most decisive factor determinting the viability of commercial plantation. Aside from domestic consumption, it is obvious that woodchips of eucalyptus exported to Japan and Taiwan are in high demands. However, based on the current stumpage price of 450 baht per ton of wood, only eucalyptus plantation located within the radius of 200 km from woodchip factory will be economically viable.

Cost of private plantation for 5-year rotation of *E. camaldulensis* at Chachaengsao province was estimated in 1985 at 2,677 baht per rai. Land tenure was found to be a major cost (900 baht/rai), followed by agricultural supplies (535 baht/rai), site preparation (507 baht/rai) and tending (436 baht/rai). The first–year cost accounted for 60 percent of the whole rotation cost. Based on average wood production suitable to woodchip of 15 tons

per rai, the annual net profit of *E. camaldulensis* plantation would be 815 baht per rai making the B/C ratio of 2.52. Hence, plantation investment of *E. camaldulensis* at a proper location is of interest.

REFERENCES

Arupeepatanapong, C., P. Niwaswat, S. Suwanaprateep, N. Champathong, and T. Sinna. 1983. Private plantation : A survey report, 1966–1983. Planning Division, Royal Forest Department, Bangkok. 86 p. (in Thai).

Phantumvanit, D. and S. Sathirathai. 1987. Pressure on forest– The Thai experience. TDRI mimeographed. 51 p.

Royal Forest Department. 1986. Forestry statistics of Thailand. Planning Division, Royal Forest Department, Bangkok, 74 p.

Sanitprachakorn, M., S. Manatsrisuksai, and S. Kittitarakul. 1986. Planting eucalyptus in Thailand. Office of Private Plantation Promotion, Royal Forest Department, Bangkok, 87 p. (In Thai).

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