



THESIS

**PROVENANCE VARIATION AND PROGENY TESTING
OF *Eucalyptus urophylla* S.T. Blake GROWN AT LAD
KRATING PLANTATION, CHACHOENGSAO
PROVINCE**

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**GRADUATE SCHOOL, KASETSART UNIVERSITY
2006**



THESIS APPROVAL
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Master of Science (Tropical Forestry)

DEGREE

Tropical Forestry

FIELD

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PROGRAM

TITLE: Provenance Variation and Progeny Testing of *Eucalyptus urophylla*
S.T. Blake Grown at Lad Krating Plantation, Chachoengsao
Province

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THESIS

PROVENANCE VARIATION AND PROGENY TESTING OF *Eucalyptus urophylla* S.T. BLAKE GROWN AT LAD KRATING PLANTATION, CHACHOENSAO PROVINCE

MANDY MAID

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The Timor Mountain Gum is an exotic species which has great potential to be grown in different parts of Thailand and fill the gap in wood demand. However, the species should be tested in the field to determine the suitability of the species and its provenances in the study area. The Timor Mountain Gum provenance variations were assessed periodically in the provenance trials for growth characteristics. The progeny tests of Timor Mountain Gum were established using the best families, and after successive phases of roguing will be converted to a seedling seed orchard. The findings of these experiments are needed for the selection of the best seed sources to increase plantation productivity and for the selection of the best individuals or clones for use in future tree improvement and breeding programs. The average survival percentage, tree height, DBH, and D10 were 54%, 25m, 23.57cm, and 29.79cm respectively, and there were statistically significant differences among provenances for these characteristics. The increment for these growth characteristics was highest during the initial growth periods (the first three years). Rough barks had higher mean average bark thickness than smooth barks. A lowland provenance from Mt. Lewotobi, Flores (No.6) was the best performing provenance. For the three years old progenies, the overall mean above-ground biomass was 13.36kg, with the greatest biomass partitioning in the stem wood (10.18kg). Above-ground biomass had a strong correlation (above 0.80, $p < 0.01$) with most of the growth characteristics. Average means for the Harvest Index, Form Quotient, and Crown Ratio were 0.73, 0.68 and 0.36 respectively. Average survival percentages, DBH, D10, and crown diameter were 97.34%, 8.83cm, 10.45cm and 1.58m respectively for the progenies. There were statistically highly significant ($p < 0.01$) differences among provenances and blocks for all these growth characters. Heritability of survival was 0.303, meanwhile heritability for the growth characteristics were as follows: total height (0.613), DBH (0.774), D10 (0.740), crown diameter (0.513), and stem form (0.518). The ten best ranking families were from Ermera, Timor (No.8); Mt. Lewotobi, Flores (No.18); Ermera, Timor (No.7); Ampui, Alor (No.3); Mt. Egon, Flores (No.9); Mt. Egon, Flores (No.77); Mt. Sirung, Pantar (No.12); Mt. Mutis, Timor (No.25); Mt. Sirung, Pantar (No.11); and Remexio, Timor (No.38) which were recommended for selection and future use in tree breeding programs.

Student's signature

Thesis Advisor's signature

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I praise God, because he did not reject my prayers or keep back his constant love from me (Psalms 66:20). For the Lord provides for those he loves, while they are asleep (Psalms 127:2).

My appreciation goes to my family for their constant love and prayers.

With all the help given so generously the author was able to complete her task and finalize her thesis with ease and peace of mind.

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