DETERMINATION OF RADIAL GROWTH IN SELECTED TROPICAL TREE SPECIES USING PINNING METHOD AND DENDROMETER

NORLINE ZARNUDIN

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NORLINE ZARNUDIN

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DETERMINATION OF RADIAL GROWTH IN SELECTED TROPICAL TREE SPECIES USING PINNING METHOD AND DENDROMETER

By

NORLINE ZARNUDIN

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DETERMINATION OF RADIAL GROWTH IN SELECTED TROPICAL TREE SPECIES USING PINNING METHOD AND DENDROMETER

By

NORLINE ZARNUDIN

November 2010

Chairman: Prof. Mohd Hamami Sahri, PhD

Faculty: Forestry

Radial growths of Shorea leprosula (Meranti tembaga), Hopea odorata (Merawan siput jantan), Shorea parvifolia (Meranti sarang punai) and Endospermum malaccense (Sesenduk), growing under humid tropics in Selangor was studied in a one year period. The objectives of this study were to investigate the radial growth increment of the above species through dendrometer and pinning methods. Meteorological data of the experimental sites for one year period were also obtained. In this method, a comparison of vessel and ray width before and after the wounding was carried out. Average vessel diameter changed from large to the small diameter. However average ray width changed from small to a large diameter once when a pin was inserted. In S. leprosula average vessel diameter changed from 238 to 104 μm. Average vessel diameter of H. odorata changed from 203 to 128 μm. Ray’s width changed from 44 to 58 μm in S. leprosula and 43 to 54 μm in H. odorata. Through the pinning experiment radial growth of all selected tree species was obtained. Traumatic resin canals (TRC) usually occur sporadically due to injury in concentric formation formed in dipterocarp species. Measurement of the length of TRC in a
tangential direction was obtained. In *S. leprosula* tangential length was 38.6 mm and average diameter of TRC was 86.7 μm (in normal wood, average diameter of resin canal was 53.4 μm). In *H. odorata* tangential length of TRC was 25.6 mm while diameter was 31.4 μm. Correlation between monthly radial growths with meteorological data was investigated. From the experiments, *S. leprosula* and *S. parvifolia* have the correlation coefficient in a range of 0.3. This phenomenon is considering *S. leprosula*, *S. parvifolia* and *E. malaccense* species correlated significantly with precipitation. The correlation between monthly radial growth and precipitation indicates a general positive relationship. The study concluded that the dendrometer and pinning method was appeared to be a simple and effective method to measure the radial growth changes in these tropical trees.
Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**PENENTUAN PERTUMBUHAN JEJARI POKOK UNTUK SPESIS TROPIS YANG TERPILIH MENGGUNAKAN KAEDAH “PINNING” DAN DENDROMETER**

Oleh

NORLINE ZARNUDIN

November 2010

Pengerusi: Prof. Mohd Hamami Sahri, PhD

Fakulti: Perhutanan

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I certify that an Examination Committee has met on 2010 to conduct the final examination of Norline Zarnudin on her Master of Science thesis entitled “Determination of Radial Growth in Selected Tropical Tree Species using Pinning Method and Dendrometer” in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the student be awarded the degree of Master of Science.
Members of the Examination Committee were as follows:

Faridah Hanum Ibrahim, PhD  
Professor  
Faculty of Forestry  
Universiti Putra Malaysia  
(Chairman)

Mohd Zaki Hamzah, PhD  
Associate Professor  
Faculty of Forestry  
Universiti Putra Malaysia  
(Internal Examiner)

Mohd Nazre Saleh, PhD  
Lecturer  
Faculty of Forestry  
Universiti Putra Malaysia  
(Internal Examiner)

Ab Rasip Ab Ghani, PhD  
Coordinator FRIM’s Sub Station Agroferestry  
Forest Research Institute Malaysia  
(External Examiner)

BUJANG KIM HUAT, PhD  
Professor and Deputy Dean  
School of Graduate Studies  
Universiti Putra Malaysia

Date:
This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

Mohd Hamami Sahri, PhD  
Professor  
Faculty of Forestry  
Universiti Putra Malaysia  
(Chairman)

Tadashi Nobuchi, PhD  
Professor  
Faculty of Forestry  
Universiti Putra Malaysia  
(Member)

Hazandy Abdul Hamid, PhD  
Lecturer  
Faculty of Forestry  
Universiti Putra Malaysia  
(Member)

HASANAH MOHD GHAZALI, PhD  
Professor and Dean  
School of Graduate Studies  
Universiti Putra Malaysia

Date: 22 February 2011
DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Putra Malaysia or other institutions.

NORLINE ZARNUDIN

Date: 19 November 2010
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