

STEM WOUND CLOSURE OF *Plagiodon fragrans* Roxb.
(TEMBISU)

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2007

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Stem wound closure of fagraea fragrans roxb.(tembusu) /
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STEM WOUND CLOSURE OF *Fagraea fragrans* Roxb. (TEMBUSU)

By

Noraine binti Salleh Hudin

Research Report submitted in partial fulfilment of
the requirements for the degree of
Bachelor of Applied Science (Biodiversity Conservation and Management)

Department of Biological Sciences
Faculty of Science and Technology
UNIVERSITI MALAYSIA TERENGGANU
2007

1100051211

This project should be cited as:

Noraine, S. H. 2007. Stem wound closure of *Fagraea fragrans* Roxb. (tembusu). Undergraduate thesis, Bachelor of Applied Science (Biodiversity Conservation and Management), Faculty of Science and Technology, Universiti Malaysia Terengganu, Terengganu. 49p.

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RESEARCH REPORT VERIFICATION**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: STEM WOUND CLOSURE OF *Fagraea fragrans* Roxb. (TEMBUSU) oleh NORAINIE BINTI SALLEH HUDIN, no. matrik: UK 10462 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh ijazah Sarjana Muda Sains Gunaan (Pemuliharaan dan Pengurusan Biodiversiti), Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

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ACKNOWLEDGEMENTS

First and foremost, I am grateful to Allah S.W.T for the blessing for me in doing this project. My appreciation also goes to the supervisor of this project, Miss Jamilah binti Mohd. Salim @ Halim, for the guidance and critical comments. I also sincerely thank all the lecturers of Biological Department for the useful advices. For much appreciated ideas and help in statistical analysis, my gratitude goes to Assoc. Prof. Liew Hock Chark and Dr. Chuah Tse Seng. I wish to thank to the lab assistant, Mr. Muhamad Razali bin Salam, for technical assistance. I would also like to thank the Department of Biological Sciences as well as Faculty of Science and Technology of Universiti Malaysia Terengganu for giving the opportunity and for providing laboratory facilities to conduct this project.

I also acknowledge Sultan Abdul Samad Library of Universiti Putra Malaysia for the valuable information. I also wish to thank the Meteorological Department of Malaysia for the generosity in giving information on weather. Thanks are extended to classmates who had assisted in the field, housemates for all the help in every aspect, and all people who had indirectly helped me in finishing this project. Last but not least, thanks to my beloved parents and siblings for the support.

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LIST OF ABBREVIATIONS

| | | |
|-------|---|---|
| ANOVA | - | Analysis of Variance |
| CODIT | - | Compartmentalization of Decay in Tree |
| DBH | - | Diameter breast height |
| E | - | East |
| g | - | Gram |
| GLM | - | General Linear Model |
| Kg | - | Kilogram |
| Klx | - | Kilolux |
| m | - | Meter |
| mm | - | Millimetre |
| N | - | North |
| SD | - | Standard deviation |
| SE | - | Standard error |
| SPSS | - | Statistical Package for the Social Sciences |
| °C | - | Degree Celsius |
| % | - | Percentage |

ABSTRACT

Mechanical wound that occur on tree trunk leads to the damaging of plant tissue, weaken tree structure, distracting sap translocation, and giving an entry for pathogens infections. Effective wound closure mechanism is crucial to protect plant tissue from the invasion of biotic agents which may lead to stem disease or decay. This study was conducted to examine wound closure rate and mechanisms of *Fagraea fragrans* in heath vegetation on BRIS (Beach Ridges Interspersed with Swales) site of Rantau Abang, Terengganu. *Fagraea fragrans* trees, which the diameter at breast height ranged from 5 cm to 7 cm, were artificially wounded by exposing the sapwood ($N = 5$) and the inner bark ($N = 5$). The wound closure mechanism followed the CODIT (Compartmentalization of Decay in Tree) model through formation of wound periderm in exposed inner bark and callus in exposed sapwood wound. There were no significant differences between wound closure rate in width between exposed sapwood and exposed inner bark. Wound positions along stem also had no effect on wound width closure. However, wound closure in width was positively correlated with stem growth (shown by diameter at breast height). Similarly, the differences in wound length closure rate between exposed sapwood and inner bark were insignificant. Wound closure in length was similar regardless of wound position along stem. Meanwhile, correlation between wound closure in length with stem growth was significantly positive. Possible factors that influence stem wound closure rate at *Fagraea fragrans* are discussed.

PENUTUPAN LUKA PADA BATANG *Fagraea fragrans* Roxb. (TEMBUSU)

ABSTRAK

Luka mekanikal pada batang pokok menyebabkan kerosakan pada tisu tumbuhan, melemahkan struktur pokok, mengganggu pengangkutan sap, dan membawa kepada jangkitan patogen. Penutupan luka yang berkesan penting untuk melindungi tisu tumbuhan daripada jangkitan agen biotik yang boleh menyebabkan penyakit dan pereputan batang pokok. Kajian ini telah dijalankan untuk meneliti mekanisma penutupan luka dan kadarnya pada batang *Fagraea fragrans* yang hidup di kawasan vegetasi padang 'heath' di tanah BRIS (Beach Ridges Interspersed with Swales) di Rantau Abang, Terengganu. Dua rawatan luka dengan dua kedalaman berbeza iaitu mendedahkan bahagian dalam kulit kayu ($N = 5$) dan kayu gubal ($N = 5$) telah dibuat pada batang *Fagraea fragrans* yang mempunyai diameter pada paras dada antara 5 cm hingga 7 cm. Mekanisma penutupan luka berlaku mengikut model CODIT (Compartmentalization of Decay in Tree) yang melibatkan pembentukan periderma bagi luka yang mendedahkan bahagian dalam kulit kayu dan kalus bagi luka yang mendedahkan kayu gubal. Tiada perbezaan ketara bagi kadar penutupan lebar luka antara luka yang mendedahkan kayu gubal dan bahagian dalam kulit kayu. Kedudukan luka pada batang juga tidak mempengaruhi penutupan lebar luka. Walau bagaimanapun, penutupan lebar luka berkorelasi secara positif dengan pertumbuhan batang (ditunjukkan melalui diameter pada paras dada). Perbezaan bagi penutupan panjang luka antara luka yang mendedahkan kayu gubal dan bahagian dalam kulit kayu juga tidak ketara. Penutupan panjang luka adalah sama walaupun pada kedudukan yang berbeza pada batang. Sementara itu, korelasi antara penutupan panjang luka dengan pertumbuhan batang pula adalah ketara. Faktor-faktor yang mempengaruhi kadar penutupan luka pada batang *Fagraea fragrans* dibincangkan dalam kajian ini.