



UNIVERSITI
MALAYSIA
KELANTAN

FINAL YEAR PROJECT GUIDE BOOK

BACHELOR OF APPLIED SCIENCE WITH HONOURS

**FACULTY OF AGRO BASED INDUSTRY
UNIVERSITI MALAYSIA KELANTAN
2016**

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CHAPTER 1

GENERAL REQUIREMENTS

1.1 OVERVIEW

The purpose of this book is to guide the undergraduate students of the Faculty of Agro Based Industry, Universiti Malaysia Kelantan, Jeli Campus in the preparation of their proposals and theses. This brief guide covers the specified proposal and thesis formats and other necessary writing rules. This sets a standard by which the quality of the student learning outcomes, writing and submitted work can be maintained. Students are reminded to familiarise themselves to the stipulated guidelines presented in this book from the beginning stages. This guide will also assist the supervisors to ensure conformity to the rules. This guide book contains two parts as follows:

- Part 1 provides information on the preparation and writing of the proposal
- Part 2 provides information on the preparation and writing of the thesis

Appendices are presented as much as possible, to provide examples which the students may follow. Proposals and theses failing to follow the provided format will not be accepted for submission.

1.2 LANGUAGE

The proposal and thesis must be written in scientific **British English**. Consistency of the language in terms of spelling and grammar must be maintained at all times. A thesis should be written in the third person form.

1.3 SUBMISSION OF PROPOSAL

Two hard copies of your research proposal, spiral comb bound is to be handed to the Faculty for evaluation purpose.

1.4 SUBMISSION OF THESIS

Two soft bound copies must be submitted to the Faculty for evaluation. The final Turnitin similarity report must be attached together (cut off: < 25%). The minimum word limit for the thesis, including tables and figures, and references is 10 000 words and must not exceed 20 000 words. Upon examination both the soft bound copies will be returned to the students for correction. After correction and obtaining final approval from the supervisor, students are required to submit **TWO** copies of the corrected thesis, hard bound cover; and **TWO** softcopies of the thesis in a CD (in PDF format) to the Faculty. Students are advised to keep one copy (research proposal and thesis for their own reference).

1.5 PLAGIARISM

Plagiarism is taking the words, theories, creations or ideas of another person and passing them off as your own. In order to avoid plagiarism, the students must be able to acknowledge and reference sources well. Students will have to abide to the scientific writing ethics to avoid plagiarism issues. The official plagiarism detection tool used by Universiti Malaysia Kelantan is Turnitin. Students will have to hand in the Turnitin similarity report to the supervisor during the thesis writing process for monitoring (cut off: < 25%). Students will have to abide to the scientific writing code of ethics to avoid plagiarism issues.

CHAPTER 2

PROPOSAL GUIDELINE

2.1 FORMAT OF PROPOSAL

2.1.1 TITLE PAGE

Title should describe the content of the research accurately and concisely and should be written using 14-point Arial font. Title page must contain information listed in the following order (See example in Appendix 2.1):

- i. UMK Logo
- ii. Title of the proposal
- iii. Student's full name
- iv. Student's matric number
- v. Name of supervisor
- vi. Name of program
- vii. Name of faculty
- viii. Name of the university
- ix. Year of submission

2.1.2 EXECUTIVE SUMMARY

An executive summary is a general statement of the research and summary of the entire proposal in no more than 300 words. It should include the problem statement, objectives, research methodology, expected output/outcomes/implication,

and significance of output from the research project. Maximum of FIVE (5) keywords should be included. See example in Appendix 2.2.

2.1.3 TABLE OF CONTENT

Contains the list of all preliminary pages (executive summary and table of content), proposal content and references with respective page numbers. Content title are written in uppercase while the subheadings of the content are written by mixing upper and lower case. Not more than three levels of Arabic numerals subheadings are allowed in the Table of Content (content names are level 1 headings, subheadings of a content are level 2 headings, subheadings of subheadings are level 3). See example in Appendix 2.3. All the contents and subheadings titles should be used similar to the actual text and pages are stated accordingly.

2.1.4 RESEARCH BACKGROUND

Research background provide the background information of a topic or research interest. The information identifies and describes the history and nature of a well-defined research problem with reference to the existing literature. The background information should indicate the root of the problem being studied, its scope, and the extent to which previous studies have successfully investigated.

The components of research background are problem statement, hypothesis (optional), research questions, objectives, scope of study, significance of study and limitation of study (optional).

2.1.3.1 PROBLEM STATEMENT

A research problem is a statement about an area of concern, a condition to be improved upon, a difficulty to be eliminated, or a troubling question that exists in scholarly literature. The importance of problem statement is to introduce the reader to the importance of the topic being studied and provide the framework for reporting the results

2.1.3.2 HYPOTHESIS (OPTIONAL)

A research hypothesis is a statement of expectation or prediction that will be tested by research. In a hypothesis statement, students make a prediction about what they think will happen or is happening in their experiment.

2.1.3.3 RESEARCH QUESTION

A research question is the fundamental core of a research project. It focuses the study, determines the methodology, and guides all stages of inquiry, analysis, and reporting.

2.1.3.4 OBJECTIVES

Research objective is a description of what is to be achieved in the study. Research objectives will narrow and focus the study to determine type of information that will be collected in the study and further facilitate in the development of methodology. The research objectives for Final Year Project are limit to not more than THREE (3).

2.1.3.5 SCOPE OF STUDY

Scope of the study refers to the parameters in which the study will be carried out. It is important to make this section as clear as possible to make sure the study is in the accepted range.

2.1.3.6 SIGNIFICANCE OF STUDY

Significance of study should explain the need of the study and its potential application and utilization.

2.1.3.7 LIMITATION OF STUDY (OPTIONAL)

Limitations are matters and occurrences that arise in a study which are out of the researcher's control. They limit the extensivity to which a study can go, and sometimes affect the end result and conclusions that can be drawn.

2.1.5 LITERATURE REVIEW

This section is a critical review of literatures related to the topic of the proposed project. It should act as the base for the experiment/analytical section of the thesis. The literature selected must be up to date, analysed and synthesised logically.

2.1.6 METHODOLOGY

Methodology consist of two (2) parts:

i. Materials and Equipments

All the materials and equipment's required for the proposed project should be listed in paragraph form.

ii. Methodology

It describes the methods and techniques used in the project. This may include the description of methodology, theoretical development, hypothesis description, experimental design and standard procedure descriptions.

2.1.7 EXPECTED OUTCOME

Expected outcomes summarise the overall results to be achieved after completion of the proposed project.

2.1.8 FLOW CHART OF RESEARCH ACTIVITIES

Flow chart of research activities summarise the overall research activity that will be carried out proposed project in a diagram and labelled as Figure. See example in Appendix 2.4.

2.1.9 GANTT CHART AND MILESTONES

A Gantt chart is a visual representation in the form of bar chart of a project schedule that shows the start and finish dates of the different required elements of a project. Whereas, milestones are used to indicate important dates on the project plan,

often-key events or goals. Milestones are used to mark desired completion dates or project. See example in Appendix 2.5.

2.1.10 BUDGET

Budget listed the total estimated cost required to carry out the proposed project. This may include consumables, chemicals, existing equipments and apparatus. The example of estimated budget is listed in Appendix 2.6.

2.1.11 REFERENCES

References are detailed description of items from which information were obtained in preparing the thesis and listed at the end of the text. Every reference cited in the text (with the exception of personal communications) should be listed in the References section that follows the main body of the project report. Likewise, citation that is not mentioned in the text should not be listed in the reference section.

Students must adhere to the text citation and referencing styles of the American Psychological Association (APA) style. In-text citation consists of author's first name followed by year of publication in bracket. While, end-text citation consists of author's first name followed by year of publication and should be stated at the end of a referred sentence with both author's name and publication year in bracket. Two authors should be written with "&" symbol followed by year of publication. More than 2 authors should use abbreviation *et al.* (italic) after the first name of first author followed by year of publication. See example in Appendix 2.7.

The format of References list must be in accordance with the following guidelines:

- i. The references must be listed alphabetically writer and the second line onwards is indented 1 cm to the left.
- ii. The author only mentioned in the text using the family name (surname), but other short name must be shown in the reference list.
- iii. References from journal articles:

Name and short name of the authors. Year of publication should be placed in brackets. The title of the article. The name of the journal (*italic*), volume and issue number (*italics*), page numbers first and last. Example:

Lee, C.K., Darah, I. and Ibrahim, C.O. (2007). Enzymatic deinking of laser printed office papers: Some governing parameters on deinking efficiency. *Bioresource Technology*, 98(1), 1684 -1689.

- iv. References from book:

Name and short name of the authors. Year of publication should be placed in brackets.

Title (*italic*). Place of publication: name of publisher. Number of pages. Example:

Ibrahim, C.O. (1994). *Introduction to Industrial Microbiology*. Penang: Universiti Sains Malaysia Press. 15-20.

- v. References from chapter in the book:

Name and short name of the authors of the chapter. Year of publication should be placed in brackets. The title of the chapter. In: Name of author, title of the book (*italics*) pages in parentheses. Place of publication: name of publisher. Example:

Ibrahim, C.O., Rosma, A., Darah, I. and Kumar, S. (2007). Utilization of the Malaysian agrowaste resources for the generation of value added products via biotechnological processes. In: Koutinas, A., Pandey, A. and Larroche C. (eds.) *Current Topics on bioprocesses in Food Industry Volume II* (pp. 99-109). Delhi: ASIATECH Publisher Inc.

vi. References from thesis:

Name and short name of the author. Year of publication should be placed in brackets. Title. Dissertation stage. Name of University, name of the place. Example:

Uronu, A. B. (1989). Studies on the infection of pea (*Pisum sativum*) by *Colletotrichum pisi*. M. Sc. Thesis. University of Bristol, U.K.

vii. References from conferences papers/ proceeding/ seminar:

Conference Name (italics), name and the name stands for the name of the author. Year of publication should be placed in brackets. Title of the article. Place. Number of first and last pages. Example:

Muhamed Odeh, A.A.L. and Ibrahim, C.O. (2007). Lipases from *Bacillus megaterium* BW 16 and *Trichoderma harzianum* BW 45: comparative hydrophilic-hydrophobic organic solvent tolerance. *International Conference on New Horizons in Biotechnology*, Trivandrum, India. pp. 7.

viii. References from websites

Name and short name of the author. Year of publication should be placed in brackets. The title of the article. Retrieved on .. (Date), the website of (name of site).

Example:

United States Environmental Protection Agency. (2007). Climate Change. Retrieved May 4, 2007 from the Environmental Protection Agency website: <http://www.epa.gov/climatechange>

The List of References should follow closely the example in Appendix 2.8.

2.2 TECHNICAL SPECIFICATION

2.2.1 FONT TYPE AND FONT SIZE

The proposal report must be written using the **Arial** font and the font size is **11-point** and the same typeface must be used throughout the text, including heading and

page numbers. Font should not be scripted or italicized except for scientific names and terms in a different language. **Bold** print may be used for headings. Footnotes and text in tables should not be less than 9 point. Equations and formula must be typed.

2.2.2 TABLES AND FIGURES

Tables, figures and photographs should be arranged so that they exist in separate pages without mixed with text (optional). The information of the tables, figures and photograph should be stated/ mentioned first followed by the materials. It also need to be numbered in separate series, with the number and title, together with further information which needs such as notes, bookmarks, and so on. Tables and figures should be numbered consecutively by chapter number followed with level 2 Arabic numbering throughout the thesis.

Number and title of the table is placed at the top of the table, meanwhile, the number and title of figures including charts, diagrams and photographs are placed at the bottom of each figures. See example in Appendix 2.9.

2.2.3 MARGINS

The margin should be set up as according to normal Ms. Word document as follows:

Top	: 2.5 cm
Bottom	: 2.5 cm
Left	: 2.5 cm
Right	: 2.5 cm

Right margin of the text should be justified for the whole report. See Appendix 2.10.

2.2.4 SPACING

The proposal report must be typed **Double line spacing** in between lines, while **Four line spacing** should be used between paragraphs and sections. Single spacing should only be used for following list:

- i. Explanatory footnotes
- ii. Quotations longer than three lines set in a block
- iii. References
- iv. Appendices
- v. Headings or subheadings for Tables and Figures

A new paragraph should be at least two lines from the bottom of the page; otherwise the new paragraph should start in the next page.

2.2.5 PAGINATION

All pages should be numbered **Centrally** at the **Bottom** margin. Page numbers should not be placed in brackets, hyphenated or accompanied by other decorative devices. Print text or figures on only one side of each sheet. Only original word-processed copy or good and clean photocopies are acceptable.

Pages should be numbered consecutively throughout the project report, including pages for tables, figures and appendices. The Title page should not be numbered though it is counted in Roman as page i. The Executive Summary page must be continued numbered in Roman numerals ii and appeared on the page. Page

1 starts with the first page of the Research Background and followed by subsequent pages.

2.2.6 LAYOUT

The report must be written in **Portrait** layout. Though, the Landscape layout could be used for Figures and Table if necessary

2.2.7 PAPER

The proposal report must be written on **A4 size (210mm x 297mm)** of white paper, **80g weight** on **one side only**. The same type of paper must be used for the whole report.

2.2.8 BINDING

Page The report binding should be spiral comb binding with plastic cover.

CHAPTER 3

THESIS GUIDELINE

3.1 FORMAT OF THESIS

Each of Final Year Project thesis consist of **THREE (3)** main section: Preliminary pages, Text and References. Preliminary pages consist of Title page, Thesis Declaration, Acknowledgment, Abstract (English and Malay), Table of Content, List of Tables, List of Figures, and List of Symbols and Abbreviations.

The main text of thesis report is arranged in chapters which the chapter numbers and subheadings titles are arranged subsequently. Text consists of SIX (6) chapters as follows:

- Chapter 1 : Introduction
- Chapter 2 : Literature Review
- Chapter 3 : Methodology
- Chapter 4 : Results
- Chapter 5 : Discussion
- Chapter 6 : Conclusion and Recommendation

However, Chapter 4 Results and Chapter 5 Discussion may be combined together as requested by supervisors.

3.1.1 TITLE PAGE

This page should include the following items (see example in Appendix 3.1):

- i. UMK Logo
- ii. Full title of the thesis (in uppercase);
- iii. Full name of the author (in uppercase);
- iv. Degree for which the thesis is submitted and description of the requirements for the award;
- v. Name of the institution and university to where the thesis is submitted;
and
- vi. Year of submission.

The title should capture the content of the thesis accurately and concisely.

Name of species in the title should be written in italic sentence case.

3.1.2 THESIS DECLARATION

Declaration document is a statement by the student which verifies that works available in the thesis is original and unpublished by any institution. A thesis to be submitted must obtain prior declaration by the supervisor which verifies that the thesis has reached an acceptable level. See example in Appendix 3.2.

Declaration document need to be signed by the student and the supervisor. Failure to complete the declaration document is considered incomplete thesis and will not be accepted by the faculty.

3.1.3 ACKNOWLEDGEMENT

Acknowledgements usually contain written expressions of appreciation for the guidance and assistance provided by individuals and institutions upon Final Year Project completion.

3.1.4 ABSTRACT

An abstract is a digest of the entire thesis and should be accorded the same careful attention as the main text. Abstract should not exceed 300 words. It includes a brief statement of the problem; a concise description of the research method and design; summary of the major findings, including the significance or lack of it; and conclusions. Maximum of FIVE (5) keywords should be included. Reference to literature is normally not included in the abstract.

The abstract should be written in both in English and Bahasa Malaysia. The version that appears first will be of the same language used in writing the thesis. The format of abstract heading is shown in Appendix 3.3 and 3.4. Although a thesis may have been written in the English language, the corresponding abstract in Bahasa Malaysia must also reach an acceptable scholarly standard. In addition, scientific terms must be used consistently. Abbreviations or acronyms must be preceded by the full term at the first use.

3.1.5 TABLE OF CONTENTS

Contains the list of all the preliminary contents, text contents (Chapters), references and appendices written in uppercase with respective page numbers. See example in Appendix 3.5.

Chapter titles are preceded by their number of chapters and written in uppercase while the subheadings of the chapters are written by mixing upper and lower case. Not more than three levels of subheadings are allowed in the Table of Contents (chapter names are level 1 headings, subheadings of a chapter are level 2 headings, subheadings of subheadings are level 3). Subheadings of chapters should be numbered with Arabic numerals. All the chapters and subheadings titles should be used similar to the actual text and pages are stated accordingly.

3.1.6 LIST OF TABLES, FIGURES, SYMBOLS AND ABBREVIATIONS

This list shows the exact titles or captions of all tables and figures in the text and appendices, together with the beginning page number of each table and figure. See examples in Appendix 3.6 and 3.7. The figure includes graphs, maps, charts, engineering drawings, photographs, sketches and printed images. Tables and figures should be numbered beginning with chapter number and followed consecutively with level 2 Arabic numbering. Appendices tables and figures should be numbered beginning with appendices letter and followed consecutively with level 2 Arabic numbering throughout the thesis.

Whenever abbreviations and acronyms (e.g. FAO, DOA, MARDI, PORIM) are used in the thesis, it is best to list them in a list of Abbreviations/Notation/Glossary of Terms together with their meanings, even though the full names are already given at the first mention in the text. See example in Appendix 3.8. This list serves as ready reference to readers who are not familiar with the abbreviations used. Universally recognised scientific symbols (OD, cm, mm, kg, ha) need not be listed.

3.1.7 CHAPTER 1 INTRODUCTION

Introduction is the introductory chapter (background information) that indicates the problem to be addressed and its importance and validity. It sets forth the context, the research objectives to be attained and the hypotheses to be tested. This section also discusses the scope and the significance of the research. Introduction may be break up into logical segments by using subheadings.

3.1.8 CHAPTER 2 LITERATURE REVIEW

A literature review surveys scholarly articles, books and other sources (e.g., dissertations, conference proceedings) relevant to a particular issue, area of research, or theory, providing a description, summary and critical evaluation of each work. The purpose is to offer an overview of significant literature published on a selected topic. However, a literature review is not a summary of works of different authors. Justification is given in this section for the use of specific solution techniques or problem solving procedures in present work. Literature review may be break up into logical segments by using subheadings.

3.1.9 CHAPTER 3 MATERIALS AND METHODS

Descriptions of materials, equipment, procedures, techniques, calculations and calibration plots employed through out the study. Limitations, assumptions and range of validity of the methods are also included in this section. This information is required to allow the reader to assess the believability of the present results and also is needed by another researcher to replicate the experiment.

3.1.10 CHAPTER 4 RESULTS

The results are actual statements of observations, whether positive or negative. It can be reported in the form of figures, tables, statistics or text. Sufficient details should be presented so that others can draw their own inferences and construct their own explanations. Results may be break up into logical segments by using subheadings.

3.1.11 CHAPTER 5 DISCUSSION

A discussion is based on the results obtained from the study in relation to the hypotheses and is not simply a restatement of the results. Discussion may be break up into logical segments by using subheadings. It highlights the main finding, their significance and implications. The discussion section should be a brief essay in itself, answering the following questions:

- i. What are the major patterns in the observations?
- ii. What are the relationships, trends and generalizations among the results?
- iii. What are the likely causes (mechanisms) underlying these patterns?
- iv. Is there agreement or disagreement with previous work?
- v. How do the obtained results relate to the present hypothesis/problem statement in the introduction?
- vi. Include possible explanations related to the present results (must be supported by references).
- vii. What are the contributions of present findings to the field of study?

3.1.12 CHAPTER 6 CONCLUSION AND RECOMMENDATION

A summary which highlights the most important observations and outcomes of the study upon which a conclusion is drawn in line with the objective set. It also outlines the significance and contribution of overall work to the area of study.

Suggestion or recommendation on future research work may also be written in a separate subsection. The future work can arise from the present results generated or work which able to further confirm the present hypothesis.

3.1.13 REFERENCES

References guideline follow the section 2.1.11 and Appendix 2.8.

3.1.14 APPENDICES

If supplementary original data, illustrative material, a detailed derivation of equations, an extensive proof of a theorem, or a quotation too extensive for the body of the project report are included, they may be presented in appendices. Similar material should be gathered in a single appendix. See example in Appendix 3.9.

Appendices must adhere to the following guidelines:

- i. Appendices may be break up into logical segments consecutively beginning with letter (Eg: Appendix A).
- ii. Tables and figures should be numbered beginning with appendix letter followed by subheading level 2 Arabic numeral (Eg: Table A.1).
- iii. The appendix material should begin FOUR (4) line spacing below the heading.

- iv. The appendices pages are counted and numbered in Arabic numerals continuation from text and references.

3.2 TECHNICAL SPECIFICATIONS

Typing should be done on a word processor, with printing done on a letter quality using laser printer. Candidates for bachelor degrees are urged to consult the supervisor/ coordinator on matters such as format or the thesis before starting to type their draft thesis. This will avoid costly errors and delays.

3.2.1 FONT TYPE AND FONT SIZE

The font size should be **11 point, Arial** and the same typeface must be used throughout the text, including title page, headings and page numbers. Font should not be scripted or italicized except for scientific names and terms in a different language. Bold print may be used for headings. Footnotes and text in tables should not be less than **9 point**. Equations and formulae must be typed.

3.2.2 TABLES AND FIGURES

Tables and figures guidelines follow the section 2.2.2 and Appendix 2.9.

3.2.3 MARGINS

Margin specifications are meant to facilitate binding and trimming. All information (text heading, footnotes and figures), including page numbers, must be within the text area. See example in Appendix 3.10. The specifications as follows:

Top	: 2.5 cm
Bottom	: 2.5 cm
Left	: 3.8 cm
Right	: 2.5 cm

3.2.4 SPACING

Double line spacing must be used in between lines. However, FOUR (4) line spacing must be used between paragraphs and sections. Single spacing is permitted within:

- i. Explanatory footnotes
- ii. Quotations longer than three lines set in a block
- iii. References
- iv. Multi-line captions (tables, figures)
- v. Appendices
- vi. Headings or subheadings for Tables and Figures

A new paragraph should be at least two lines at the bottom of the page. Otherwise, the new paragraph should start in a new page.

3.2.5 PAGINATION

All pages should be numbered centrally at the bottom margin. The page numbers should not be placed in brackets, hyphenated or accompanied by other decorative devices. Print text or figures on only one side of each sheet. Only the original word-processed copy of a thesis or photocopies of high quality will be accepted. The

pages should be numbered consecutively throughout the thesis, including pages for the tables, figures and appendices.

Preliminary of pages must be numbered in Roman numerals (i, ii, iii). The title page should not be numbered as though it is counted as page i. Text, References and Appendices must be numbered in Arabic numerals (1, 2, 3). Page 1 is the first page of Introduction (or Chapter 1) and must appear on the page.

3.2.6 LAYOUT

The text should be printed in **Portrait** layout. However, the Landscape layout may be used for tables and figures.

3.2.7 PAPER

The project report must be written on one side only of good quality white bond paper (80 g weight) of A4 size (210 mm x 297 mm). The same grade of paper must be used throughout the project report.

3.2.8 BINDING

The evaluated and corrected thesis report should be bound in hard cover. Number of copy is explained in section 1.4. The binding should be as for a book in which pages are permanently secured.

The following should be lettered in Gold with Arial 14 point font size from the head to the foot of the project report spine (See example in Appendix 3.11):

- i. Name of candidate
- ii. Abbreviated degree (E.g: B. Appl. Sc. (Agrotechnology) with Hons.)
- iii. Year of submission

The following particulars should be provided on the project report cover using Gold block font with font size Arial 14 point (See example in Appendix 3.12):

- i. Title of thesis
- ii. Name of candidate
- iii. Degree
- iv. Name of Faculty and University
- v. Year of submission

The thesis should be bound with **Glossy Sheen Dark Green** hard cover. The code of dark green colour code as follows:

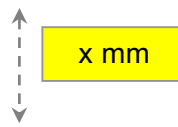
R: 0		C: 88%
G: 102	or	M: 34%
B: 51		Y: 93%
		K: 24%

3.2.9 SUBMISSION FORM FOR FINAL THESIS

Final thesis should be submitted at Faculty General Office on the scheduled date announced by course coordinator. Upon submission, students are advised to strictly adhere to instruction in section 1.4 Thesis Submission and section 1.5 Plagiarism. Submission form is as per Appendix 3.13. Student need to complete the form and submit together with the Laboratory form or Agropark form for final submission.



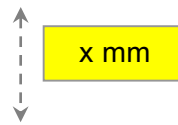
Organogenesis from Anther and Ovary Cultures of Kenaf (*Hibiscus cannabinus* L.) Treated
with Different Hormonal Combinations



By

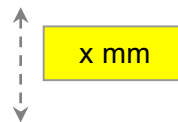
Zulaiha Binti Sahat

F13A001

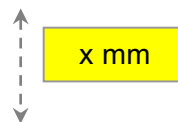


Supervisor

Dr. Dwi Susanto



A proposal submitted in fulfillment of the requirements for the degree of Bachelor of Applied
Science (Bioindustrial Technology) with Honours



Faculty of Agro Based Industry

UNIVERSITI MALAYSIA KELANTAN

2016

**Effect of Different Solvent Extraction on Antioxidant Content and Activities of
Fragraea acuminatissima Merr. (Loganiaceae)**

EXECUTIVE SUMMARY

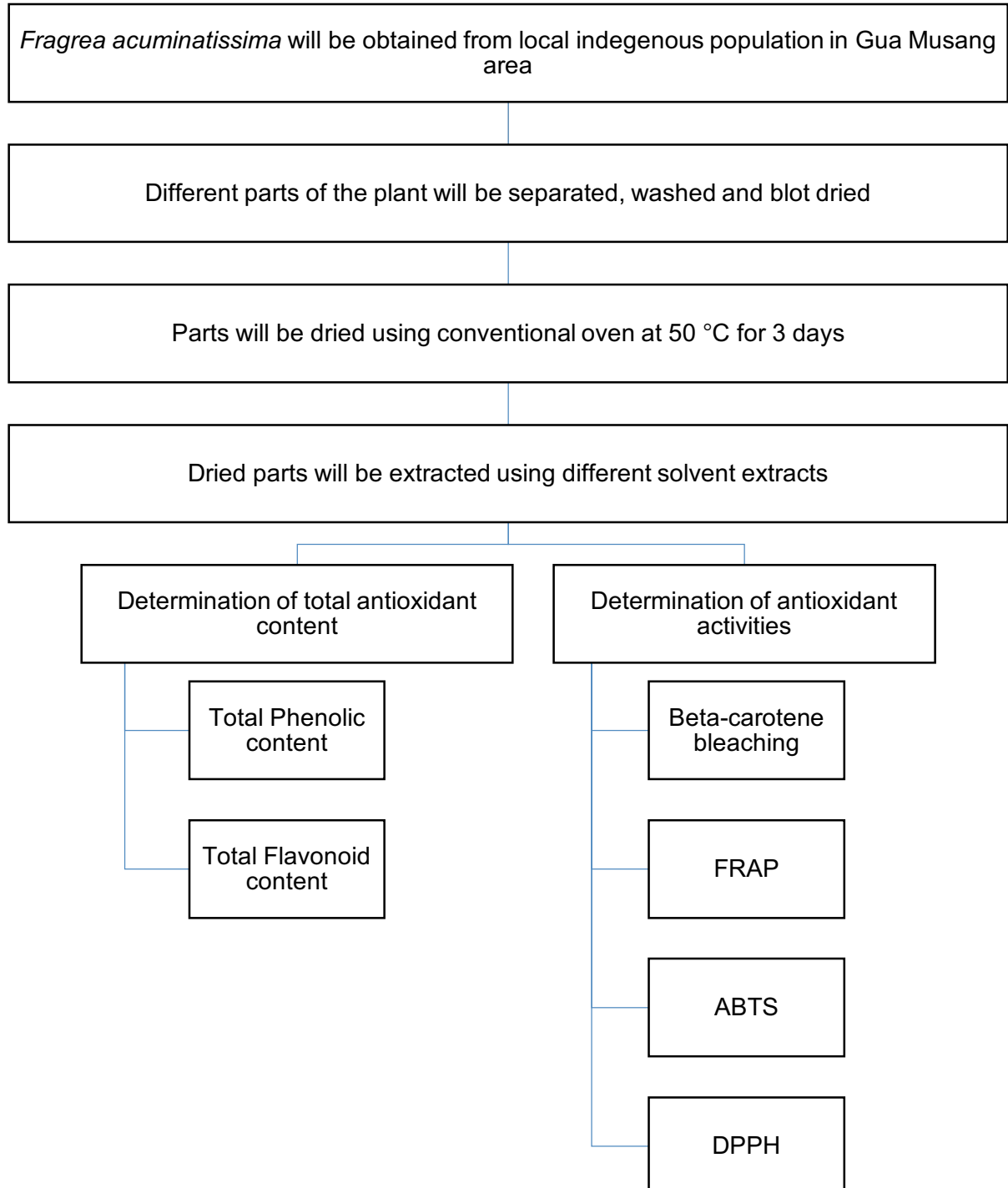
Natural herbs and plant medicines are being used a long time ago by the community not only as a food but also as a source of healing remedies. However, scientific evidence on health potential claimed by the society are rarely been studied and the safety issue often hesitate the population over its consumption. One of the herb plant which medically been consumed by the rural and indigenous population in Malaysia is *Fragraea acuminatissima* Merr (Loganiaceae) or locally known as tengkuk biawak. Currently, there are lacking of publications found on this species including its valuable components and safety issue. This project is proposed to reveal the total antioxidant content and activities of different parts of tengkuk biawak by different solvents extraction. Two total antioxidant content analysis will be carried out focusing on phenolic and flavonoid content. Whereas, four antioxidant assays will be conducted to determine the antioxidant activity including beta-carotene bleaching, DPPH scavenging activity, FRAP and ABTS assays. The findings of this project will provide the fundamental scientific evidence of the antioxidant potential in different parts of tengkuk biawak by using different solvent extraction. Data obtained will also help to improve the nutrient composition database of underutilized plant in Malaysia generally and in Kelantan specifically. Antioxidant potential of tengkuk biawak would give ideas for future studies in investigating the potential health effect and the mechanisms of actions at molecular levels.

Keywords: *Fragraea acuminatissima*, antioxidant activities, phytochemicals, toxicity

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5.0 FLOW CHART



6.0 GANTT CHART AND MILESTONES

Year	2016											2017
Project (Activities)	F	M	A	M	J	J	A	S	O	N	D	J
Preparation of the proposal	■	■	■	■	■							
Harvesting sample and sample preparation						■						
Sample extraction							■					
Total antioxidant content analysis								■				
Antioxidant activities analysis									■			
Data checking and analysis							■	■	■			
Thesis preparation										■	■	■
Milestones	F	M	A	M	J	J	A	S	O	N	D	J
Submission of research proposal					30							
Finished sample preparation						31						
Finished sample extraction							31					
Complete total antioxidant content analysis								30				
Complete antioxidant activities analysis									31			
Complete data checking and analysis									31			
Thesis submission												15

7.0 BUDGET

Table 1: Estimated budget

Item	Quantity	Price (RM)
Beaker (25 mL)	20	Existing at FIAT's laboratory
HPLC	1 sample	Existing at FIAT's laboratory
Hexane	1 L	150
Total		150

EXAMPLES OF IN-TEXT CITATION

In Chapter 2, the design characteristics of the CLMP was finalized. According to Nagatani *et al.* (2000), because of the high estimated load of the CLMP, the driver circuit (L298) will consume high currents. To ensure the proper operation of this component, a heat sink is required. An additional aluminum plate, as designed in Section 2.6, is suggested to be attached to the L298 to function as a heat sink. A rough estimate on the dimensions of the heat sink can be obtained by using the following equation (David & Rosenberg, 2006),

$$A = h \left[\frac{T_{\max} - T_{\text{amb}} - R_{\text{jc}}}{P_{\text{tot}}} \right]^{-1} \quad (3.1)$$

where P_{tot} is the maximum rated power which is equal to 25 W, T_{amb} is the ambient temperature which is equal to 30 °C, T_{\max} is the maximum rated temperature which is equal to 150 °C, R_{jc} is the junction-case thermal resistance which is equal to 3 °CW⁻¹, h is the heat transfer coefficient which is equal to 537Wm⁻²°C⁻¹ and A is the suggested area of the heat sink. Based on these values and by using Equation (3.1), the area of the heat sink was found to be 0.001035m². Since the height of the L298 chip is 2.3 cm, the length of the heat sink can be calculated to be 4.5 cm. Figure 3.14 shows the close-up view of designed heat sink and Table 3.2 gives the finalized dimensions of the heat sink.

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EXAMPLES OF TABLE, FIGURE AND EQUATION

Figure:



Figure 2.1: Seaback turtle found at the coast of Terengganu.

Table:

Table 4.2: the color codes and connectivity of a 4-phase bipolar 8-wire stepper motor.

Motor Wire	Red	Red	Black	Black	Yellow	Yellow	Green	Green
Color		White	White			Green	White	
Coil Output	A	B	C	D	E	F	G	H
Node								
Serial Connection	A	Connected		A'	B	Connected		B'

Equation:

$$\sum_{i=n}^n A = 9 \quad (3.2)$$

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UPPERCASE HEADINGS,
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1.0 RESEARCH BACKGROUND

1 Tab on each paragraph

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Natural antioxidant has gained increasing interest among consumers and scientific community as many epidemiological studies claimed that it would give a lot of benefit to health. Herbs and plants medicine are being used a long time ago by the ancient civilization not only as a food but also as a source of healing.

..... Scientific study on medicinal effect of this plant herb is never been studied. However, recent findings on antioxidant activity and phytochemical compound studies such as alkaloids, steroids and terpenoids have strong support for Loganiaceae family which able to possess possible health potential effect (Mallikharjuna *et al.*, 2010; Ugoh *et al.*, 2013).

1 X ENTER (2.0 lines Spacing)

1.1 PROBLEM STATEMENT

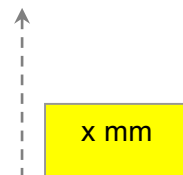
Lack of scientific information of valuable constituents of the plant and safety issue often hesitate the population over the consumption of plant herbs particularly tengkuk biawak. Thus, we need to elucidate the phytochemical content and antioxidant activities of this plant to ensure their effectiveness in possibility to scavenge free radicals in human body and consequently decrease the free radical related diseases such as diabetes mellitus, hypertension, cancer and Parkinson. Phytochemical characterization of this plant is never been studied in Malaysia and this research will be the first reporting on this species. The fundamental research of this plant will provide those information via the methods proposed in this proposal.

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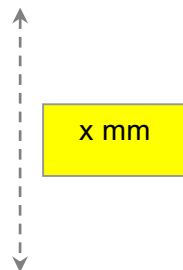
Organogenesis from Anther and Ovary Cultures of Kenaf (*Hibiscus cannabinus* L.)

Treated with Different Hormonal Combinations

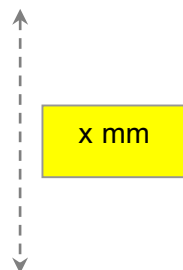


By

Zulaiha Binti Sahat



A report submitted in fulfillment of the requirements for the degree of Bachelor of Applied Science (Bioindustrial Technology) with Honours



Faculty of Agro Based Industry

UNIVERSITI MALAYSIA KELANTAN

2016

DECLARATION

I hereby declare that the work embodied in this Report is the result of the original research and has not been submitted for a higher degree to any universities or institutions.

Student

Name:

Date:

I certify that the Report of this final year project entitled “ _____
_____ ” by _____, matric number _____
has been examined and all the correction recommended by examiners have been done
for the degree of Bachelor of Applied Science (Agriculture Technology) with Honours,
Faculty of Agro-Based Industry, Universiti Malaysia Kelantan.

Approved by:

Supervisor

Name:

Date:

Development of Background Subtraction Algorithm for Biometric Identification

ABSTRACT

This thesis presents an improved approach for an automatic face detection system. Segmentation of novel or dynamic objects in a scene can be achieved using background subtraction or foreground segmentation. This is a critical early step in most computer vision applications in domains such as surveillance and human-computer interaction. The proposed system consists of three parts. In the first part, the use of background subtraction algorithm to deal with the problem of lighting changes, shadows and repetitive motions. All previous implementations fail to handle properly one or more common phenomena, such as global illumination changes, shadows, inter-reflections, similarity of foreground color to background and non-static backgrounds (e.g. active video displays or trees waving in the wind). The proposed method is a background model that uses per-pixel, time-adaptive and Gaussian mixtures in the combined input space of pixel neighborhood and luminance invariant color. This combination in itself is novel. In the second part, another technique known as morphological erosion and dilation operators are used to remove the noise in the resulting binary image to improve the accuracy. The third part is accomplished by using a new technique to locate the face position in the image and extract it for recognition and identification purposes. The algorithm has been tested in several different lighting conditions and environments. The experimental results show that the method possesses much greater robustness to problematic phenomena than the prior state of the art methods, without sacrificing real-time performance, making it well-suited for a wide range of practical applications in video events which requiring detection in real-time. The experimental results in real time applications show the robustness, reliability and efficiency in the proposed approach; they can accurately detect and extract human face 98% of the time, with the ability to detect the face of different types of people gender, skin color and head attire. The proposed algorithm can be executed at 30 to 35 FPS for an image size of 320×240 pixels, which is much better when compared with any other real time applications.

Keywords: Automatic face detection system, background subtraction, foreground segmentation, computer vision.

Pembangunan Algoritma Penolakan Latar Belakang Untuk Pengenalpastian Muka Biometrik

ABSTRAK

Di dalam tesis ini, diperkenalkan satu kaedah baru yang lebih baik untuk sistem automatik pengenalpastian muka. Persegmenan objek baru ataupun dinamik dalam satu imej boleh dicapai melalui teknik penolakan latar belakang ataupun persegmenan latar depan. Ini adalah suatu langkah awal kritikal dalam kebanyakan aplikasi penglihatan komputer dalam domain seperti sistem pengawasan dan interaksi manusia-komputer. Sistem yang dicadangkan mengandungi tiga tahap. Dalam tahap yang pertama, penolakan latar belakang digunakan untuk menangani masalah perubahan pencahayaan, bayang-bayang, pantulan, persamaan warna latar depan dengan warna latar belakang dan latar belakang dinamik (e.g. paparan video aktif ataupun gerakan pohon ditiup angin). Satu kaedah dicadangkan untuk memodel latar belakang yang berasaskan setiap pixel, mudah suai masa dan menggunakan gabungan Gaussian dalam kombinasi pixel jiran and warna tak varian. Kombinasi in secara sendirinya adalah baru. Dalam tahap kedua, pengurangan ralat dalam imej untuk meningkatkan kejituan dijalankan dengan menggunakan penapisan morfologi yang menghasilkan satu imej dwi-warna. Di dalam tahap ketiga pula, satu teknik yang baru untuk mencari posisi kepala di dalam imej dan mengekstraknya untuk pengesanan dan pengenalpastian. Pengujian algoritma dalam keadaan pencahayaan and persekitaran berbeza telah dijalankan. Keputusan eksperimen menunjukkan bahawa kaedah yang digunakan mempunyai ketahanan tinggi terhadap masalah-masalah yang dibangkitkan oleh penyelidik terdahulu tanpa mengorbankan prestasi masa-nyata yakni menjadikannya sesuai untuk banyak rangkaian aplikasi video yang memerlukan pengesanan dan pengenalpastian. Hasil eksperimen pada aplikasi masa sebenar menunjukkan kekuatan, keterpercayaan dan kecekapan pada pendekatan yang diusulkan; hasil eksperimen ini dapat mencari dan mengekstrak muka manusia dalam 98% daripada eksperimen, dengan kemampuan untuk mencari muka untuk pelbagai kelamin, warna kulit dan pemakaian kepala. Algoritma yang diusulkan dapat menghasilkan 30 hingga 35 FPS dalam saiz citra 320×340 pixel, di mana ianya lebih baik daripada aplikasi masa sebenar yang lain.

Kata kunci: Sistem automatik pengenalpastian muka, teknik penolakan latar belakang, persegmenan latar depan, aplikasi penglihatan computer.

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LIST OF ABBREVIATIONS AND SYMBOLS

CLMP	Car-Like Mobile Platform
DC	Direct Current
DLL	Dynamic Linked Library
N	Sample size
α	Acceleration (ms^{-2})
Ω	Resistance (ohm)

APPENDIX A

Table A.1: One-way ANOVA

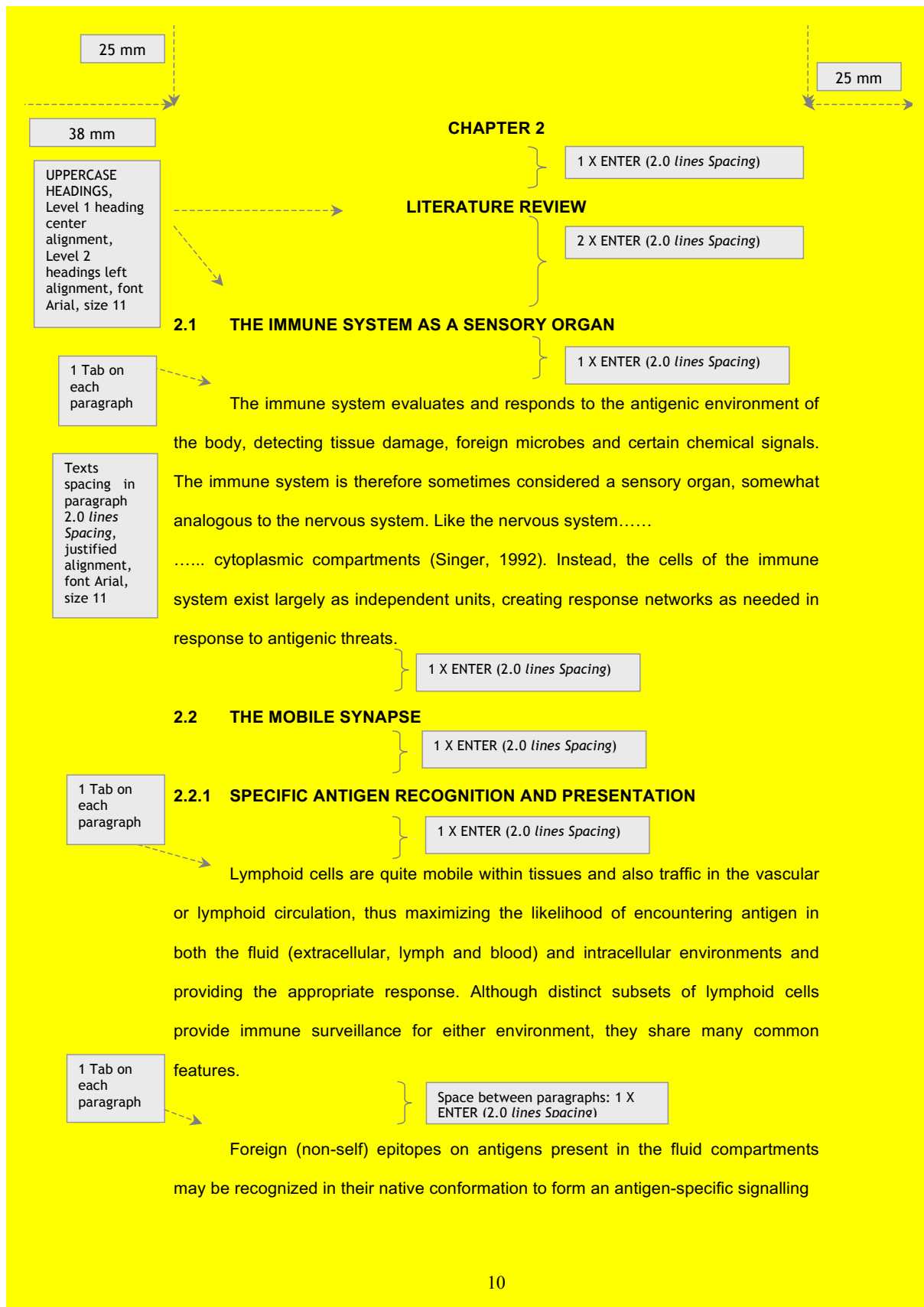
		Sum of Squares	df	Mean Square	F	Sig.
TPC	Between Groups	35344.394	7	5049.199	15772.553	.000
	Within Groups	5.122	16	.320		
	Total	35349.516	23			
TFC	Between Groups	404981.019	7	57854.431	4463.056	.000
	Within Groups	207.407	16	12.963		
	Total	405188.426	23			
DPPH	Between Groups	56.697	7	8.100	545.906	.000
	Within Groups	.237	16	.015		
	Total	56.934	23			

Table A.2: Post Hoc Analysis using Duncan Multiple Test for Total Phenolic Content

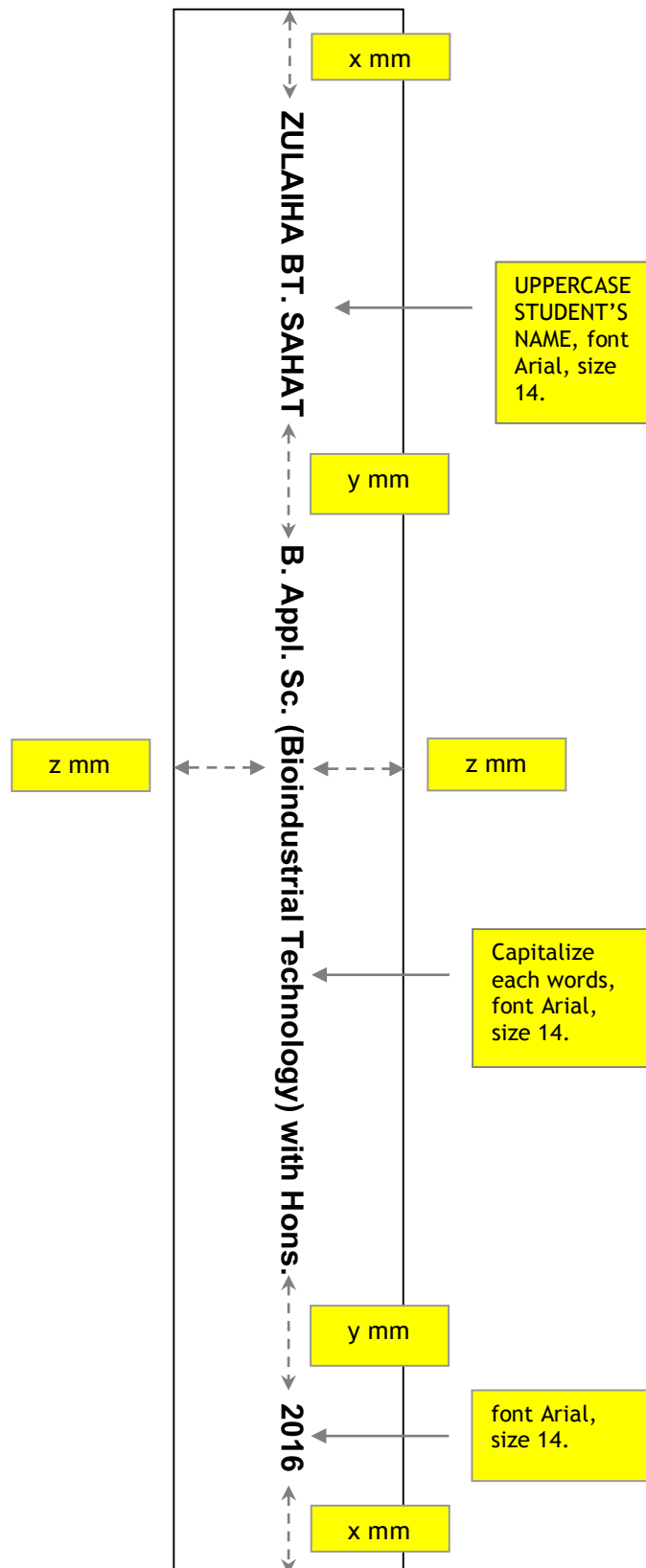
sample	N	Subset for alpha = 0.05							
		1	2	3	4	5	6	7	8
MAE Root	3	83.4583							
Maceration Root	3		137.9987						
Orbital Root	3			156.1250					
MAE Stem	3				171.0000				
Sonication Root	3					184.3333			
Orbital Stem	3						188.6250		
Maceration Stem	3							205.3333	
Sonication Stem	3								206.8750
Sig.		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

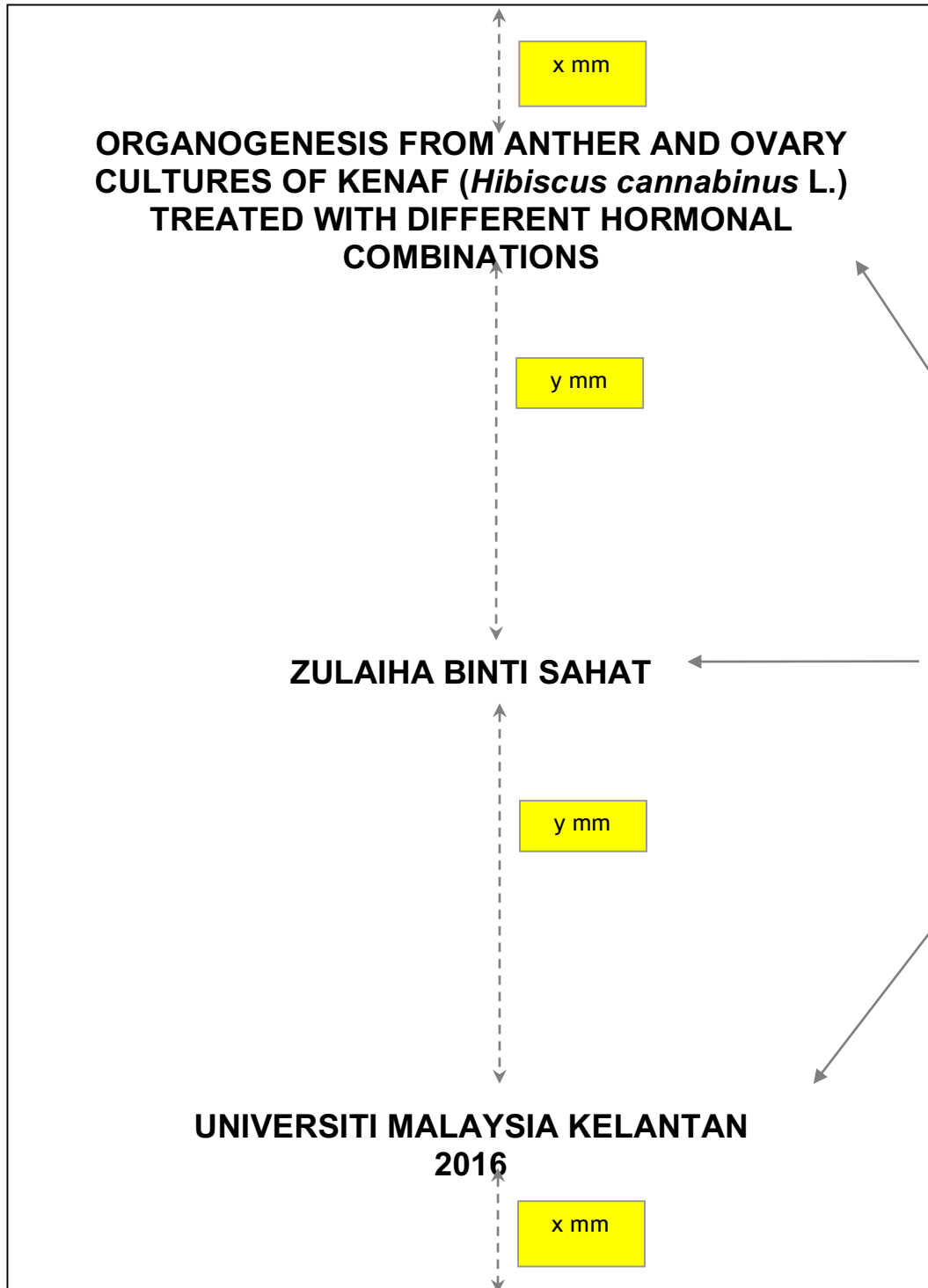
a. Uses Harmonic Mean Sample Size = 3.000.



SPINE OF HARD-BOUND THESIS COVER



HARD-BOUND THESIS COVER



Capitalize each words (except species name), center alignment, font Arial, size 14.

**FAKULTI INDUSTRI ASAS TANI
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BORANG PENYERAHAN NASKHAH LAPORAN PENYELIDIKAN MUTAKHIR

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Penyerahan Naskah Laporan Penyelidikan Mutakhir

Saya, No Matrik
menyerahkan 3 naskah Laporan Penyelidikan Mutakhir bertajuk:

.....
.....
.....

2. Saya dengan ini mengesahkan bahawa segala pembetulan yang diperlukan telah dilakukan sebagaimana yang telah dicadangkan oleh pemeriksa.

Sekian, terima kasih.

.....
Tarikh:

Perakuan Penyelia

Saya, penyelia kepada pelajar di atas dengan ini
memperakukan maklumat yang dinyatakan oleh pelajar adalah benar.

Terima kasih.

Tarikh