POSTGRADUATE INSTITUTE OF AGRICULTURE

UNIVERSITY OF PERADENIYA

GUIDELINES FOR PREPARATION

OF

M.Sc., M.Phil. AND Ph.D. THESIS

2022

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POSTGRADUATE INSTITUTE OF AGRICULTURE
UNIVERSITY OF PERADENIYA

GUIDELINES FOR PREPARATION OF M.Sc., M.Phil. AND Ph.D. THESIS

1. BACKGROUND INFORMATION

Every candidate applying for a Degree of **Doctor of Philosophy (Ph.D.)** shall submit a thesis embodying the research giving evidence of the originality, ability of independent critical analysis and discovery of new facts.

The candidates applying for the Degree of **Master of Science (M.Sc.)** and **Master of Philosophy (M.Phil.)** shall submit a thesis to include results of research which gives an indication of the student's ability to conduct research with some supervision.

- A candidate should include his/ her list of publications resulted during the degree programme at the end of appendices and should annex any of his/her research if already published in journals as supporting documents confirming his ability to interpret, analyze and present scientific papers.
- Any candidate who successfully completes the degree program and intends to publish the thesis or a part of it is required to obtain permission in writing from the Director of the Postgraduate Institute of Agriculture (PGIA).

Note: Students are requested to consult his/her supervisor and Chairperson of the Board of Study before commencing the preparation of the thesis.

2. SUBMISSION OF THE THESIS

Copies of the final draft of the thesis (Ph.D- 03 copies) and (M.Sc. / M.Phil- 02 copies) shall in the first instance be submitted by the candidate to the Director of the Postgraduate Institute of Agriculture. As the Examination Committee may suggest revisions in the content of the thesis, these copies shall be unbound but paginated. Student should submit the thesis for evaluation along with the filled application for thesis defence examination which is available in the PGIA office/website.

When the thesis has been accepted by the Examination Committee and corrected or revised satisfactorily, two (02) bound copies of the thesis shall be summitted by the candidate to the Director of the Institute for the signatures of the Examination Committee. One copy shall become the property of the institute, while the second copy will be returned to the candidate.

At the same time, the candidate should submit 2 CDs to the PGIA. One CD should include, Abstract (specimen 14.6) and (Title+ Abstract+Thesis) as PDF files which will be sent to the Library. The other CD should include 3 page document which include a Photograph of the student, Name, Degree, Address, Telephone No., Title, Senior Supervisor/Supervisors in the first page, a summary in 200 words in the second page and a summary of the research in laymen language in the third page which will be used for Newletter/PGIA.

2.1 Copyright

The thesis becomes the property of the institute, but abstracting journals may reprint abstracts or translations of them provided that written permission has been taken from the Director of the institute.

3. CONTENT OF THE THESIS

3.1 Title Page for M.Sc./M.Phil/PhD Degrees: The title of the thesis should be short, concise, informative and descriptive of the research done and it should be displayed at the top of the title page. The title should be presented in bold, uppercase letters and center aligned. If the title includes any scientific names of organisms, they should be written in lower case italics, except for the first letter of the genus which is capitalized.

The title page includes the Title of the thesis (M.Sc./M.Phil/ Ph.D) candidate's fullname in bold, the Degree for which the candidate is submitting the thesis, the name of the institute and the month and year of submission.

(Specimens 14.1, 14.2 & 14.3)

3.2 Signature page should indicate the approvals of the examiners and the Director of the Institute.
(Both the title page and the signature page should be obtained from the office of the Director).

(Specimen 14.4)

3.3 Declaration Page: The thesis should have a **Declaration** signed by the candidate and certified by his/her supervisor/s and the Director of the institute. The declaration should have the PGIA date stamp both at the initial and final submission of the thesis.

(Specimen 14.5)

3.4 Abstract Page: An abstract of the thesis of not more than six hundred words should be included in the thesis and the typing should be with double spacing (Specimen 14.6)

Abstract for CD should include the Title of the project, candidate's name, PGIA affiliation and address. The abstract should not exceed 350 words and typed single spaced on a single page

and preferably as a single paragraph. Abstract should outline the justification, methodologies used, significant findings and conclusions. Do not include keywords (Specimen 14.7)

3.5 Acknowledgement/s: The candidate shall state under the Acknowledgement/s any assistance obtained from others such as in designing and conduct of experiments, construction of apparatus, calibration of equipment, data analysis, guidance and supervision in the preparation of the thesis and any sources from which financial support have been received for the research project .

4. PAPER AND PRINTING

4.1 Type of paper to be used

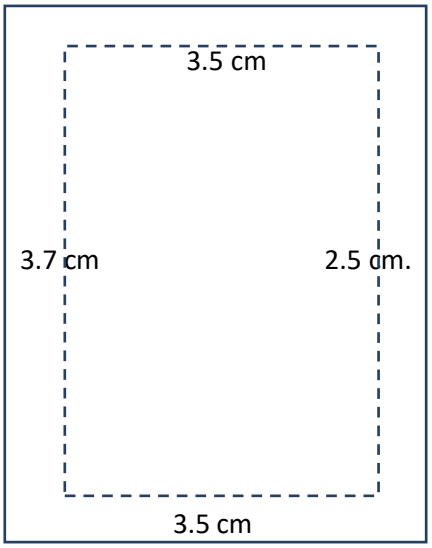
Clear white good quality A4 size (210mm x 297mm) paper having at least 80 gsm should be used for the final two copies of the thesis. Only one type of paper should be used throughout the thesis, however papers of different quality and sizes may be used for illustrations, maps etc. as may be necessary. Photographic plates are allowed for charts and diagrams.

4.2 Printing

All pages of the thesis should be computer printed only on one side of the page using Times New Roman (font size 12) with double spacing.

4.3 Margins of pages

The margins of each page should be maintained as follows: left - 3.7 cm, right 2.5cm, top and bottom 3.5 cm. The right margin should be 2.0 cm after binding is over.Therefore it is advisable to keep 2.5 cm at the
time of typing.



4.4 Cover page: Official copies of the thesis should have a green hard bound outer cover with title, authors' full name, degree and year printed in gold. The cover of the thesis should stand at 21.5 cm x 30.2 cm in the finally bound position.
(Specimen 14.9). (Times New Roman, font size 14)

4.5 Spine : The spine of the hard bound copy of the thesis should carry the name of the candidate with initials, name of the degree and the year of award, from bottom upwards in that order leaving 2.5 cm space on either end.
(Specimen 14.10). (Times New Roman font size 12)

(***Rexene for binding is available in the Office of the Director of the institute).***

4.6 Numbering of pages

Each page in the thesis should be numbered in consecutive order including illustrative material.

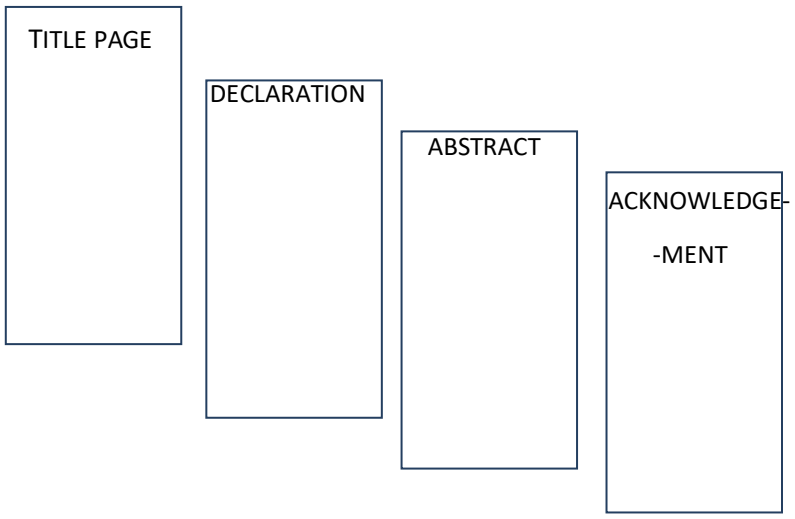
From Abstract to the Appendices (Abstract, Acknowledgements, Table of Contents, List of Tables, List of Figures, List of Plates and List of Abbreviations) should be numbered single-line using lower case in Roman numerals at the top of each page.

Commencing from the beginning of the main body of the thesis (Chapter 1 to last page to the end of the thesis should be numbered in Arabic numerals at the top center of each page. The page that commences Chapters/ Abstract/ Acknowledgements/Table of Contents/ List of Tables/ List of Figures/ List of Plates/ List of Abbreviations/ Appendices should be left without numbering but numbering should be continued from the next page.

5. LISTING OF THE ORDER OF ITEMS IN M.Sc./M.Phil./Ph.D THESIS

5.1 Prepatory Pages

Title page
Declaration page
Abstract page
Acknowledgement/s
Table of Contents
List of Tables
List of Figures
List of Plates
List of Abbreviations



5.2 Main body of the thesis

The main body of the thesis shall constitute several **Chapters** (eg ; Chapter 1, Chapter 2 etc). Each chapter may have several subtitles listed under the main title and these will be shown as Chapter 1. 1.1, Chapter 1 . 1.2 etc .

Each Chapter shall have a title displayed in upper case bold type letters with Arabic numerals (eg. CHAPTER 1, CHAPTER 2) followed by the title in bold type set in Times New Roman font size 14. Both the Chapter number and the Title should be centered. Sub titles shall be printed in bold type letters (Times New Roman font size 12). Proper spacing between Chapter number, Chapter title, sub titles and between paragraphs should be maintained thoroughout the thesis. The text in the thesis should be Times New Roman font size 12 with double spacing (see the example at the end).

5.3 Layout of Chapters

Lay out of Chapters could be arranged in two methods. You can use either first or second method based on your preference.

First Method

CHAPTER 1

INTRODUCTION

1.1. Justification and Background to the proposed research

1.2. Current status

1.3. Objectives

1.3.1. General objectives

1.3.2. Specific objectives

CHAPTER 2

LITERATURE REVIEW

2.1. History of Salmonella

2.2. Nomenclature of Salmonella

2.3. Pathogenesis of Salmonella

2.4. …….

CHAPTER 3

MATERIALS AND METHODS

3.1. Isolating and serotyping Salmonella from broiler chicken samples

3.2. Detection of virulent genes and quantification of virulence gene expression

3.3. …….

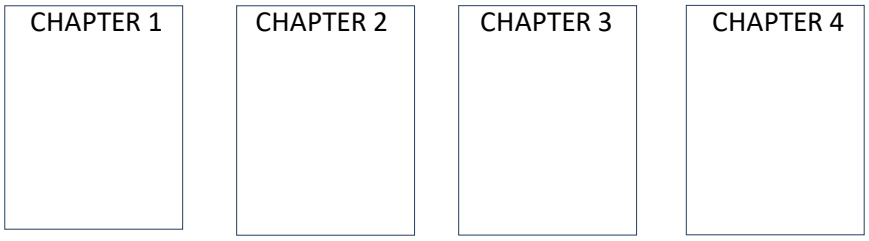
CHAPTER 4

RESULTS AND DISCUSSION

4.1. Expression of virulent genes in Salmonella isolates

4.2. Presence of antimicrobial resistant genes

4.3. Biofilm formation on different surfaces



CHAPTER 5

CONCLUSIONS

REFERENCES

APPENDICES

APPENDIX I Publication I

APPENDIX II Publication II

Appendices- These include sets of data not directly required to interpret/explain the project work/outcomes which if necessary could be easily accessible in the Appendices.

Published journal articles arising from the thesis could be attached as Appendices.

Second Method

ORGANIZATION OF THE THESIS (Breif description on the layout of the thesis)

CHAPTER 1

INTRODUCTION

1.1. Aquatic Resources of Sri Lanka

1.2. Malwthu Oya

1.3. Objectives

1.3.1. General objectives

1.3.2. Specific objectives

CHAPTER 2

LITERATURE REVIEW

2.1. Global Status of Water

2.2. Threats to Lentic and Lotic Waters

2.3. River Substrates

2.4. …….

CHAPTER 3

NATIVE FISH SPECIES IN UPPER MALWATHU OYA

3.1. Introduction

3.1.1. Specific Objectives

3.1.2. ……

3.2. Material and Methods

3.2.1. Selection of Study Area

3.2.2. Determination of River Lenghth

3.2.3……

3.3. Results and Discussion

3.3.1. Fish species in upper Malwathu Oya

3.3.2. Relative Abundance of Native Fish in Upper Malwathu Oya

3.3.3. Distribution of Native Fish in upper Malwathu Oya

3.3.4. ……

3.4. Conclusions

CHAPTER 4

EFFECT OF WATER QUALITY ON COHABITING NATIVE FISH IN UPPER MALWATHU OYA

4.1. Introduction

4.1.1. Specific Objectives

4.2. Material and Methods

4.2.1. Sampling Sites in Upper Malwathu Oya

4.2.2. Collection of Fish Samples

4.2.3. Chemical Analysis

4.3. Results and Discussion

4.3.1. Seasonal Changes in pH

4.3.2. Spatial Changes in pH

4.4. Conclusions

CHAPTER 5

GENERAL DISCUSSION

5.1. Threats to Upper Malwathu Oya

5.1.1. Water Quality

5.1.1.1. Recommendations to Improve Water Quality

5.1.2. River Parameters

5.1.2.1 Recommendations to Promote the Upstream Movement of Fish

5.1.3. Arsenic and Cadmium

5.1.3.1. Recommendations to Mitigate the Impacts of Arsenic and Cadmium

CHAPTER 6

CONCLUSIONS

REFERENCES

APPENDICES

APPENDIX I Publication I

APPENDIX II Publication II

6. REFERENCES

6.1 Harvard System or Author and Year System

References shall be cited using the Harvard referencing style or Author-Year referencing style. All references in the text should be included at the end of the thesis in the References section. The references should be arranged in alphabetical order at the end of the thesis and in chronological order in the text. if several papers by the same author/s are cited. Use a, b, etc. after the year to distinguish papers published by the same author/s in the same year.

Examples:

Conrad, A.B. (1991a). Fungal inhibition in rice crops. *Postharvest Crop Protection,* 1, 81-93.

Conrad, A.B. (1991b). Heat tolerance in third instars of the oriental fruit fly (Diptera: Tephritidae). *Journal of Asian Entomology*, 1298-1303.

If the same source is cited in the previous reference and no other work has been quoted in between same source could be used in the next reference without repeating the names to save space.

References should be composed in the following order: Author/s names with initials after surname, Year of publication (*in parenthesis)*, Title of the article, Name of the journal, Volume, Number (*in parenthesis)*, Number of pages.

Example: Reference of a full article:

Liu,Q., Meng, X. and Tang, G.Y. (2019). Antibacterial and antifungal activities of spices. *International Journal of Molecular Sciences,* 18 (6) : 20 – 27.

To save space, Journal references could be abbreviated according to the List of Journal Title World Abbreviations, British Standards Institution (BS 5605,1978).

Example: An abbreviated Journal article

Liu,Q., Meng, X. and Tang, G.Y. (2019). Antibacterial and antifungal activities of spices. *Int.J.Mol Sci,* 18 (6) : 20 – 27.

6.2 In- text citations

In-text citations, up to two authors, use all authors names and the year, if more than two authors, use after the last name of the first author *et al.; (*meaning and others) but names of all authors should appear in the **References** list at the end of the thesis.

Some examples are given below to illustrate the recommended format of the Author- Year System.

Examples of in-text citations:

In Indonesia Gliricidia is used as the sole shade tree (Siebel, 1987). Sivapalan (1993) reported that Gliricidia grown under mid country tea provided 20kg/ha green matteryield. Seneviratne *et al*. (2011) identified shifting cultivation as a wasteful farming practice….Recent studies (Silva and Perera, 2016) have shown …… Peterson (2003b) …..… that the actual value is higher (Senaratne *et al.,* 1995; Stowell, 2012).

6.3 Journal articles with single author:

Bedford, G.O.(2013). Biology and management of palm dynastid beetle. *Recent Adv. Ann. Rev.Entomol.*, 58: 353-372.

6.4 Journal articles with two authors

Collier,T. and Van Steenwyk, R. (2004). Critical evaluation of augmentative bio - control. *Biol. Control,* 31: 245-246.

6.5 Journal articles with more than two authors

Ismail, A.M., Ella, E.S., Vegara, G.V. and Mckill, D.J. (2009). Mechanisms associated with tolerance to flooding during germination and early seedling growth of rice (*Oryza sativa* L). *Ann.Bot,* 103: 197-209.

6.6 Articles not yet published but in Press

Abeyratna, J.A. and Arulnandy K. (2020). Effect of nitrogen and potassium on the grain yield of rice (*Oryza sativa* L). *Journal of the National Agricultural Society of Sri Lanka 2020* (in press)

6.7 Books (with author)

De Datta, S.K. (1981). *Principles and Practices of Rice Production*. John Wiley & Sons, Inc.

Day, Robert A. (1983). *How to write and publish a scientific paper*, 2nd edn. ISI Press, Philadelphia, USA.

6.8 Books (without author)

Anonymous (1989). *Arid Zone Forestry. A Guide for Field Technicians*. Food and Agriculture Organization, Rome,Italy.

Anonymous (2019). *Student Handdbook*. Postgraduate Institute of Agriculture University of Peradeniya.

6.9 Chapters in Edited Books

Ries, S.K. (1976). Subtoxic effects on plants. In: Audus, L.J. (ed.) *Herbicides: Physiology, Biochemistry and Ecology,* 2nd edn. Vol. 2, Academic Press, London. 313-344.

Marambe,B., Abeysekera, A.S.K. and Herath, H.M.S. (2015). Weeds and weed management agricultural and natural ecosystems: An overview of the Sri Lankan context. In: Rao, A.N. , Yaduraju, N.T., Chandrasena, N.R., Gul Hassan and Sharma, A.R. (eds.) *Weed science in the Asia-Pacific region*, Chapter 9, Asian-Pacific Weed Science Society and Indian Society of Weed Science, Hyderabad, India. 213-240.

Ranasinghe, S. (2014). Pest management in organic coconut production. In: Gunasena, H.P.M., Gunathilake, H.A.J. and Evarard, D.M.J.T. (eds.) *Organic Coconut Production,* Chapter 6, Publication of the Coconut Research Institute of Sri Lanka, Pro Creations Ederamulla, Wattala. 119 -130.

6.10 Monograph

Gunatilleke, C.V.S. (1996). *A nature guide to the world's end trail, Horton Plains.* Peradeniya Science Publication.

6.11 Proceedings of Conferences, workshops, Congresses, Symposia and Case Studies

Wijesekara, H.A.K., Senarathna, K.G.C. and Rajapakse R.M.G. (2015). Synthesis of a metallated porphyrin complex using ferrous sulfate and investigating its characteristics. *Proceedings of the Peradeniya University International Research Sessions*, *Sri Lanka,* 19, 328.

Bruins, M. (2009). Evolution and contribution of plant breeding to global agriculture.*Proceedings of the second world seed conference*, September 8 – 10. Food and Agriculture Organization, Rome.

Thattil, R.O, Wickremasinghe, I .P. and Gunasena, H.P.M. (1993). Performance of Gliricidia provenances in the intermediate zone of Sri Lanka. *Proceedings of the 4th regional workshop on multipurpose trees* , 12 -14 March, Kandy , Sri Lanka.

Ekanayake, U.L.N.S. and Wijesinghe, D.G.N.G. (2020). Junk food consumption, physical activity and nutritional status of adolescent school children. *Annual Congress of the Postgraduate Institute of Agriculture, University of Peradeniya,* 3.

Tennakoon, N.A. (2011). Soil fertility and water management through coconut based agro forestry systems. In: Pushpakumara, D.K.N.G., Gunasena, H.P.M., Gunathilake, H.A.J. and Singh, V.P. (eds.) *Proceedings of the symposium on coconut land productivity through agro forestry interventions*, Coconut Research Institute and World Agroforestry Center, New Delhi, India, 45 – 57.

Weerahewa, J., Kodituwakku,S. and Ariyawardena, A. (2010).The fertilizer subsidy program in Sri Lanka. In: Pinstrup-Anderson,P. (ed). Case Study No. 7-11, *Food policy for developing countries: The role of the government in the global food system*. Cornell University, New York.

6.12 Thesis

Cregg, B.M. (1990). Net Photosynthesis and carbon allocation of loblolly pine (*Pinus taeda* L.) branches in relation to three levels of shade. Ph.D. Thesis, University of Georgia, USA.

6.13 Internet sources

Thesis (website):

Smith, J. (2000). Curli's Airships Polegate, Master of Arts. [online] Available at: http://www.curlysairships.com [Accessed 29 May 2001]

Journal article (online database or website):

Marcus, L., Prusky, D. and Jacoby, B. (1988). Purification and characterization of avocado lipoxygenase. *Phytochemistry* [online] 27(2), 323-326. Available at: https://doi.org/10.1016/0031-9422(88)83090-5 [Accessed 8 April 2015].

IRRI Rice Knowledge Bank. (2015). Wet direct seeded rice. [online] Available at: http://www.knowledge bank.irri.org/ [Accessed March 31, 2019].

6.14 Patents

Ratnayake, U.N., Fernando,N., Kularatna,S. and Karunaratna,V. Process for making reinforcing elastomer-clay nanocomposites (Assignee: Sri Lanka Institute of Nanotechnology (PVT) Ltd) US Patent No. 12/0004347 AI, Jan 5, 2012).

Green, M. A. Artificial amorphous semiconductors and application to solar cells. New South Wales, Innovations Pyt Ltd, Patent No. PCT /AU2005/0006147, April 29, 2005.

7. ILLUSTRATIONS, FIGURES, TABLES AND PLATES

7.1 Illustrations: Drawings, figures, maps should be clearly printed and borders should not be present around the illustrations.The titles of all figures should be numbered in Arabic numerals and placed at the bottom using Times New Roman font size 12 and double spaced if there is more than one line. In maps, information such as coordinates, linear scale, directive arrow and index map showing the locality of area should provided. A legend for the figures and statistical significance should be given. They should be placed in an appropriate position in the text.

Eg: **Figure 3.3. Effect of fertilizer on grain yield……..**

(Times New Roman, Font size 12, bold)

7.2 Tables: Tables must be self-explanatory and should not represent the data given elsewhere in the text. Only the relevant data should be presented in tables. Tables should be placed close to the text and no vertical lines should be used. The titles of tables should be numbered and placed at the top of the table. If the volume of the data is too large, consider placing them as appendix tables.

Eg: **Table 3.4. Grain yield variations in rice…..**

(Times New Roman, Font size 12, bold)

7.3 Plates: Plates should be included when they are essential for the understanding of the content in the text. They should be clear, glossy in colour and of high quality.

Eg: **Plate 5. Commercial unit for dendro power generation in Sri Lanka**

(Times New Roman, Font size 12, bold)

Note: *Footnotes may be placed at the bottom of the Figures, Tables and Plates to cite sources or explain author's comments*.

8. SCIENTIFIC NAMES OF PLANTS AND ANIMALS

Scientific names of plants and animals should be presented in *italics* with the authority in capitals.

In the first citation genus, species and authority shall be given (Eg: *Oryza sativa* L), in later citations generic name should be abbreviated (Eg: *O. sativa* L)

8.1 Examples of botanical names

Rice	- *Oryza sativa* L	Gliricidia	- *Gliricidia sepium* (Jacq) Kunth ex Walp
Jackfruit	- *Artocarpus heterophillus* L (Thw)	Cardamom	- *Elattaria cardamomum* Maton
Chilli	- *Capsicum annum* L	Tea	- *Camellia sinensis L*

8.2 Examples of zoological names

Coconut rhinoceros beetle	-*Oryctes rhinoceros* L
Coconut red palm weevil	- *Rhynchophorus ferrugineus* Oliver
Coconut black headed caterpillar	- *Opisina arenosella* Walker
Coconut mite	- *Aceria guerreronis* Keifer

9. ABBREVIATIONS

Abbreviations,the shortened form of a word are commonly used when citing references according to the British Standards Institution BS 56051978.

If unconventional terms are used, they should be presented in detail in the first citation. Eg; dry zone (DZ), Mahawel Development Authority (MDA), Department of Agriculture (DOA)

9.1 Common examples of Abbreviations

Anonymous	-	Anon
Abbreviations	-	Abbre
Bulletin	-	Bull
Conference	-	Conf
Experimental	-	Exp
Institute	-	Inst.
Organic	-	Org
Pathology	-	Pathol
Proceedings	-	Proc
Science	-	Sci
Symposium	-	Symp

9.2 Examples of Abbreviations used without definition

Term	**Abbreviation**	**Term**	**Abbreviation**
Average	ave	Concentration	concn
Height	ht	molecular weight	mol. wt
Number	No.	Specific gravity	sp.gr
Temperature	temp	Volume	vol
Experiment	expt	Diameter	diam
Week	wk	Weight	wt
Length	length m	Year	yr

9.3 Examples of SI derived units expressed in terms of base units

		SI Unit
Quantity	**Name**	**Symbol**
Area	square meter	m^2
Volume	cubic meter	m^3
Speed, velocity	meter per second	m/sec
Density , mass density	kilogram per cubic meter	kg/m^3

Other abbreviations/acronyms should be spelled out when first used.

10. UNITS OF PHYSICAL QUANTITIES

Use the International System of Units (SI) and keep a single space between two types of units.

E.g.: kg m J mol^{-1} K^{-1} kg m^{-3}

11. MATHEMATICAL FORMULAE

All mathematical formulae should be typed with symbols in correct alignment and adequately spaced; vectors should be indicated by vertical lines.

12. CHEMICAL FORMULAE AND NOMENCLATURE

12.1 Valence of ions can be denoted as Ca^{2+} and CO_3^{2-}

12.2 Nomenclature: Use IUPAC (International Union of Pure and Applied Chemistry) nomenclature

13. LEVEL OF STATISTICAL SIGNIFICANCE

In reporting experimental data, the digits that are not significant should not be used (do not keep digits beyond the precision of the scale of the instrument).
E.g.: 4.6567 to be reported as 4.66 if the scale used is precise up to the second decimal place.
The level of significance could be expressed as $P<0.05$

SPECIMEN 14.1. TITLE PAGE - Ph.D THESIS

USE OF EVAPORATIVE WATER COOLING (EWC) IN GRINDING CHILLI (*Capsicum annum* L.)

(Times New Roman, font size 14, bold)

By

HEWA KAPUGE BUDDIKA CHAMARA

(Times New Roman, font size 14, Bold)

Thesis (Times New Roman, font size 12)

submitted for the degree of

DOCTOR OF PHILOSOPHY (Times New Roman, 12, bold)

in the

POSTGRADUATE INSTITUTE OF AGRICULTURE

of the

UNIVERSITY OF PERADENIYA
PERADENIYA

OCTOBER 2021

(Times New Roman, font size 12, bold)

SPECIMEN 14.2. TITLE PAGE - M.Phil. DEGREE

IMPACT OF USERS' TECHNOLOGY READINESSAND PERCEIVED VALUE ON MOBILE PHONE ENABLED INTERNET USAGE

(Times New Roman, font size 14)

By

ALUTHYKUMBURA MUDIYANSELAGE AMILA SHANIKA BANDARA

(Times New Roman, font size 14)

Thesis

Submitted in partial fulfillment of the requirements

for the degree of

MASTER OF PHILISOPHY

in the

POSTGRADUATE INSTITUTE OF AGRICULTURE

of the

UNIVERSITY OF PERADENIYA
PERADENIYA

FEBRUARY 2021

(Times New Roman, font size 12)

SPECIMEN 14.3. TITLE PAGE - M.Sc. DEGREE

THREE-WAY ANALYSIS METHODS TO DETECT PANEL DISCONSENSUS IN TEA SENSORY EVALUATION

(Times New Roman, font size 14)

By

WANNAKUWATHTHA MITIWADUGE DESHA RAJNI FERNANDO

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Thesis

Submitted in partial fulfillment of the requirements

for the degree of

MASTER OF SCIENCE IN BIO-STATISTICS

in the

POSTGRADUATE INSTITUTE OF AGRICULTURE

of the

UNIVERSITY OF PERADENIYA
PERADENIYA

JANUARY 2021

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SPECIMEN 14.4- SIGNATURE PAGE-M.Sc./M.Phil./Ph.D THESIS

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SPECIMEN 14. 5 DECLARATION PAGE- M.Sc./M.Phil./Ph.D THESIS

DECLARATION (Times New Roman, font size 14, bold)

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I do hereby declare that the work reported in this thesis was exclusively carried by me under the supervision of ……..

It describes the results of my own independent research except where due reference has been made in the text. No part of this thesis has been submitted earlier or concurrently for the same or any other degree.

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Date	Signature of the candidate

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…….(Signature)……	…….(Signature)……
……. (Name) ……	……. (Name) ……
Senior Supervisor	Supervisor
Date:……	Date:……

SPECIMEN 14.6 - ABSTRACT – M.Sc./ M.Phil./Ph.D.THESIS

ABSTRACT(Times New Roman, font size 14, bold)

The primary objective of this study was to investigate the impact of users' technology readiness (TR) and perceived value (PV) on mobile phone enabled internet usage. User's TR has been defined as the people's propensity to embrace and use new technologies for goals at home and work and measured using the Technology Readiness Index2.0. Five dimensions of PV were used were: Utilitarian value Hedonic value, Uniqueness value epistemic valueand economic value. The adoption index has been defined as the degree to which a person has formulated conscious plans specified behavior. Measurement items of these variables were adopted through established scales. Seven research hypotheses were formulated in the study. A survey was conducted for mobile phone users in the Central Province of Sri Lanka. Data were collected from a sample of 522 adult mobile phone users using the multistage random sampling. Data analysis included three phases. The first phase included a descriptive analysis followed by the measurement model validation phase using Confirmatory Factor Analysis. The final phase of analysis included structural model validation using covariance-based structural equation modeling (CB-SEM). The findings of the study revealed differences in user's readiness across different groups of demographic factors such as level of education, age and civil status. Strategies to increase the mobile data usage and offering more customized mobile packages were identified.

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SPECIMEN 14.7 - ABSTRACT (For CD) – M.Sc./ M.Phil./Ph.D.THESIS

IMPACT OF USERS' TECHNOLOGY READINESS AND PERCEIVED VALUE ON MOBILE PHONE ENABLED INTERNET USAGE IN THE CENTRAL PROVINCE OF SRI LANKA

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A.M.A.S.M. Bandara

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ABSTRACT

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The primary objective of this study was to investigate the impact of users' technology readiness (TR) and perceived value (PV) on mobile phone enabled internet usage. User's TR has been defined as the people's propensity to embrace and use new technologies for goals at home and work and measured using the Technology Readiness Index2.0. Five dimensions of PV were used were: Utilitarian value Hedonic value, Uniqueness value epistemic valueand economic value. The adoption index has been defined as the degree to which a person has formulated conscious plans specified behavior. Measurement items of these variables were adopted through established scales. Seven research hypotheses were formulated in the study. A survey was conducted for mobile phone users in the Central Province of Sri Lanka. Data were collected from a sample of 522adult mobile phone users using the multistage random sampling. Data analysis included three phases. The first phase included a descriptive analysis followed by the measurement model validation phase using Confirmatory Factor Analysis. The final phase of analysis included structural model validation using covariance-based structural equation modeling (CB-SEM). The findings of the study revealed differences in user's readiness across different groups of demographic factors such as level of education, age and civil status. Theadoption intensionof mobile internet services indicated mediation effects on the effect of user's adoption intention of mobile phone enabled internet services. Findings also revealed that the internet-variable effects proposed by the final structural model except the epistemic value on adoption intention were moderated by certain demographic factors. Strategies to increase the mobile data usage and offering more customized mobile packages were identified. Policy implications in considering the users' level technology readiness to digitize the public services and the inefficiencies of using price as a controlling mechanism formobile internet services have been discussed.

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CHAPTER 1

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INTRODUCTION

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1.1. Agricultural Extension

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Agricultural extension can be defined as the entire set of organizations that support and facilitate people engaged in agricultural production to solve problems and to obtain information, skills, and technologies to improve their livelihoods and well-being (Birner *et al.*, 2006).

The World Bank (1990) agrees that services must be provided in a fundamentally different way than in the past, emphasizing on a framework for agricultural service provision that might be effective under current circumstances in developing countries. This framework puts agricultural extension into a much broader context of a demand-led service market. Hence the term "advisory services" is used instead of "extension", to include the many non-traditional tasks, such as market information, micro-finance and health issues.

1.1.1. Extension approaches

Agricultural extension services date back to the nineteenth century with the aims of increasing agricultural productivity and production in Sri Lanka. For research to be effective there must be an efficient mechanism whereby its findings can be used by the end users. The process of making research findings available is the function of extension. Accordingly, research produces innovations which are passed on to extension which in turn passes them to farmers (Metrick, 1993). Developing a

medium to exchange information is vital because it is necessary to integrate information from researchers, farmers and extension agents to be able to develop technologies that work.

The most common sterilizing agents used to disinfect the explants are sodium hypochlorite, calcium hypochlorite, hydrogen peroxides, bromine water, silver nitrate, mercuric chloride and antibiotics. Generally hypochlorite solutions are easy to obtain and use, and are most effective, which are the active ingredient in many commercially available domestic bleach solutions (Balian *et al.*, 2008; Dudgeon *et al.*, 2010). An initial pre-sterilization in ethanol (5- 30 seconds) followed by 1- 2 % sodium hypochlorite (10- 15 minutes) is usually sufficient and effective for many tissues. Shaking the explant during sterilization procedure will obviously enhance the effectiveness of the process. After sterilizing the explants, they should be washed several times (5 times) in sterile distilled water for complete removal of sterilant. Normally waxy tissues are hydrophobic and addition of Tween- 20 in sterilizing agents will enhance the sterilization. A wide range of disinfectants have been used for explant sterilization.

Based on the results presented in Table 3.6, for both explants, MS medium supplemented 1.0 mg/L BAP was found to be best in proliferating shoot buds (80.0 % and 86.0 % respectively).

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Table 4.15. Effect of each natural compound among *Salmonella* isolates in broiler chicken at 10^6 CFU/g of meat contamination level

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Treatment	Salmonella isolates[1] Indicate foot note			
	S4	S6	S8	S23
Control	4.85±0.07$^{a/N}$	4.91±0.03$^{a/S}$	4.86±0.05$^{a/V}$	4.87±0.01$^{a/Z}$
Cardamom	4.26±0.05$^{b/M}$	4.31±0.03$^{b/P}$	4.27±0.03$^{b/U}$	4.27±0.03$^{b/X}$
Nutmeg	3.91±0.05$^{c/L}$	4.01±0.01$^{c/P}$	3.89±0.05$^{c/T}$	3.99±0.05$^{c/W}$
Ginger	4.25±0.02$^{d/L}$	3.99±0.03$^{d/P}$	3.91±0.04$^{d/T}$	3.95±0.02$^{d/W}$
Garlic	3.88±0.02$^{e/L}$	4.30±0.01$^{f/Q}$	4.23±0.01$^{e/U}$	4.23±0.01$^{e/X}$
Aloe vera	4.21±0.01$^{g/M}$	4.39±0.02$^{g/Q}$	3.88±0.03$^{g/T}$	3.94±0.01$^{g/W}$
Mace	4.34±0.02$^{h/M}$	4.28±0.02$^{k/Q}$	4.33±0.04$^{h/U}$	4.37±0.02$^{h/Y}$

Indicate foot note

[1]Number of survived Salmonella (Log CFU/g of meat) Values in same row with different superscripts (simple letters) are statistically significant different at 95% confident interval; Values in the same column under different subtitles with different superscripts (capital letters) are significantly different at 95% confident level

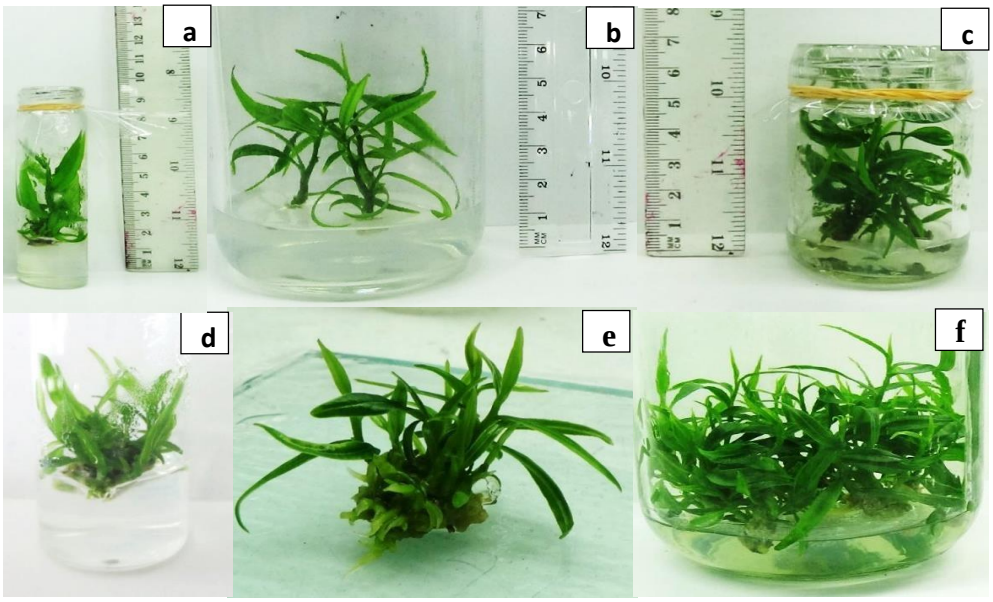

Plate 3.4. Elongation of shoots in MS media supplemented with 40 g/L of sucrose and 1.0 mg/L BAP and 0.1 mg/L IBA at; 20th week (a), at 24th week (b), at 28th week (c), and multiplication of shoots at the end of 20th week (d), 24th week and 28th week (e and f)

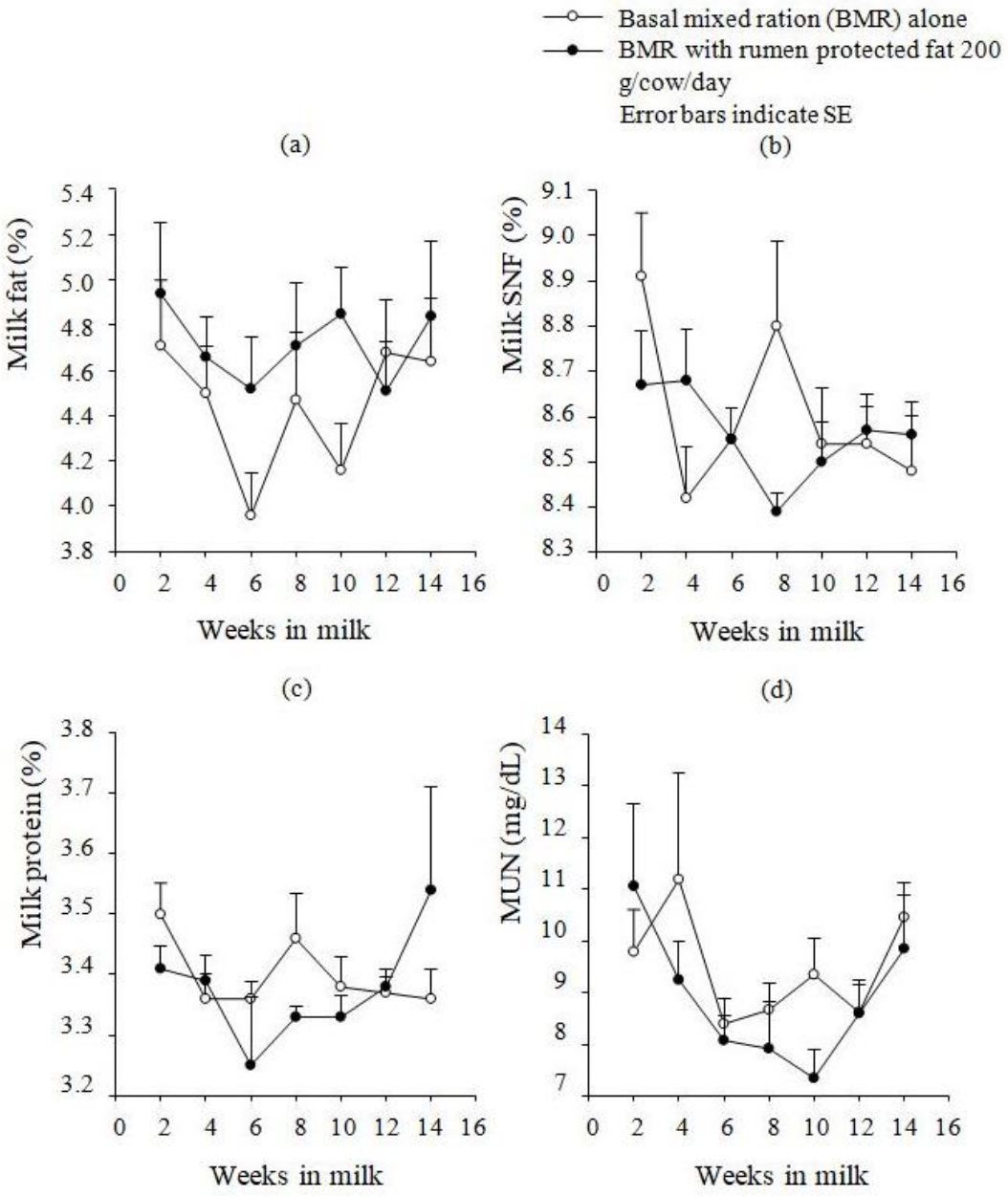

Figure 5.3. Influence of rumen protected fat supplementation during early lactation on (a) Milk fat (b) Milk SNF (c) Milk protein and (d) Milk urea nitrogen (MUN) contents of tropical crossbred dairy cattle

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REFERENCES

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Adam, A.Z., Tajuddin, S.N., Sudmoon, R., Chaveerach, A., Abdullah, U.H., gyMahat, M.N. and Mohamed, R. (2018). Chemical constituents and toxicity effects of leaves from several agarwood tree species (*Aquillaria*). *Journal of Tropical Forest Science*, **30**(3), 342–353.

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Day, R. A. (1983). *How to write and publish a scientific paper*, 2nd edn. ISI Press, Philadelphia, USA.

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Marcus, L., Prusky, D. and Jacoby, B. (1988). Purification and characterization of avocado lipoxygenase. *Phytochemistry* [online] **27**(2), 323-326. Available at: https://doi.org/10.1016/0031-9422(88)83090-5 [Accessed 8 April 2015].

Miller, R.D., Collins, G.B. and Davis, D.L. (1983). Effects of nicotine precursors on nicotine content in callus cultures of burley tobacco alkaloid lines. *Crop Science*, **23**, 561–5.

Ries, S.K. (1976). Subtoxic effects on plants. In: Audus, L.J. (ed.) *Herbicides: Physiology, Biochemistry and Ecology,* 2nd edn. Vol. 2, Academic Press, London. 313-344.

Wijesekara, H.A.K., Senarathna, K.G.C. and Rajapakse R.M.G. (2015). Synthesis of a metallated porphyrin complex using ferrous sulfate and investigating its characteristics. *Proceedings of the Peradeniya University International Research Sessions, Sri Lanka,* **19**, 328.

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APPENDICES

APPENDIX I

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Publication I

Tropical Agricultural Research (2022) 33(2): 113-124

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Tropical Agricultural Research

Journal Home Page: https://tar.sljol.info

Prevalence of Bovine Tuberculosis among Cattle and Buffaloes in the Central Province of Sri Lanka

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ABSTRACT

The Bovine tuberculosis (bTB) is a chronic disease condition in dairy cattle and a proven global zoonosis. This study was designed to identify the prevalence of bTB in dairy cattle and buffaloes in the Central Province (CP) of Sri Lanka. Single Intradermal Comparative Cervical Tuberculin (SICCT) test was performed in 20 farms (n=616 cattle and buffaloes) in three districts (NuwaraEliya; NE, Kandy; KN, and Matale; MT) in the CP. Out of the SICCT positive samples, randomly selected serum samples (n=33) of eight farms were subjected to the rapid antibody (Ab) test for further confirmation. Results were evaluated for different risk factors; age, sex, parity, body condition score (BCS), breed, herd origin, reproductive status, herd size, type of management, and duration of farm establishment. The prevalence of bTB among individual cattle and buffaloes was 22% with a 50% herd-level prevalence. In NE and KN, 34% and 19% of individuals showed positive reactions for SICCT, respectively, while all the individuals in MT were negative. There were significant statistical associations ($P<0.05$) were observed with the prevalence of bTB and BCS, breed, herd origin, and reproductive status; however, age, sex, parity, herd size, type of management, and duration of farm establishment were not statistically significant ($P>0.05$) with the prevalence of bTB.The conclusion is that, based on the SICCT test, the estimated prevalence of bTB in cattle and buffaloes in the central province of Sri Lanka is relatively high (>20%). The SICCT test could be recommended for the screening of the bTB in cattle and buffaloes in all regions of Sri Lanka to assess the island-wide prevalence of bTB, as this disease carries the risk of transmitting to humans and other susceptible animal species.

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SPECIMEN 14.14 - OUTER COVER PAGE – M.Sc./M.Phil./Ph.D. Degrees

MICROPROPAGATION AND PRODUCTION OF AGARWOOD FRAGRANCE COMPOUNDS BY PLANT CELL CULTURES OF *Gyrinops walla*

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HEWA KAPUGE BUDDIKA SAMPATH CHAMARA

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2017

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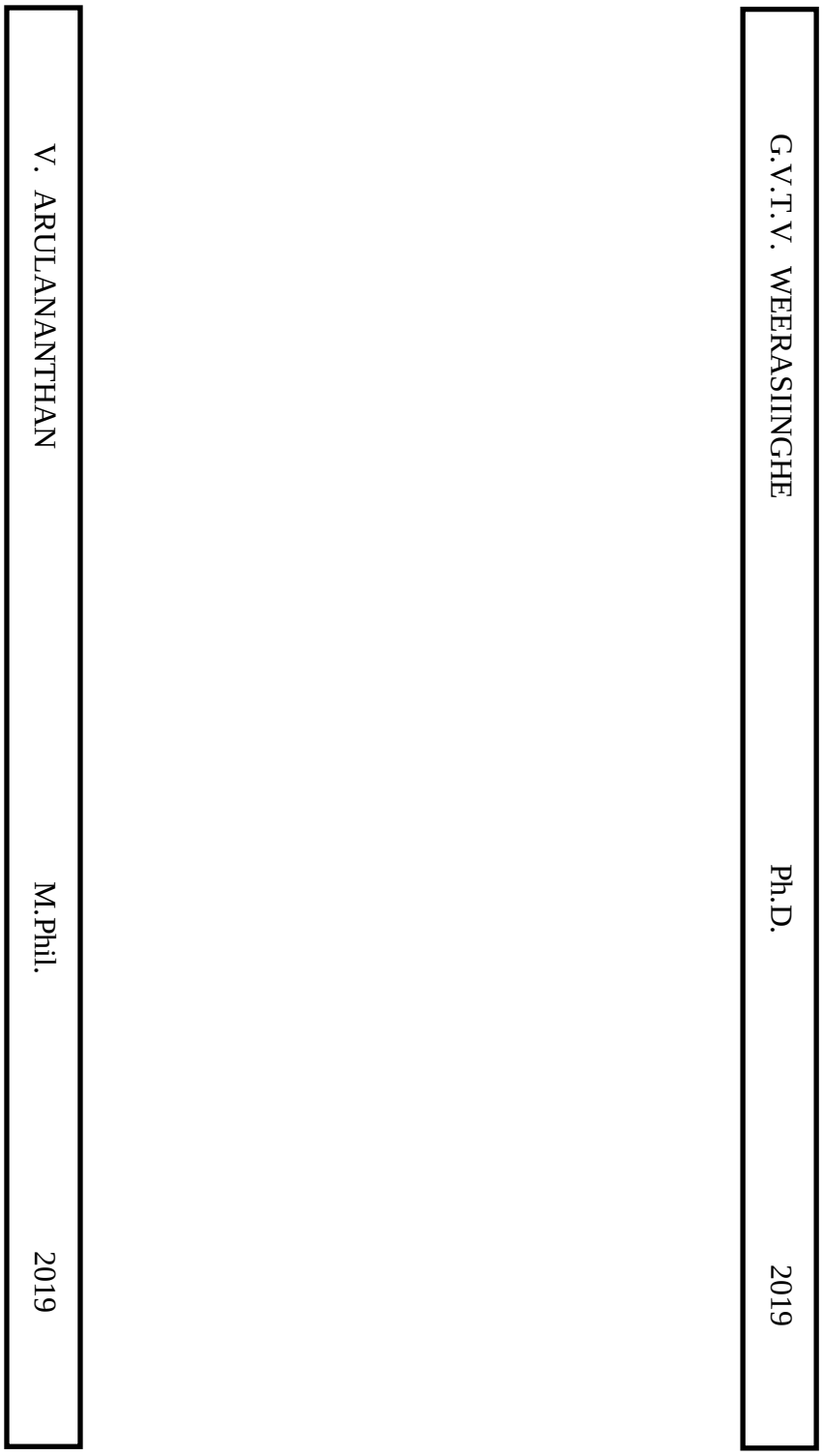
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