POSTGRADUATE INSTITUTE OF AGRICULTURE
UNIVERSITY OF PERADENIYA

Instructions for the Preparation of Directed Study Report

M.Sc. (CW) Degrees

2020

CONTENTS

CHAPTER 1

GENERAL GUIDELINES

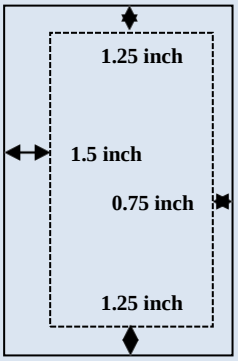
The Directed Study report shall consist of the candidate's own account of his/her research, showing a distinct contribution to knowledge and provide evidence of originality shown by the exercise of independent critical analysis and/or by the discovery of new facts. Directed Study report must be a satisfactory literary presentation.

A candidate shall not submit a Directed Study report or part thereof, on which a degree has been already conferred upon him/her by the University of Peradeniya or any other university/institution. A candidate may incorporate into Directed Study report any of his/her published work, which has not already been embodied in an earlier report/thesis submitted by him/her for the conferment of a degree.

1.1 Paper and Printing

Each copy shall be on clear white paper of good quality having at least **80 gsm and A4 size (210 mm × 297 mm).** One type of paper must be used throughout the Directed Study report. Illustrations may be reproduced by photographic or other standard processes.

All the pages in the Directed Study report must be computer printed only on one side of the page using Times New Roman (size 12) font with 1.5-line spacing. However, the following components of the Directed Study report should have single-line spacing: abstract, acknowledgement, table of contents, list of tables, list of figures, list of abbreviations, table titles, figure captions and references. Each reference must be separated by a single-line spacing. Margins on each page must be maintained as follows: left hand, 1.5 inch; right hand, 0.75 inch; top and bottom, 1.25inch.

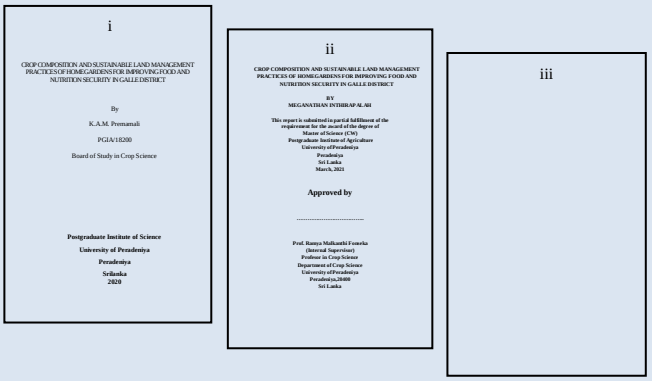


1.2 Numbering of Pages

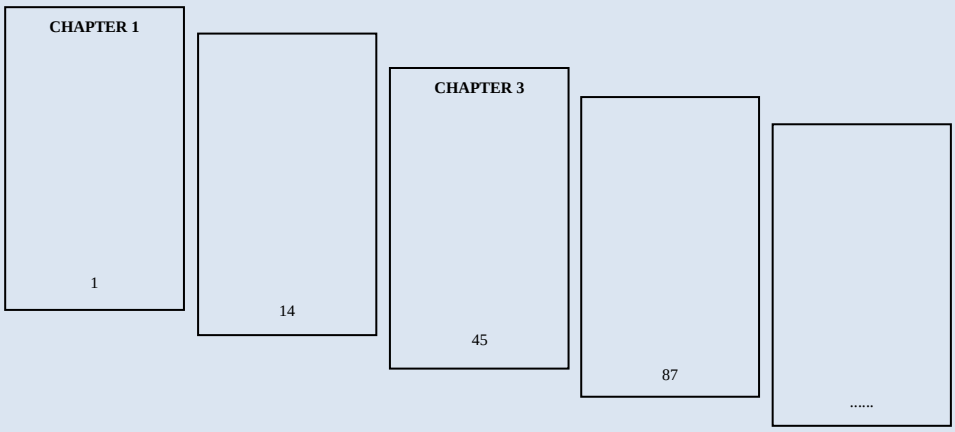
Each page in a Directed Study report should be numbered in consecutive order including illustrative material as well as text.

Prefatory pages (from 'Title Page' to 'List of Abbreviations') must be numbered using lower-case Roman numerals, which should appear at the midpoint, 10 mm below the top-edge of the page.

- Title Page
- Decleration
- Abstract
- Acknowledgments
- Table of Contents
- List of Tables
- List of Figures
- List of Abbreviations
- List of Appendices



Main Body of the Text (Chapter 1, 2, 3, etc.): All the pages in the main body of the Directed Study report (from 'Introduction/Chapter 1' to 'Last Page of Directed Study report') must be numbered using Arabic numerals, beginning with 1, appearing at the midpoint, 10 mm above the bottom-edge of the page.



1.3 Cover Page

Cover of the Directed Study report should be a transparent OHP paper. It must be spiral bound (Black colour) in its final submission. Number of copies to be submitted to PGIA is one.

1.4 Prefatory Pages

Title Page: Title of the Directed Study report (Times New Roman - size 14, Bold, uppercase letters and centre aligned) at the top of the page, candidate's name, Registration number, Board of Study in the middle, and the Institutional address (Times New Roman - size 14) at the bottom (see Chapter 4 – Specimen 4.1). Title of the Directed Study report should be informative and descriptive of the work done and approved by the relevant Board of Study.

If the title includes scientific names of organisms, those should be written in lowercase italics except for the first letter of the genus, which is always capitalized.

Declaration: Each Project Report/Thesis should have a declaration (see Chapter 4 - Specimen 4.2), signed by the candidate and certified by his/her supervisor(s). The declaration should also carry the PGIA date stamp during the submission of the Report.

Abstract of M.Sc. Directed study Report: Abstract page should carry the title Abstract (see Chapter 4 - Specimen 4.3). The abstract should not exceed 350 words and be printed single-spaced on a single page. Having a single paragraph is recommended. Do not state the keywords.

Acknowledgments: The candidate shall declare in the Directed Study report any assistance--obtained from others--such as for collection of material, design and construction of apparatus, performance of experiments, preparation of thesis and financial support.

Table of Contents: Titles of contents of the Directed Study report including all the prefatory pages must be listed with single-line spacing (see Chapter 4 - Specimen 4.9).

List of Tables: All format tables used/made in the Directed Study report must be listed with single-line spacing.

List of Figures: All the figures (drawings, maps, photographs, etc.) that appear in the Directed Study report must be listed with single-line spacing.

List of Abbreviations: All abbreviations used/made in the Directed Study report must be listed with single-line spacing.

Notes: If necessary, notes could be included either at the foot of each page or as a group at the end of each chapter.

1.5 Main Body of the Text

CHAPTER 1
……
1.1 INTRODUCTION
1.1.1 ….
1.1.2 …
….
…..
1.2 METHODOLOGY
1.2.1 …
1.2.2 ….
….
…..
1.3 RESULTS AND DISCUSSION
1.3.1 …
1.3.2 ….
….
…..
1.4 CONCLUSIONS
….
…..
REFERENCES
….
….
APPENDICES
…

CHAPTER 2
……
2.1 INTRODUCTION
2.1.1 ….
2.1.2 …
2.2 METHODOLOGY
2.2.1 …
2.2.2 ….
2.3 RESULTS AND DISCUSSION
2.3.1 …
2.3.2 ….
2.4 CONCLUSIONS
…
….
REFERENCES
…
….
APPENDICES
…

If a Directed Study report has several different subprojects, each subproject could be assigned a chapter number (CHAPTER 1, 2, 3, etc.), and each chapter can have an Introduction, Methodology, Results and Discussion, Conclusions, References and Appendices. It is recommended that the list of references be included at the end of a thesis, if its chapters describe a coherent study.

Or else, the chapter numbers could simply be assigned to Introduction, Methodology, Results and Discussion and Conclusions.

CHAPTER 1
INTRODUCTION
1.1 ….
1.2 …
1.3 …
…
….
CHAPTER 2
METHODOLOGY
2.1 …
2.2 ….
…
….
CHAPTER 3
RESULTS AND DISCUSSION
3.1 …
3.2 ….
…
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CHAPTER 4
CONCLUSIONS
…
….
REFERENCES
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APPENDICES
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Each chapter shall be named in uppercase bold type letters with Roman numerals (e.g.: **CHAPTER 2, CHAPTER 3**, etc.) followed by the title of the respective chapter in uppercase bold type letters (size14) after a single-line spacing. Both the chapter number and the title of the chapter should be centered as given below. The text should start after a two-line spacing. Bold letters may be used for sub- titles and, italics for emphasis, in the text as appropriate (see Chapter 4 - Specimen 4.5).

CHAPTER 1

INTRODUCTION

1.1 ……
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1.2 ……
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List of References: References are listed at the end of Directed Study report using the "Harvard System" or "Author and Year System" throughout the thesis.

Appendices: Any detailed description, recipe, set of data, etc. that is not directly required for interpreting/explaining the project work/outcome could be included in an appendix.

CHAPTER 2

PRESENTATION OF SCIENTIFIC MATERIAL

2.1. Illustrations, Tables and Plates

2.1.1. Illustrations: Drawings, diagrams, figures ,maps etc. should be clearly printed. They should carry captions on the same page.
The titles of all figures should be numbered in Arabic numerals and placed at the bottom using Times New Roman font size 10 and single spaced if there is more than one line. A legend for the figures and statistical significance should be given. They should be placed in an appropriate position in the text.
In maps, information such as coordinates, linear scale, directive arrow and index map showing the locality of area should be provided.

Eg: **Figure 3.3:** Effect of fertilizer on grain yield…….. Times New Roman, Font size 10

2.1.2. 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 . The tables should be placed close to the text. The titles of tables should be numbered and placed at the top of the table. If there is more than one line in the title they should be single spaced. 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 10

2.1.3. 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 10)

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

2.2. 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 should be given (Eg: *Oryza sativa* L), in later citations generic name should be abbreviated (Eg: *O. sativa* L)

2.2.1. Examples of Botanical names

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

2.2.2. 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

2.3. Abbreviations

Abbreviations, the shortened form of a word are commonly used when citing references according to the British Standards Institution BS 5605 1978.
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)

2.3.1. 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

2.3.2. 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

2.3.3. 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	$m\ sec^{-1}$
Density, mass density	kilogram per cubic meter	$kg\ m^{-3}$

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

1. Keep a single space between two types of units. Do not indicate units as divisions, and instead, use a negative exponent.
   E.g.: kg m J mol^{-1} K^{-1} kg m^{-3} (kg/m^3 is not acceptable.)
   Note:
   1. Although the SI unit of concentration is mol m^{-3}, mol dm^{-3} (or M) unit is acceptable. Use the selected unit consistently.

   2. Although the SI unit of volume is m^3, small volumes of solutions are usually expressed in mL or ml, both of which are acceptable. However, be consistent throughout the document.

2.4. Units of Physical Quantities

Use the International System of Units (SI).
Use the lower case for unit symbols and keep a single space between two types of units.

2.5. Mathematical Formulae

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

Keep a single space before and after arithmetic operation symbols. Also keep a single space before and after '=' sign

E.g.: 3 + 5 = 8 3 – 5 = -2
3 × 5 = 15 (Use the multiplication symbol, and do not use the letter x or * for multiplication.)
3 ÷ 5 = 0.6

2.6. Chemical Formulae and Nomenclature

Valence of ions can be denoted as Ca^{2++} or Ca^{2+} -
Nomenclature: Use IUPAC (International Union of Pure and Applied Chemistry) nomenclature

2.7. Level of Statistical Significance

In reporting experimental data, the digits that are not significant should not be used.
The level of significance could be expressed as $P<0.05$

2.8. Other

2.8.1 Trigonometric functions:
Keep a single space after trigonometric function symbols. E.g.: sin x tan y $\tan^{-1}(x + y)$

2.8.2 Inequalities:
Keep a single space before and after inequalities. E.g.: x < 5 y > 7
P ≤ 5 (Underlining inequality sign '≤' is not acceptable.)

2.8.3 Parenthesis:
Keep a single space before and after a parenthesis. However, within the parenthesis, do not keep space between the parenthesis symbol and the adjacent letter/symbol inside the parenthesis.
E.g.: The magnitude of x is less than five (x < 5) and ....

2.8.4 Scientific Units, Notation and Significant Figures

Keep a single space between the magnitude and the unit of a particular quantity. In expressing percentages, do not keep any space between the number and the % sign.

E.g.: 5.00×10^{5} N m^{-2} 56.7%

2.8.5 Trace level concentrations:

Use mg L^{-1} (liquids) and mg kg^{-1} (solids) instead of 'ppm'; µg L^{-1} (liquids) and µg kg^{-1} (solids) instead of 'ppb'.

2.8.6 Temperature:

Use degree symbol for temperature in centigrade. E.g.: 25 °C (Do not use superscript of 0 as in 25 ^{0}C)

2.8.7 Scientific Notation:

Express very small and very large numbers in scientific notation. Do not keep any space before and after '×' sign as this does not represent multiplication.

E.g.: 0.000507 to be written as 5.07×10^{-4} 340000 to be written as 3.4×10^{5}

2.8.8 Significant Figures:

In reporting experimental measurements, do not keep digits that are not significant (*i.e.*, 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.

CHAPTER 3

REFERENCES/BIBLIOGRAPHY FORMAT

3.1. Harvard System or Author and Year System

References shall be cited by using the Harvard System or Author- Year System. All references in the text should be included at the end of the thesis in the **List of References**. The references should be arranged in alphabetical order under author/s name and in chronological order. If several papers of the same author/s are cited indicate them as a,b,c etc. followed by the year of references.

Examples: Perera, A. (2019a), Perera, A . (2018 b), Perera, A. (2017c)
If the same source is cited in the previous reference and no other work has been quoted in between *ibid* (same source) could be used in the next reference without repeating the names to save space.
Example: ibid.(2019). ……..
ibid. (2018). ……..

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 (No.6) : 20 – 27

To save space, Journal references should 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

Each reference should be separated by a single - line spacing.

3.2. 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 **List References** 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

3.3. Journal articles with single author:

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

3.4. Journal articles with two authors

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

3.5. 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

Abbreviated reference:

Ismail, A.M *et al*.; (2009). Mechanisms associated with tolerance to flooding during germination and early seedling growth of rice (*O. sativa* L).Ann.Bot 103:197-209

3.6. Articles not yet published but in Press

Abeyratna,J.A and Arulnandy. K . 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)*

3.7. 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 Ed. ISI Press, Philadelphia, USA

3.8. 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

3.9. Chapters in Edited Books

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*: Weed science in the Asia-Pacific region, Chapter 9, Eds:A.N.Rao, N.T. Yaduraju, N.R.Chandrasena, Gul Hassan and A.R.Sharma, 213-240. Asian-Pacific Weed Science Society and Indian Society of Weed Science, Hyderabad, India

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

3.10. Monograph

Gunathilake, C.V.S.(1996). A nature guide to the World's End Trail, Horton Plains, Peradeniya Science publication

3.11. Proceedings of Conferences, workshops, Congresses, Symposia and Case Studies

Bruins, M.(2009). Evolution and contribution of plant breeding to global agriculture. *In*: Proceedings of the second world seed **conference,** Ed: M. Norton, 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. *In*: 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, Abstract of Paper presented at the Annual **Congress** of the

Postgraduate Institute of Agriculture, University of Peradeniya, 3

Tennakoon,N.A.(2011). Soil fertility and water management through coconut based agroforestry systems. *In*: Proceeding of the **symposium** on coconut land productivity through agroforestry interventions Eds; D.K.N.G.Pushpakumara, H.P.M.Gunasena, H.A.J.Gunathilake and V.P.Singh Eds; 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

3.12. Thesis (Unpublished)

H.K.B.S. Chamara. (2019). Improved weed management and crop establishment methods for rice genotypes capable of germinating under anaerobic conditions in direct seed rice production systems. Ph.D Thesis (Unpublished), Postgraduate Institute of Agriculture, University of Peradeniya.

3.13. Internet sources

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

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

CHAPTER 4

SPECIMEN PAGES

Boxes given in the specimen pages represent A4-size pages of the Directed Study report, but not to scale. The font to be used is specified at the right-hand side margin of the pages.

4.1 Specimen Title Page

This box should not appear on the cover page

Crop Composition and Sustainable Land Management Practices of Homegardens for Improving Food and Nutrition Security in Galle District

(Times New Roman, size 14)

(*Three-line spacing*)

KALU ACHCHILLAGE MAHESHIKA PREMAMALI

(Times New Roman, size 12)

Master of Science in Crop Science
2020
Board of Study Crop Science
Postgraduate Institute of Agriculture
University of Peradeniya
Peradeniya
Sri Lanka

(Times New Roman, size 12)

4.2. Specimen Signatory Page *This box should not appear*

(*One-line spacing*)

Crop Composition and Sustainable Land Management Practices of Homegardens for Improving Food And Nutrition Security in Galle District

(Times New Roman, size 14)

(*Two-line spacing*)

By
KALU ACHCHILLAGE MAHESHIKA PREMAMALI
PGIA 18000

(Times New Roman, size 12, *1.5 line spacing*)

A REPORT

submitted in partial fulfillment of the requirement for the course

CS 5298 Directed Study

in

Master of Science in Crop Science (CW)

2020

Board of Study in Crop Science

Postgraduate Institute of Agriculture

University of Peradeniya

Peradeniya

Sri Lanka

March, 2021

Approved by

……..

Prof. Ramya Malkanthi Fonseka
(Internal Supervisor)
Professor in Crop Science
Department of Crop Science, Faculty of Agriculture
University of Peradeniya
Peradeniya,20400
Sri Lanka

Date:……..

4.3 Specimen Declaration Page

This box should not appear

DECLARATION

(Times New Roman, size 14)

(Times New Roman, Size 12)

I do hereby declare that the work reported in this Directed Study report was exclusively carried out 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 project report/thesis has been submitted earlier or concurrently for the same or any other degree.

(Times New Roman, size 12)

Date: ……. ……

Signature of the Candidate

Certified by:

(Times New Roman, size 12)

1. Supervisor (Name):…… Date: ……..

Signature: ……

2. Supervisor (Name):……. Date: ……..

Signature: ……

(Times New Roman, size 14)

4.3 Specimen Abstract

This box should not appear

(*One-line spacing*)

ABSTRACT

(Times New Roman, size 12)

(*Two-line spacing*)

Home gardening is considered as a promising approach that fulfills socio economic, cultural and ecological needs of people through sustainable management practices and high diversity of plant species. A survey was conducted in Galle district (Wet zone) to identify the composition of plant species and sustainable land management practices adopted in homegardens in the area and thereby to identify the contribution of homegardens to food productivity and nutrient security of household in the Galle district. Six Agrarian Service Divisions: Aluthwala, Ahungalla, Batapola, Nagoda, Hiniduma and Yakkalamulla were selected by cluster sampling with total of 88 home gardens were visited for data collection during the period from October 2019 to January 2020. Data on socio-economic characteristics of the respondents, composition of the home gardens and plant diversity in the home gardens, sustainable management practices and constraints in home gardening were collected through a structured questionnaire and in detailed interviews based on discussions and observations. The data were analyzed using SPSS statistical software program and Microsoft Office Excel 2010.There were 147 of widely cultivated identified species that belong to 58 plant families transversely all gardens. Generally, 29.1°/o of the species found in homegardens serve as medicinal plants with a higher diversity and 16.3% and 13.4% of the plants are mainly fruits and vegetables respectively that are used as mainly for home consumption. The diversity of species found in home gardens varies from 18 to 52 species, with an average of 30.68 species in a homegarden. These species contribute mainly to balance the food production and nutritional status (energy, vitamins and minerals) of households. The practices such as manual weeding, compost preparation and application, soil conservation, use of environmental friendly pest control methods, use of simple farming tools and pruning provide a long term advantage while satisfying peoples' needs, foods and also protecting the environment. However, constraints such as high intensity of rainfall, insect and pests attacks, wild animal damages such as porcupines, wild boars and bandicoots, lack of quality planting materials or seeds and time limitation had affected to reduce the productivity of home gardens in Galle district.

(Times New Roman, size 12)

4.4 Specimen Table of Contents

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TABLE OF CONTENTS

4.5 Specimen Text Page

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CHAPTER 1

INTRODUCTION

1.1. General Over View

With the modem agricultural techniques, the sustainability of farming due to new technology adaptations like the use of improved seed, improved machinery, irrigation systems and pesticides. Lack of one factor out of these results a massive reduction in productivity from a unit of land. Therefore the adoption of sustainable agricultural practices has got in to a crucial factor to a crucial factor to acquire continuous, high diverse production reaching food security, soil and water conservation, protection of biodiversity, lower greenhouse gas emission, resilience to natural disasters and climate change etc. Home gardening is such a promising approach that fulfills socio-economic, cultural and ecological needs of people through sustainable management practices and high diversity of plant species.

It is one of the major forms of land use and a dynamic sustainable food production system that persist through generations to accomplish socio-economic, cultural and ecological needs (Pushpakumara et al., 2012). These homegardens are well-known due to their high species diversity, serve as a source of nutrition to the households as well as generate income (Senanayake et al., 2009). Galhena (2012) concluded that the homegardens contribute to food production by providing diverse of locally produced fresh and nutritious food to families. Further, stated that many crops grown in homegardens represent local indigenous crops rich in vitamins, minerals and calories leading to a healthy diet.

A homegarden is a supplementary food production system at small scale, by own and for household members that mimics the multi-layered natural ecosystem (Hoogerbrugge and Fresco, 1993). Homegarden is a land use system of an individual house combination of annual, perennial agricultural crops, multi-use trees and shrubs in association with livestock handled by family labor (Femandes and Nair, 1986). Abebe et al.(2006