



University of Hohenheim
Institute for Crop Production and Grassland Research (340)

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Guidelines for Thesis Writing

(Bachelors and Masters)

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Graduate students often struggle to organize their hard work into a potentially strong project/thesis to fascinate academics for higher grades. Although, the type of work you have done in the last few months/years plays a key role for making 'the best thesis', the style and format, which you have adopted to distribute your innovative ideas to the scientific community might be an important factor. Here, these tips and points might help you for making not only a good thesis with professional appearance, but also help to put you on the top in your future efforts.

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1 Getting started

Before start your thesis writing, resume a few questions and answers in your mind to serve yourself better, “what have you thought to do?”, “what have you done?”, “what you want to write”. As you are going to put forward a new research problem with possible solutions into the doors of the scientific world, your thesis should likely answer the basic questions that may arise in the potential usage of the results in the future. However, it is not necessary to provide all information that are directly or indirectly related to your research, but ensure providing the basic knowledge for the comprehensive understanding of the whole idea.

You thesis will become a formal document. That means it may be used by specialists and non-specialists for knowledge dissemination. Importantly, sometimes your research results may provide potential future paths for further development. Thus, your thesis should be precise with basic knowledge. In cases where your thesis does not meet the minimum knowledge provision, you may have high chances of being asked for revising the text to meet the standard information. Under extreme situations, you may need to carry out the lacking part of the research, although it might be unusual.

2 Cover page

Cover page is optional. If you are interested, you can define the bound thesis copy, by providing basic information. Collectively, these can be grouped under “Cover Page”, which can also become the front page of the thesis (Appendix A). It generally contains information like

- Title of the thesis
- Author name, followed by previous qualification if applicable
- Department, University
- Name of the Supervisor
- Month and year of submission

3 Thesis structure

Although writing styles often vary from thesis to thesis and university-to-university, the most widely accepted and generalized thesis formats may be composed with all necessary information.

Your original thesis text starts now. Broadly you can divide this section into different sections/subsections with appropriate headings for easy understanding of the thesis. It may contain components such as (titles in **bold** are essential, rest are either optional or according to necessity)

3.1	Title page
3.2	Table of contents
3.3	List of abbreviations
3.4	List of tables
3.5	List of figures
3.6	Introduction
3.7	Materials and methods
3.8	Results
3.9	Discussion
3.10	Summary/conclusions
3.11	References
3.12	Appendices
3.13	Author's declaration
3.14	Dedication and acknowledgements
3.15	Review of literature

3.1 Title page

Title page should be the same as cover page. Although it is not necessary to follow the same order, or same page, it should contain the information mentioned in the cover page section (Appendix A).

3.2 Table of contents

The different parts of the thesis are presented in a sequential manner along with page numbers which allows for easy reference to the reader. The contents may be divided and sub-divided when necessary. Do not insert too many sub-chapters, and limit the hierarchy to 3 levels.

3.3 List of abbreviations

The long forms of abbreviations and units of measurements used in the thesis should be given as a list.

3.4 List of tables

A list of tables along with their page numbers should be given for easy and quick reference.

3.5 List of figures

A list of figures along with their page numbers should be given for easy and quick reference.

3.6 Introduction

This is the first chapter of the thesis. The introduction should state the background and reasons of the research problem. Typically, it should deal with “what...why...how” approach, by discussing previous literature that support your basic hypothesis and research work. Provide the necessary background for clear understanding and putting the reader into the context of your main hypothesis. Do not summarize your results. At the end of the introduction clearly mention the aims/objectives and hypotheses of the proposed topic of research that you intend to test in a sequential manner. Shortly,

Situation >> problems >> open questions >> what can we do >> how can we solve the problem (lab, field etc.) >> aims/objectives >> hypotheses

3.7 Materials and Methods

The second chapter of the thesis should cover the materials that were used/required for the experiments and the different procedures and protocols followed. Experimental designs and methods of statistical analyses should be mentioned. Methods should be described precisely that enough to allow replicates. For field experiments, the following details might be worthwhile to mention.

- Site description including geography, climate, and soil properties,
- Experimental designs such as RBD, CRBD, split-plot etc.,
- Inputs of the experiments such as plant material used, treatments imposed, other inter- and intra-cultural practices carried out,
- Information on sampling methods, observations, and devices and equipment used along with their manufacturer details,
- Methods of analysis for chemical substances along with their manufacturer details,
- Statistical procedures and softwares' with due acknowledgement of their respective developers.

3.8 Results

The findings of the research work should be presented in this chapter. Tables and figures should be given and important points should be explained textually. Statistical analyses should be presented in both tables and figures with appropriate significance levels. Do not interpret the results, just describe them. Multiple comparisons might reveal more information, but don't mess-up all results. Key results may be highlighted in **bold**. This section may be broken into several sub-sections. The headings/sub-headings should be short, informative and represent the actual message.

3.9 Discussion

The discussion should not contain repetition of the results. Rather it should explore the implications of the results by considering the relevant published research, which may be in agreement/disagreement with your hypothesis. It should be as concise as possible, but be provided in a logical manner. Collectively, this section should have coordination between your results and previous literature. It is not necessary all the time that your results should support previous reports, however, while interpreting the results should be done in an acceptable manner.

If your results have new findings that are not yet published anywhere, don't hesitate to discuss those findings, but provide closely related literature to support that hypothesis. Key findings may be kept in **bold** and avoid common words like good, bad, positive, negative etc. because they are understandable.

The majority of literature used should be from peer-reviewed, international journals and should be from recent years. However, in such cases where scarce literature exists, using old (past 5-10 years) literature may be appropriate. Also if there is a 'classical' reference, you should mention it. Try to use primary sources of literature, which originally proposed the main idea. Do not use internet-sources, which are not reliable. However, you can use information from official pages such as FAO statistics or governmental pages. Altogether, only a few www- references should be used.

3.10 Summary/conclusions

The summary should state clearly the main objectives & conclusions of the research and give a clear explanation of their importance and relevance. In conclusions part, you should make comprehensive statements of your own research findings. These should not mess-up with any reported findings other than your research. In future perspectives, you should provide information as to how your research results will be beneficial for future research.

3.11 References

All publications cited in the text should be presented in a list of references following summary. The entire thesis text should be carefully checked to ensure that the spelling of authors' names and dates are exactly the same in the text as in the reference list.

Any missing references in the list may cause inconvenience to the future readers. In the text, references should be arranged in a chronological order based on author name, and alphabetical order in the reference list. Try to avoid usage of internet sources, as they may not be available in the future.

3.12 Appendices

Appendices should be placed at the end of the thesis. They represent important material to support your hypothesis, but too large to fit in the main frame of the text. Generally, they

contain detailed background data tables, detailed formulas, maps etc. You can also provide interesting illustrations. Although appendices do not contain any text information, a title could be provided for each appendix.

3.13 Author's declaration

The author should give a signed declaration stating the originality of the research work. This indicates that the work was done entirely by the author and the elements in the thesis are not a copy of or similar to any other thesis submitted/published elsewhere (Appendix B).

3.14 Acknowledgements and dedication

It is important to acknowledge and thank your supervisor(s), other people and organizations who helped with the research work and thesis writing. Also it looks appropriate if you offer sincere thanks to the funding agency, if you are supported by any. Finally, it is authors wish whether to dedicate the thesis to their loved ones or not.

3.15 Review of literature

Review of literature is optional. If you are interested in providing a comprehensive outlook on your research area, and work done in the past, you are free to include a separate chapter as review of literature. However, it is not compulsory. If you have chosen to provide a review of literature, this chapter should follow the introduction chapter.

4. Style and format

4.1 Main text

The text of the thesis should be written in precise manner. As the total text is a mixture of sections/headings/sub-headings/main text, each section should contain relevant information. Sentences should be written in short way. Latin names of a plant or animal species should be written in *italics*. The L. for 'Linné', however should not be italicized. Latin names must be written completely when mentioned first time and have to be abbreviated if mentioned further. The entire thesis should be written in 'past tense' with consistent style of writing. However, when discussing points of your views and according to the context, you can often use 'present tense' also. Entire text should be organized in

1.5 spacing with full justification, with small indentation at the beginning of the second paragraph onwards.

Avoid sentences like “Claupein has written in the year 2008 that the grain yield...”, and write in a better way like “The grain yield was higher in....(Claupein, 2008)”. Numerals less than 10 should be written in letters. Use scientific language while writing and avoid terms like “I have found” or “We have found”. Try to use indirect language such as “the site was located at...”. Take enough care that there are no blanks or other errors. Search for common errors such as blank full stop, blank blank etc. Do this systematically for the last check of your thesis. Do not insert any foot notes except for the tables.

4.2 References

References should be limited. In most cases, 40–50 references are probably sufficient for a master thesis and ca. 20 for a bachelor thesis. Arrange them in chronological order in the text. Citation of the secondary literature should succeed the primary literature. Format all references in the following style.

- One author – mention author name and year – **(Claupein, 2008)**.
- Two authors – mention two authors name and year – **(Claupein & Gruber, 2008)**.
- More than two authors – mention first author and et al. year **(Claupein et al., 2008)**.
- In case, more than two references are included for supporting the hypothesis, arrange in year wise - **(Claupein, 2006; Gruber & Claupein, 2007; Valluru et al., 2008)**.

In the references list, references should be arranged alphabetically based on author's name. For name of the journals, write full name of the journal. Use the following system for arranging your references and note the proper position of the punctuation. All references should be arranged in hanging style except first line.

Journal citations:

Wingler A. 2008. The role of sugars in integrating environmental signals during the regulation of leaf senescence. *Journal of Experimental Botany* 57: 391–399.

Wingler S.A., Purdy S.K. 2008. The role of sugars in integrating environmental signals during the regulation of leaf senescence. *Journal of Experimental Botany* 57: 391–399.

Wingler A., Purdy S., MacLean J.A. 2008. The role of sugars in integrating environmental signals during the regulation of leaf senescence. *Journal of Experimental Botany* 57: 391–399.

In press articles:

Wingler A., Purdy S., MacLean J.A. 2008. The role of sugars in integrating environmental signals during the regulation of leaf senescence. *Journal of Experimental Botany*, doi:10.1016/j.tplants/2008.05.0599. (in press).

Dissertations and Theses:

Wingler A. 2008. The role of sugars in integrating environmental signals during the regulation of leaf senescence. Dissertation, University of Hohenheim, Germany, pp 125.

Citation from a book:

Wingler A. 2008. The role of sugars in integrating environmental signals during the regulation of leaf senescence. Science Publishers, New Delhi, India, pp 125.

Citation from a book chapter:

Wingler A. 2008. The role of sugars in integrating environmental signals during the regulation of leaf senescence. In: MacLean JA, Purdy S,(Eds.), *The role of sugars in plant metabolism*. CRC Publishers, London, UK, pp 125.

Internet sources:

Wingler A. 2008. Micronutrients effect on root rhizobia and its colonization. Available: <http://www.healingdaily.com/detoxification-diet/sugar.htm> (25.06.2008).

4.3 Page layout

All pages should be arranged and produced in A4-size paper. Tables and illustrations should also be according to the page size. Pages should be printed on one side only. Set the page margins 25 mm on top, right and bottom of the pages, while the left margin should be kept 35 mm to allow binding.

All pages should be numbered except the title page. Table of contents, lists of abbreviations, lists of tables and figures should be numbered in Roman numerals. Original numbering (Arabic numerals such as 1, 2, 3...) should be start from introduction.

4.4 Fonts

In order to maintain text consistency, the font style should be common throughout the thesis. Standard fonts such as 'Times Roman' or 'Arial' should be used for the body text. However for headings/sub-headings, you may use another font.

The font size should be used 12 in case of 'Times Roman'. However, in case of 'Arial', font size of 11 may be sufficient. In case of headings/sub-headings, font size 16 with bold, for sub-headings 14 with bold may be used.

For example:

2. Materials and Methods ('Arial' 16, bold)

2.1 Plant material ('Arial' 14, bold)

A single F1 hybrid plant, generated from crossing individual genotypes of partially inbred-lines of the perennial ryegrass (*Lolium perenne* L.) varieties Perma and Aurora, was self-pollinated to give a seed yield of something over 200 seeds. Germination was good and initially 200 plants were raised. After the first 3yr 192 plants remained following the loss of a few weak plants. The F1 population has subsequently stabilized at 188 plants. These plants show good vigour and have been maintained successfully by regular vegetative propagation of small subsets of tillers for over 10yr...

4.5 Numbering

Numbering should be done in Arabic numerals throughout the thesis except for the front pages, as indicated above. To avoid confusion to the readers, up to 3 levels numbering would be appropriate. Generally for chapters should be level 1, headings should be level 2, sub-headings should be level 3. It should be

At 1 level – 1.XXX

At 2 level – 1.1 XXX

At 3 level – 1.1.1 XXX

Tables, figures and appendices should be numbered accordingly.

4.6. Tables

Tables should be numbered as they appear in the text. Try to avoid excessive tabulation and duplication data. The captions should be short and informative so that it is possible to understand a graph/table without surrounding text. They should be inserted close to the place where they were mentioned first time. Do not reproduce table data into figures. Statistical significance levels should be clear and should indicate in the legends along with number of replication. Generally tables should be arranged in between text for easy interpretation. Try to arrange the table always to the left margin of the page. Title has to be given top of the table. Try to avoid too many decimal points, according to the value of your results. If you have a yield value of 1500.868 t ha⁻¹ it makes no sense to give the decimals. For results, up to two decimals, and for statistical significance, up to 3-4 decimals might be sufficient. The values which are not significant indicate with 'NS'. Avoid vertical lines and too many horizontal lines (see example).

For example:

Table 1. Correlations between tissue polymeric fructan content and selected growth parameters

Trait	Tissue polymeric fructan content			
	Leaf	Stem	Tiller base	Root
Leaf extension rate (mm d ⁻¹)	0.103*	0.079 ^{NS}	0.006 ^{NS}	-0.091
Regrowth extension rate (mm d ⁻¹)	0.040 ^{NS}	0.230***	0.029**	-0.049*
Tiller survival	0.194**	0.120 ^{NS}	0.253***	-0.017**

* **, *** indicates significance at $P < 0.001$, 0.01, 0.05, respectively.
^{NS} indicates non-significant. (n=38).

4.7 Titles

Title should be informative and short. Generally it should contain independent, dependant variables, crop and conditions/regions etc.

For example:

Effect of "independent variable" on "dependant variables" in "crop" under "conditions/regions".

However, it is always flexible and should be written according to your context.

4.8 Figures

Figures are simple indicators for easy interpretation of your data. If possible tables may be substituted by figures, but the values have to be shown in the annexure. Giving clear labels and legends to the figures is important to allow for easy understanding by the reader. Although colour figures look attractive, try to avoid in thesis, as colour figures may not be reproduced with full clarity. Legends should be given clearly. Try to indicate standard error values as vertical/horizontal bars. X and Y axis-parameters should be clear and their units should be provided. Try to use common scale for all the co-figures in one figure, as it may highlight your significance standards. According to the requirement, data may be presented as either bar diagram or line diagram or some other form, but make sure that the type of diagram should represent your data at best. For correlation diagrams, provide correlation coefficient. In case of more than two sub-figures in one figure, use alphabet to indicate the respective sub-figure. Title has to be kept below the figure. Do not use 3-D figures, if there is no need. Significance levels and standard errors should be included in the figure. Do not write the numerals of the value in the figure.

For example:

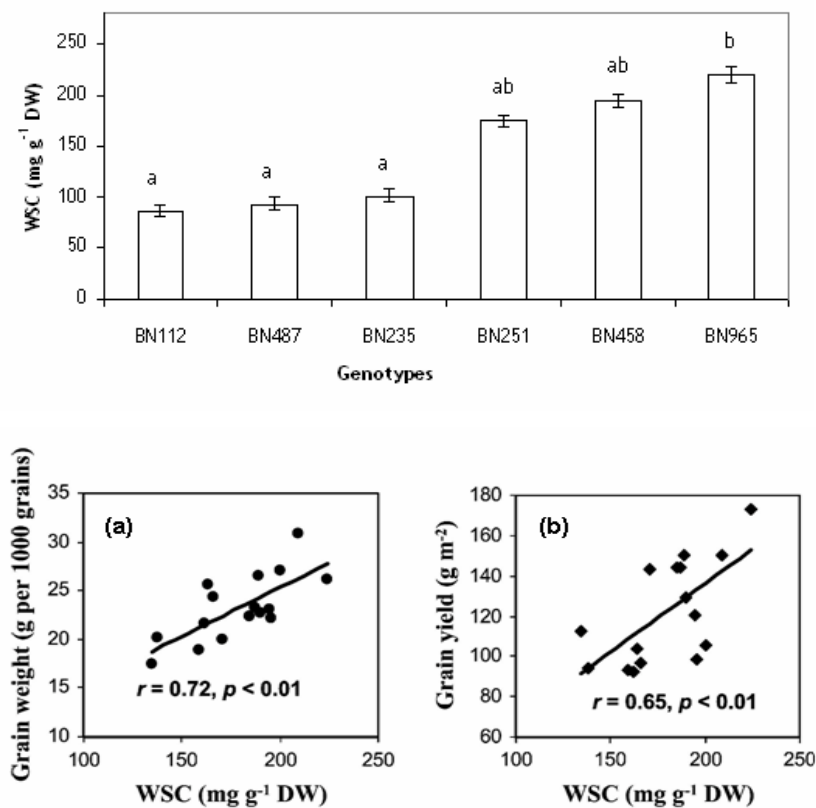


Fig.1. xxxxx

5. Appendices

5.1 Appendix A: Cover page



UNIVERSITY OF HOHENHEIM
Institute for Crop Production and Grassland Research (340)

Prof. Dr. Wilhelm Claupein

Title of the Thesis

Master/Bachelor Thesis
submitted by

Name of the student
Place of resident

August 2008



5.2 Authors declaration

Declaration

I hereby declares that the thesis entitled "----" has been carried out in the Institute for Crop Production and Grassland Research, University of Hohenheim, Stuttgart, Germany under the guidance of Prof. Dr. Wilhelm Claupein. The work is original and has not been submitted in part or full by me for any degree or diploma at any other University.

I further declare that the material obtained from other sources has been duly acknowledged in the thesis.

(Signature of the student)

Date:

Place: Hohenheim, Stuttgart, Germany

5.3 Criteria for Thesis evaluation

	Planung/Konzeption/Planning and conception	A	B	C	D	fail
Zeitmanagement/ Time management	Selbstständig, sinnvolle Zeiteinteilung Independent, sensible, timing					
Abgrenzung des Problems/ Defining of the problem	Präzise, selbstständig, realistisch – unklar, diffus Precise, independent, realistic, unclear, vague					
Selektion der angewandten Methoden/ Selection of the methods	Qualitative Auswahl, Überblick über Methoden – mangelnder Überblick, keine Selektion Qualitative choice, overview about methods, lack of overview, no selection					
Durchführung/Execution						
Fleiß, Engagement/ Diligence, commitment	Hoch interessiert – nicht vorhanden Highly interested, not available					
Selbstständigkeit/ Independence	Selbstständig – nur unter Anleitung Independent, only under guidance					
Wiss. Arbeiten/ Research work	Überlegt, konzentriert, eigene Ideen, Organisation, Gestaltung – unkonzentriert, nachlässig Thought over, concentrated, own ideas, organization – unconcentrated, careless					
Schriftliche Ausführung/Written execution						
Gliederung/ Structure	Selbstständig, strukturiert, logisch – chaotisch Independent, structured, logical – chaotic					
Problemstellung, Zielsetzung/ Definition of problems and objectives	Klar abgegrenzt, roter Faden, konkret – diffus Clearly defined, red thread, concrete, vague					
Zusammenfassung/ Summary	Knapp, präzise – schwammig Scarce, precise – porous					
Darstellung der Ergebnisse/ Presentation of results	Angemessen, Auswahl vernünftig, objektiv – unangemessen, subjektiv adequate, rational choice, impartial – inadequate, subjective					
Literatur/ Literature	Aktuell, richtig zitiert, angemessen – veraltet Up to date, rightly cited, adequate – old, outdated					
Sprache/ Language	Präzise, wiss. Terminologie, Rechtschreibung, Fehler etc. Precise, research terminology, correctly written, mistakes etc.					
Format/ Format	Korrekt?! Abkürzungen, Tabellenüberschriften, Abbildungsunterschriften etc. Correct, abbreviations, naming of table, legends etc.					

WARNING

Piracy is criminal. Do not follow copy & paste technique from the internet. Do not translate sentence or paragraph from other authors, unless you are sure that this is a free-citation. Otherwise it is criminal with the consequence that your thesis is not accepted. This may disqualify your thesis even several years later.