

**CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE**

**Faculty of Tropical AgriSciences**



Czech University of Life Sciences Prague

**Faculty of Tropical  
AgriSciences**

**Methodical Manual for**

**Writing of Bachelor's Thesis**

**Original Research Type of the Thesis**

Prague 2020

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## 1. Introduction

The goal of this text is to make the writing of the student's thesis easier and to draw attention to the common mistakes that are better avoided during your writing. This manual was prepared in accordance with the *Rules for selection, processing, archivation and publication of Bachelor's thesis at the Czech University of Life Sciences Prague* given by the Rector of CULS in his Regulation number 3/2016. This manual is adequate for the Bachelor's theses (Thesis) carried out at the Faculty of Tropical AgriSciences (FTA) conducting their own original reserach.

The main goal of a Thesis is to learn the basic skills of scientific thesis methodology, especially how to:

- write up current knowledge in set issues or topics
- work with scientific texts (searching in literature sources, citation, writing)
- formulate hypotheses correctly
- design data collection appropriately
- analyse data and carry out relevant statistical testing of suggested hypotheses
- present results of original work appropriately
- interpret results and discuss the relevance of the results obtained in the context of current knowledge

## 2. How to write the Bachelor's thesis

Working on a Bachelor's thesis is a long-term process. Both the research itself and writing the thesis require a certain level of knowledge, hence studying appropriate scientific literature is essential. This is the real basis of the success of the work on the thesis and reaching it requires a certain amount of time. Be aware of that. Finally, quality, not quantity is what is ultimately assessed. The number of pages is not a relevant measure of assessment. Content is the most important.

Working successfully on a Bachelor's thesis depends on good cooperation and communication with your supervisor. At the beginning agree with your supervisor on the method of cooperation and communication. Also agree clearly on the aims and methods of your research. Arrange with your supervisor a time schedule for your research. Some supervisors will provide you with their own template for research design and its schedule.

On the other hand, your supervisor may not be an expert in all aspects of your research. In such cases, do not be afraid to look for consultants.

Give enough time to your supervisor to read your handwritten submissions and particularly the completed Bachelor's thesis. Ask more people to read your thesis. Your text should be understandable to a wider range of lay readers. The removal of obvious spelling mistakes and unclear sentences is very helpful. Do not write long sentences. By the end, the reader will probably forget what was said at the beginning. Do not discourage your rivals with an undue number of pages or the wrong style of writing. Read a printed version carefully before submitting the Bachelor's thesis.

## **2.1. General rules for writing scientific texts in English**

Just as the thesis should have a clear structure, so paragraphs should have a clear structure. It is best if the idea that you will develop in the paragraph is stated in the first sentence. You should write your Thesis in formal and academic English language. You must use British English.

It is recommended to make spaces between numbers and units (not "5kg" but "5 kg"). If you want to compare facts, do not use letter "x" but use symbol "×".

Latin terms must be written in italics (e.g. *ad libitum*, *in vivo* etc.). Names of genus and species names are also written in italics (e.g. *Taurotagus derbianus*) but higher taxonomic units are not written in italics (e.g. subfamily Bovinae, order Cetartiodactyla). Note that if authors use "spp." (as a short way of saying that something applies to many species within a genus), these abbreviations such as "sp.", "spp.", "subsp.", etc. should not be italicized.

The contractions (e.g. don't, isn't, shouldn't etc.) are not used in scientific literature (nor in students' theses). Quotation marks in English are placed on the upper part of the word (write "something" not „something“). You should also write numbers with decimal point “.” (e.g. 16.89 % not 16,89 %); commas “,” are used to divide thousands in English (e.g. The estimated population of camels in Australia is 1,200,000 animals).

The space between numbers and the percent sign (%) is often missing in English texts. It is possible to use both, with or without spaces (there is no difference in the meaning in English) but it should be uniform in your whole thesis.

In case of any doubts about English grammar, do not hesitate to consult your texts with an English native speaker.

## **2.2. How to format your thesis**

- The recommended font is Times New Roman or Calibri and font size 12 points.
- Use a wider line spacing (1.5).
- Use page borders: 3.0 cm for upper, 2.5 cm for lower, 3.0 cm for left and 3.0 cm for right sides.
- The numbering of the pages starts by the Introduction chapter (the first page of Introduction has the page number 1).
- We recommend double-sided print.

The Word template as .docx file including basic chapters and format of the thesis is available for download at websites of the FTA and we strongly recommend to use this template.

## **2.3. How to cite information**

The FTA has prepared an obligatory specimen for the style of citations and references. Student can choose, after agreement with the thesis supervisor, one of the styles of the scientific journals – **PLoS** or **Conservation Biology**. You must strictly follow the selected style; all commas, dots and colons must be laid out in your thesis as in the FTA specimen! You can find these specimens at the websites of the faculty.

Check precisely whether all references appear in the text and whether all citations are likewise mentioned in List of references. If some citation or reference is missing, it is a very serious mistake.

## **2.4. The thesis structure**

The thesis usually has these parts:

- Title page
- Assignment with electronic signatures of the Head of department and the Dean of FTA (only in printed version of the thesis)

- Declaration
- Acknowledgement
- Abstract
- Contents
- List of tables and List of figures
- List of the abbreviations used in the thesis
- ***Text part of the thesis*** (see the description bellow)
- Appendices

**The text part of the thesis**, containing original research, usually has the following structure:

- 1) Introduction
- 2) Literature Review
- 3) Aims of the Thesis
- 4) Methods (and Material if relevant)
- 5) Results
- 6) Discussion
- 7) Conclusions
- 8) References

Consider carefully where you put your information, e. g. all descriptions of methods should be included in *Methods* and not in *Results* or *Literature review*. The recurrence of the same information in different parts of the thesis is a common mistake. This mistake can easily occur in the chapters *Results* and *Discussion* or in *Literature review* and *Discussion*.

### **3. Description of particular parts of the Thesis**

#### **3.1. Title page**

You state your name, the name of your supervisor and consultants, the name of the Thesis, the year of submission and the place where the Bachelor's Thesis was written (university, faculty, and optionally department). The statement of academic degrees of author and

supervisor(s) is recommended but it is dependent on the agreement with the supervisor. A specimen title page is included in the Appendix 2 to this manual.

### **3.2. Assignment**

The Assignment, approved by the Head of the department and the Dean of faculty, is printed from the University information system. Both signatures can be electronic.

### **3.3. Declaration**

You should declare that the Thesis is original work conducted by yourself and that you used the literature that is mentioned in References.

**Example of declaration:** *“I hereby declare that I have done this thesis entitled .... independently, all texts in this thesis are original, and all the sources have been quoted and acknowledged by means of complete references and according to Citation rules of the FTA.”*

*In...(place and date) ...*

(signature of student)

Name of the student

### **3.4. Acknowledgement**

Express your thanks to whom you want. It could be appropriate to remember your supervisor and consultants. It is also appropriate to mention financial sources for the thesis. Pay attention to the fact that people read the *Acknowledgement* relatively often. An extensive list is not usually the best option. About ten lines are often sufficient.

### **3.5. Abstract**

Abstract is needed in English only. The Abstract is one of the most important parts of your Thesis, because many people will read the abstract first, before reading the whole text. According to the abstract, they will decide whether the Thesis is interesting or not

and whether is worth to read it or not. The Abstract represents a summary of the whole work; you should briefly describe the aims of your thesis, your methodology, the most important results, conclusions and its importance to your field of science. This is why you should write your Abstract last.

Abstract will include the **keywords** as well. You should provide approximately five keywords or sets of words (e.g. agonistic behaviour, *Taurotragus derbianus*). The keywords define further the topic of your thesis and so you should not repeat the same words as in the title of your thesis.

After reading the abstract, everybody should know what your thesis is about. It is necessary to fit each abstract into one page. The recommended length is about 200 – 350 words for one abstract. Abstracts are written in the past tense.

### **3.6. Introduction and Literature Review chapters**

An *Introduction* should include a literature survey that introduces also the less knowledgeable reader to the issues chosen. You should describe here your main research question, why it is relevant to study the particular problems you dealt with. Use already citations in the text.

Next, you should summarize the current knowledge about the problem concerned. Certainly, this does not mean writing a colossal work of many pages with an exhausting list of theses about the problems studied from the dawn of human history. Try to extract from the literature the significant information and put it into context. Name also known and influential authors in your field. The problems studied should be connected to some basic questions of a wider character. Consider also the results of studies which are not in agreement with your favourite theory.

If you cite someone, you must have a reason for it and provide some concrete information on his/her methodology or conclusions.

Do not write for example: Wild camels were studied by Reading et al. (1996).

Write for example: Reading et al. (1999) observed Wild camels in Mongolia: The average group size was 10 camels.



Your thesis will not be completed merely by listing literary facts. It is necessary to critically assess these facts and clearly show where the gaps in our knowledge are. Do not forget to clearly distinguish between facts, opinions and speculations.

The whole text must be logically interconnected. Sentences must follow from the previous thoughts and arguments. You are writing a scientific story and its point is to reach your goals and results. The literature review should be step by step directed towards the formulation of the aims of your thesis by enhancing gaps in our current knowledge which you aim to fill in by your own work.

It is possible to write this chapter in the present or past tense.

### **3.7. Aims of the Thesis**

In this chapter, you formulate the aims of your Thesis, first by some general aim and then by particular, manageable aims. You can support your aims with tested hypothesis. Write clearly what is new about your Thesis and how you want to achieve it. Aims should be written in the past tense.

Example: The Bachelor's Thesis goal was to find the differences in timing of the breeding season of camels in the wild and in captivity.

*The Hypothesis* (or questions) should clearly follow from the *Introduction*. No other topic should appear there than those actually mentioned in your thesis. The hypothesis should be rooted in current body of knowledge and must be for some reason challenging and interesting for the whole scientific community.

Even if you write this part of thesis before your research activities, you should write your goals and hypothesis in the past tense.

### **3.8. Methods (and Material)**

This part should be very precise. You must describe everything carefully enough that anyone could repeat your experiments and observations. Do not forget to mention the number of samples, animals'/respondents age and sex, the period of day and year, local conditions and a description of the locality (for example with a map or tables with characteristics of the site and subject), specific equipment used and other details. It could

be also suitable to mention how you prevented the influence of repeated testing on the same individuals and why you think that the number of individuals (sample size) was sufficient to answer your questions. It is essential to describe the statistical methods and computer programs used. If you use abbreviations, list them. You should write this chapter in the past tense.

*Methods* is often divided into several subchapters, e.g.: material (for example animals), respondents, type of research design (experimental, quasi-experimental...), data collection instruments, data analysis etc. Reading of the Thesis is made easier if the structure of the subchapters is similar in each chapter (*Methods* × *Results* × *Discussion*). Try to be relatively brief but you must include all important facts, e.g. it is not necessary to mention the fact that you wrote down your notes by pencil on an A4 size sheet of paper.

### **3.9. Results**

Consider carefully which part of your results should be present in the *Results* chapter. What should be there are principally the results that contribute to the answers to your initial research questions. Basic data (for example tables with sizes measured or individuals' genotypes) belong more likely in the *Appendices* or on the attached CD. You should write your results in the past tense. You can write in the plural (We found that ...) or singular (I found that ...) and it is possible to use both, active (I ... / We ...) and passive voice (It was found that ...).

Do not forget that this section is also a TEXT, not an overview of tables and figures or a short summary of statistical tests. You must describe your results in a comprehensive text with full sentences.

### **3.10. Discussion**

Do not underestimate the *Discussion* chapter. It is the most important part of your thesis, and accordingly the most complicated to write. Writing a good *Discussion* requires plenty of time. Sometimes, it can occur that after the writing of the *Discussion* you have to rewrite other sections, for example, the whole *Literature review*.

It is good to start with the interpretation of your results. This does not mean repeating your results, but interpreting them. Explain WHY you found out what you did and what

does is really MEAN; you can refer to sections of text from previous chapters or to previous tables or figures.

The *Discussion* must also show how your results reflect the current knowledge about the problems in question. You must discuss both the agreement of the results you obtained with previously published results and also their disagreement. Explain the originality of your results. If there exists any disagreement between your results and the results of other researchers, then it is necessary to explain why this is possible.

Example: Zhirnov and Ilyinsky (1986) reported a smaller average group size of Wild camels than this study. However their research was carried out in a different season.

Do not forget that you defined your questions and goals at the beginning of your research (in the Aims section). It is necessary to answer them. You can also indicate the need for further research after your basic findings. You can also formulate a new hypothesis that could be tested in the future. The sequence of the topics discussed should be the same as it was in the *Literature review*. The Thesis reader should be prepared for the *Discussion* after reading the *Introduction* and *Literature review*. New facts that were not mentioned in the *Literature review* should not occur in the *Discussion*. You can write this chapter in present or past tense.

### **3.11. Conclusions**

This chapter mentions only the most important result(s) in general picture and context. Present briefly what is new in your thesis, summarize the most important findings and present some recommendations or possibilities of practical use. Thus do not repeat facts from the Methods, Results or other chapters. Write this chapter in the past tense.

### **3.12. References**

References are listed in alphabetical order (A to Z) in the Conservation Biology style or in order of occurrence in the text in the PLoS journal style. The obligatory style of references is set by faculty. The style is available at faculty website.

### **3.13. The Appendices**

Bigger tables and figures which are interesting but unsuitable for use in the main body of the Thesis can be included in the *Appendices*. Pagination of Appendices is usually different in style than in main body of Thesis (e.g. Roman numerals). The *Appendices* chapter is not included in the *Contents*. You should provide a *List of Appendices* prior to the Appendices.

You can also provide primary data and protocols in an appendix. The best solution is to attach a CD with data, protocols and also a manual on how to find your way around the *Appendices*. The file with the manual should be easily identifiable. Name it for example manual or readme. Data should be saved in a format that is possible to open in some general program (for example Excel or PDF). For electronic submission of Thesis you can upload the appendices in separated file.

## **4. Tables and figures**

Keep in mind that figures tend to express ideas, while tables show data. Do not mention obvious data from the tables again in the text. Pay attention also to the duplication of data contained in the tables and graphs. However, every table and graph must be mentioned in the text (put simply: the table shows data that must be referred to in the text). Graphs are usually referred to as Figures. It is possible to place tables and figures (graphs and pictures) in the text part of your thesis. But all tables and figures included in your thesis must have some reason for their presence. They need some connection with the text and it is essential to refer to them in your text.

Example: As shown in Figure 1, the population of Wild camels has halved in the last fifty years. or The population has halved in the last fifty years (see Figure 1).

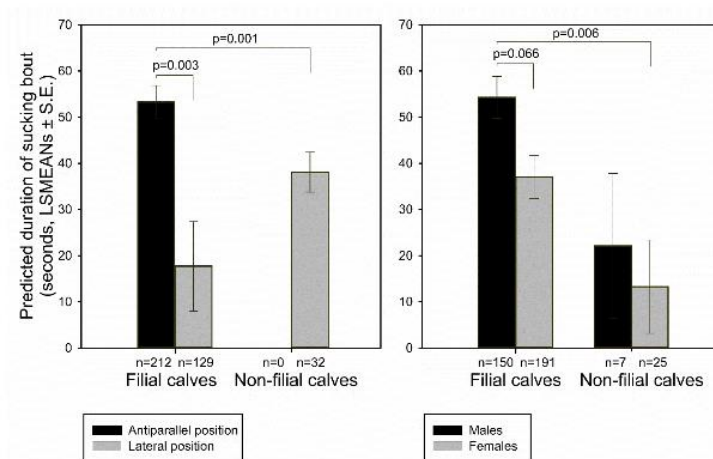


Figure 5. Sucking bout duration (LSMEAN ± SE) for filial and non-filial calves according to position and for filial and non-filial male and female calves.

(Source: Brandlová K, Bartoš L, Haberová T. 2013. Camel Calves as Opportunistic Milk Thefts? The First Description of Allosuckling in Domestic Bactrian Camel (*Camelus bactrianus*). PLOS ONE 8: e53052).

Tables and figures should be numbered and arranged in numerical order (which means that Table 1 appears in the text earlier than Table 2). Pay attention to the legends of the figures and the tables. Graphs must be self-explanatory and the description in texts of the axes and legends should be precise. The tables should be as simple as possible. It is recommended to use invisible vertical lines and the number of horizontal lines should be reduced to a minimum. The numbers presented in your graphs or tables must keep to the correct style of language (be careful with decimal points).

All tables and figures must have descriptive **captions**. Captions on tables are placed before the table while captions on the figures are placed under the figure. It is possible to use whole words (Table, Figure, Graph) or shortened words (Tab., Fig.) but the style must be consistent throughout the thesis. The language of the tables and figures should be the same as language of the whole Thesis. Every table and figure should contain their source (e.g. citation, authorship, or the formulation “based on...”)

Example of the table:

**Table 1. Zoological gardens included in the study with the numbers of camels kept and the number of filial and non-filial sucking bouts in herds**

Zoo	Year	Adults (M, F)	Nursing F	Calves (M, F)	Total SB	Non-filial SB	Non-filial SB (%)
Brno	2006	1,4	2	0,2	81	0	0,00
Brno	2007	1,3	1	0,2*	26	3	11,54
Zlín-Lešná	2005	1,2	2	2,0	58	2	3,45
Ostrava	2006	1,7	2	1,1	85	16	18,82
Ostrava	2007	1,7	3	1,2	36	9	25,00
Praha	2006	1,5	2	1,1	87	2	2,29
<b>Total</b>					<b>373</b>	<b>32</b>	<b>8,58</b>

(M - males; F- females; SB – sucking bout)

\*One of the calves was already weaned by its mother but occasionally sucked from a non-maternal dam

Of course, you can use coloured graphs or tables. But simplicity is recommended. It is enough if you use only black and white (of course, this does not have to apply to all pictures or photographs). If you use coloured graphs, they should also be distinguishable in a black and white version (if possible).

## **5. Schedule and activities during the writing of a Bachelor's thesis**

The topic of the Bachelor's thesis is chosen during the winter semester in the 2<sup>nd</sup> year of Bachelor's studies. By the end of winter semester, the student must be associated to the topic in the UIS and receive 1-2 ECTS. Credit will be given by the Thesis supervisor and only on the condition that the assignment is approved by a head of department and all the tasks connected with that credit are fulfilled.

If any minor changes (correction of spelling errors, small changes to the name, objectives or methodology) in the approved thesis assignment are necessary, it is possible to apply for update at the Academic Administration Office. The application must be supported by the signature of the supervisor. The deadline for such application is 31<sup>st</sup> of January of the year of final thesis submission. No corrections will be accepted after this deadline.

Every thesis submitted will be checked for plagiarism. Students receive 13-14 ECTS for the submission. The submitted thesis will be judged by the Thesis supervisor and one external reviewer.

A thesis defence takes place together with the state exams. After unsuccessful attempt to defend the thesis, the student has a right to defend the improved version of the thesis one more time. All the successfully defended theses are published on-line through the UIS.

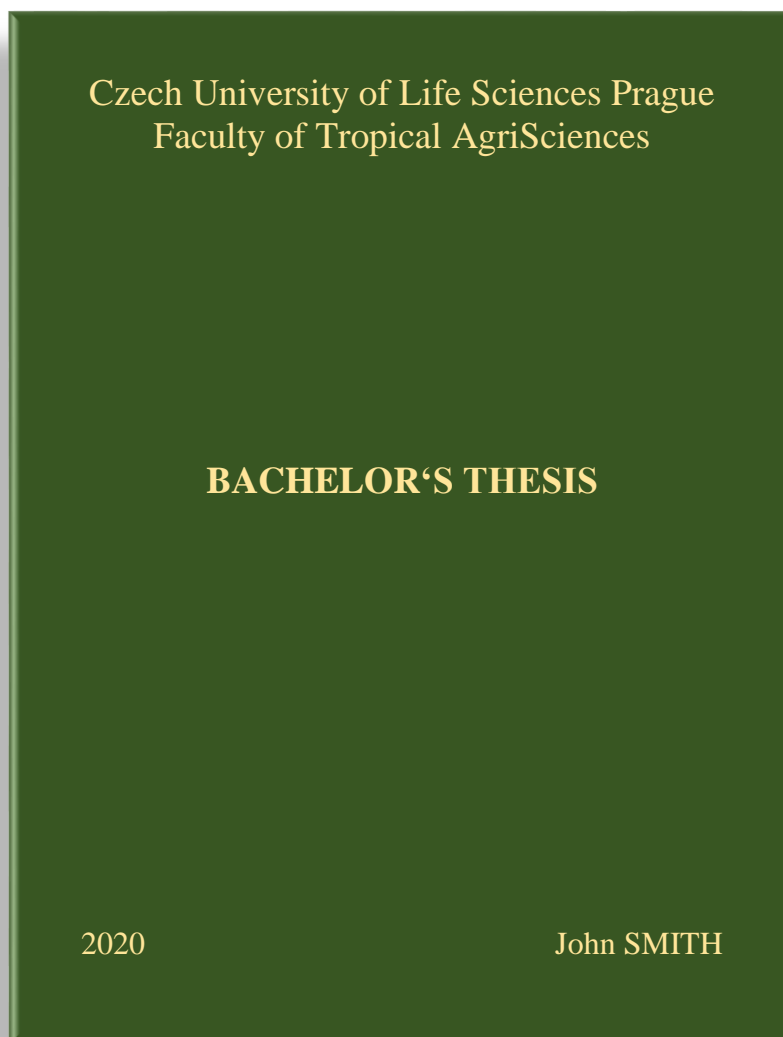
## **6. How to submit your Thesis**

The Thesis must be submitted to the Study office in two hardback copies. Double-sided print is possible. Do not forget to sign your *Declaration*. Moreover, do not forget to number the pages and check, if the numbering corresponds to the Contents. You must also submit the exact copy of the **Thesis as a PDF to the University information system (UIS)** at the same time. To submit your thesis to the UIS, it is necessary to fill in all the necessary fields in the "Insert additional information" section, upload the work in the "Insert the thesis and the appendices" section and **finally submit the thesis by confirmation in the "Thesis submission" section.**

All deadlines are fixed and late submission will not be tolerated. For exact deadline of submission consult current schedule for the Academic year.

The **cover** (boards) of the **Bachelor's Thesis must be green**. The text on the cover of the Bachelor's thesis must be in English (see the specimen in the Appendix 1).

**Appendix 1** Specimen of the cover of a thesis





**Appendix 2** Specimen of a title page

**CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE**

**Faculty of Tropical AgriSciences**



**name of the thesis**

BACHELOR'S THESIS

Prague 2020

**Author:**

**Supervisor:**

### **Appendix 3 Thesis Assignment**

Thesis assignment should be created in the University information system (is.czu.cz). It can be created by a supervisor or by a student. The student should discuss the assignment with the supervisor intensively and follow his/her requirements.

The assignment consists of the following parts:

#### **Objectives of thesis:**

Here you should briefly formulate the aims of your Thesis, first with a general aim and then with particular aims. Write clearly what is new about your Thesis. Recommended length is between 300 and 400 symbols including spaces.

#### **Methodology:**

You should describe the basic material (or respondents) and methods used to achieve your aims. The number of samples, type of research design, type of data collection instruments, the period of day and year, the location of the research, specific equipment used and other details should be briefly included. Planned statistical methods can also be described. Time-table for your work should be also included. The deadlines for the formulation of aims, methods, literature review etc. can be put here. The period of data collection should also be specified. Recommended length is between 500 and 700 symbols including spaces.

#### **The proposed extent of the thesis:**

Standard length is from 30 to 50 pages. You can insert e.g. "40-50pp".

#### **Keywords**

You should provide five or six keywords or sets of words (e.g. agonistic behaviour, *Taurotragus derbianus*). The keywords define the topic of your thesis and so you should not repeat the same words as in the title of your thesis.

#### **Literature**

The recommended number of references is from 5 to 10. All references should be important pieces of work relevant for your research field.

#### **Appendix 4** Evaluation of the Bachelor's Thesis by supervisor and opponent

Supervisor evaluates separately by grades from 1 (excellent) to 4 (failed) following criteria:

- Cooperation and communication with the supervisor
- Schedule and timing of the research process
- Engagement of the student
- Choice of suitable methods
- Formulation of the aims
- Scientific contribution of the thesis
- Theoretical background of the author
- Handling with data and information
- Handling with scientific literature (citations)
- Argumentation and critical thinking
- Abstract and keywords
- Structure of the chapters and paragraphs
- Comprehensibility of the text
- Accuracy of the terminology
- Quality of scientific language
- Formatting, layout and general impression

Reviewer evaluates separately by grades from 1 (excellent) to 4 (failed) following criteria:

- Formulation of the aims
- Choice of suitable methods
- Fulfilment of the aims
- Scientific contribution of the thesis
- Originality of the thesis
- Theoretical background of the author
- Handling with data and information
- Handling with scientific literature (citations)
- Argumentation and critical thinking
- Abstract and keywords
- Structure of the chapters and paragraphs

- Comprehensibility of the text
- Accuracy of the terminology
- Quality of scientific language
- Formatting, layout and general impression

Finally, supervisor and reviewer evaluates the whole thesis by grade and provide other comments or suggestions. Reviewer formulates at least two questions for thesis defence. Student receive both reviews at least one week prior to the final Thesis defence.

## **Methodical Manual for the writing of Bachelor's Thesis**

### **Faculty of Tropical AgriSciences**

Prepared by Karolína Brandlová, Tamara Fedorova, Pavla Hejčmanová, Jiří Hejkrlík, Radka Hudečková, Radim Kotrba, Richard Policht, Tereza Pilařová and others.

Finalisation by Tamara Fedorova.

Revision by Pavla Hejčmanová, Jiří Hejkrlík, Tereza Pilařová.

Language proofreading by Micheal Ua Seaghdha