UNIVERSITY OF ZAGREB

**FACULTY OF AGRICULTURE**

**TITLE OF THE MASTER THESIS**

MASTER THESIS

Name and surname

Zagreb, month 20 xx.

UNIVERSITY OF ZAGREB

**FACULTY OF AGRICULTURE**

Graduate study programme:

Name of the study programme

**TITLE OF THE MASTER THESIS**

MASTER THESIS

Name and surname

Mentor:

Title. Name and surname

Co-Mentor:

Title. Name and surname

Zagreb, month 20 xx.

UNIVERSITY OF ZAGREB

**FACULTY OF AGRICULTURE**

**STUDENT STATEMENT**

ON THE ACADEMIC INTEGRITY

I, **Name and Surname**, JMBAG XXXXXXXXXX , born on dd month yyyy in name of the place, county , declare that I independently prepared the Master thesis entitled:

**TITLE OF MASTER THESIS**

With my signature I guarantee:

* that I am the sole author of this Master thesis;
* that all literature sources used, both published and unpublished, are appropriately cited or paraphrased and listed in the reference list at the end of the Master thesis;
* that this Master thesis does not contain any parts of work previously submitted to the Faculty of Agriculture or other higher education institutions for the purpose of completing university or specialist study programme
* that the electronic version of this Master thesis is identical to the printed version which has been reviewed by the Committee and approved by the mentor
* that I am acquainted with the regulations of the Code of Ethics of the University of Zagreb (Article 19).

In Zagreb, on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Signature of the student*

UNIVERSITY OF ZAGREB

**FACULTY OF AGRICULTURE**

**REPORT**

ON EVALUATION AND DEFENSE OF GRADUATE THESIS

Master thesis of the student **Name and Surname**, JMBAG XXXXXXXXXX, entitled

**TITLE OF MASTER THESIS**

was defended and evaluated with the grade \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Committee: signatures:

1. Title. Name Surname mentor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Title. Name Surname co-mentor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Title. Name Surname member ­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Title. Name Surname member \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This page should be either empty or contain Personal acknowledgment.

**Acknowledgement**

I hereby thank...

**Content**

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**Summary**

## 

Of the Master thesis of student **Name Surname**, entitled

**TITLE OF MASTER THESIS**

In the Summary it is necessary to display briefly the entire work - to describe the problem, outline the main ideas, materials and methods, results and conclusions, without quotes, tables and graphs. The extent of the Summary should be up to 1000 characters with spaces. At the end of the Summary it is necessary to specify 3 to 5 keywords. The Summary should be written in Croatian and English.

Help:

The text above is about a third of the recommended length - it has 395 characters including spaces.

**Keywords**: keyword1, keyword2, keyword3

**Sažetak**

Diplomskog rada studenta/ice **Ime Prezime**, naslova

**NASLOV RADA**

U Sažetku je potrebno ukratko prikazati cijeli rad – opisati problem, izraziti najvažnije ideje, materijal i metode rada, te rezultate i zaključke, bez citata, tablica i grafova. Opseg sažetka je do 1000 znakova s praznim mjestima. Na kraju Sažetka potrebno je navesti 3 do 5 ključnih riječi. Sažetak treba pisati na hrvatskom i engleskom jeziku.

**Ključne riječi**: ključna riječ, riječ, riječ

1. Introduction

The technical formatting of the Master thesis requires special attention. A well-structured and clearly prepared thesis facilitates reading and provides an insight into the systematic processing of the topic.

The paper should be written on a computer using one of the text processing programmes (*MS Word*), with an appropriate external appearance and in compliance with the structure of the content.

The heading – represented by three levels of styles, namely Heading (1.), Subheading 1 (1.1.) and Subheading 2 (1.1.1.) - is already defined in this template, so use it. Use *Normal* for the remaining text. It is therefore essential that you use the predefined styles (*Normal* – for the entire text, Title, Subtitle 1, Subtitle 2) so that your work is readable, clear and neat.

The chapters are numbered in the Table of contents and in the text, with the numbering starting with the Introduction. A new chapter (style Title 1) should always begin on a new page. Therefore, it is necessary to insert a page break before such a title. This can be done by:

1. *Insert → Break → Next Page*
2. Special formatting of the style Heading 1: *Format → Paragraph → Line and Page Breaks*

Start a new paragraph either:

* with an indented first line (*Tab*) (as used in the text above) or
* with a blank line (which we will demonstrate in the next three paragraphs).

Whichever you choose, you should be consistent throughout the text.

Calibri, Arial and Times New Roman fonts are recommended for Master thesis. It is necessary to justify the text on both sides. A single space should be placed after each word.

Punctuation marks such as a period, question mark, exclamation mark, comma, colon, and quotation marks should be written together with the following word (no space should be inserted between the punctuation marks and the word).

The Introduction should clearly and concisely describe the topic of the Master thesis and the problems that will be addressed. The Introduction should outline the purpose of the paper, present the problem and offer a solution in the form of a hypothesis or expectation. The Introduction should answer the question of what the paper is about, what has been compiled, designed or researched and why. At the end of the Introduction or as a separate sub-chapter should be the objective of the Master thesis or the research objective, which is best defined using the suggested verbs in the infinitive form.

* 1. Objective of the Master thesis or Objective of the research

The Introduction should be 1-2 pages long.

1. Literature Review / Method Description / Literature Overview

In the **central part of the thesis**, the problem of the thesis is systematically elaborated, whereby the sources are properly cited (see Instructions for preparation of the Master thesis, 5. Rules of citation and creation of reference list):

* **in a research Master thesis**, one should follow the conventional rules and organise the chapters according to the IMRAD1[[1]](#footnote-1) (Introduction, Methodods, Results and Discussion) structure,
* **in an expert-project Master thesis**, it is necessary to describe the methods (both those known and those recommended for solving the problem) in detail and to present your own solution, and
* **in a review Master thesis**, it is essential to extensively elaborate on the literature (what is currently known about the topic) and synthesize the material studied.

It consists of several interlinked sub-chapters.

* 1. Subchapters with corresponding headings - second level

In which individual parts of the main topic/project are broken down into logical units and processed according to key aspects.

* + 1. Sub-chapters with corresponding headings - third level

For a better overview, it is desirable to introduce sub-chapters (up to three levels) in consultation with the mentor. This part of the thesis is based on the analysis of at least 20 literature sources that are relevant to the agreed topic.

1. Chapter of the central part of the thesis - images, tables and graphs

Each table, graph, or image must be numbered, have a title and be centred on the page. The numbering is done in a way that the chapter label is given first, followed by the consecutive number within the chapter - for example Table 3.1, i.e. the first table in Chapter 3.

If a table, image or graph is not the author's original work, i.e. comes from a different source, it is necessary to cite the source: "Source: …" (journal, book, website) in 10- or 9-point font text below the table, image or graph.

When designing the layout of tables, it is recommended to avoid the excessive use of margin lines, i.e. to use them moderately, mainly horizontally. Instructions for the graphic design of tables, images and graphs can best be found in the publications in *Agriculturae Conspectus Scientificus* (http://acs.agr.hr/acs/index.php/acs/issue/archive ).

The table, graph, or image should be placed as close as possible to the part of the text in which it is correctly referenced, e.g: "... as shown in Table 3.1. the mineral composition ...".

The title of the table is written above the table, as in Table 3.1.

Table 3.1. Mineral composition of dried broccoli according to certain authors

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Minerals | Measuring  unit | Varo et al.  (1980) | Piggott  (1986) | Magnusson  (2000) | Acyggosis  (2011) | Grandmother  (2006) |
| N | % | 6.4 – 7.2 | 5.6 – 6.1 | 2.2 – 5.6 | 2.60 – 4.01 | - |
| P | % | 0.73 – 0.91 | 0.79 – 1.07 | 0.37 – 0.71 | - | 0.36 – 0.47 |
| K | % | 3.5 – 3.7 | 4.2 – 4.5 | 2.6 – 4.4 | 2.21 – 3.96 | 2.75 – 3.51 |
| What | % | 0.20 – 0.25 | 0.25 – 0.33 | 0.15 – 0.70 | 0.80 – 1.58 | 0.34 – 0.40 |
| Mg | % | 0.33 – 0.52 | 0.80 – 0.95 | 0.10 – 0.23 | 0.18 – 0.46 | - |
| Fe | mg kg -1 | 91 – 109 | - | 37.2 – 171.2 | 96.1 – 100.2 | - |

Source: ... state the source

If tables or graphs with results are used in which abbreviations or symbols are used to indicate the results of statistical tests, it is necessary to provide a description of these abbreviations and symbols in 10-point font text below.

The title of the image or graph should be written below the image or graph, as shown in Figure 3.1.



Figure 3.1. Setup of an experiment in the Maksimir experimental station

Source: Department of Plant Breeding, Genetics, and Biometrics, University of Zagreb Faculty of Agriculture

<http://www.agr.unizg.hr/hr/article/98/zavod_za_oplemenjivanje_bilja_genetiku_i_biometriku> - accessed 8 March 2019.

* 1. Subchapter of the central part of the paper – orthographic signs

Spelling characters such as period, question mark, exclamation point, comma, colon, semicolon, open and closed parenthesis, quotation marks at the beginning and end of quotations, are written together with the word or number that follows (between these characters and the word there is no space).

Hyphen (–) and hyphen (-) are different spelling characters. A hyphen is slightly longer than a hyphen and is written with spaces on both sides (example: 3-5 keywords). The conjunction is somewhat shorter and is written without spaces (example: Lika-Senj county)

* + 1. Subsection - Units of measurement and their abbreviations

Abbreviations of units of measurement are written after the numerical value and separated by a space. Abbreviations of units of measurement are written according to the rules described in Appendix 7.1 of this Template. For example:

* + 100 kilogrammes of NPK per hectare is written as 100 kg NPK ha-1 or as 100 kg NPK/ha
  + 25 degrees Celsius is written as 25 °C
  + the amount of precipitation is expressed either in mm or in L/m 2

1. Chapter of the central part of the thesis – language and style

The Master thesis is written in a scientific style that is generally rigorous and dry and is aimed at experts and specialists. It lacks intimacy, individuality, emotional tone, cynicism and irony. Certain concepts are expressed precisely using scientific terminology.

Characteristics of scientific language and style:

* 1. **Clarity and precision** – pay attention to clarity of thought, arrange the words in a sentence appropriately and avoid overly long and poorly structured sentences (tip: read the sentence out loud!)
  2. **Simplicity, naturalness and moderation** – the language must not be pathetic, bombastic, ornate, ironic, sceptical, polemical or pretentious
  3. **Conciseness** – avoid unnecessary use of words and explain certain concepts in as few words as possible
  4. **Coherence** – the relationship between the individual parts and words of a sentence must be logical
  5. **Formulation of paragraphs (sections)** – a new section is characterised by consistency and coherence (logical connection)
  6. Subchapter – grammar, spelling and style

The Master thesis is written in standard English and must be grammatically, orthographically and stylistically correct.

**Verb tense:**

* Past tense when we write about our results (Summary, Material and work methods, Results)
* The present tense when we write about the results of other authors (Introduction, Discussion)

**Person:**

A scientific and professional text is usually written in the passive:

It has been found …

Or in the third person singular or plural (e.g. in the literature review):

… the author established … or … the authors established

* + 1. Subchapter - abbreviations and foreign words

Abbreviations may be used in the work. When an abbreviation appears for the first time in the text, the full name must be written and then the abbreviation can be used. If the work contains a large number of abbreviations, these should be listed in the form of a table as an Appendix at the end of the work.

1. Conclusion

The **Conclusion** is the final part of the **research** Master thesis and should briefly (up to one page) and clearly answer the research questions and state what has been established or achieved through the research, as well as provide guidelines and ideas for further research. No new discoveries, data or information should be presented in the Conclusion, and no new sources or literature should be cited.

The **Conclusion of an expert-project and review** Master thesis should provide a brief (up to 1 page) clear and concise overview of relevant knowledge, information, facts, procedures and attitudes developed in the main part of the thesis. The Conclusion does not contain any new findings, new data or information. It is not usual to cite new sources or refer to literature here. The Conclusion is expected to address the stated aims of the thesis and briefly outline what is important about the topic/project being worked on, as well as possible directions for the development or improvement of the topic/project being worked on.

1. Reference list

Literary sources should be arranged according to *the Harvard* style[[2]](#footnote-2), and then sorted alphabetically and numbered.

Help: in *Home* → *Paragraph,* first do *Sort* from A to Z ↓, then *Numbering*)

1. DAISIE – Delivering Alien Invasive Species In Europe (DAISIE) project funded by the sixth framework programme of the European Commission (Contract Number: SSPI-CT-2003-511202). http://www.europe-aliens.org – accessed 27th February 2019.
2. Hengl T., Husnjak S. (2001). Possibilities of Geoinformation Technologies in Mapping and Management of Soils in Croatia. Agriculturae Conspectus Scientificus. 66(3): 169-179.
3. ISHS (2008). ISHS Working Groups. ISHS - International Society for Horticultural Science. <http://www.ishs.org> – – accessed 27th May 2018.
4. JMP®, Version 13.0.0. SAS Institute Inc., Cary, NC, 1989-2007.
5. Kempthorne O. (1957). An introduction to genetic statistics. John Wiley and Sons, New York.
6. Kennedy B. W. (1990). Use of mixed model methodology in analysis of designed experiments. In: Advances in Statistical Methods for Genetic Improvement of Livestock (Gianola D., Hammond K., Ur.), Springer-Verlag, Berlin, 77-97.
7. Maletić E., Pejić I., Karoglan Kontić J. (2008). Vinova loza - Ampelografija, ekologija, oplemenjivanje. Školska knjiga, Zagreb.
8. McDonald J. H. 2014. Handbook of Biological Statistics (3rd ed.). Sparky House Publishing, Baltimore, Maryland. <http://www.biostathandbook.com/> – accessed 27th February 2019.
9. Nestroy O. (2007) The World Reference Base for Soil Resources (WRB) as an Instrument for the National and International Communication. Agriculturae Conspectus Scientificus. [online] 72(1), 9-12. <https://acs.agr.hr/acs/index.php/acs/issue/view/11> – accessed 27th February 2019.
10. Ortiz R., Wagoire W. W., Hill J., Chandra S., Madsen S., Stolen O. (2001). Heritability of and correlations among genotype by environment stability statistics for grain yield in bread wheat. Theoretical and Applied Genetics 103: 469-474.
11. R Development Core Team (2008). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <http://www.R-project.org> – accessed 10th December 2017.
12. Rohlf F. J. (2005). NTSYS-pc: numerical taxonomy and multivariate analysis system, version 2.2. Exeter Software: Setauket, NY.
13. Hebrang Grgić I., Ivanjko T., Melinščak Zlodi I. Mučnjak D. (2018). Citiranje u digitalnom okruženju: priručnik. Carnet, Zagreb. <https://www.e-skole.hr/wp-content/uploads/2018/03/Prirucnik_Citiranje-u-digitalnom-okruzenju-1.pdf> – accessed 25th February 2019.
14. Appendix
    1. Tables of measurement units

The following tables present units of measurement and abbreviations for individual measured variables. They serve as an aid for students when writing thesis and when expressing the quantities used.

Table 7.1. SI prefixes

|  |  |  |
| --- | --- | --- |
| **Factor** | **Name** | **Symbol** |
| 101 | deca | da |
| 102 | hecto | h |
| 103 | kilo | k |
| 106 | mega | M |
| 109 | giga | G |
| 1012 | tera | T |
| 10−1 | deci | d |
| 10−2 | centi | c |
| 10−3 | mili | m |
| 10−6 | micro | μ |
| 10−9 | nano | n |
| 10−12 | pico | p |

Table 7.2. Basic SI physical quantities

|  |  |  |  |
| --- | --- | --- | --- |
| **Size** | **Symbol** | **SI unit** | **Allowed units** |
| length | *l* | m | km, cm, mm... |
| mass | *m* | kg | g, mg, t, μg... |
| time | *t* | s | h, min, ms... |
| thermodynamic temperature | *T* | K |  |
| amount of substance | *n* | mol | mmol, μmol... |
| current strength | *I* | A | mA, kA... |
| light intensity | *Iv* | cd |  |

Table 7.3.Physical quantities with application in agriculture

|  |  |  |
| --- | --- | --- |
| **Size** | **SI unit** | **Allowed units** |
| amount of precipitation | dm3 /m2 | mm, L/m 2 |
| amount of nutrients | kg/m2 | t/ha, kg/ha, t/m 2 ... |
| amount of sugar | g/dm3 | g/L, °Oe, Brix... |

Table 7.4. Derived SI physical quantities

|  |  |  |  |
| --- | --- | --- | --- |
| **Size** | **Symbol** | **SI unit** | **Allowed units** |
| Force | *F* | N | kN, mN... |
| Power | *P* | W | kW, MW, mW... |
| Pressure | *P* | And | bar, kPa, Torr, mmHg... |
| Surface | *A* | m2 | ha, cm2 , mm2 ... |
| Volume | *V* | m3 | dm3 (L), cm3 (mL), μL... |
| Wavelength | *λ* | nm | Å, μm... |
| Frequency | *ν* | Hz (with−1 ) | kHz, MHz... |
| \*Density | *ρ* | kg/m3 | g/cm3 , g/mL, g/L... |
| Molar concentration | *C* | mol/m3 | mol/dm3 , mol/L, mmol/mL... |
| Mass concentration | *γ* | kg/m3 | mg/L, mg/mL, μg/L… |
| Mass fraction | *W* | 1 | %, mg/kg, μg/g, μg/kg... |
| Volume fraction | *ϕ* | 1 | %, mL/L, μL/L... |

\* SI allows this way of writing complex units, while according to IUPAC it is more correct g cm-3 .

The conventional writing e.g. mg/kg can still be used.

**List of used sources - link:**

DHMZ – Državni hidrometeorološki zavod.

<http://www.dhmz.htnet.hr/klima/klima.php?id=klima_elementi&param=do> – accessed 12th March 2018.

Cohen E. R., Cvitas T., Frey J. G., Holmström B., Kuchitsu K., Marquardt R., Mills I., Pavese F., Quack M., Stohner J., Strauss H.L., Takami M., Thor A. J. (2008). Quantities, Units and Symbols in Physical Chemistry, IUPAC Green Book, 3rd Edition, 2nd Printing, IUPAC & RSC Publishing, Cambridge.

<https://www.iupac.org/fileadmin/user_upload/publications/e-resources/ONLINE-IUPAC-GB3-2ndPrinting-Online-Sep2012.pdf> – accessed 12th March 2018.

Taylor B. N., Thompson A. (2008). The International System of Units (SI), United States version of the English text of the eighth edition (2006) of the International Bureau of Weights and Measures publication Le Système International d’ Unités (SI), Washington.

<https://www.nist.gov/sites/default/files/documents/pml/div684/fcdc/sp330-2.pdf> – accessed 12th March 2018.

Biography

At the end of the Master thesis, the student should write his short CV.

It should be started as a new chapter on a new page.

This chapter is not numbered, but goes into the Table of Contents (like the Summary)

The CV should be written in the third person singular on about half a page of text.

You need to provide information about yourself:

* place and date of birth,
* education - formal (secondary school - which, where, from xxxx to xxxx years; music school ...)
* foreign languages - which and at what level - understanding, speaking, writing (<https://europass.cedefop.europa.eu/hr/resources/european-language-levels-cefr>)
* skills and competences (certificates of completed courses, computer work and software knowledge, volunteering, music, sports, art, ...)
* the rest.

1. IMRAD = Introduction, methods, Results and discussion [↑](#footnote-ref-1)
2. Follow: Author Guidelines from the journal ACS:

   <https://acs.agr.hr/acs/index.php/acs/about/submissions#authorGuidelines> [↑](#footnote-ref-2)