

**Guidelines for
Writing
Scientific
Paper
for Student Final Project**
4th Edition

Guidelines for Writing Scientific Paper for Student Final Project

4th Edition

**By
4th Edition Revision
Team**



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FOREWORD

This 4th edition of the Guidelines for Writing Scientific Paper (PPKI) for Student Final Project is a revision of the previous edition of PPKI, and contains guidelines for writing scientific papers for multi-strata IPB students, starting from vocational, undergraduate, master's, to doctoral programs. The final project work of vocational students is in the form of a final report that comes from the results of field work practices. The final project work of undergraduate students in the form of an undergraduate thesis can come from research (experimental or non-experimental), design (social, economic, or engineering), and internship activities. The work of a master's student's final project is called a master thesis and a doctoral student's work is called a dissertation. Master thesis and dissertation material can come from the same sources as undergraduate thesis, but with a more in-depth level of study and specifically for dissertation must emphasize novelty (novelty). For graduate students, there is an obligation to publish their final scientific paper in scientific journals, but the format and procedure are not regulated in this book.

This guide is prepared with rules that are aligned with changes in the field of scientific writing. Some of its important characteristics are (1) scientific paper prioritizes careful, concise, and clear manuscripts; (2) the number of references is not large, but relevant and of high quality; (3) a more efficient way of citing and compiling a references. The final impact is that the written work becomes more concise without sacrificing the quality of the substance. The minimum number of pages of a scientific paper in the form of a final report, undergraduate thesis, master thesis, or dissertation is not stipulated. The quality of writing can be improved by referring to scientific journals that have been subscribed to by IPB and by the government. To get more information, the academic community can contact the staff of the IPB Library. Access via the internet has been provided, both to download and to upload scientific papers of the IPB academic community.

Based on the graduate qualifications set out in the Indonesian National Qualifications Framework (KKNI), the breadth and depth of content of scientific paper for vocational, undergraduate, and graduate students also vary. From practical field work activities, diploma III students can compile a final scientific report. This work is the result of their ability to complete a wide range of work, choosing the appropriate method from a variety of standardized or unstandardized options by analyzing data. These results indicate that the quality and quantity of their performance is measurable. Meanwhile, there are quite a number of activities for undergraduate thesis data collection by undergraduate students that can be developed. Therefore, the work of undergraduate students' final assignments is not limited to the results of research activities. This is intended to prepare those who will enter the workforce. If the mandate in the KKNI is observed, the supervision of undergraduate students' final assignments is more emphasized on the use of science and technology in their field of expertise.

Recognition by national and international circles cannot be separated from the papers in scientific journals and papers submitted in scientific forums. For this reason, graduate students are required to publish their final scientific paper at the national and/or international level, either through seminar forums or scientific journals.

In this case, it is the obligation of the lecturers to guide them in presenting their scientific paper. Joint publications between lecturers and have become commonplace in leading universities in the world. This practice has become a tradition at IPB.

This 4th edition of the manual is made possible by the hard work and dedication of the entire team, thank you and we hope that this book will be useful for all.

Bogor, December 2019

Rector of IPB,

Prof. Dr. Arif Satria, S.P., M.Si.



IPB UNIVERSITY RECTOR REGULATION
NUMBER 27/IT3/PP/2019

ON

GUIDELINES FOR WRITING SCIENTIFIC
PROJECT FOR STUDENT FINAL PROJECT

IPB UNIVERSITY

IPB UNIVERSITY RECTOR,

- Considering : a. that in order to harmonize the writing of the latest scientific papers for writing the final project for IPB University students, and to respond to the plan to implement the 2020 IPB curriculum, several provisions for writing student scientific papers are as stated in the IPB University Rector Regulation Number 9/IT3/LT/2012 on Guidelines for Writing Scientific Paper of Undergraduate, Master's, and Doctoral Education Program Students of IPB University needs to be improved in order to adjust to changes to accommodate multi-strata education programs at IPB which include Diploma, Undergraduate, Master's and Doctoral Education Programs
- b. that based on the considerations as referred to in letter a, it is necessary to stipulate IPB University Rector Regulation on the Guidelines for Writing Scientific Paper for Student Final Project of IPB University.
- In view of : 1. Law Number 12 of 2012 on Higher Education (State Gazette of the Republic of Indonesia of 2012 Number 158, Supplement to the State Gazette of the Republic of Indonesia Number 5336);
2. Government Regulation Number 19 of 2005 on National Education Standards (State Gazette of the Republic of Indonesia of 2005 Number 41, Supplement to the State Gazette of the Republic of Indonesia Number 4496) as Last Amended by Government Regulation of the Republic of Indonesia Number 13 of 2015 on the Second Amendment to Government Regulation Number 19 of 2005 on National Education Standards (State Gazette of the Republic of Indonesia of 2015 Number 45, Supplement to the State Gazette of the Republic of Indonesia Number 5670);

3. Government Regulation Number 66 of 2013 on the Statute of IPB University (State Gazette of the Republic of Indonesia of 2013 Number 164, Supplement to the State Gazette of the Republic of Indonesia Number 5453);
4. Government Regulation Number 4 of 2014 on the Implementation of Higher Education and Management of Higher Education (State Gazette of the Republic of Indonesia of 2014 Number 16, Supplement to the State Gazette of the Republic of Indonesia Number 5500);
5. Regulation of the Minister of Research, Technology and Higher Education Number 44 of 2015 on National Standards for Higher Education (State Gazette of the Republic of Indonesia of 2015 Number 1952) as amended by Regulation of the Minister of Research, Technology and Higher Education Number 50 of 2018 on Amendments to Regulation of the Minister of Research, Technology, and Higher Education Number 44 of 2015 on National Standards for Higher Education (State Gazette of the Republic of Indonesia of 2018 Number 1496);
6. Regulation of the Board of Trustees of IPB University Number 1/IT3.MWA/2019 on Organization and Work Procedure of IPB University as amended by Regulation of the Board of Trustees of IPB University Number 4/IT3. MWA/OT/2019 on Amendments to IPB University Board of Trustees Regulation Number 1/IT3.MWA/OT/2019 on Organization and Work Procedures of IPB University;
7. Decree of the Board of Trustees of IPB University Number 36/IT3.MWA/KP/2017 on the Appointment of the Rector of IPB University for the 2017-2022 Period;

HAS DECIDED TO:

Stipulate : IPB UNIVERSITY RECTOR REGULATION ON GUIDELINES FOR WRITING SCIENTIFIC PAPER FOR STUDENT FINAL PROJECT OF IPB UNIVERSITY.

Article 1

Guidelines for writing scientific paper for the final project of students of diploma, undergraduate, master's, and doctoral programs of IPB University as listed in the Appendix of this Rector Regulation.

Article 2

The guidelines as referred to in Article 1 are used as a guide for both students and supervisors in writing a student's final scientific paper.

Article 3

With the enactment of this Rector Regulation, the writing of a student's final scientific paper must comply with the provisions of this Rector Regulation no later than the even semester of the 2019/2020 academic year.

Article 4

With the stipulation of this Rector Regulation, the IPB University Rector Regulation Number 9/IT3/LT/2012 concerning Guidelines for Writing Scientific Paper for Undergraduate, Master's, and Doctoral Students of IPB University is revoked and declared invalid.

Article 5

This Rector Regulation comes into force on the date of stipulation.

Stipulated in Bogor
on December 20, 2019
RECTOR OF IPB UNIVERSITY,

Prof. Dr. Arif Satria, S.P., M.Si

PREFACE

This 4th edition of the Guidelines for Writing Scientific Paper for Student Final Project contains many changes, both in terms of systematics and substance. The changes were based on the desire of the IPB leaders so that the writings of students at IPB, with the direction of their supervisors, could express their ideas or scientific findings in concise documents without compromising the quality of the substance. Efficiency in terms of writing has already been applied in developed countries and IPB as a leading university in the country can also be a pioneer in implementing this new paradigm. There has also been a rapid change, shifting from a final project that was just a document stored neatly in the library to a widely published work. In addition to scientific publications, outputs can be patents, public policies, and business plans. Outcomes that can reach audiences outside our national borders are very easy in this era of information technology. The final objective is that the well-prepared writings are referred to by readers, not limited to the IPB Campus area, Bogor.

Unlike the previous edition, this PPKI book only contains a guide for writing scientific papers for multi-strata students' final projects starting from D-3, S-1, S-2, to S-3. Although it is intended as a practical guide for writing scientific papers, Chapter II of this edition emphasizes ethics in research and writing scientific papers, including ways to prevent dishonest behavior. The inclusion of this topic is intended to instill in students things to watch out for in writing scientific papers that promote honesty and scientific truth. Nowadays, there is a lot of information that can be accessed easily which on the other hand can lead students to become plagiarists which in the end can hinder the cultivation of creativity to work. Students need to realize that there is an inherent ethics in researchers. The data collected must be free from fabrication, falsification, and the manuscript compiled must be free from plagiarism.

In this PPKI book, the final work of diploma students is called the final report, the undergraduate is called the undergraduate thesis, the master is called the master thesis, and the doctor is called the dissertation. The final report is written based on the results of field work. Undergraduate thesis is a report on research results, both experimental and non-experimental, social, economic, and technical design, as well as internships. The master thesis and dissertation are reports on the results of data collection which are the same as the undergraduate thesis, except for internships. Two dissertation formats remain the same as in the 3rd edition, namely the dissertation with a general (traditional) pattern and the research series pattern. The research series pattern takes precedence over the general pattern. The pattern chosen is determined by the respective department or faculty or by the supervisory commission. The pattern of the research series contains parts of the manuscript that are ready to be published or have even been published in scientific journals. S-2 and S-3 students are required to publish at least one article in a reputable scientific journal as one of the graduation requirements.

The typing format is described in Chapter III of Scientific Paper Systematics as well as in the appendix, along with complete and practical examples to follow, including font type and size, spacing, typing distance, and margins. Keep in mind that what is exemplified here is the final document typing format. Students can prepare a draft text with a different typing if it is desired by the supervisors. If students want to type with two spaces for drafts for reasons of facilitating the review and examination of manuscripts by supervisors or examiners, consult with the supervisors.

Of course, the linguistic aspect will also determine the quality of a scientific paper. The obligation to use good and correct Bahasa Indonesia is stated in Presidential Regulation no. 63 of 2019. The linguistic aspect is briefly described in Chapter IV by referring to the Big Indonesian Dictionary (KBBI) and the latest edition of the General Guidelines for Indonesian Spelling (PUEBI) (BPPB 2016) which is supported by Guidelines for Formation of Terms, Guidelines for Chemical Nomenclature, and Glossary of Terms. The online version of the KBBI can be accessed on the <https://kbbi.kemdikbud.go.id/> page and PUEBI can be accessed on the website of the Language Development and Development Agency, Ministry of Education and Culture, namely the page <http://badanBahasa.kemdikbud.go.id/lamanbahasa/sites/default/files/PUEBI.pdf>. A glossary of terms containing Bahasa Indonesia and foreign language equivalents will facilitate the search for foreign equivalents for various fields of science, which can be downloaded from the <http://badanBahasa.kemdikbud.go.id/glosarium/> page. Term equivalent is very useful, because there is a provision in the writing of a final scientific paper at IPB that the Abstract or Summary (except the D-3 final report) must be translated into English. This is intended to expand the range so that the Abstract/Summary can be understood by non-Indonesian-speaking readers, as a consequence of the publication of the final scientific paper in the IPB repository. (repository.ipb.ac.id)¹. Especially for international students, final scientific papers can be written in English. Before being approved by the supervisors, manuscripts of scientific papers must be checked for similarity using the software available at IPB.

The description of numbers and symbols in Chapter V basically has not changed much from the 3rd edition, which is still following the International System. Likewise, the techniques of designing tables and figures as illustrations are explained in Chapter VI so that students can display various types of manuscript illustrations effectively as adopted by reputable publishers and scientific journals. The principle adopted is the clarity of the information that will be displayed as a text supplement, not the complexity of the table or figure display. The preparation of the references in Chapter VII follows the method that is widely adopted in the world of writing because of its simplicity, but still contains complete elements. There are some adjustments in this section compared to the previous edition. Reference sources that we use in updating this PPKI book are listed in the References.

¹ Final projects that have been published in scientific journals and proceedings, works that have the potential to be patented, and contains data that is confidential, disturbing, or endangering public and national interests may not be uploaded to the repository in their entirety.

The systematics of scientific papers that are not final projects, such as seminar/colloquial papers, articles for scientific journals, and other structured assignment reports are not regulated in these guidelines. However, in linguistic rules, the writing of numbers, symbols, terms, scientific nomenclature, illustrations, citations, and preparation of references still refers to these guidelines.

We would like to thank those who have contributed to the preparation of this PPKI book. This handbook was made possible by the hard work and dedication of the compiling team of the previous edition, namely Mr./Mrs. Agustin W Gunawan, Djoko Prijono, Dewi Apri Astuti, Didik Suhardjito, Ekawati Sri Wahyuni, Laksmi Arianti, Mulia Purba, Parulian Hutagaol, Tineke Mandang, Upik Kesumawati Hadi, Sri Nurdiati, and Ahmad Ridha coordinated by Mrs. Suminar S Achmadi. Our gratitude is also extended to the team that initiated the revision of the next edition, namely Mr./Mrs. Suminar S. Achmadi, Djoko Prijono, Dewi Apri Astuti, Ekawati Sri Wahyuni, Ahmad Ridha, Ni Wayan Kurniani Karja, Julie Eka Sari, Yeni A Mulyani, Made Astawan, Nunung Kusnadi, Ali Khomsan, Armansyah Halomoan Tambunan, Entang Iskandar, Nimmi Zulbainarni, Anita Ristianingrum, Rr. Renny Soelistiyowati, Retnaningsih, Fredinan Yulianda, Nunik Sri Ariyanti, and Hadri Latif coordinated by Mr. Swastiko Priyambodo. In line with the demands for changes at IPB, the latest edition of the handbook has been revised again by a team coordinated by Mrs. Chairun Nisa' and consisting of Mr./Mrs. Suminar S. Achmadi, Djoko Prijono, Ekawati Sri Wahyuni, Nunung Kusnadi, Retnaningsih, Ibnul Qayim, Eka Intan Kumala Putri, Defina, Wina Yulianti, Ence Darmo Jaya Supena, Yeni A Mulyani, Ahmad Ridha, Idqan Fahmi, and Endar Hasafah Nugrahani. We also thank Mr. Drajat Martianto as the Vice Rector for Education and Student Affairs for the guidance given.

Bogor, December 2019

4th Edition Revision Team

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I INTRODUCTION

1.1 Paradigms in Scientific Writing

One of the demands of the times is a paradigm shift that scientific paper must be published as widely as possible. This is in line with the mandate in KKNI (Indonesian Qualification Framework) which implies that the quality of theses and dissertations must be worthy of publication in reputable national and international scientific journals. In addition to the outputs in the form of journal articles mandated in KKNI, the outputs can also be in the form of conference papers, patents, prototypes, public policies, and business plans. The main paradigm in relation to the IPB academic community is the demand to increase the dignity of Indonesian scholars and prospective scholars. These demands include the novelty of knowledge or technology contained in research work so that the Indonesian nation is not left behind from other nations, namely patent-oriented research, publication in scientific journals, and appropriate technology.

Traditional scientific writing generally includes an introduction, method, results, and discussion, known as IMRAD (*introduction, methods, results, and discussion*), as well as references. The title of each of these sections may vary. However, in accordance with the demands of the times, there is a paradigm shift in the procedure for writing scientific papers compared to traditional format, especially scientific writing in the form of dissertations. In many reputable universities in the world, the dissertation patterns no longer adhere to the traditional systematics, which consists of Introduction, Literature Review, Methods, Results and Discussion, Conclusions and Suggestions, and References.

Four characteristics of scientific paper with a new paradigm are described in the following description. *First*, university scientific paper is characterized by brevity or not long drawn out. It is no longer common for universities to determine the minimum number of pages for final scientific papers and the current maximum limit is expressed in word count. For example, the Literature Review section will be more like a clipping written beyond the number of pages used to write down research results or observations and discussions if not carefully controlled. Methods like this are prone to plagiarism, and will even turn off writing creativity. It would be better if the scientific paper produced is concise and of good quality compared to a scientific paper in thick volume, but full of quotations from reference libraries that are not used for argumentation. On the other hand, the researcher's important findings are not even widely published.

Second, another consequence of the conciseness principle is resource savings, especially regarding paper, ink, and storage space savings. At IPB, since the 2011 academic year, the manuscript of the final scientific paper has been typed on paper back and forth.

Third, with regard to the obligation for students to publish their research results—as long as the research results are not confidential, do not interfere and/or do not harm the public or national interests—must be disseminated by means of seminars, publications, patents, and/or other means that can be used to convey information.

research results to the public (see article 44, paragraph 5 of the Regulation of the Minister of Research, Technology and Higher Education No. 44 of 2015 concerning National Standards for Higher Education). Student research outputs must be published together with supervisors, both in scientific journals, as well as papers presented orally or posters in scientific meetings. Students who appear in national and international scientific forums together with their supervisors will gain valuable experience and can create a good academic atmosphere on campus. Graduate students can be the first or second author in the manuscript of an article submitted to the administrator of a scientific journal. In line with these demands, in the planning stage of their studies, a master and doctoral student and their supervisors must plan the output in the form of publications or scientific meeting papers. Outcomes like this can be chapters in a thesis or dissertation after starting with an introduction and ending with a general discussion and general conclusions. An example of such a dissertation pattern is given in Chapter III.

Fourth, related to the fact that this is the age of information technology, all scientific papers must be accessible via the internet. Access to information through the internet greatly facilitates and speeds up the search for information. However, this sophistication can be misused to choose arbitrary sources of reference and what is even worse is plagiarism. Prevention and overcoming of plagiarism in higher education (Regulation of the Minister of National Education No. 17 of 2010) which is described in the Indonesian Academic Integrity Pavilion (Anjani) implies that the academic community must be more careful when writing scientific papers in order to avoid academic, moral, and ethical sanctions. and social.

1.2 Systematics of Scientific Writing Guidelines

The writing of scientific papers must be arranged based on certain systematics in accordance with the style book. Likewise, in the preparation of a final scientific paper at IPB, the writing must be in accordance with the style book that has been formulated by the PPKI IPB team. These systematic guidelines for writing scientific papers include ethics in research and writing scientific papers; systematics of scientific paper; language; numbers, symbols, terms, and scientific nomenclature; illustration; Literature Citations and Reference Compilation.

Specifically, the format and typing are explained in the Systematics of Scientific paper section and the Appendix section accompanied by examples. With the details that have been written in the examples in the appendix, students should be able to observe and obey them. Adhering to this provision from the beginning of the preparation of the manuscript will save time and effort to produce a good scientific paper. The appendix contains examples of typing—for example, typing of covers with letter font and font size and typing at certain spaces—in order to obtain uniformity in the format of final scientific papers from various strata at IPB.

II ETHICS IN RESEARCH AND SCIENTIFIC WRITING

As one of the leading research-based universities, IPB continues to strive to develop research with main competencies in the fields of agriculture, marine, and tropical biosciences and with entrepreneurial character published nationally and internationally. These noble ideals are the responsibility of the entire academic community. The implementation of research and publications must be directed and of good quality in accordance with the visions and missions of IPB. Therefore, lecturers need to provide guidance to students in both technical implementation of research and writing scientific papers. Students need to have a correct understanding of academic integrity, especially the nature of research and scientific ethics, in order to avoid various disgraceful acts in the scientific world.

2.1 The Nature of Research

Research is the key to progress, not only for academic purposes but also for the interests of government, industry, and commerce. This goal can be achieved if its implementation is considered in a systematic and controlled manner. Based on empirical knowledge, investigation, observation, or description, research must be carried out carefully and produce accurate data. The collected data is analyzed and interpreted objectively, in an unbiased manner, and logically, and produces clear conclusions for the development of science. The new knowledge gained from this research activity will receive recognition in the realm of science if it is published in the form of scientific writing of which the validity can be assessed and evaluated openly. The best publication of research results is through scientific journals that apply a set of norms and are universally applicable.

In the scientific world, there are six types of despicable acts that must be avoided, namely data fabrication, data falsification, plagiarism, unauthorized authorship, conflicts of interest, and multiple submissions. The description of each of these despicable acts is as follows:

- a. **Fabrication:** Data or research results are fabricated or made up and are recorded and/or published without proof that the researcher concerned has carried out the research. This is where it is important for every researcher to make scrupulous research notes (logbooks) as evidence of not doing fabrication.
- b. **Falsification:** Research data or results are falsified by altering or misreporting, including intentionally removing conflicting data to alter the results. Falsification also includes the manipulation of research materials, equipment, or processes.
- c. **Plagiarism:** Other people's ideas or words that are not commonly referred to and/or quoted by researcher and author without giving credit or acknowledgment to the source. Plagiarism can occur at the time of submitting research proposal, implementation, or reporting the results. Plagiarism includes the act of stealing other people's ideas, thoughts, processes, and research results, both in the form of data and words, including material obtained in limited research that is confidential.

- d. Unauthorized authorship: This includes voluntarily or coercive naming as the author without contributing to the published scientific paper; removing the name of someone who contributed to the published scientific paper; asking others to make a scientific paper for them without any contribution. The contribution in question can be in the form of ideas, opinions, or active participation related to the scientific field and can be proven.
- e. Conflict of interest: This disgraceful act involves the making of scientific paper based on the wishes of the party giving or receiving benefit without conducting research in accordance with scientific principles and ethics.
- f. Multiple submissions: Student scientific paper should only be submitted once, and also only submitted to one scientific journal and/or publisher until a decision is made to publish.

Students as researchers or designers must manage the planning, implementation, and reporting of the results of their scientific research responsibly, scrupulously, and thoroughly so as to avoid the possibility of plagiarism. The following are some parts of the research or design that are prone to violations.

- a. Experimental techniques: Scientific observations must be verifiable to reduce possible bias, the observations obtained must be repeatable (replication), the methods used must be carefully structured so as not to complicate the distinction between signal and noise, the source of the error must be clear so that the problems studied do not become blurred, and the conclusions drawn are not wrong.
- b. Handling of data: The validity of the data depends on the validity and accuracy of the method used. Researchers must understand the nature of the data collected. Therefore, researchers must be directly involved in every process that is carried out. Discrepancies in data originating from two or more measurement sources must be observed and resolved.
- c. Conflict of interest: This is prone to occur in research or designs that are financed by a particular sponsor or provider of the materials used. In carrying out research or design, sponsors often prioritize the achievement of their interests rather than maintaining scientific objectivity.

2.2 Ethics for Researchers and Authors

There are several ethical issues related to research, including issues related to vulnerable people, test animals, animal embryos, and conflicts of interest (Pauwels 2007). Those who fall into the vulnerable category include children, prisoners, people with mental disabilities, and patients with serious illnesses. If they are going to be the subject of research, researchers must look for legal grounds that can guarantee their participation, for example from parents or doctors. Research participants like this should be informed as clearly as possible about the objectives and procedures of the research to be carried out and their impact (risks and inconveniences that will be experienced). This action aims to make them understand so that researchers obtain informed consent, both from the participants themselves and from the person appointed as their guardian. Informed consent

also needs to be obtained for research using human genetic material or biological samples. This is used to guarantee the validity of the data to be obtained and to ensure that there will be no rejection of the research results in the future. Research involving test animals or animal embryos must state the amount used, the amount sacrificed, and the method of treatment (3R [reduce, reuse, refinement]). Thus, researchers as much as possible use alternatives to animals or animal embryos and use the least number of animals. Before carrying out research using vulnerable people, test animals, and animal embryos in the fields of basic science, biomedicine, agriculture, fisheries, and animal husbandry, researchers must obtain ethical clearance from the Research Ethics Commission Team at the IPB level (<http://lppm.ipb.ac.id/komisi-etik-manusia/> or <http://lppm.ipb.ac.id/download/komisi-etik-hewan/>). Conflicts of interest can occur when researchers emphasize the excellence of their research without conveying the risks to respondents when trying to obtain informed consent from potential participants.

Copyright infringement is not included in the category of scientific ethical issues that impose moral and social sanctions, but is included in the category of criminal issues for which the perpetrators can be subject to corporal punishment and/or monetary fines. Therefore, in carrying out research and writing the results, researchers must keep away from copyright infringement so that their reputation as scientists is not tarnished. In the Copyright Law no. 28 of 2014 it is stated that creators and/or copyright holders of copyrighted works in the fields of science, art, and literature have the right to allow or prohibit other people who without their consent rent out the work for commercial purposes. Some of the creations in the field of knowledge that are protected by law, which are written in Article 40 are books, pamphlets, layouts of published papers, talks, lectures, speeches, teaching aids made for the benefit of education and science, databases, computer programs, video games, maps, translations, interpretations, adaptations, anthologies, and other works resulting from the translation. "There is no copyright on the results of open meetings of state institutions, statutory regulations, state speeches or speeches of government officials, court decisions or judges' decisions, and decisions of arbitration bodies or decisions of other similar bodies."

2.3 Plagiarism Prevention

Plagiarism is an act, intentionally or unintentionally, to obtain or try to obtain credit or grade for a scientific paper. The trick is to quote part or all of works and/or scientific papers of other parties which are then recognized as their own scientific paper, without stating the source accurately and adequately. The perpetrators are called plagiarists and can be individuals or groups, each of which acts for themselves, for a group, or for and on behalf of an entity. In the IPB environment, plagiarism can be prevented because IPB provides sanctions for plagiarists in an effort to maintain its credibility as a leading university.

The opportunity for plagiarism is very large due to the advancement of information technology via the internet. Information is very easy and fast to access, but sources from the internet are not free to cite. In addition to information sources from the internet, common sources of plagiarism can be obtained from laboratory guides, other student paper assignments, the author's own previous work (self-plagiarism), journal articles, books, and newspapers.

There are several ways to prevent plagiarism in research. These methods include the following:

- a. enhance honesty and sense of responsibility;
- b. increase the understanding that plagiarism will have moral implications;
- c. increase accuracy and thoroughness in sorting and determining reference libraries;
- d. have confidence that the research plan is not a cheat;
- e. have confidence that the data taken is valid and accurate;
- f. appreciate the contribution of data or information from other researchers by expressing gratitude or mentioning the source of the article cited;
- g. make a research note (logbook) so that everything they do is recorded properly to prove that there is no falsification of data or research results.

Similar to research, in writing scientific papers, there are also ways to prevent plagiarism. The following are the ways to overcome this plagiarism tendency:

- a. archive original reference sources to avoid intentional carelessness;
- b. correctly understand the meaning of other people's writing so that there is no misunderstanding;
- c. learn how to make appropriate paraphrases to express summaries of other people's various writings or thoughts from sources read in their own words, not just replacing a few words;
- d. respect the rights of authorship and intellectual property rights, including the work of fellow students by writing reference sources.

Students must avoid plagiarism. Apart from getting moral sanctions from the community, plagiarism can be fatal for students who do it, such as getting academic sanctions and even criminal sanctions.

IPB's efforts through the quality control group (GKM) and/or department/faculty education commissions to prevent plagiarism are to require students to check the similarity of manuscripts (proposals and manuscripts ready to be uploaded to the repository) with other existing documents. Manuscript similarity check is intended to prevent plagiarism. For example, seminar papers must be corrected and seminars must be postponed if there are indications of plagiarism, both at the level of sentences, paragraphs, sub-chapters, chapters, let alone the whole part of the paper.

With the development of information technology today, every researcher or writer can use anti-plagiarism software tools to ensure that scientific paper produced is free from plagiarism.

2.4 A glimpse of Anjani and Rama

Anjani (Indonesian Platform for Academic Integrity) (<http://anjani.ristekdikti.go.id>) is a portal provided by the Ministry of Research, Technology and Higher Education as a mandate from the Minister of Research, Technology and Higher Education regarding academic integrity. Although this portal is intended for mentoring, evaluation and measurement, classification and violations, as well as sanctions imposed for integrity violators, what is more important is that academics can maintain ethics. Anjani has also

prepared software tools to detect similarities in scientific papers so that the level of plagiarism can be measured. Anjani's supporting documents are quite extensive, namely from the IPB repository and various research & development institutions in the student final project repositories at the national level called Rama (<http://rama.ristekdikti.go.id/>). Other sources are all electronic journals published in Indonesia (<http://garuda.ristekdikti.go.id/>) and the integration of intellectual property of researchers in Indonesia in the Science and Technology Index (Sinta) portal.

III SCIENTIFIC PAPER SYSTEMATICS

This chapter contains the systematics of various types of scientific papers written by IPB students of Diploma, Bachelor, Master, and Doctoral Programs. Types of scientific papers that are part of the final project and are a prerequisite for graduation are presented in Table 3.1.

Table 3.1 Types of final projects and methods of data collection according to the educational program at IPB

Final Project Activities			Final Project Name and Program			
			Diploma Final Report	Bachelor Undergraduate Thesis	Master Master Thesis	Doctor Dissertation
Research	Experimental	Laboratory	-	√	√	√
		Field	-	√	√	√
	Non experimental	Explorative	-	√	√	√
		Field	-	√	√	√
		Case Study	-	√	√	√
		Literatur Study	-	√	√	√
Draft	Social	-	√	√	√	
	Economy	-	√	√	√	
	Engineering	-	√	√	√	
Internship*		-	√	-	-	
PKM*		-	√	-	-	
PKL		√	-	-	-	

* Requirements for internships and PKM (Student Creativity Program) which can be used as final scientific papers are determined by each unit (department/study program)

A Final Report for Diploma Programs

The final report is the final project for diploma program students from the results of field work practices (PKL) with the goal to make students gain knowledge, skills, and work experience in accordance with their respective fields of expertise. The next goal is that students are able to identify problems and provide alternative solutions to problems in the world of work through the application of knowledge according to their field of expertise. In addition, this activity also aims to bring universities closer to the community and the world of work so that there is feedback for study programs to improve higher education curricula that are in line with the demands of the world of work and development in various fields.

B Undergraduate thesis for Undergraduate Programs

Undergraduate thesis is a final project for undergraduate students which is a scientific paper based on empirical studies. Undergraduate thesis aims to introduce and train students to apply science and technology, as well as solve problems encountered in the field. Data for the preparation of an undergraduate thesis can be obtained from research, design, or internships. Research can be in the form of experimental or non-experimental research. Experimental research can be in the form of laboratory research and field research. Non-experimental research can take the form of exploration, field research, case studies, or literature studies.

Experimental research data can be in the form of primary data or a combination of primary and secondary data. On the other hand, non-experimental research data can be in the form of primary, secondary, or a combination of primary and secondary data. Furthermore, the design can be in the form of social design, economic design, and engineering design.

C Master thesis for Master's Programs

Master thesis is the final project for master's program students which is a scientific paper based on empirical or original studies. The master thesis aims to train students to apply and develop science and technology, and to solve problems encountered in the field through an inter- or multidisciplinary approach. As with undergraduate thesis, data for the preparation of a master thesis can be obtained from research or design. Research can be in the form of experimental or non-experimental research. Non-experimental research can take the form of exploration, field research, case studies, or literature studies (specifically for certain sciences). Experimental research data can be in the form of primary data or a combination of primary and secondary data. On the other hand, non-experimental research data can be in the form of primary, secondary, or a combination of primary and secondary data. Furthermore, the design can be in the form of social design, economic design, and engineering design. The output of the master thesis must be useful for community and science, and be able to gain national and/or international recognition through scientific publications.

D Dissertation for Doctoral Programs

Dissertation is a final project for doctoral students which is a scientific paper based on empirical or original studies. Dissertation aims to enable students to develop new science and technology (novelty) and solve problems in their scientific field or professional practice through inter-, multi-, and transdisciplinary approaches, to produce creative, original, and tested works. The conditions for obtaining data on the dissertation are the same as for the master thesis, except for literature study. Dissertation research outputs must be beneficial to community and science, and be able to gain national and international recognition through publications.

The final scientific paper consists of three parts, namely the first part, body, and the last part. Each part will be described and some will be given an example (in the form of an appendix).

3.1 The first part

The first part consists of a sequence of (1) cover page, (2) title page, (3) statement page, (4) abstract or summary, (5) copyright page, (6) inner cover page, (7) examiner team page, (8) validation page, (9) preface, (10) table of contents, and if necessary (11) list of tables, list of figures, list of appendices, and other lists.

3.1.1 Cover Page (see Appendix 1)

This page is the front page of the scientific paper which will provide the first information to the readers about the scientific paper. Things related to the cover page are as follows.

- a) The cover page contains the title, student name (last name not abbreviated), IPB official logo in accordance with the IPB Statute, name of department/name of study program (except for FKH the name of the faculty), name of faculty/Vocational School/Business School/Graduate School, IPB University, Bogor, and year of graduation.
- b) The cover page is printed on thick laminated cardboard with colors according to the faculty/school or stratum (see Appendix 1). The undergraduate thesis/final report is in the form of a soft cover, while the master thesis and dissertation are in the form of a hard cover. All letters are printed in yellow gold or black ink (according to the regulations of each faculty/school).
- c) The back of the cover page contains the words IPB, year, name, NIM, and logo (see Appendix 2). The back is used in the final project with a minimum number of 60 pages or it is possible to make a back section.

3.1.2 Title Page

This page is a copy of the cover page. Unlike the cover page, this title page is printed on white paper.

3.1.3 Copyright Declaration and Transfer Page (see Appendix 3)

This page contains a statement that the final project is the work of a student under the direction of the supervisor. The statement also explains that the final scientific paper has never been submitted in any form to any university and is free from plagiarism.

3.1.4 *Abstrak* and Abstract (see Appendix 4)

Abstract is a brief and accurate statement about the contents of the final scientific paper. Issues related to the abstract are as follows.

- a) *Abstrak* and Abstract are written for undergraduate theses in Bahasa Indonesia and English.
- b) The typing begins with the name of the student (without the student ID number [NIM]), followed by the title of the undergraduate thesis, “supervised by” or “supervised by”, and the names of the supervisors (without a degree). All names are written in capital letters.
- c) The narrative is structured in one paragraph, contains no more than 200 words, and is written on one page for both languages.
- d) *Abstrak* and Abstracts contain background problems, research objectives, methods, research results with an emphasis on new findings, and implications that are presented in an informative and factual manner. References to libraries, figures, and tables are not allowed. Abbreviations are only introduced if they are still used again in the *Abstrak* and Abstract sections.
- e) At the end of the abstract are listed keywords, no more than five words or phrases that describe important concepts. Keywords are written in Bahasa Indonesia and English according to the language of the abstract and arranged alphabetically.
- f) Abstract page (in Bahasa Indonesia and English) is numbered with *i*, counted as a content page, but not printed.

3.1.5 *Summary* and Summary (see Appendix 5)

Summary is a short and effective form of a final scientific paper. Summary contains the following items.

- a) *Summary* is written for the final report, master thesis, and dissertation, while Summary is a translation of *Summary* in English, specifically for the master thesis and dissertation. *Summary* and Summary are each typed no more than two pages, written in a one-space format in several paragraphs.
- b) The title of the final report in the summary is written in Bahasa Indonesia and English.
- c) The typing begins with the name of the student (without NIM), followed by the title of the final report/master thesis/dissertation, “supervised by”, and the names of the supervisors (without degree). All names are written in capital letters.
- d) A complete summary describes the entire contents of the final report, master thesis, and dissertation which contains the problem background (tentative), objectives, methods and results. Specifically, in the master thesis and dissertation, emphasis is needed on new findings, and the implications that are presented in an informative and factual manner. References to literature, figures, and tables are not allowed. Abbreviations are only introduced if they are still used in the *Summary* and Summary section.
- e) At the end of the *Summary* and Summary are listed keywords, no more than five words or phrases that explain important concepts. Keywords are listed alphabetically in Bahasa Indonesia for *Summary*, and in English for Summary.

3.1.6 Copyright Page (see Appendix 6)

This page contains copyright for the scientific paper. The copyright of the IPB student's final scientific paper belongs to IPB.

3.1.7 Inner Title Page (see Appendix 7)

This page is located on the inside after the copyright page. In general, this page contains the same information as the title page, but adds information about the type of final project (final report, undergraduate thesis, master thesis, or dissertation) and the objectives for which the scientific paper is made.

3.1.8 Examiner Team Page (see Appendix 8)

This page contains the names of the examiners or the examiner team outside the supervisory commission at the time of the final exam (final report, undergraduate thesis, and master thesis), or at the closed examination and promotion session (dissertation). The names are written in full with the degree. This page is printed behind the inner title page (even page position and opposite the validation page).

3.1.9 Validation Page (see Appendix 9)

The validation page is an important sheet to ensure the validity of a scientific paper. This page contains the following provisions.

- a) This page contains:
 - (1) title of final report/undergraduate thesis/master thesis/dissertation,
 - (2) author's identity (name and NIM),
 - (3) approval by the supervisors/supervisory commission,
 - (4) acknowledgement by the institution, and
 - (5) Exam date time.
- b) The final report is known by the head of the study program and the vice dean for academic and student affairs at the vocational school.
- c) Undergraduate thesis is known by the head of the department, except for FKH which is recognized by the vice dean for academics and student affairs, and the School of Business (SB) is known by the head of the study program.
- d) The master thesis and dissertation is recognized by the head of the study program and the dean of the graduate school. The names and academic degrees of the supervisors, the head of the study program, the head of the department, and the head of the faculty/school are written in full.
- e) Names and signatures are listed one by one.
- f) The validation page *is* not printed on both sides and is placed on the right side of the page (odd page position).

3.1.10 Preface (see Appendix 10)

Preface is a statement written by the author as an introduction to the final scientific paper. Some of the provisions regarding the preface are described below.

- a) Preface is written in the form of a paragraph containing a brief description of the topic and title of the scientific paper, information on time and duration of the research/design/internship/PKL implementation, location, and source of funds (if not from own funds).
- b) Preface contains acknowledgment and appreciation addressed to the supervisory commission, external examiners, parents (family), and other parties who contribute directly to the implementation of research/design/internship/PKL. The contribution can be in the form of providing funds, experimental materials, facilities, field or laboratory technical services, and academic or professional input on the manuscript of the final scientific paper.
- c) Preface is expected not to contain things that are not directly related to the completion of the final project.

3.1.11 Table of Contents (see Appendix 11)

Table of contents thoroughly contains the contents of the final thesis and serves as a guide for readers who are interested in reading sub-subchapters, sub-chapters, chapters, or the whole. Table of Contents is arranged based on chapters, sub-chapters, and sub-subchapters by taking into account the pattern adopted, both the general pattern and the pattern of research series at each stratum.

3.1.12 List of Tables, List of Figures, List of Appendices (see Appendix 12)

List of Tables, List of Figures, List of Appendices are written if the number of tables, figures, and appendices is more than one. If needed, List of Formulas, List of Notations, Glossary, and other lists can be added. List of Tables, List of Figures, List of Appendices, and other lists can be written continuously on one page (no need to write on separate pages).

3.2 Body

In general, the body consists of introduction, method, results, discussion, conclusions or closing, recommendations, and references. A literature review/theoretical basis/theoretical framework/framework of thought can be added after the introduction, provided that the number of pages of the chapter does not exceed 10% of the total pages of the body of the manuscript. The results and discussion sections can be combined into a Results and Discussion chapter. The conclusions or closing section and recommendations can also be combined into a Conclusions and Recommendations or Closing and Recommendations chapter. The body of a master thesis and dissertation may follow a general pattern or a series of research patterns with several chapters. The pattern chosen is the responsibility of the supervisory commission.

The pattern of the research series is exemplified in Appendix 11.b. This pattern begins with a General Introduction, followed by two or more chapters containing manuscript of scientific article, which has been or has not been published in scientific journals. Each chapter begins with an abstract and a specific introduction according to the topic in the research series and ends with a conclusion. This series of chapters is followed by General Discussion, General Conclusions and Recommendations, and References.

3.2.1 Introduction

Introduction contains the background or justification for choosing the topic of the final scientific paper, the formulation or approach to problem solving, objectives, benefit, and scope. Especially for dissertation, the introduction must contain the novelty of science and technology.

3.2.1.1 Background

- (1) Background contains an explanation of the reasons for choosing the topic and the importance of the research/study being carried out based on theoretical and practical reasons, as well as how these problems can be overcome. More specific research problems are formulated in the problem formulation section.
- (2) The background explanation must be systematic, logical, and accompanied by data, information, and literature review from primary, up-to-date, and relevant sources that can be scientifically justified.

3.2.1.2 Problem statement

- (1) Problem statement is a concise statement about the problem to be solved and how to solve it.
- (2) Problem statement in the final project in the form of research can be clarified by detailing several research questions. Research questions can be started with the words what, who, how much, how, and why to answer the specific research objectives. These questions can be asked for various reasons, such as gaps, challenges, doubts, confusion, ambiguity, and academic curiosity related to natural, social, and economic phenomena.

3.2.1.3 Objectives

- (1) Objectives are guides or directions for planning and carrying out the final project study.
- (2) Objectives are written in the form of short and clear statements of what will be gained from the internship or answered in research questions as explained in the background.
- (3) Objectives are stated with measurable verbs such as identifying, analyzing, calculating, compiling, formulating, measuring quantities, describing, explaining, proving, exploring, testing, applying concepts or conjectures, or making a prototype. In the statement of research objectives, the verbs to know, see, or understand should not be used.
- (4) Research problems and objectives must be related and consistent.

3.2.1.4 Benefit

- (1) Benefit is the positive impact (usefulness) of the results of scientific paper in the field of science and technology, development, and society.
- (2) The main benefit of scientific paper is to add to the repertoire of knowledge in the form of literature as a source of reference for the development of science and technology, decision makers both in industry and government and institutions to formulate new policies, as well as the general public.
- (3) Benefit is stated with simple and logical verbs.

3.2.1.5 Scope

A scientific activity in the form of internship or research is often faced with limited data, funds, time, methods, and even theory. Therefore, a scientific activity needs to clearly indicate the scope by considering these limitations.

3.2.1.6 Novelty

Novelty can be in the form of new problems, the use of new methods, new approaches to examine a problem, or improvement of assumptions in the study of a problem or symptom. This novelty is highly emphasized and written in the dissertation.

3.2.1.7 Hypothesis

Hypothesis can be written explicitly or implicitly according to the relevant science and technology field. Hypothesis can be part of the introduction (for exact sciences or experimental studies), or the final part of the literature review (for the social and economic fields).

3.2.2 Literature Review

- a) Literature review contains a review of literature relevant to the scientific paper's topic to obtain complete information related to the progress of science and technology that has been known to the latest (state of the art). This is to convince readers that the scientific paper reported is new knowledge that is more advanced than previous knowledge.

- b) In research in the field of social and economic sciences, literature review is the basis for the preparation of a new analytical framework and new hypothesis on the scientific paper's topic.
- c) Literature review can be part of an introductory chapter, or it can be a separate chapter. If it is a separate chapter, the number of pages is not more than 10% of the total pages of scientific papers, and does not exceed the number of pages of Results and Discussion.
- d) For a master thesis and dissertation with a research series pattern, general literature review does not need to be written in a separate chapter.

3.2.3 Framework

- a) Framework is a description of the reasoning of researchers in their efforts to answer research objectives with a deductive approach. Therefore, the framework is more suitable for the final project that uses a research model.
- b) In the framework section, researchers assemble their mindset systematically to be able to arrange temporary answers or research hypotheses in accordance with research objectives.
- c) To help follow the flow of thought schematically, flowcharts of process frameworks and problem statement as well as the achievement of research objectives can be made with the help of graphics, mathematical models, or diagrams. (see Appendix 13)

3.2.4 Methods

Methods are arranged according to the type of final scientific work based on the educational strata at IPB referring to Table 3.1. The research/study methods contain an explanation of the procedures, techniques, and research design.

- a) Procedures or work methods contain operational stages or steps that are arranged systematically, sequentially, and in detail, so that they can be repeated by others with valid and reliable results. Simplification of procedures or ways of working can be made in the form of flowcharts.
- b) Techniques are part of methods on how to obtain and analyze data.
- c) Design is a design in the implementation of research.
- d) Methods are divided into several sub-chapters, namely time and location, materials and tools (if any), methods of data collection and analysis, and operational definitions.
- e) In research in the field of basic and applied sciences using vulnerable people, test animals, and human embryos, researchers must have ethical clearance from the IPB Research Ethics Commission team. Especially for research that uses human objects, there must also be an informed consent.
- f) The operational definition of variables is an explanation of the variables used in research. These variables must be operationalized in the context of their use. Variables are concepts that have various values, while concepts are generalized abstractions. Concepts describe phenomena in an abstract way, or make generalizations about something specific. Therefore, variables or concepts in research in practice can be expressed in various sizes or criteria. The operational definition of this variable is listed as needed.

- g) In scientific research, the terms variable, response, and parameter are often used incorrectly. If the object of research has several characteristics or units of observation that are interesting to study because their values vary, the term used is the observed variable or response. The term response is used especially if it related to several responses that can be studied as a result of giving treatment in an experiment. If the object of research is related to estimating the characteristics of population data using sample data, the term parameter in statistics is used for any value that describes the characteristics of the population.
- h) Instructions for writing each of these methods are as follows:

(1) Experimental research

The main characteristic of experimental research is that researchers collect new data that has never been collected before, in accordance with their research objectives by using certain techniques. Experimental research can be in the form of laboratory research and field research designed in accordance with research objectives. Field research can use a quantitative or qualitative approach, and the data collected can be in the form of quantitative or qualitative data. The information presented in the Methods chapter for each type of experimental research selected explains the following:

- (a) the assumptions and methods used;
- (b) time and location of the laboratory or field;
- (c) tools and materials;
- (d) experimental design or model;
- (e) variables and how to measure them;
- (f) sampling technique;
- (g) data recording, storage and processing techniques;
- (h) data analysis technique.

(2) Non-experimental research

Non-experimental research can be in the form of exploratory research, field surveys, case studies, and literature studies. Non-experimental research methods can use primary data collected by oneself and/or secondary data that is already available (data collected with the same or different objectives with the objectives of the researcher). If secondary data is used in research methods, it must be explained how to determine and select the data in accordance with the research objectives. It is important to note that the data used must be authentic and sourced from institutions that have authority and can be trusted. The information presented in the Methods chapter for each type of non-experimental research selected explains the following:

- (a) the assumptions and methods used;
- (b) time and location of the laboratory or field;
- (c) tools and materials (if any);

- (d) models (if required);
- (e) variables and how to measure them;
- (f) sampling technique;
- (g) data recording, storage and processing techniques;
- (h) data analysis technique.

In case studies, it is necessary to add:

- (a) reasons for selecting the case;
- (b) reasons for selecting the unit of observation, justification for selecting respondents and informants;
- (c) collection techniques and chronology of the time of obtaining information or data;

In the literature study, it is necessary to add:

- (a) literature sources
- (b) time span

(3) Social design

Social design is a form of final project to produce a policy/strategy/action program draft for public development in a community. Social design methods should state

- (a) location and time of the study (location maps and schedule of activities are placed in the appendix);
- (b) research type;
- (c) research subject;
- (d) data collection technique;
- (e) data processing and analysis techniques;
- (f) determination of social policies/strategies/action programs (which will be designed and later implemented by the community based on research results);
- (g) determining the methods of designing policies/strategies/action programs;
- (h) determination of participants in the design of policies/strategies/action programs;
- (i) the process of designing policies/strategies/action programs.

(4) Economic design

There are various economic designs, one of which is a business plan. If the funds needed to realize the business come from a financial institution, this plan must be supported by information or credit application documents from the intended financial institution (specifically for S-2 and S-3). The stages of compiling a business plan are as follows:

- (a) prepare a complete and bank-worthy business plan document supported by concrete data and valid analysis, for example by using a strength, weakness, opportunity, threat (SWOT) analysis;
- (b) business profile: contains the business mission, detailing the products or services offered, the location and size of the business, how the products will be manufactured or services will be provided;

- (c) market analysis: market conditions covering market demand and competition;
 - (d) marketing strategy and plan: describe the 4Ps (product, price, place, promotion);
 - (e) operational plans: listed for nonmanufacturing businesses;
 - (f) management team: describes the organization's plan for the planned business in an organization chart;
 - (g) financial plan: presents projected financial data that determines the economic viability and investment commitments, consisting of a summary of sales and costs, as well as an overview of cash flow and balance sheet estimated.
- (5) Engineering design
- Engineering design or prototype design is classified as primary research with results in the form of physical (hardware) and non-physical (software) objects. In the methods must be explained
- (a) time and place of implementation;
 - (b) design tools and materials;
 - (c) design stages;
 - (d) design criteria;
 - (e) preliminary design of the design concept;
 - (f) functional design analysis;
 - (g) structural design analysis;
 - (h) engineering figure making;
 - (i) design simulation;
 - (j) creation, functional testing, iteration, and modification of prototypes by researchers;
 - (k) prototype performance testing by researchers (S-1, S-2, and S-3);
 - (l) prototype performance testing by experts and users (S-2 and S-3);
 - (m) final design of prototype modification result (S-2 and S-3).
- (6) Internships and field work practices
- Work methods or study methods follow the workflow in the company or in other internships. The analytical methods used are based on the literature that underlies the field of study. Items that must be in the Methods chapter are:
- (a) time and place;
 - (b) tools and materials;
 - (c) data collection and analysis techniques (if any) and methods of interpretation.

3.2.5 Results, Discussion, or Results and Discussion

In writing results and discussion, it can be separated into a Results chapter and a Discussion chapter, or combined into a Results and Discussion chapter. Separation or merging of these two chapters depends on the field of study, or according to the direction of the supervisors.

3.2.5.1 Results

- (1) This part only displays data/findings and can be divided into several sub-chapters according to objectives.
- (2) The results of field works, internships, designs, or research activities are written systematically and clearly in accordance with the objectives and data obtained.
- (3) Data can be presented with illustrations in the form of tables or figures (maps, floor plans, photos, diagrams). Ways to create an effective illustration is listed in chapter VI Illustration.
- (4) Tables and figures must be referred to or referenced in the corresponding text.
- (5) The data that has been included in the table should not be duplicated in the form of figures, or vice versa, and emphasize only the results that are important in the text or narrative.

3.2.5.2 Discussion

- (1) Discussion is an interpretation or explanation of the result data of field works, internships, designs, or research activities. In the discussion, the interpretation or explanation must be related to the literature, especially the most recent and primary. Discussion can also reveal limitations in the activities of field works, internships, designs, or research carried out.
- (2) Arguments are presented briefly and logically that are focused on answering objectives and testing the hypothesis (if any).
- (3) Arguments are put forward to show similarities, discuss differences, and the causes of differences, linked to relevant theories and previous findings. Discussion seeks to show new aspects that are found and are a unity.
- (4) The statements in the paragraph are well packaged, starting with one's own opinion at the beginning of the paragraph, followed by the support from the literature, and ending with a concluding sentence. The opinions of previous researchers which have been summarized in the Introduction chapter or the Literature Review chapter need not be repeated, but are referred to as necessary.
- (5) Each argument is developed in at least one paragraph. The way to develop an argument is the same as writing a good paragraph. So, the author needs to divide the discussion into several topics that are developed, each in one paragraph. Each paragraph contains three elements, namely the topic of discussion, development of reasoning, and conclusion or a summary of the sub-topic of the discussion.
- (6) There are three levels of depth in the discussion of research/study results, namely showing events, patterns, and structures (Anderson and Johnson 1997). In showing the event, researchers only read the facts of the research/study results obtained. In showing the pattern, researchers pay attention to the regularity or tendency of the facts of the research/study results.

In showing the structure, researchers explain further from the pattern by answering the questions why the pattern occurs, and what factors cause the pattern to occur. Discussion by showing the structure requires theoretical support or references to the results of previous studies that have been scientifically tested.

- (7) Preferably, the discussion can also provide implications for the application of new findings and other aspects that need further investigation. The discussion ends with a positive, firm, and strong sentence.

3.2.5.3 Results and discussion

- (1) If Results and Discussion are combined into one chapter, the data/findings are presented first, given sufficient explanation for the important findings, followed by interpretation, then discussion.
- (2) The sub-chapters in the Results and Discussion chapter are developed systematically, referring to objectives, and leading to conclusions.
- (3) In some study programs, results and discussion can be written by displaying the titles of the discussion chapters—generally in accordance with the objectives—without writing the word Results and Discussion chapter.

3.2.6 Conclusions or Closing and Recommendation

3.2.6.1 Conclusions or closing

Conclusions or closing can be joined with recommendation becoming Conclusions and Recommendation or Closing and Recommendation.

- (1) The last part of a scientific paper can be in the form of conclusions or closing. Closing is used in scientific paper in the form of social design and economic design.
- (2) Conclusions are not a summary of the results, but answers to predetermined objectives or answers from the results of testing various hypotheses that are critically described so that they do not contain other meanings (ambiguous). Thus, a distinction must be made between the assumptions, findings, and conclusions of study results.
- (3) Especially for dissertation, conclusions must also provide a clear statement relating to the novelty proposed in the introduction and how big the novelty's contribution to the development of science and technology is.
- (4) Conclusion statements must be stated meticulously and carefully. These conclusions can be presented three times, namely in the Discussion, Conclusions, and Abstract/Summary chapters, so thoroughness is needed in presenting them in different expressions.
- (5) Conclusions or closing are written in the form of effective paragraphs in accordance with the research objectives.
- (6) For the pattern of research series, conclusions are also described in each research subtitle. In addition, there is also a General Conclusions chapter which compiles various conclusions that have been mentioned in the previous subtitle. For General Conclusions, the author must provide a clear statement relating to the novelty proposed in the Introduction chapter.

3.2.6.2 Recommendation

- (1) Recommendations should lead to implications or further action to be taken in connection with the findings or conclusions.
- (2) Recommendations related to the implementation follow-up or research/study results are preferably in the form of refinement of assumptions and methods. So, recommendations related to further research must be described specifically.
- (3) Recommendations can also be in the form of recommendations for stakeholders. For this reason, the recommendation needs to explain that the results can be directly applied in daily life or require certain adjustments.

3.2.7 References

References is the last chapter in the main part of a scientific paper. The procedure for writing references and reference citations is explained in detail in the Literature Citations and Reference Compilation chapter. Points that need to be considered in references are as follows.

- a) Referred literature must meet the criteria of being relevant, current, and credible and meet the minimum number of literature that must be referred to. The minimum number of literature referred to for the final report is 15, undergraduate thesis 20, master thesis 40, and dissertation 50.
- b) The references used must be relevant to the research topic/study, especially those published in the last 1-10 years.
- c) Examples of credible references are articles in scientific journals, books, monographs, patents or scientific papers that have been tested by the same-field academic community and published in reputable journals or publishers.
- d) All literature referred to in the manuscript must be included in the References and there are no references in the References that are not contained in the manuscript.
- e) References that are not published and cannot be obtained from libraries or accessed by normal means, including personal communications are only included in the text, but do not need to be listed in References.
- f) Inclusion of literature is intended to give appreciation and recognition for the work or opinions of others as well as professional courtesy.
- g) The inclusion of other people's opinions without referring to the source can be classified as plagiarism because the reader assumes the description is their own opinion.

3.3 The last part

The last part is the part that completes a scientific paper as the final project.

This section contains the Appendices (if any) and Life history.

3.3.1 Appendices

The appendices present materials that is closely related to methods, results, and discussion which are considered too detailed or too long to be presented in the body of the manuscript, but supports the discussion. All appendices must be referenced in the body of the text. Requirements related to the appendices:

- a) Appendix materials can be in the form of examples of statistical calculations, additional information, case examples, maps, extensive data analysis, formula derivations, statement lists, computer programs or flowcharts, experimental procedures written in prescription format, compound spectrums, circuit diagrams, large table from a set of experiments, questionnaire or survey forms, and so on which if entered into the paper will disrupt the flow of exposure.
- b) Raw data are often still needed for further research, and therefore can be included in the appendices.
- c) The appendices are arranged with serial numbers and page numbers according to the order of discussion in the body of the manuscript.
- d) The title of each appendix must be short and clear and not use the same table or figure title as the body. All appendix titles in the form of tables and figures are placed at the top.

3.3.2 Life History (see Appendix 14)

- a) The life history explains the place and date of birth of the student, the number of sons and daughters from their parents, the names of both parents or guardians. In addition, the name of the husband or wife and children can be added if the student is married.
- b) For the final report and undergraduate thesis, education is written from high school until being registered as an IPB student, while for the master thesis and dissertation it is written from university until it is accepted in the Graduate Program.
- c) The writer's activities outside of academics that support education are also well listed, especially academic achievements that have been achieved during the student period.
- d) The description of life history is no more than one page (see Appendix 14).

For the master thesis and dissertation, also write down the name of the study program, scholarships received, seminars and workshops that have been attended, and scientific publications that are part of the master thesis and dissertation (both already published and currently being submitted for publication), and achievements achieved during the graduate program.

IV LANGUAGE

Bahasa Indonesia is growing very rapidly along with the development of science, technology, and art. This is reflected in the increase in the number of entries from around 62 thousand in the 1st edition of the Big Indonesian Dictionary (KBBI) to around 127 thousand in the 5th edition. The online version of the KBBI (on the network, online) can be accessed at <https://kbbi.kemdikbud.go.id/> and the offline version (outside the network, apps) can be downloaded on the Google Play store. The list of terms and their equivalents which was originally published in printed form of the Glossary of Terms for each field of science has been changed to an online glossary containing more than 180 thousand Indonesian-English equivalent terms and vice versa, and can be accessed at <http://badanBahasa.kemdikbud.go.id/glosarium/>.

In this chapter, several language tools, word selection, sentence arrangement, and paragraph effectiveness will be described. Sentence arrangement in paragraphs should not leave a single line of sentence at the top or bottom of the page.

4.1 Language tool

The source of reference for the use of letters, grammar, word fragmentation, and punctuation is the General Guidelines for Indonesian Spelling (PUEBI) stipulated by Permendikbud Number 50 of 2015, replacing the General Guidelines for Enhanced Indonesian Spelling (Regulation of the Minister of National Education of the Republic of Indonesia Number 46 of 2009). In writing, try not to cut off the words; if you have to, follow the rules of word fragmentation in PUEBI. Some examples of errors that are commonly found in student writing can be seen in Table 4.1–Table 4.6.

4.2 Word selection (diction)

Choosing the right words in a sentence will give a clear understanding and correct language reasoning. The higher the number of vocabulary used, the more scientific the nature of the writing. The words wrong, inaccurate, incorrect, or mistaken have the same meaning, but their usage effects are very different. In every language there is a set of synonyms, namely words that do not always have the same meaning. The words fare, rent, wages, spending, cost, budget are synonymous, each of which has a special meaning and definition. The Indonesian Thesaurus Thematic Book can be used to expand the author's vocabulary (accessible at <http://thesaurus.kemdikbud.go.id/tematis/>).

Improved vocabulary can be achieved by reading a lot and then learning difficult words using a dictionary. If we look at the word forest in a general dictionary, it will reveal several kinds of meanings it has, both as a noun (*hutan jati*), verb (*menghutankan*), adjective (*ayam hutan*), and its derivative forms (*kehutanan*, *perhutanan*, *penghutanan*) complete with its meaning. If the inquiry continues to the dictionary of terms, there will be a word *perhutanian* that is matched with the English terms agroforestry. So, with the help of a general dictionary, a dictionary of terms, and a glossary, it will be possible to know the types, fields of meaning, variety, usage, and translation of words to be understood and mastered well.

Table 4.1 Rules for using letters

Use	Example
	Italic
- Foreign words and regional languages that have not become loanwords are included in the Direct Citation	- <i>learning outcome, output, file</i>
Note: it is better to avoid using regional languages that are not yet in the KBBI	
- Unknown constants and variables in mathematics	- <i>x, y, l</i>
- Cross-reference statement	- see, also see
- emphasis in sentences	- Table 4.1 Rules for using letters (<i>continuation</i>)
- Title of book or journal mentioned in The writing body	- <i>Hayati Journal of Biosciences, Microbiology Indonesia</i>
- Used to write the name of the bacterial taxon from order to species	- <i>Pseudomonadales, Pseudomonaceae, Pseudomonas, Pseudomonas aureus</i>
- Used to write the name of the family, genus, and species of the virus	- <i>Flaviviridae, Flavivirus, Yellow fever virus</i>
- Used to write the name of the taxon at the genus level and the level below the genus (plants, invertebrates and vertebrates, not including the name of the discoverer)	- <i>Brassica oleracea var. capitata</i> - <i>Felis catus</i> (Felidae) [cat species and family name] - <i>Manis javanica</i> Desmarest 1822
Every word in the titles of the book, chapters, and subchapters is in sentences, except except the task words: and, which, for, in, to, from, against, as, but, SYSTEMATICS (chapter) based on, in, between, through, by, which - General Systematics (subchapter) does not lie in the initial position	- <i>Guidelines for Writing Scientific Paper for final project</i> - SCIENTIFIC PAPER - <i>General Systematics (subchapter) does not lie in the initial position</i>
Every word in the scientific journals except the task: and, which, for, in, to, from, against, as, but, based on, in, between, through, in A way, which is not in the initial position	- Between Karawang and Bekasi - <i>Journal of Fisheries and Marine Technology</i>
Name of nation, language, person, religion, day, month, date, historical event, scientific name of taxon of creatures, institutions, and position/degree/rank followed by name of person or place	Indonesian nation/language/people - Islam, Christianity, Hinduism, Buddhism, Catholicism, and Confucianism - AD, Hijri, Saka - 30 September Movement, Dutch Military Aggression, World War I - Perissodactyla (order) - <i>Rhinoceros sondaicus</i> (Javanese rhino species) - IPB University (institution) - Rector of IPB University (positions) - Rector Arif Satria (position-person) - Prof. Dr. Ir. Arif Satria, M.Sc. (degree)
Geographical names attached to the names of products and artworks and become the signature of the region use capital letters	- <i>asinan Bogor, bakso Malang, tari Bali, rendang Padang, batik Solo</i>
Exception:	
- geographical names attached to the names of Products and not the signature of the region	- <i>bika ambon, gula jawa</i>
- type name (usually has scientific name)	- <i>kacang bogor, malang apples, javan rhinos</i>

Table 4.1 Rules for using letters (*continuation*)

Use	Example
Writing people's names on laws, arguments, tests, theories, methods, analysis, principles, principles, rules, scales, and others in the field of science that uses people's names	- Dalton's law, Duncan's test, Epstein's methods, Fourier analysis, Archimedes principle, rules of terms, Amagat-Leduc, Bernoulli's principle, Coriolis parameters, Kelvin influence, Coriolis acceleration, Likert scale
<i>Exception:</i> Writing a person's name on an object that is trade name that has become general terms is written in lowercase	- diesel machine
Abbreviated naming	- completely randomized design (CRD) of analytical hierarchy process (AHP), or multiple immunodiffusion (MIG) methods
Bold letters	
For chapter and subchapter titles	- Introduction (chapter) - Background (subchapter)
Greek Letters	
Used in mathematical formulas, astronomical symbols, measurement units, chemical/biochemical or medicine	- r (formula) - declination (astronomical symbol)
Used in mathematical formulas, astronomical symbols, measurement units, chemical/biochemical	- m (units) - -amylase, -globulin (biochemical/medical terms)

Table 4.2 Examples of spelling errors

Kinds of errors	Incorrect	Correct
Spelling error	<i>nafas, negatip, aktip, aktifitas, propinsi, miliar/milyar, triliyun/trilyun, kementrian, kualitas, jadual</i>	<i>napas, negatif, aktif, aktivitas, provinsi, miliar, triliun, kementerian, kualitas, jadwal</i>
Combination of bound elements and root words	<i>pasca sarjana, antar kota, multi strata, anti jamur, non kolesterol, sub chapter</i>	<i>pascasarjana, antarkota, multistrata, antijamur, nonkolesterol, subchapter</i>
Combination of base word and base word, except for the words already correctly combined, for example, <i>olahraga, kepada, daripada</i>	<i>budidaya, tandatangan, sumberdaya, tanggungjawab, terimakasih, kerjasama</i>	<i>budi daya, tanda tangan, source daya, tanggung jawab, terima kasih, kerja sama</i>
Notes: The combination of base word and base word will be written combined if they get a prefix and a suffix at the same time, for example: <i>membudidayakan, menandatangani, mempertanggungjawabkan.</i> The initial letters k, p, s, t become silent due to the prefix meN- (me-, mem-, men-, meny-, meng-, and meng-)	<i>mengkarantinakan, mengkilap, mengelola, mengkolonisasi, mengkombinasikan, mengkonsumsi, mengkoreksi, memperinci, mempengaruhi, mempublikasikan, mensikapi, mensintesis, mensukseskan, mensucikan, mensosialisasikan, mentaati, menterjemahkan, mentoleransi</i>	<i>mengarantinakan, mengkilap, mengelola, mengkolonisasi, mengombinasikan, mengonsumsi, mengoreksi, memerinci, memengaruhi, memublikasikan, menyikapi, menyintesis, menyukseskan, menyucikan, menyosialisasikan, menaati, menterjemahkan, menoleransi</i>

Note: The above provisions do not apply if: the prefix meN- is followed by a double consonant, for example: *mengklasifikasikan, mengkristalkan, mengkritik, mempraktikkan, memproduksi, memproklamasikan, menstabilkan, mensterilkan, mentransfer, mentransformasi.*

Table 4.2 Examples of spelling errors (*continuation*)

Kinds of errors	Incorrect	Correct
The initial letters k, p, s, t become silent due to the prefix peN- (pe-, pem-, pen-, peny-, peng-, and penge-)	<i>pengkuras, pengkikisan, pengkulitan, pempaparan, pempasangan, pempukulan, pensusunan, pensiapan, pensalinan, pensesuaian, pentukaran, pentafsiran</i>	<i>penguras, pengikisan, pengulitan, pemaparan, pemasangan, pemukulan, penyusunan, penyiapan, penyalinan, penyesuaian, penukaran, penafsiran</i>
Kinds of Incorrect errors Note:		
	<ul style="list-style-type: none"> - prefix peN- followed by a double consonant (not silent), for example: <i>pengklasifikasian, pengkristalan, penstabilan, pensterilan.</i> - prefix peN- followed by a double consonant (silent), for example: <i>pemrograman, pemrakarsa, pemrosesan.</i> - double meaning words, for example: <i>pengkajian berbeda dengan pengajian, petinju berbeda dengan peninju</i> 	
Adding a prefix by adding letters/sounds	<i>menyolok, menyuci, merubah/merobah, mensahkan</i>	<i>mencolok, mencuci, mengubah, mengesahkan</i>
One-syllable base words get the prefix meN-	<i>mensahkan, mencat, mencap, mempel,</i>	<i>mengesahkan, mengecat, mengecap, mengepel</i>
Base word	<ul style="list-style-type: none"> - <i>merubah</i> (base word: <i>ubah</i>) - <i>menyuci</i> (base word: <i>cuci</i>) - <i>menyolok</i> (base word: <i>colok</i>) 	<ul style="list-style-type: none"> - <i>mengubah</i> - <i>mencuci</i> - <i>mencolok</i>
Adjustment in spelling based on English, not Dutch	<i>analisa, sintesa, hidrolisa</i>	<i>analisis, sintesis, hidrolisis</i>
Use of the letter x	<i>komplex or komplek, taxonomi, silem or ksilem</i>	<i>kompleks, taksonomi, xilem</i>
The letters h in the clusters gh, kh, rh, th are removed, while the letters ph become f and ch	<i>sorghum, khromatographi, metode/metoda, morfologi/morpologi</i>	<i>sorgum, kromatografi, metode, morfologi</i>
Incorrect writing because of lack of knowledge in the standard form	<i>amuba, atmosfir/atmosfera, jadual, kualitas, varitas, otomatis, mikroba/mikrobia/mikrobe, standarisasi</i>	<i>ameba, atmosfer, jadwal, kualitas/mutu, varietas, otomatis, mikrob, standarisasi</i>
The names of certain sciences end in -ika	<i>Sistematik/sistimatik</i> (science names); <i>kosmetika, antibiotika; tropika/tropis</i>	<i>Sistematika</i> (science names); <i>kosmetik, antibiotik, tropik</i> (not science names)

Table 4.3 Examples of errors in writing the word

Kinds of errors	Incorrect	Correct
The use of prepositions is confused with the use of affixes	<i>Didalam, diantaranya, disamping itu, kedalam, dilapangan, kelaboratorium</i>	<i>Inside, di, diantara, di samping itu, ke dalam, di lapangan, ke laboratorium</i>
The use of affixes is confused the use of prepositions	<i>Di lakukan, di amati, di nyatakan</i>	<i>Dilakukan, diamati, dinyatakan dengan</i>

Table 4.4 Examples of errors in using punctuation

Punctuation	Incorrect	Correct
Period (.)		
- Separating hour and minute	at 13:30	at 13.30
- Decimal point*	0.8; 10.97	0,8; 10,97
- Behind the last number or letter in a chart, overview, or list	8.1.; 8.1.1.; 8.1.2.	8.1; 8.1.1; 8.1.2
- Separating thousands or multiples that show quantity	in 1.995; NIP 19650220.199002.1001	in 1995; NIP 196502201990021001
- Separating name and academic degree following it to differentiate from given name or surname	Prof Dr Ir Sukardi, MM	Prof. Dr. Ir. Sukardi, M.M.
- money value writing	Rp. 10 000,-	Rp10.000,00
Interpunct (·)		
- Water group writing in chemical compounds	CuSO ₄ .5H ₂ O	CuSO ₄ ·5H ₂ O
- times sign substitute (×)	$k \times g \times (a+2)$	$k \times g \times (a+2)$ can be printed $kg(a+2)$ or $kg(a+2)$

Table 4.5 Examples of using other punctuation marks

Punctuation	Example
Comma (,)	
Separate the name, address and its parts	Dean of the Faculty of Human Ecology, IPB University, Jalan Kamper, Dramaga, Bogor 16680
Decimal sign	12,5; 10,46
Used at the end of details in the form of words or phrase	The sanctions as referred to in paragraph (1) in the form of: a) reprimand, b) written warning, c) postponement of lecturer right allotment, d) reduction in rank and academic position, e) honourable discharge, or dishonorable discharge.
Separate the subordinate clauses that precede the main clause	Because IPB has changed its name into IPB University, all the academic community must adapt.
Semicolon (;)	
Separating elements in complex sequences, especially if those elements already contain punctuation	The study focused on three groups of animals: rodents (rats and squirrels); ruminants (cows, goats, and buffalos); and insects (grasshoppers, beetles, and termites).
Separate author names on multireferences	(Achmadi <i>et al.</i> 2018; Suhartono <i>et al.</i> 2019)
Used at the end of a detail in the form of a clause	Lecturers can be dishonorably dismissed from their positions as lecturers due to: a. breaking the oath and promise of office; b. violating the work agreement or collective work agreement; or c. neglecting obligations in carrying out duties for 1 (one) month or more continuously.

Table 4.5 Examples of using other punctuation marks (*continuation*)

Punctuation	Example
Colon (:)	
Indicates direct quotes	Satria (2015) revealed: “Sociologically, the characteristics of coastal communities are different from those of agrarian characteristics because of the differences in the characteristics of the resources they face.”
Indicates the ratio	Ratio of female students to male is 3:1.
Separate title and subtitle	The Gene Literature: How to Construct It?
Separate volume and page numbers in references	<i>Microbiol Indones.</i> 2(1):85–86.
Question mark (?)	
Shows hesitation in a statement	In the absence of a comparison, for the time should this bamboo be determined as <i>Gigantochloa? Atrioviolacea</i>
Hyphen (-)	
Concatenate <i>se-</i> with the next word that starts with a capital letter, <i>ke-</i> with numbers, numbers with <i>-an</i>	<i>se-Indonesia, abad ke-21, tahun 1990-an</i>
Dash (–, —)	
- En dash (–) is used for	- pages 15–25, length 24,5–31,0 mm
- showing range	- from pages 15 to 25, <i>not</i> from pages 15–25
- The use of dash - with words “from” and “between”, or with a minus sign should be avoided	- between 1945 and 1950, <i>not</i> between 1945–1950, -4 to -6 °C, <i>not</i> -4 – -6 °C
Em dash is used to limit insertion of sentences that are not closely related to main sentence	Deer shooting in the palace grounds —to regulate the carrying capacity of the grazing site— held every 3 years.
Note: en (–) and em (—) signs can be found in symbols in MS Word special characters	
Brackets ((...))	
Additional information or explanation that is not integral part or can be separated from the subject conversation	Subsequent testing of one of the stains (number 4) gives the conjecture that the compounds contained in the fungal culture media x is a sesquiterpene compound.
Letters to introduce abbreviation	The ethyl acetate fraction can be separated by using preparative thin layer chromatography (TLC).
Numbering entered in a sentence	The three steps are (a) prevention, (b) treatment, and (c) recovery.
Explanation in bracketed sentences	The similarities of the two processes (the differences are discussed in the literature review section [see pp. 35–38]) need to be explained here.
Special use in literature	[see Literature]
single quote (‘...’)	
Meaning of translation	The West Java Health Office launched a ‘pengasapan’ fogging program to prevent dengue fever.
Double quotes (“...”)	
Unknown terms or words with a special meaning	Semanggi, Kuningan, and Gatot Subroto areas are named “golden triangle”.

Table 4.5 Examples of using other punctuation marks (*continuation*)

Punctuation	Example
ellipsis sign (...) Indicates that a part is omitted on a citation	Marketing distribution pattern... based on sample observations.
slash mark (/) Division mark or indicates fractional numbers For the word every	1/2 = 0,5 125 ton/ha or ton ha ⁻¹

Table 4.6 Examples of writing non-standard and standard phrases in Bahasa Indonesia sentences

Non-standard or incorrect form	Standard or correct form
<i>bukan ... tetapi</i>	<i>bukan ... melainkan</i>
<i>tidak ... melainkan</i>	<i>tidak ... tetapi</i>
<i>terdiri dari</i>	<i>terdiri atas</i>
<i>tergantung pada</i>	<i>bergantung pada</i>
<i>bertujuan untuk</i>	<i>bertujuan ... (without "untuk")</i>
<i>antara x dengan y</i>	<i>antara x dan y</i>
<i>dibanding ...</i>	<i>dibandingkan dengan ...</i>
<i>walau or meskipun, tetapi ... (se)</i>	<i>walau or meskipun ..., (without the word tetapi) molecule series</i>
molecules series	<i>respondents</i>
respondents-respondents	<i>many elements</i>
many elements-elements	<i>disebabkan oleh</i>
<i>disebabkan karena</i>	<i>agar or supaya</i>
<i>agar supaya</i>	<i>dalam rangka ..., atau untuk ...</i>
<i>dalam rangka untuk</i>	<i>example batuan ialah ... atau misalnya ...</i>
<i>contoh jenis batuan misalnya ...</i>	<i>... baik ... maupun ...</i>
<i>... baik ... ataupun ...</i>	<i>Jika/bila/kalau/seandainya ..., ... (without the word maka after comma) atau ... maka ...</i>
<i>Jika/bila/kalau/seandainya ... maka</i>	Examples:
...	- <i>Jika sel sudah matang, ia akan membelah.</i>
	- <i>Sel sudah matang maka ia akan membelah.</i>

The word "*dimana*" is often used incorrectly. The first mistake is the writing must be separated (written "*di mana*"). The second error is that in Indonesian grammar, *di mana* is a question word, it is only used to ask for a place. Its use as a conjunction should be avoided. To avoid this, the following words can be used: *yang, ketika, pada saat, waktu, or tempat*. The choice of diction is adjusted to the sentence link.

A person is free to choose the right words to express his ideas in writing. However, in the use of terms in the field of science, a writer must obey the terms that have been standardized; terms cannot be varied. For example: propagation in physics is 'propagation' while in biology it is 'reproduction'. Terms and scientific nomenclature will be described in the chapter Numbers, Symbols, Terms, and Scientific Nomenclature.

4.3 Sentence arrangement

Sentences in Bahasa Indonesia generally have short, passive, and simple characteristics. A sentence must have a subject and a predicate. The sentence structure can be reversed by changing the place of the words without changing the meaning, except to emphasize the meaning. For example: *Pengamatan pada X dilakukan oleh Sigit pada tahun 2009* or *Sigit pada tahun 2009 mengamati X*.

A common mistake is to make sentences that do not have a subject and/or predicate. Example sentences with no subject are shown in Table 4.7.

Table 4.7 Examples of ineffective sentences

Ineffective sentence	Effective sentence
This study discusses <i>about</i> postharvest damage	This study discusses postharvest damage
...	...
<i>From</i> Table 1 shows that ...	Table 1 shows that ...
<i>Based on</i> the results of this study indicated that	The results of this study indicated that
...	
Sentence without a predicate	Sentence with a predicate
Students to cornfield	Students go to cornfield
Students research in laboratory	Students carry out research in laboratory or Student conduct a research in ...
Sentence without a subject	Sentence with a subject
Use a trawler to catch fish	Here the fishermen use a trawler to catch fish
In cultivating land, use tractor	In cultivating land, farmers use tractor

Word choice, variety of sentence structures, and proper use of punctuation marks will increase the effectiveness of sentences. Sometimes, sentences can be more effective when several short sentences are combined and equivalent parts are aligned or contrasted, or arranged by emphasizing cause-and-effect relationships. However, the merging must be careful not to overdo it so that the sentence becomes prolonged, ambiguous, and the meaning cannot be captured immediately. In scientific writing, an emotional writing style needs to be avoided. Therefore, expressions such as very meaningful conclusions, most important findings, or very interesting results should be avoided.

4.4 Paragraph effectiveness

Paragraphs function as unifying sentences that are coherent and causally related, accompanied by logical and effective reasons, and are objective to explain a unified idea or theme. The author's argument can only be developed through the preparation of a series of effective paragraphs, namely by utilizing the functions of the opening paragraph, connecting paragraph, and closing paragraph.

The paragraph itself is defined as a unit of information that has a topic sentence or main idea. The topic sentence is followed by several supporting sentences and ends with a closing sentence. So, it is impossible for a paragraph to consist of only one sentence. The author must be able to control the length of the paragraph by themselves based on several considerations that are determined by the problem being written. Paragraphs that are too long and fill the entire page are not effective. To avoid this, the topic sentence should not be too general and should focus on certain aspects.

Table 4.8 Examples of the stages of making paragraphs

Stage	Example
Topic sentence	Smoking can be an expensive habit. (“Smoking” is the topic and “expensive habits” is what should be described using supporting information)
Supporting information	The price of cigarettes is around Rp10,000 per pack. The average cigarette addict spends two packs per day. Addicts spend on cigarettes around Rp7,300,000 per year. Smokers have to spend extra money to replace their perforated clothes.
Complete paragraph	Smoking can be an expensive habit. A person who is addicted to cigarettes spends an average of about two packs of cigarettes per day. With an average cigarette price of Rp10,000 per pack, an addict will spend around Rp7,300,000 per year. The amount of expenditure per year can exceed this value because cigarette addicts also have to spend extra money to replace their clothes with holes caused by cigarette sparks.

4.5 Sentence relations

A good paragraph must have sentence coherence. To unify sentences so that paragraphs can become effective paragraphs, it is necessary to pay attention to sentence form, sentence meaning, and sentence logic. In addition, appropriate conjunctions (transition words) can be used which can help when you have to show various relationships or sentence relations in the paragraph.

Table 4.9 Examples of using transition words

Relation	Connector
Addition	next, in addition, just like ..., furthermore, then, finally
Contradiction	however, nevertheless, although, on the contrary
Comparison	just like..., in the same way
Cause-result	so, therefore, thus
Objectives	in order to, to
Conclusion	in general, in essence, in summary, in short
Place	side by side with, adjacent to
Time	after..., a while later

4.6 Conjunctions

Conjunctions cannot all be used as transition words. Examples of conjunctions that should not be used as transition words are *while*, *so*, *but*, and *and*. This word cannot be placed at the beginning of a sentence, let alone at the beginning of a paragraph.

V NUMBERS, SYMBOLS, TERMS, AND SCIENTIFIC NOMENCLATURE

This chapter contains the procedures for writing numbers, symbols, terms, and scientific nomenclature which are used in writing the final scientific paper. This writing procedure refers to CSE (2014) and PUEBI (2015).

5.1 Numbers

- There are two types of numbers: Arabic numbers which consist of 10 basic numbers (0, 1, 2, 3, 4, 5, 6, 7, 8, and 9) and Roman numbers which consist of seven basic letters of lowercase and capital letters. (i, v, x, l, c, d, m or I, V, X, L, C, D, M).
- Numbers are written with numbers when followed by standard units even if the number is less than 10 (3 kg; 11 m), but written with words when followed by non-standard quantities and the amount is less than 10 (five baskets of mango; 12 baskets).
- Numbers which indicate ranges and written in text can be separated by the word to (for example: ... from 1974 to 1978...), whereas when written in a table, the en dash (–) (1974–1978) is used. The en sign (–) can be found in symbols in MS Word special characters.
- The decimal sign in numbers is represented by a comma (0,24) instead of a period (0.24).
- Multiples of thousands in numbers that consist of more than four numbers are separated by a period sign (37.412; 8.625.479). Inside text, numbers that only consist of four numbers do not need to be marked with a period (3764 instead of 3.764) but in the table it can be marked with a period for the purpose of aligning table entries.
- In writing text that has a series of numbers with decimal places, a period-comma is placed between the decimal numbers (... 3,4; 0,5; 4,5 m s⁻¹ ..., respectively).
- Writing 1.1234×10^3 is more common than $0,11234 \times 10^4$.
- Rules for writing number symbols for: whole numbers (12); fractional numbers (2/3; 3,9); level number words (*bab ke-4; abad ke-20*); numbers ending in –an (*tahun 1950-an*); numbers followed by standard units even if the number is less than 10 (6 jam); number symbols cannot start sentences (*Sampel air diisikan ke dalam 30 botol*, **not**: *30 botol diisi dengan sampel air*); numbers that represent large round numbers can be spelled (... *biaya sebesar 125 juta rupiah.*), but if numbers are represented by numbers and letters, they must be spelled correctly (... *sebesar Rp24.450,00*).

5.2 Quantities, Units, and Symbols

- Quantities, units, and symbols in scientific writing are shown in Table 5.1.
- Units refer to the International System of Units, abbreviated SI (*Système International d'Unités*).
- This system is based on the metric system and its multiples of 10. For example: units of length are expressed in meters (m) and multiples thereof may be in units dm, cm, mm, m, nm, pm, or other multiples of 10. This system is also characterized by distinctive prefixes (Table 5.2).
- The names of people who are used as unit names, the initial letter of the person's name is written in lowercase, but the symbol starts with a capital letter (Table 5.1).

- e. The writing of the use of SI unit prefixes, among others, is set as follows:
- 1) Decimal values that are multiples of kilograms (kg is written by combining the SI prefix with g (gram instead of kg, e.g. g to represent a multiple of 10^{-6} g instead of nkg).
 - 2) SI unit prefixes can be combined with base units, additional units and derived units, for example cm, μA , μmol , MHz.
 - 3) SI prefixes can be combined with one or more symbols units to denote mixed units, for example $\mu\text{mol dm}^{-3}$.
 - 4) Combination of prefixes should be avoided, for example to express 10^{-9} m, write nm not m μm .
 - 5) Combination of prefixes and symbols for units is considered a symbol that can be raised to the power without using brackets, for example cm^3 .

Table 5.1 Standard unit quantities and symbols based on IS

Quantity	Subquantity	Unit	Symbol
Base	Length	meter	m
	Mass	kilogram	Kg
	Time	second	s ^a
	Electric Current	(second)	A
	Thermodynamic temperature	ampere*	K
	Total substance	mol	mol
	Light intensity	candela	cd
Additional	Flat angle	radian	rd
	Solid angle	steradian	sr
Derived	Area	meter ²	m ²
	Velocity, speed	meter/detik	m s ⁻¹
	Acceleration	meter/detik ²	m s ⁻²
	Force	newton*	N
	Work, Energy	joule*	J
	Power	watt*	W
	Pressure	pascal*	Pa
	Electric charge	coulomb*	C
	Voltage	volt*	V
	Electrical resistance	ohm*	Ω
	Electrical conductance	siemens*	S
	Electrical capacitance	farad*	F
	Magnetic flux	weber*	Wb
	Luminous flux	lumen	lm
	Illuminance	lux	lx
	Luminance (series)	kandela/meter ²	cd m ⁻²
Frequency	hertz*	Hz	

^a in Bahasa Indonesia, sec (second) and additional unit of min (minutes) and hour can be used

*person name as unit name

Table 5.2 Prefixes for SI Units

Multiple	Prefix	Symbol	Multiple	Prefix	Symbol
10 ⁻¹	desi	d	10 ¹	deka	da
10 ⁻²	centi	c	10 ²	hecto	h
10 ⁻³	mili	m	10 ³	kilo	k
10 ⁻⁶	micro	μ	10 ⁶	mega	M
10 ⁻⁹	nano	n	10 ⁹	giga	G
10 ⁻¹²	pico	p	10 ¹²	tera	T
10 ⁻¹⁵	femto	f	10 ¹⁵	maps	P
10 ⁻¹⁸	ato	a	10 ¹⁸	exa	E
10 ⁻²¹	zepto	z	10 ²¹	zeta	Z
10 ⁻²⁴	voktor	y	10 ²⁴	vota	Y

Note: for other units that are SI derivatives (e.g. volume), they can be adjusted as long as the writing is consistent.

- f. Several ways can be used to express units for multiplication and division. The method as in Table 5.3 can be used as long as it adheres to the principles of the writing method.

Table 5.3 Abbreviation for units of multiplication and division

Quantity	Suggested abbreviation	Can be written	Cannot be written
Torque	N m	N·m	Nm, N.m
Force	J s ⁻¹	J/s, $\frac{J}{s}$	J s ⁻¹
Gas constant	J mol ⁻¹ K ⁻¹	J mol K	J/mol/K

- g. Number followed by units can be written as follows.
- 1) Between numeric value and unit is given a distance or space, for example force 100 N, frequency 50 Hz, so it is not written 100N, 50Hz.
 - 2) There is a space between number and degree and unit, for example 20 °C not 20°C or 20° C.
- h. Size symbols are written in italics, while the symbols for units are written upright. For example, voltage is written as *V*, while the unit is V(volt); $V = 20 V$, or $V = 20$ volts.
- i. Sometimes the literature that is used as a reference includes non-SI unit or its multiples of 10. In this case, it is recommended to quote according to the original and written into SI unit (Table 5.4), once is enough for the same unit, for example the air pressure in that area is 1 atm ($1,013 \times 10^5 \text{ N m}^{-2}$).
- j. Arithmetic and algebraic operators are given in Table 5.5.
- k. The procedures for using space are as follows.

- 1) Space is used before and after all operator symbols in a mathematics statement. For example:

$$x = -4y + 1 \text{ (not } x = -4y + 1) \qquad 0 < x < yz \text{ (not } 0 < x < yz)$$

- 2) Space is also used next to symbols for trigonometric functions, logarithms, exponential, and limit, unless the quantity that follows or precedes these symbols use brackets, or the function carries a subscript or superscript. For example:

$$b \sin x \qquad (ac)\sin^3 2y \qquad \log x \qquad \exp y \qquad \exp(a + 2b) \qquad y^{\sin x}$$

- 3) Space is not required between two pairs of brackets; between the subscript or superscript sign variables. For example:

$$\begin{array}{lll} (c-1)d & (5a-2b)(3c+2d) & a/x/ \\ \cos^3y & (a-1)y^3z & c^{x-2}d \end{array}$$

- 4) Space is not required between the symbols + and or ± if these signs are used to represent positive or negative numbers or variables. For example:

$$-2x \dots \text{the values are } +13, -7, \text{ or } \pm 2$$

Table 5.4 Conversion of frequently encountered units

Quantity	Conversion
Length	1 inch (1 in) = 0,0833 feet (ft) = 0,0254 m
Mass	1 slug = 14,59 kg
Velocity	1 mil hours ⁻¹ = 0,4770 m s ⁻¹ = 0,6869 knot
Force	1 lb (usually written as lb, read "pound") = 4,448 N
Pressure	1 atm = 1,013 bar = 14,7 psi (lb m ⁻²) = 76 cm Hg = 1,013 × 10 ⁵ N m ⁻² = 1 mb = 100 Pa, 1 dyne cm ⁻² = 0,1 Pa
Energy	1 kcal (read kilocalorie) = 1000 cal (read calorie) = 3,968 Btu (British thermal unit) = 4185 J
Power	1 HP (read horse power) = 745,7 W = 0,1782 kcal s ⁻¹ = 2545 Btu hours ⁻¹
Magnetic Flux	1 maxwell (Mx) = 10 ⁻⁸ weber (Wb)
Magnetic field intensity	1 gauss = 10 ⁻⁴ Wb m ⁻²
Radiant intensity	1 Ly minute ⁻¹ = 697 W m ⁻² , 1 Ly = 1 cal
cm ⁻² Angle of incidence of solar radiation	radian = 1,75 × 10 ⁻² degree

1. If mathematical expressions are expressed in the text, the use of vertical space is attempted as carefully as possible. This means restricting the writing of fractions, roots, exponents, and other large symbols. For example:

$$(b-d)^{1/2} \text{ (not } \sqrt{b-d})$$

Only one division (/) sign is allowed. For example:

$$\frac{a/b}{c} \text{ or } (a/b)/c \text{ (not } a/b/c \text{)}$$

Exponents of more than one level should be written as follows.

$$\exp(x^{2-1}) \text{ (not } e^{x^{-1}})$$

$$\exp\left(\frac{a-b}{c+d}\right) \text{ (not } e^{c+d \frac{a-b}{c+d}})$$

Table 5.5 Arithmetic operators, algebra, and mathematical functions

Symbol	Meaning
=	Equal to
≠	Not equal to
≡	Identical with
~	Associated with
≈	About the same as
→	Approaching
≐	Asymptotically equal to
∝	Proportional to
∞	Infinity
<	Smaller than
>	Greater than
≤	Smaller or equal to
≥	Greater or equal to
«	Much smaller than
»	Much greater than
+	Plus
-	Minus
±	More or less
: or /	Divided by
· or ×	Times
$\lim_{x \rightarrow a} y$	Limit of y if x approaches a
Σ	Sigma notation (summation)
Π	Product notation (doubling)
\int	Integral notation
\oint	Close integral notation
dy/dx or $D_x y$	The derivative of y with respect to x , used if $y = f(x)$
$\partial u / \partial x$	Partial derivative of u with respect to x , used if $y =$
$\partial^2 u / \partial x \partial y$ or $D_x(D_x u)$	Second partial derivative of u , first derivative of x and the second derivative of y
∈	Member of
∉	Not a member of
⊃	Contain as a member of
⊂ or ⊆	Subset of
⊃ or ⊇	Loading as a subset
∪	Union
∩	Intersect
∅	Empty set

m. If a mathematical expression cannot be written in one line, the expression can be truncated in the following way.

1) Before or after the sign “ = ”, as in the following example

$$\dots x + 2 = 3by + 4m$$

2) Before or after the addition or subtraction sign, as in the following example

$$\dots y = K[(u/y) + (v/r)] + ba[(u/y) + (r/v)]$$

3) Before or after the multiplication sign (\times) or between two brackets if the multiplication sign is not included, as in the following example
 $\dots R = (dx/ty)(4n/3n + 1)$, becomes $\dots R = (dx/ty) \times (4n/3n + 1)$

4) Before addition symbols (sigma, integral)

For the three examples above, truncation of writing after the operator symbol is preferable because it indicates that there is still a continuation of the mathematical expression.

n. Statistical symbols that are often used in scientific writings are listed in Table 5.6.

Table 5.6 Frequently used statistical symbols

Parameter	Population	Sample data
Average or mean	μ	\bar{x} or X
Variety	σ^2 or S^2	σ^2 or s^2
Correlation coefficient	ρ	r
Sample size		n
Regression coefficient	$\alpha; \beta$	$\hat{\alpha}; \hat{\beta}$ or $a; b$

o. Flowcharts are often used to show a procedure, especially in computer programming, with its distinctive symbols (Table 5.7). The example of flow diagram is shown in Figure 5.1.

Table 5.7 Frequently used symbols in making flowcharts







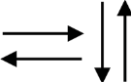



















Symbol	Name	Description
Process/operation symbols		
	Process	Process, activity, or processing by computer.
	Predefined process/subroutine	Other processes defined elsewhere. These symbols are commonly used to indicate subprocess (or subroutine in flowchart programming).
	Alternate process	A process that is an alternative to the normal flow step.
	Delay	Waiting time which is part of a process.
	Preparation	Preparation, such as installation or setup activities.
	Manual operation	Manual processing/operation, not by computer.
Branching and control of flow symbols		
	Flow direction	Relationships between symbols that indicate direction flow in a process.
	Terminal point, terminator)	Start or Stop of process.
	Decision	Decisions based on existing conditions, usually used when there are two choices (e.g. yes/no).
	Connector	In-out marker or process connection on the same sheet/page.

Table 5.7 Frequently used symbols in making flowcharts (*continuation*)

Symbol	Name	Description
	Off-page connector)	Marking in and out or linking processes on different sheets/pages.
	Merge/storage	Merging of several processes into one or indicates that the data in these symbols will be stored.
	Extract	Splitting a process into multiple parallel paths.
	Or	Branching of a process, usually more than two branches.
	Summing junction	Meeting multiple branches into a single process.
Input and output symbols		
	Data (I/O)	Input to and output of a process.
	Document	Printed document.
	M ultidocuments	Many documents in process.
	Display	Information display on user/operator.
	Manual input	Enter data manually from the user.
File and information storage symbols		
	Stored data	Data stored on hard disks or other data storage devices.
	Database	Data stored in files or database.
	Direct access storage	Indicates the storage of information on the hard drive
	Internal storage	Storage of information in memory, not on files.
Data processing symbols		
	Collate by format or standard.	Data, information, or structured materials
	Sort	Arrangement of data according to a

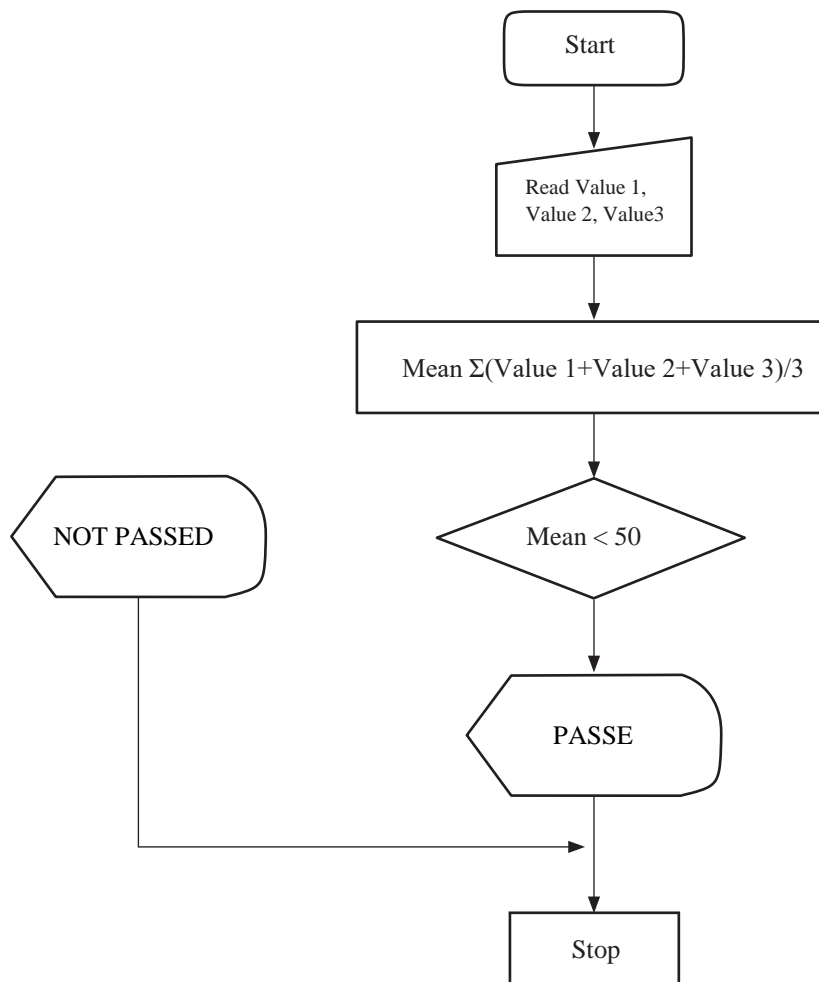


Figure 5.1 Examples of using symbols in a flow chart

5.3 Nomenclature for Organism

- a. The writing of the scientific name of organisms such as plants, animals, fungi, protists, and bacteria follows the binomial system. The binomial system consists of two words: the first word begins with a capital letter and the second word begins with a lowercase letter; both italicized.
- b. The taxonomic ranking for bacteria, fungi, plants, lichens, algae, humans, and animals is different. The scientific convention reference for each of these groups is CSE (2014) in Section 3 (*Special Scientific Conventions*), 22nd chapter (*Taxonomy and Nomenclature*).
- c. The order of writing the taxon rank begins with: kingdom, class, order, and family (suffix *-aceae*), with the first letter capitalized, and followed by genus and after the name taxon genus. The name of the genus and the taxon below it is italicized, while the name of the taxon above the genus is written in italics with the following exceptions: the family names of viruses and all the taxon of bacteria is also written in italics. The first letter of the taxon name under the genus uses lowercase.

Example of writing taxon rank for fungus: Kingdom

: Fungi
 Phylum : Glomeromycota
 Class : Glomeromycetes
 Order : Glomales
 Family : Glomaceae
 Genus : *Glomus*
 Species : *Glomus fasciculatum*

- d. Common names are often used for a genus. Writing the common name is always in lowercase (brusela, rizobium, vibrio).
- e. The writing of the binomial system for genus and species names must be written in full in the title and the first time they are mentioned in the abstract or manuscript text. Furthermore, the writing can be abbreviated in the form of the first letter of the genus only. For example: *Salmonella typhi* when it's first mentioned, then just write it down *S. typhi*. Abbreviation writing with more than one letter is not allowed.
- f. The genus name is rarely used without the species name, except in certain circumstances to indicate all the species belonging to it, for example genus *Rhizobium*, or name genus that functions as an adjective (*Salmonella* poisoning).
- g. If unsure of a particular species, the species name is abbreviated as 'sp.' for one species (*Rhizobium* sp.) or 'spp.' for more than one species (*Rhizobium* spp.), or the common names. The writing of sp. and spp. is not italicized (not italicized).
- h. The name of the subspecies or variety is written as it applies to the species, namely the genus name must be written in full in the title and when it appears for the first time in the abstract and text; then the genus name is abbreviated. For example: *Campylobacter fetus* subsp. *venerealis* on first appearance, *C. fetus* subsp. *venerealis* on the next appearances; *Brassica oleracea* var. *capitata* on first appearance, *B. oleracea* var. *capitata* on the next appearances.
- i. The designation of the strain of an organism can be written with letters and numbers as a unit or separately, for example INA123, INA 123, APS248, APS 248, YM243, YM 243. If written together with the scientific name, the word strain is not used, for example *G. fasciculatum* APS248, not *G. fasciculatum* strain APS248. However, if the line marker appears with only the genus name, the line word accompanies it, for example *Glomus* strain APS248 or *Glomus* sp. APS248 strain. The line marking can be written without using the scientific name, for example INA123 or INA 123.
- j. The name of the taxon that is put forward in relation to history needs the addition of the name of the discoverer who published it for the first time, for example *Trichoderma pseudokoningii* Rifai. If the species is later reclassified by someone else, the name of the first discoverer is enclosed in parentheses, for example *Bacteroides melaninogenicus* (Oliver & Wherry) Roy & Kelly. Sometimes after the name of the discoverer, the year of publication is written, for example *Manis javanica* Desmarest 1822.
- k. The name of the cultivar or cultivated plant is often referred to by a distinctive name which is indicated by single quotation marks. For example: 'Ciherang' rice, or 'Ciherang' *Oryza sativa* (not Ciherang rice cultivar or Ciherang cultivar *Oryza sativa*).

5.4 Nomenclature for Gen

- a. Phenotyping should be used if the mutant locus (gene) has not been correctly identified. Phenotype markers commonly used consist of three Roman letter abbreviation symbols starting with a capital letter, for example Fep, Tol, Pol, while FepA may be used for protein markers encoded by genes. *fepA*. A series of bacteriocin-tolerant mutants may be indicated by the markers TolI and TolII, and so on, or a series of multiple nucleic acid polymerase mutants may be assigned the symbols Pol1, Pol2, and Pol3, and so on. In general, the plus sign (+) superscript is used to indicate wild type or positive characters (Tol⁺), while the minus sign (−) superscript is used for mutant types or negative characters (Tol[−] Pol[−]).
- b. Promoters, terminators, and operators should be indicated by the appropriate letters: *lacZp*, *lacZt*, and *lacZo*, similarly the attenuator site should be written *lacZa*. A promoter mutation may be written, such as *glnAp*₂₃₄. Arabic subscript Numbers are used to denote genes that have more than one promoter, for example *glnAp*₁, *glnAp*₂. This provision also applies to terminators and operators.

Recommendations on general rules and principles for genetic symbolism are shown in Table 5.8. Specific genetic nomenclature for various organisms can be seen in Chapter 21 (*Genes, Chromosomes, and Related Molecules*) in CSE (2014).

Table 5.8 Recommended rules and general principles for genetic symbolism (CSE 2014)

Feature	Agreement
Gen	
Gene names	A language with a high level of internationality should be used. Traditionally, gene name describes, in concise words or phrases, the main diagnostic trait of the mutant phenotype, the name of the protein it encodes, metabolic requirements, or sensitivity or resistance to a drug or other substance. Some gene names are based on a wild-type phenotype.
Newer guidelines suggest	naming genes based on gene families and sequence similarities.
Gene symbols	Symbols are derived from the original complete name by abbreviating the name, using a combination of the initial letters of terms consisting of more than one word, or symbols that are easily recognizable and should be easy to pronounce. Although many of the old gene symbols only consist of one or two letters, and some to five letters, most guides now recommend the use of italicized 3-letter symbols. Most symbols avoid using Greek letters, Roman numbers, superscripts and subscripts; comma, period two, and period comma are used in a restricted manner.
Dominant traits	If clear, names and symbols begin with a capital letter.
recessive traits	If clear, names and symbols begin with a lowercase letter.
allele series	Gene symbols with superscripts to show allele variation/diversity in the same gene.
Wild-type allele, standard	Gene symbols with a non-italicized plus sign superscript or a plus sign with gene symbols as superscript. In gene formulas, the plus sign can be used separately.

Table 5.8 Recommended rules and general principles for genetic symbolism (CSE 2014) (continuation)

Feature	Agreement
Different loci with similar phenotype	
Nonalle (copy) [mimics], polymer gene, etc.)	Gene symbols followed by one additional Arabic letter or number, typed in the same line after the dash - or as a subscript.
Alleles derived from	Gene symbols with subscripts independent mutation
<i>Enhancer</i> , inhibitor, lethal, and suppressor	<i>En, I, L, or Su for dominant trait (en, i, l, or su for recessive trait), followed by a dash - and symbols of the associated allelet.</i>
Sterility and incompatibility	<i>S for dominant trait (s for recessive trait), followed by a dash - and related allele symbols.</i>
Gene formula	Written as the fraction with the maternal allele written first or above. Each faction corresponds to a single linkage group. The link groups are arranged in numerical order separated by a comma period. The unknown location of the gene is written in brackets in the last part of the gene formula. In euploid and aneuploid, gene symbols are repeated as many times as the number of homologous loci.
Factor	The symbol is written in square brackets and is written at the beginning of the extrachromosomal gene formula.
Chromosome	
Autosome	Shown by Arabic numbers in increasing order from longest to shortest.
sex chromosomes	Animals whose males are heterogametic have sex chromosomes denoted as X and Y; so, individual female XX, male XY. Animals whose female individuals are heterogametic have sex chromosomes denoted as Z and W; so, individual female ZW, male ZZ.
Marking	Arabic numbers are used to denote individual chromosomes; Roman numbers are for linkage groups. Chromosome markers, chromosomal bands, and other markers are typed in upright letters, not italics.
Karyotype, ideogram	Autosomes are arranged vertically in horizontal rows on a page, in descending order by length, with the short arm at the top, and with the sex chromosomes at the end of the series.
Chromosomal abnormalities	The following abbreviations are used to denote chromosomal abnormalities: Df or Def, Del deficiency, deletion Dp or Dup, In or Inv duplication, inversion T or Tran, Tp translocation, transposition Various rules regarding writing the abbreviations in italics or the choice of the abbreviation pair should be used.
Number of chromosomes	The number of chromosomes in the zygote is indicated by 2n, the number of gamete chromosomes is n, and the base number is x

5.5 Nomenclature for Chemistry

- a. Chemical formulas and full name compounds may be used, e.g. sodium hydroxide or NaOH; ammonium sulfate or $(\text{NH}_4)_2\text{SO}_4$; oxygen or O_2 ; cesium chloride-ethidium bromide or CsCl-ethidium bromide (the EtBr abbreviation for ethidium bromide is used only after its introduction).
- b. Some chemical formulas and their abbreviations that are considered familiar do not need to be introduced again, for example Tris HCl (or Tris-HCl), NaPP, $\text{Na}_1\text{ED}_2\text{TA}$.
- c. Ionic charge in superscript: Cl^- , Zn^{2+} (not Zn^{++} or Zn^{+2}), PO_4^{3-} (superscript is written after the subscript); free radicals: $\text{H}\cdot$, $(\text{NH}_3)^+\cdot$.
- d. The oxidation number of an element is written with Roman numbers, in parentheses, and is not spaced after the element's name or symbol, for example chromium(III) or Cr(III). These Roman Numbers become superscript when associated with their symbols: Pb^{II} , $\text{Pb}^{\text{IV}}\text{O}_4$. Arabic Numbers is used to denote zero number, for example potassium tetracyanonic chelate (0) (zero, not capital letter O).
- e. Isotope symbols are enclosed in square brackets, for example: ^{32}P phosphate; ^{14}C urea; sodium ^{14}C format; -naphthalic ^{14}C oic acid; -[1,4- ^{14}C]glucose.
- f. Carbon atom writing: C_{18} compound means a compound containing 18 carbon atoms. In $\text{C}_{18:1}$ and $\text{C}_{18:2}$, the number after period two represent the $\text{C}_{18:2}$ number double bonds in the compound. C-3 writing denotes carbon atom number 3 in a chemical structure.
- g. Some abbreviations that can be used for sugar names are Glc:glucose; GlcNAc: *N*-acetylglucosamine; Gal: galactose.
- h. Amino acids are often written with a three-letter abbreviation with an uppercase letter (Table 5.9). This abbreviation is commonly used for amino acid sequences (Phe-Val-Ala-Ala), in species name *tRNA* (*tRNA*^{Ala}, *tRNA*^{Met}), in writing the structure of polypeptides and proteins (Gly-Lys-Ala for the tripeptide glycylisylalanine), and in tables. One-letter symbols for amino acid abbreviations have been used a lot lately.
- i. Amino acid sequence numbers can be written, such as Leu-123 (use capital letters and hyphens to note). Superscript numbers in Gly⁵⁶Tyr⁴⁴ state the percentage and the amount must be 100.
- j. For enzyme names, the enzyme nomenclature (EC) is used, then the spelling is adjusted into Bahasa Indonesia. The ADP abbreviation can be written, but “coenzyme A” is written completely before the “CoA” abbreviation is used. If the EC number is used, write EC 1.14.13.1, not E.C. 1.14.13.1 or EC1.14.13.1. Well-known name proteinases, such as chymotrypsin, thrombin, and subtilin, can be used.

Table 5.9 Common amino acid abbreviations

English	Bahasa Indonesia	Abbreviation	
		3 letters	1 letter
Alanine	Alanina	Ala	A
Arginine	Arginina	Arg	R
Asparagine	Asparagina	Asn	N
Aspartic acid	Asam aspartat	Asp	D
Cysteine	Sisteina	Cys	C
Glutamic acid	Asam glutamat	Glu	E
Glutamine	Glutamina	Gln	Q
Glycine	Glisina	Gly	G
Histidine	Histidina	His	H
Isoleucine	Isoleusina	Ile	I
Leucine	Leusina	Leu	L
Lysine	Lisina	Lys	K
Methionine	Metionina	Met	M
Phenylalanine	Fenilalanina	Phe	F
Proline	Prolina	Pro	P
Serine	Serina	Ser	S
Threonine	Treonina	Thr	T
Tryptophan	Triptofan	Trp	W
Tyrosine	Tirosina	Tyr	Y
Valine	Valina	Val	V

- k. Nucleic acids such as RNA and DNA consist of the bases adenine (A), cytosine (C), guanine (G), thymine (T), and uracil (U), along with sugar and phosphate groups. One-letter abbreviation letters for bases can be introduced or written out in full. The following forms are acceptable, such as 57% G+C content, AT-rich part, base sequence T-G-T-T-A-A-C or TTGTTAAC; codon AGC, 5'-AAAA-3'.
- l. Poli- or oligo- written as chemical name prefix or simple terms, like oligosaccharides, polyethylene glycol, and polyfunctional. If the chemical name starts structural element that is not a number, prefixes poly- and oligo- need to be Hyphenated, for example poly-L-lysine, poly-O-acetyl-L-tyrosine.
- m. If the prefixes poly- and oligo- are followed by abbreviation, a complicated chemical name, or chemical names that are preceded by numbers, the names are written in brackets or square brackets. The name in brackets (or square brackets) is the monomer name of the polymer or oligomer, for example poly(Ala) or (Ala) chloro_n and poli[2-1,3-butadiene].
- n. The writing of the reagent name should refer to The Merck Index or Indonesian Pharmacopoeia. Trade names with or without the manufacturer's name can be written in brackets after the generic name is written first in the abstract and text, for example gentamicin (Bristagen, Bristol Laboratories). After that, a generic name is used, not a trade name.

- o. The configuration or rotation name that precedes the compound name is written with a hyphen. The symbols are *d*, *l*, and *dl* or (+), (−), and (±) (optical rotation direction without regard to configuration); *d*, *l* and *dl* (configuration in carbohydrates and amino acids; lowercase letters are used); and *R* and *S* (absolute configuration). Writing example is as follows: d-6-hydroxytryptophan, (+)-6-hydroxytryptophan, dl-alanine.
- p. Italic letters are used for symbols of elements that serve as an indication of the location of bonds in chemical names, for example O-methyltyrosine and S-benzil-N-phthaloylcysteine. Other prefixes that need to be written in italics are *cis*-, *E*-, *m*-, *meso*-, *meta*-, *n*-, *o*-, *ortho*-, *para*-, *sec*-, *tert*-, *threo*-, and *Z*-. Please note that the following prefixes are not italicized, for example mesoinocyt, paramorphine, allocholesterol, orthophosphate, or transactivation.

VI ILLUSTRATION

Illustration is a presentation of information in the form of tables, graphics, flow charts, charts, photos, maps, and figures. With illustration, information can be presented more effectively to explain the relationship between variables and the use of sentences that are too long can be avoided so that readers can understand the writing more easily. The principle that must be remembered in making illustration is that the illustration must be attractive and by itself can explain the information to be conveyed. Illustration in the form of tables or figures is not needed if the data can be described in one sentence. For example: plant height which was originally 10.2 cm in the first week becomes 13.7 cm in the second week and 15.1 cm in the third week.

In scientific writing, all illustrations in the form of tables are declared as tables, while illustrations in the form of graphics, flow diagrams, photos, and figures are expressed as figures. Carefully reproduce illustration from copyrighted reference literature. Permission needs to be requested from the publisher concerned.

6.1 Tables

Illustration in the form of a table is usually used when the observed variables are quite large and may not have the same units. Tables can be used to display a wide variety of information: (1) data with an emphasis on conveying precise numerical values, (2) large numbers of numerical values in condensed form, (3) summary information in the form of text, and (4) information that is too complex to be explained easily or briefly in text or shown with figures.

The data in the table is arranged logically so that the information conveyed can be understood quickly and precisely. Unlike figures which generally only consist of two axes, x and y, tables can contain more variables. The table can be converted to a graphics format by converting the units of the variables to become the same units.

Tables should be viewed as a means to build arguments and should convey a clear message. Therefore, the data that will be presented in the table is only the important ones and can strengthen and clarify the discussion in the text. Tables that are too complex or contain too much data should be avoided. Therefore, the table must be divided into several simpler tables. Other data can be included in the appendices.

Table consists of five bodies, namely the number and title of the table, the title of the first column (the leftmost column), the column title, the information area, and the table footnote. There are only three important dividing lines, the direction is horizontal, and the rest of the auxiliary lines must be made as necessary. Vertical guide lines are not displayed (see the following example of table format).

can be sequential from introduction chapter to results chapter without chapter number, for example Table 1, Table 2, and so on, (b) table numbering preceded by a chapter number, for example Table 1.1, Table 1.2, Table 2.1, Table 2.2, and so on (published article pattern).

- (3) table title is typed in the middle of the table field; if the table title consists of more than one row, the first letter of the second row is placed in a straight line with the first letter of the first row of the table title.
 - (4) Only the first letter of the table title needs to be capitalized, except for certain names or terms which must start with a capital letter.
 - (5) table title (a) is a phrase (not a sentence) of a brief statement about the table, (b) provides brief information that can be understood by the readers without having to read the body of the article, (c) states key information only, and (d) is a stand-alone phrase so that the table can be understood without having to read the text.
 - (6) table title does not end with a period sign, unless there is a sentence that provides additional information.
 - (7) The terms used in the table title must be the same as those used in the paper.
 - (8) If an abbreviation is used in the table title, the abbreviation must be explained in the table footnote.
- b) Column title
- (1) Column title describes the information item/entry in the column table.
 - (2) The first column title is typed left-justified, while other column titles can be placed in the middle of the column width, left-aligned, or right-aligned.
 - (3) Only the first letter of the column titles needs to be written in capital letters, except for certain terms which must start with a capital letter.
 - (4) Column titles must be written clearly, only symbols should be avoided (example, "Total examples" is not written "n" or "Total test animals" is not written "N").
 - (5) Abbreviation and symbols that are only used in the table must be explained in the footnote.
 - (6) Between the column title and column subtitle and the row title and row subtitle are spaced 2 pt.
 - (7) Between the first row title or information area with the table line above it and between the last sub row title or last information area and the table base line are spaced 3 pt.
- c) Information area
- (1) The information area contains information that will be presented by the author, which can be in the form of numbers, text, or symbols. The information presented must be clearly reflected in the table title.
 - (2) Each column of information area must be aligned with its respective column title, left-aligned, centered, or right-aligned.
 - (3) Numbers that are summed should be presented in columns not in rows.

- (4) Text information items: (a) if the information items in the table are text, short words must be used. Items of information are written like a sentence (only the first letter is capitalized); (b) information items consisting of several lines must be typed left aligned and positioned one space apart; (c) between rows in a table containing only text are spaced.
- d) Footnotes
- (1) Footnotes are used to add information that cannot be displayed directly in the table and is not contained in the paper. Footnotes and descriptions in the table can be in the form of (a) an explanation of the abbreviation used in the table, (b) information about the limitations that exist in the data, (c) a statement of statistical comparison results, and information about the results of other people's research.
 - (2) To show a footnote, superscript is used. Footnote number is placed in the table section that requires additional information. Footnote number can be placed on the table title, column title, row title, or on certain data in the information area.
 - (3) Order of determining footnote numbers (in alphabetical order):
 - a) Table title—footnote applies to all data in the table.
 - b) Column title—starting from the first column row to the right, the second column row to the right, and so on.
 - (4) Footnotes are arranged in alphabetical order below the baseline of the table. If there is more than 1 footnote, the next footnote continues after the previous footnote, no need to start on a new line.
 - (5) If the data reference source in the table needs to be written, the reference source line is written before others' footnotes.

^aSource: Poerwanto *et al.* (2009).

^aSource: Recalculated from Table 2 in Poerwanto *et al.* (2009).
 - (6) If the data in different rows come from different reference sources, the reference sources can be written in a separate column (rightmost column).
 - (7) Footnotes are typed in Times New Roman 10 pt or Arial 9 pt (or equivalent). Between the first line of the footnote and the bottom line of the table is spaced 3 pt.
- e) Placement of table in text
- (1) Table is displayed in the text near where the table is referred to for the first time.
 - (2) Table is placed in the center (relative to the left and right margins of the page) in the available space, usually placed at the top or bottom of the page so that it does not cut text on the same page.
 - (3) The distance from the last line of text to the table title below it or from the last line of the footnote to the first line of text below it is 2 spaces.
 - (4) Table that is too wide must be typed across the paper (landscape) and the page containing the table is arranged with the table title placed on the side of the paper to be bound.

6.1.2 Table Examples

In creating a table, write clear units of the displayed data. The way to write units in a table consists of several forms depending on the number of variables and how to place them in the table (Table 6.1, 6.2, 6.3, and 6.5). In addition, the creation of a dividing line between data, both by row and column is made as necessary depending on the number of variables and data to be displayed. Making a dividing line between columns and rows of data is needed when the data displayed is quite large and the font size used is small (Table 6.4, 6.5, and 6.6). The data displayed must be easily understood so that the readers will not find it difficult to read the data.

Table 6.1 Exports of Indonesian men's apparel for 2013-2019

Year	Export Volume (Ton)	Growth rate (%)	Export value (US\$ Thousand)	Growth rate (%)
2013	115	3,10	5,69	-
2014	106	3,09	5,43	2,41
2015	100	2,47	4,80	-3,20
2016	93	2,46	4,25	-38,13
2017	88	2,12	4,03	48,60

Source: processed from Trade Map 2019

Table 6.2 Effect of *Bradyrhizobium japonicum* inoculation on soybean seeds

Treatment	Number of pods	Number of seeds	Weight of 100 seeds	Nitrogen content of seeds
Control (-N)	22,4 ^d	43,6 ^c	8,9 ^c	6,704 ^b
Control (+N)	26,8 ^c	50,4 ^c	10,1 ^b	6,882 ^{ab}
BJ 11 (19)	35,4 ^a	70,6 ^a	13,5 ^a	7,132 ^a
BJ 11 (5)	31,8 ^b	63,0 ^{ab}	13,3 ^a	7,104 ^a
BJ 11 (wild type)	30,2 ^{bc}	59,0 ^b	12,9 ^a	7,164 ^a

Numbers in the same column followed by the same letter mean that the DMRT test results are not significantly different

($\alpha = 0,01$). Data is the mean value of $n = 5$.

Modified from Situmorang *et al.* (2011) *Hayati J Biosci.* 16(4):157-167

Table 6.3 Average working time per day in biogas user households in Areng Hamlet, Cibodas Village in 2019 ($n = 40$)

Activity	Male (%)	Female (%)
Reproductive activity		
Low (< 2 hours)	100,0	0,0
Medium (2–6 hours)	0,0	22,5
High (> 6 hours)	0,0	77,5
Productive activity		
Low (< 5 hours)	7,5	60,0
Medium (5–10 hours)	2,5	20,0
High (> 10 hours)	90,0	20,0
Social activity		
Low (< 5 hours)	100,0	0,0
Medium (5–6 hours)	0,0	0,0
High (> 6 hours)	0,0	100,0

Modified from Razak (2019)

Table 6.4 The content of sugar and acid titrated in bananas on the administration of polyamine and CaCl

Treatment	Sugar content (%) on the th day-				Titrated acid (mg g ⁻¹) on the th day-			
	0	3	6	9	0	3	6	9
Kontrol	0,41	0,44	0,70	1,00	1,90	2,00	2,20	2,30
Putrescine	0,39	0,39	0,60	0,93	1,90	1,90	2,00	2,40
Spermidine	0,34	0,40	0,69	0,80	2,10	2,00	2,30	2,30
Spermine	0,36	0,47	0,58	0,69	1,50	2,00	2,30	2,40
CaCl ₂	0,45	0,53	0,84	1,47	1,70	2,20	2,40	3,10

Table 6.5 Physical and chemical characteristics of gold mine waste media from industrial mining and illegal mining in Cikotok, Bogor and Pongkor, Banten

Component	Industrial mining*			Illegal mining**		
	Cikotok 2006	Pongkor 2004	Pongkor 2006	Cikotok 2004	Pongkor 2004	Pongkor 2006
Texture (%)						
Sand	220,000	640,000	670,000	70,000	400,000	450,000
Silt	570,000	170,000	260,000	820,000	500,000	400,000
Clay	210,000	190,000	70,000	110,000	100,000	150,000
pH						
H ₂ O	80,000	79,000	83,000	75,000	79,000	79,000
KCl	74,000	78,000	82,000	73,000	78,000	75,000
Organic material (%)						
C	0,2900	0,3500	0,2200	0,4700	0,5100	0,2500
N	0,0300	0,0600	0,0200	0,0400	0,0800	0,0200
C/N	100,000	60,000	110,000	120,000	60,000	130,000
P ₂ O ₅ (ppm)	430,000	100,000	300,000	1,250,000	170,000	80,000
K ₂ O (ppm)	na	463,000	530,000	na	1,245,000	1,390,000
Ca (cmol(+)/kg)	na	na	245,900	na	na	98,500
Mg (cmol(+)/kg)	na	na	0,6300	na	na	0,7400
K (cmol(+)/kg)	na	na	0,1000	na	na	0,2600
Na (cmol(+)/kg)	na	na	0,3000	na	na	0,2600
KTK (cmol(+)/kg)	na	na	23,600	na	na	51,800
KB ⁺ (%)	na	na	>100,0000	na	na	>100,0000
Al ³⁺ (cmol(+)/kg)	na	na	0,0000	na	na	0,0000
H ⁺ (cmol(+)/kg)	na	na	0,0000	na	na	0,0000
Fe (ppm)	na	16 854,0000	14 353,0000	na	43 035,0000	30 207,0000
Zn (ppm)	200,000	6,560,000	1,690,000	360,000	1 612,0000	2,250,000
Pb (ppm)	630,000	1,280,000	6,680,000	1,640,000	2,010,000	300,000
Cd (ppm)	0,6000	26,200	28,200	17,000	30,900	0,0600
CN (mg/kg)	0,4300	0,1550	0,2800- 0,7700	0,1200	0,0220	0,0400
Hg (mg/kg)	16,900	0,2930	0,0005	294,500	2,393,800	61,5400- 5981400

na: data not available

*PT Aneka Tambang (Antam), ** Small-scale community illegal mining.

Modified from Hidayati *et al.* (2009) *Hayati J Biosci.* 16(3):88–94.

Table 6.6 Comparison of red guava leaf weight in the experiment

Treatment	Leaf weight at the beginning of experiment (g/plant)		Leaf weight at the end of experiment (g/plant)	
	Wet	Dry	Wet	Dry
Growth Phase				
Vegetative	200,19 ^b	93,89 ^b	193,09	99,82
Generative	343,31 ^a	157,92 ^a	206,94	115,45
Leaf pruning				
0%	277,96	135,90	150,38 ^{ab}	78,50 ^{ab}
25%	179,60	83,36	301,31 ^a	156,94 ^a
50%	297,45	131,61	273,31 ^a	135,45 ^{ab}
100%	332,00	152,74	75,06 ^b	59,65 ^b
Interaction	-	-	75,06 ^b	59,65 ^b

Number followed by different letters in the same column means significantly different results of the 1% DMRT test, with the transformation $(x + 1.5)^{1/2}$.

Modified from Aziz and Ghilamahdi (2011) *Hayati J Biosci.* 18(2):97–02.

Table 6.7 Control of inhabited islands in Kepulauan Seribu

No.	Island name	Urban village	Area (ha)	Control
1	Pulau Payung	Pulau Tidung	20,86	DKI Provincial
2	Pulau Tidung		50,13	DKI Provincial
3	Pulau Lancang	Pulau pari	15,13	DKI Provincial
4	Pulau Pari		41,32	PT BPA
5	Pulau Untung Jawa	Pulau Untung Jawa	40,10	DKI Provincial
6	Pulau Panggang	Pulau Panggang	9,00	DKI Provincial
7	Pulau Pramuka		16,00	DKI Provincial
8	Pulau Kelapa	Pulau Kelapa	13,09	No data
9	Pulau Kelapa Dua		1,90	No data
10	Pulau Harapan	Pulau Harapan	6,70	DKI Provincial
11	Pulau Sebira		8,82	DKI Provincial

Modified from Detailed Spatial Planning and Zoning Regulations for Kepulauan Seribu Administration District (Perda DKI No. 1 of 2014)

6.2 Figures

Selection of research result data presentation in the form of figures can be in the form of graphics, flowcharts, maps, or photos. Figures in scientific works need to be considered by taking into account their relevance to the research topic being carried out. Information that has been presented in the form of a table should not be repeated with a figure-shaped presentation. Illustrations in the form of figures are better used than tables when the relationship between variables is important to convey. Illustrations in the form of figures can make it easier for readers to understand concepts that are difficult to explain with a series of words. Abbreviation, symbols, shading patterns, and line patterns on all figures throughout the body of writing must obey the principles. For example, if the empty circle and square symbols are used to denote treatment and control respectively, those symbols should continue to be used in the next figure.

Presentation of data in the form of a good figure must meet the characteristics of being economical, clear, and intact, without forgetting the attractiveness of the figure displayed. Frugality can be achieved by making figures that require minimum ink and are space efficient. The clarity of a figure must be able to assist the readers in determining the object or data that becomes the subject of discussion. The set of labels and descriptions on a figure must be proportional, so as not to obscure the meaning of the object or data. In addition, a figure should also not lead to erroneous interpretations and have an attractive appearance.

Each figure must be equipped with a title that is placed under the figure in a position in the center of the figure plane. The title begins with a capital letter and does not need to end with a period sign unless there is additional information regarding the data presented (see Figures 6.1, 6.10, and 6.11). Several things that must be considered in making a figure title are (a) the title is a phrase (not a sentence) that stands alone and briefly describes the figure, (b) provides brief information that is easily understood by the readers without having to read the body of the text, and (c) states important information.

Figure titles should not simply repeat the labels of the ordinate and abscissa axes. Figure titles do not need to start with a phrase that describes the type of figure, such as “Graphics ...” or “Maps ...” and is accompanied by units or descriptions required by the figure. Figure numbers do not end with a period and are followed by two taps before the first letter of the corresponding figure title. If the title is more than one line, the second line starts just below the first letter of the figure title.

6.2.1 Graphics

Graphics that are often used in scientific writing are line graphics, bar graphics, pie charts, and polygon diagrams. Some general provisions in making graphics are as follows.

- a) Both line graphics and bar graphics do not need to be equipped with a right border and an upper border. Horizontal and vertical lines needed are only the x-axis and y-axis. Graphics like this are said to have an open shape.
- b) The x and y axes are appropriately named and provided with the relevant units. Use a combination of upper and lower case letters for the names and labels of the x and y axes. The axis names and labels must be large enough to remain easy to read after the minification process.
- c) The scale on the x and y axes is adjusted to the range of x and y values being mapped so the period and data lines occupy most of the graphics area.
- d) The scale on the x and y axes is indicated by markers that point outside the axis so that no markers overlap with the data symbols located near the axes.
- e) Marks on the x and y axes are labeled accordingly. If the labels appear too congested, the marker can be distinguished as a labeled major tick and a minor tick located between the two major ticks (*e.g.* the y-axis markers in Figures 6.1 to 6.4).
- f) In two-variable graphics, gridlines do not need to be displayed in the graphics area.

- g) If the line graphics have two categories of data, different symbols are used to denote the different data categories while the line types do not need to be distinguished. Use dark symbols (● ■ ▲ ◆) and/or empty symbols (○ □ △ ◇) not x, +, or * signs. Data symbols do not need to be included in the List of Figures. If possible, put curve labels directly on the figure area, not in a separate legend.
- h) If a data symbol can be typed with the software used, a description of the data symbol can be included in the title figure. If not, the data symbol description can be listed in the graphics area as a legend, such as the block pattern description in Figure 6.4. The legend can be displayed using graphics software.
- i) The fonts used in figure captions, such as axis and legend names and labels, are matched to the text font. The font size is adjusted in proportion to the size of the figure and the size of the letters used in the text.
- j) When two or more graphics of the same type are displayed as one figure with one graphic above the other graphic:
 - (1) the x-axis scale on the graphics is made the same length.
 - (2) the height of the y-axis is shown in proportion to the range of the data values.
 - (3) The x-axis name and label are only displayed on the bottom graphics.
 - (4) In all graphics, the same data symbol is used to represent the same variable and the legend is only displayed once.
 - (5) The font used on all graphics must be the same.
 - (6) space between two adjacent graphics is minimized.
- k) When more than one graphic is placed next to each other, the name and axis labels are displayed only on the y-axis of the leftmost graphic.
- l) For bar graphics, use gradient shading or symbols to represent the variation of the variable from the largest to the smallest. Avoid subtle shading because it is not obvious when photocopied.
- m) In bar graphics or histograms, use a white bar pattern or shading instead of black bar, to save ink.
- n) Where possible, indicate measures of data variability, such as standard deviation and standard error. The measure of variance is simply indicated by a line on one side of the mean, usually on the upper side (Figure 6.4).

6.2.1.1 Line graphics

Line graphics can have two or three variables. Two-variable graphics are figures used to show the relationship between two continuous variables over a certain range of values. The dependent variable is placed on the y-axis and the independent variable on the x-axis, with the dependent variable changing according to the change in the independent variable. The relationship between the two variables can be shown by scattering the data alone or by a line connecting the data periods or a scattering of data with an estimator line for the mathematical relationship between the two variables. The range of values on the axis is usually wider than the range of mapped values, so all data items are in the figure area. If the range covered is too wide and impractical to show the full range, use the discontinuous axis (—//—) which represents not the entire range of values depicted. Numbers used to mark axes should be simple and should be at equal intervals. Write a good axis label for example “Distance (km)”, not just “km” or “Kilometers”.

Three-variable graphics are three-dimensional, with two independent variables each on the x-axis and y-axis at the bottom of the three-dimensional graphics and the dependent variable on the z-axis or an imaginary third dimension in the form of perspective. Advances in computer technology made it possible to create three-variable graphics easily. Two types of three-variable graphics that are often used are perspective graphics and contour maps. Perspective graphics are used to show the shape of a surface relative to three different axes, whereas contour maps can produce three-dimensional shapes on a flat surface.

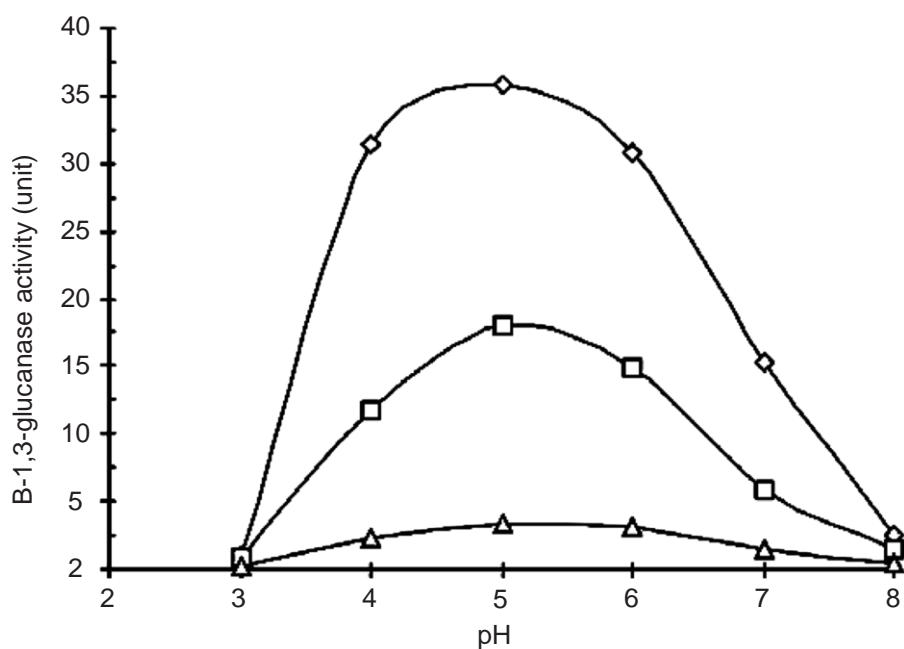


Figure 6.1 Effect of pH on the activity of β -1,3-glucanase. The activity of -1,3 glucanase was measured at various pHs under standard enzyme assay conditions. (\diamond) -1,3-glucanase I, (\square) -1,3-glucanase II, (Δ) -1,3-glucanase-III (modified from Budiarti *et al.* (2009) *Hayati J Biosci.* 16(3):115–119)

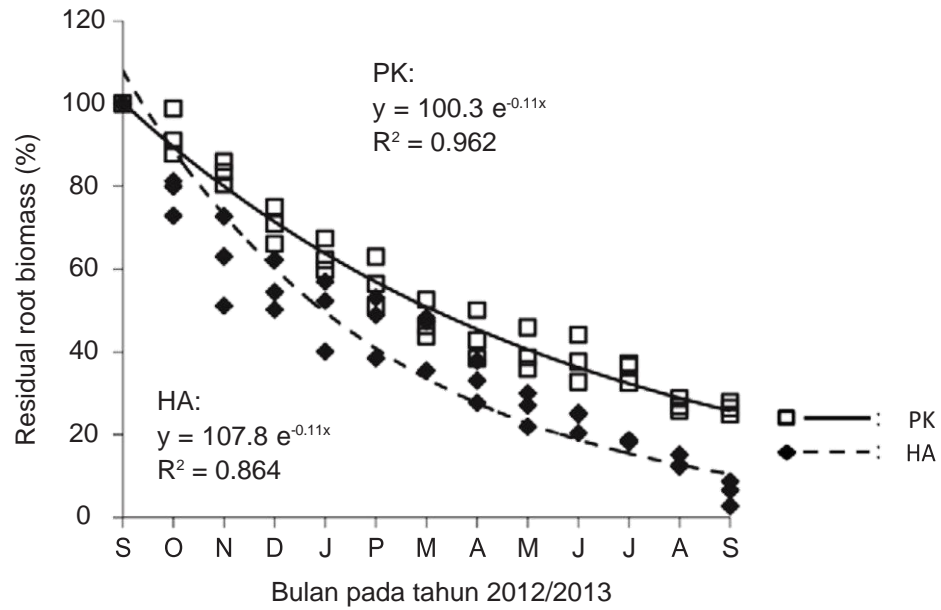


Figure 6.2 Exponential curve of the remaining root biomass in the decomposition process for 12 months of incubation from September 2012 to September 2013 in natural forest (HA) and oil palm plantations (PK) (modified from Violita *et al.* (2016) *Hayati J Biosci.* 23(1):7–12)

In this figure, in addition to the linear regression line, the distribution of the observational data, the linear regression equation, and the coefficient of determination R^2 are also displayed. The figure title does not end with a period sign because after the figure title there is no additional information.

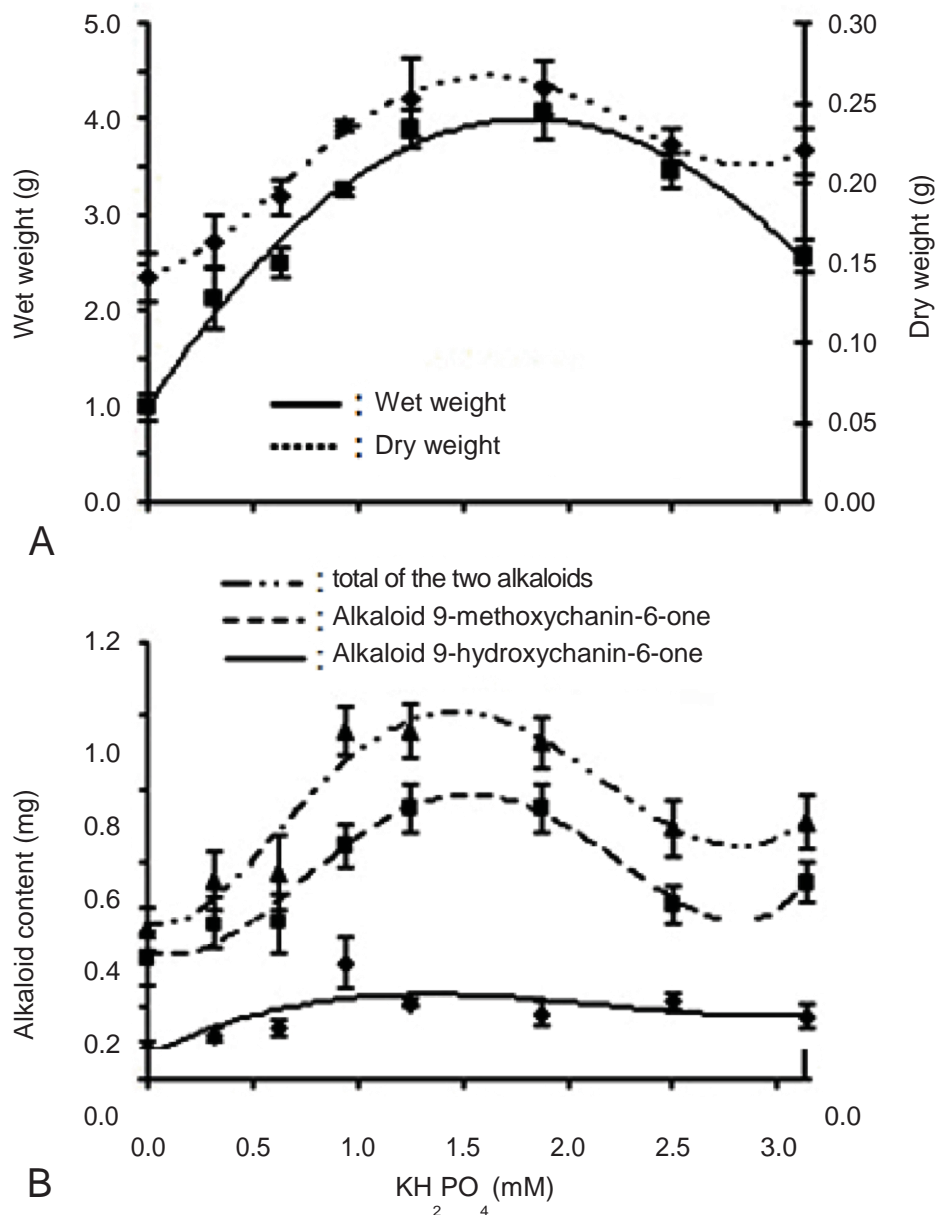


Figure 6.3 Effect of KH₂PO₄ concentration on cell biomass (A) and alkaloid content (B) of *Eurycoma longifolia* cell suspension culture in 20 ml liquid MS medium with 2.69 μ M NAA + 1.13 μ M 2,4-D after 14 days of culture (modified from Siregar *et al.* (2009) *Hayati J Biosci.* 16(2):69–77)

6.2.1.2 Bar charts

Bar charts are graphics with one axis showing the data variables and the other axis showing the categories. Bar charts can be used to (a) show rankings among variables, (b) reveal groupings among variables, (c) compare ranges of data within a given variable. Values on the data variable axis are continuous values, while the axis indicating categories does not represent continuous values.

Bar charts should be used when absolutely necessary to facilitate data interpretation. In many cases, especially if there are no significant differences in values between variables, presenting data in tabular form is more economical than bar charts.

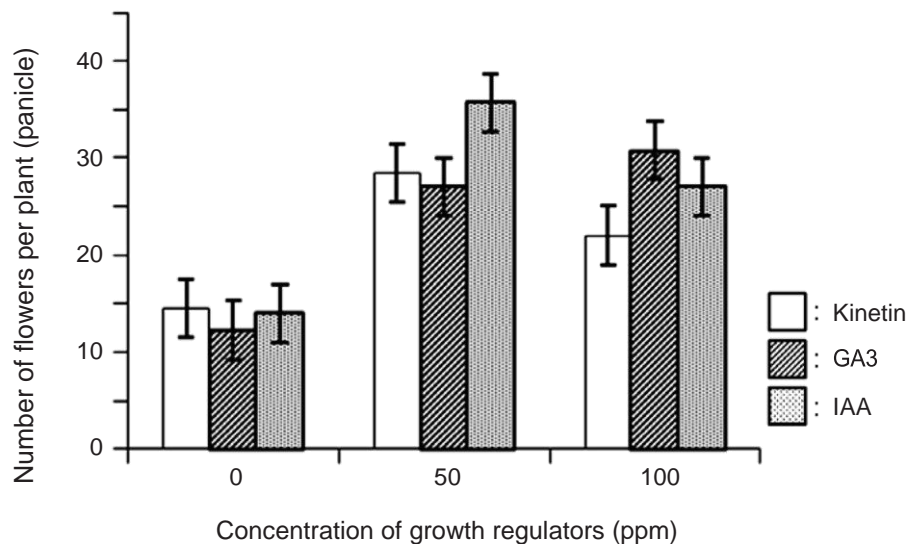


Figure 6.4 Effect of growth regulator treatment Kinetin, GA3, or IAA on andromonoecious *Jatropha* on increasing the number of flowers per plant for 10 weeks of observation. The vertical line (bar) is the standard error (modified from Dasumiati *et al.* (2014) *Hayati J Biosci.* 21(3):111–120).

The data bars in Figure 6.4 are distinguished by the solid line shading pattern and the empty bars so that when the figures are photocopied, the shading patterns can still be clearly distinguished. Black blocks are not recommended as they waste ink. Blocks with smooth gradient shading should also be avoided because if the figure is photocopied the difference in the shading pattern may not be obvious. The inclusion of information on the data blocks in the figure area will be more practical and make it easier for readers to understand the contents of the figure than it is listed on the title figure.

Histograms are a special form of bar charts with two variables, one of which is an interval. Basically, the x-axis and y-axis values in the histogram are continuous values, but the x-axis values are grouped in certain intervals. The interval is indicated by adding a mark on the x-axis at the interval boundaries. A commonly used histogram example is the population pyramid graphic (see Figure 6.5).

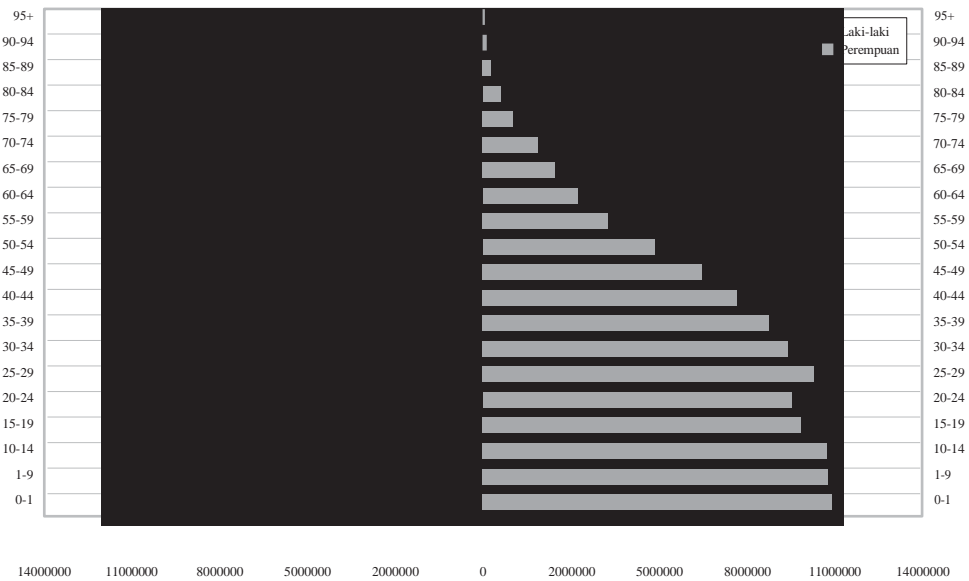


Figure 6.5 Example of a histogram of Indonesian population composition

6.2.1.3 Pie charts

A pie chart is used when the author is not too concerned with precise component quantities, but is more concerned with the relationship between the various components and their composition. This type of chart can be used to compare data from various categories by converting the data quantities into equivalent angles in a circle. A solid shading pattern should also be used to indicate the different components of a pie chart if the chart is to be printed in black ink (see Figure 6.6). If the presentation in the form of figures is not really needed, data in this form can be easily converted to a simple two-column table that is more economical and can display data better.

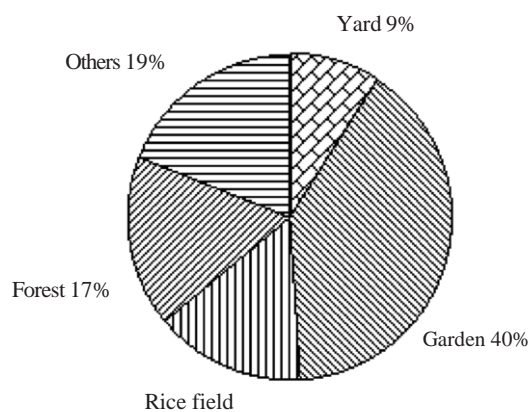


Figure 6.6 Pie chart example of percentage of land use in Bundokan District in 1992

6.2.1.4 Spider charts

A spider chart is a graphic and/or plot consisting of radii describing the value of one variable. The lengths of the radii are equal to the magnitudes of the variable values. Then lines are drawn connecting the data values. This forms a radar- or star-shaped plot (see Figure 6.7). This chart is used to display multivariate data in the form of two-dimensional graphics of three or more quantitative variables represented by axes starting from the same period.

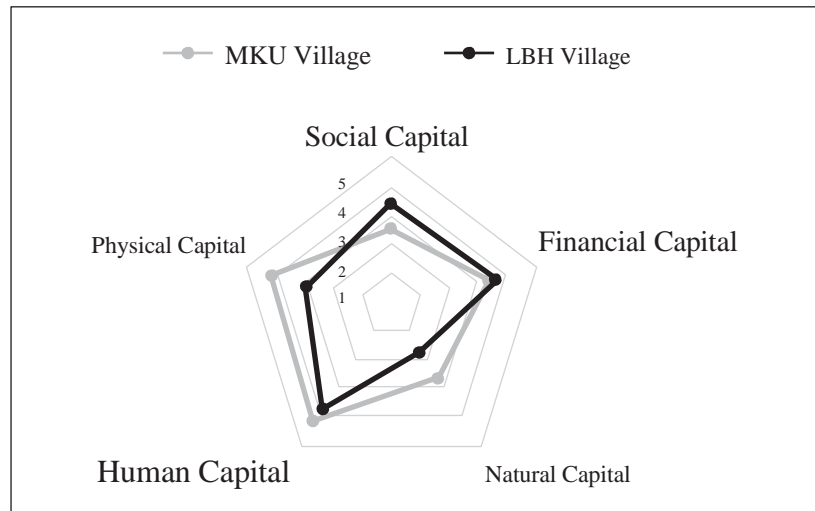


Figure 6.7 Household assets in Muara Kaman Ulu Village (MKU) in Muara Kaman Sub-district and Long Beleh Haloq Village (LBH) in Kembang Janggut Subdistrict Kutai Kartanegara District, East Kalimantan. (Modified from Yulian *et al.* (2017) *Sodality: Jurnal Sosiologi Pedesaan*, 5(3):242–249).

6.2.2 Flowcharts

Illustrations in the form of flowcharts are used to show the stage of activities or cause-and-effect relationships of an activity (framework) or the relationship between one activity or process and other processes (system analysis). Flowchart example is shown in Figure 6.8.

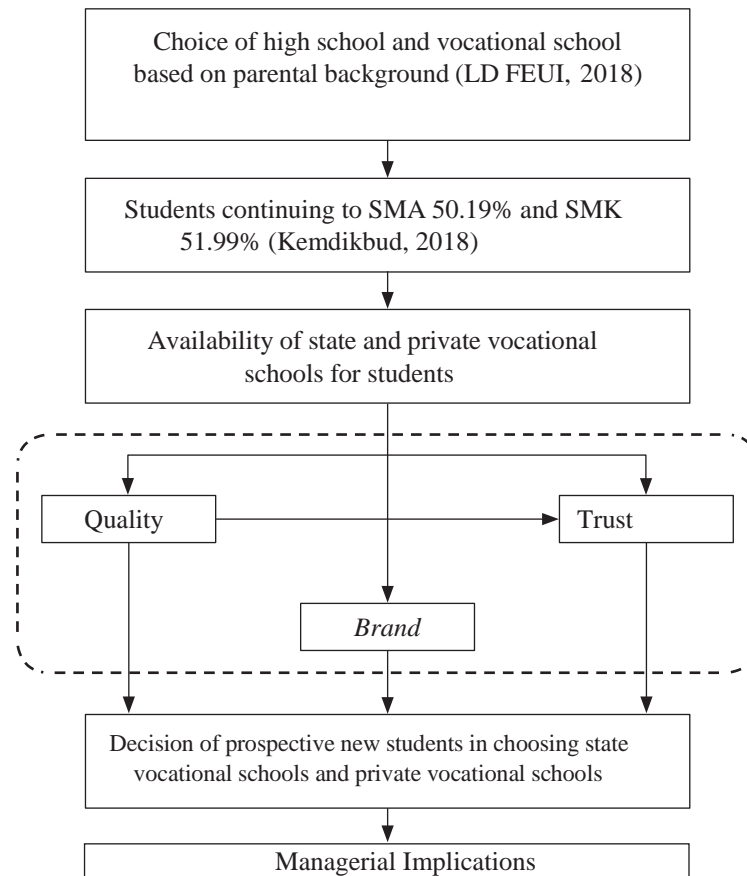


Figure 6.8 Framework Diagram (Setyaningsih 2019)

6.2.3 Maps

Illustration in the form of maps can be used to describe the research location. If maps are used, it is necessary to pay attention to the completeness of a map which includes title maps, geographical coordinates, legend, scale, cardinal directions, map source or maker, and year of manufacture. The map scale used is a line scale because the map may have been enlarged or reduced several times. It is necessary to pay attention to the size of the maps used so that the labels on the maps can be read (see Figure 6.9).

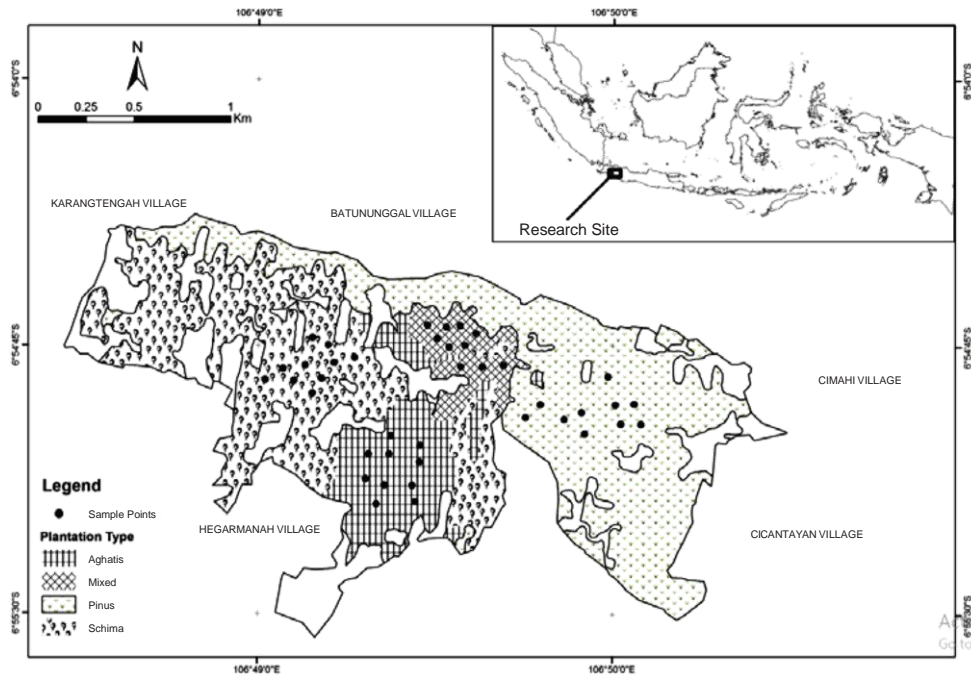


Figure 6.9 Maps of research locations and research sample points in Gunung Walat Forest as an IPB educational forest located in Sukabumi District of West Java, Indonesia (modified from Kaban *et al.* (2017) *Hayati J Biosci.* 24(2):72–78)

6.2.4 Photos

A photo or figure sketch is used to provide a concrete picture to the readers about the object of observation, the ongoing process, or the situation in the field. The illustration displayed must be related and can clarify the description that you want to highlight.

The technical qualities of photography, such as clarity, resolution, focus, contrast, are important things to fulfill in presenting photos. Other important information that is also needed to give clarity to photos is notation and scale. Notation in figures or photos uses Arial font with a minimum size of 8. Scale needs to be displayed because photos generally do not have the same size as the original object. It is therefore not permissible to use magnification statements such as 500×, 5000×, or 10,000×. The way to show the scale is by placing a ruler or other pointer whose size is known near the example or photo object. Photos taken with the help of a microscope need to be equipped with a scale line (–) that indicates a certain size. The scale size can be placed above the scale line, in the figure area, or in the figure description.

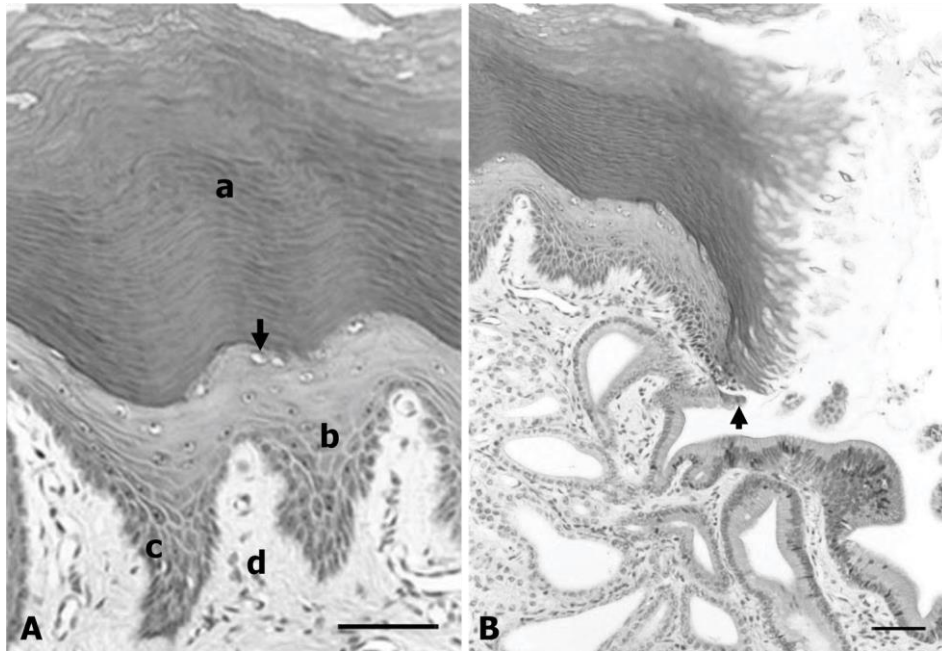


Figure 6.10 Micrograph of the gastric mucosa of the pangolin (*Manis javanica*). (A) The entire surface of the gastric mucosa of the pangolin is lined by keratinized, multi-layered squamous epithelium. (B) At the gland orifice, the epithelium changes to cylindrical epithelium (arrow). The mucosal epithelial layer consists of: korneum (a), granulosum (arrow), spinosum (b), and germinativum (c). Lapis submucosa (d) is located in the germinativum layer profundal. HE coloring, scale = 50 μm . (modified from Nisa' *et al.* (2010), *Anatomia Histologia Embryologia* 39:432–439).

Illustrations in a final scientific paper should be one's own work, not copied in their entirety from other publications. The use of photos or sketch figures from other publications must be authorized by the publisher of the relevant scientific work. When using photos or figures from other publications, after the figure title is written:

“Figure reproduced from XXX (year) with the permission of the publisher YYY.” (full reproduction).

“Redrawn from XXX (year) with permission from publisher YYY.”
(redrawing).

“Modified/adapted from XXX (year) with the permission of the publisher YYY.” (with modification).

6.2.5 Instrument Output

Figures can also be prints produced from laboratory equipment, such as chromatograms, spectra, electrocardiograms, and seismograms. Example output of the Fourier transform infrared (FTIR) tool is shown in Figure 6.11.

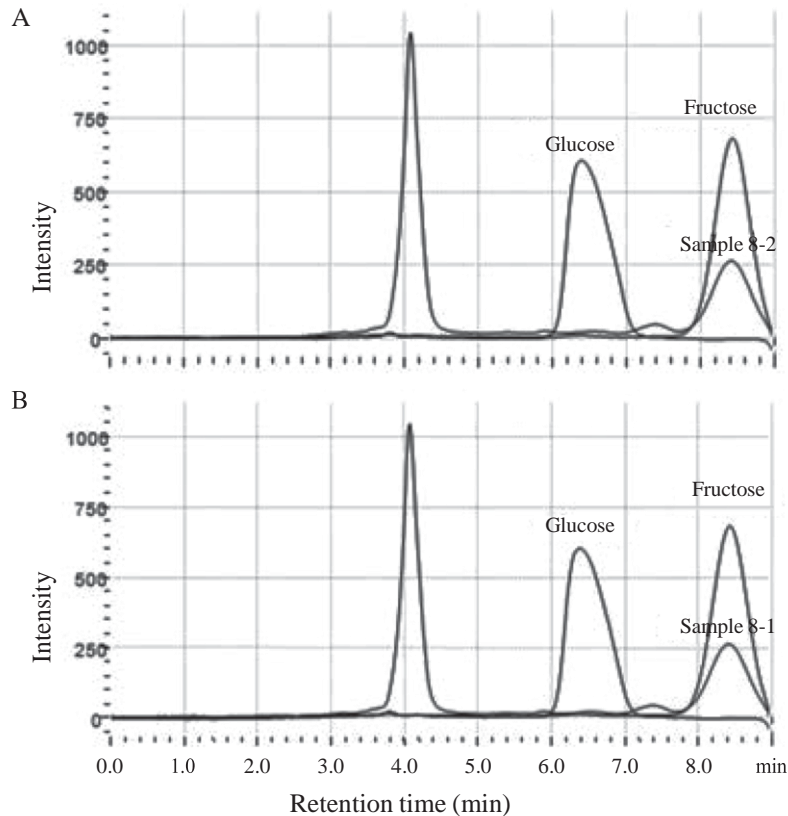


Figure 6.11 HPLC chromatogram of exopolysaccharide (EPS) analysis of *Weissella confusa* after hydrolysis with 3% TCA at 100 °C for 1 hour. (A) EPS from *W. confusa* MBF8-1; (B) EPS of *W. confusa* MBF8-2. All EPS examples showed peaks in fructose retention time. Cation exchange column Ca^{2+} was used with water as the liquid phase at a rate of 1 mL/minute. (modified from Malik *et al.* (2015) *Hayati J Biosci.* 22(3):130–135)

6.3 Table and Figure References

An illustration is referenced at least once in the paper. All illustrations must be placed as close as possible to the text that indicates their existence. The reference to an illustration is stated in the paragraph before the table or figure. The words “table” and “figure” begin with a capital letter when followed by a number. The table or figure numbers are in the order in which they appear in the paper. Numbers are intended to facilitate references in the text. Examples are as follows:

- ... as shown in Figure 5.
- ... close to sigmoid shape (Figure 5).
- ... increasing rapidly (Table 3).

Reference to illustrations that are not accompanied by descriptions should be avoided. For example:

“The results can be seen in Table 3” or “The results are presented in Table 3”

A better statement would be

“In Table 3 it is shown that green beans emit more blue spectrum than peanuts”.

VII LITERATURE CITATIONS AND REFERENCE COMPILATION

In writing, the work of a person or group of people is cited because the author wants to strengthen the idea of their writing. The citations in their work show that the author has valued the research results of others to support their activities or develop and improve the results of existing research. Therefore, the citation used must be explained from where it was obtained by writing the name of the author and the year of publication, sometimes for certain fields of science by including the page number where the citation is in the original source. Thus, the author has followed ethics in referring to sources of information and avoided plagiarism (see the explanation in the Ethics chapter in Research and Scientific Writing).

Not all literature sources deserve to be referred to in a scientific paper. Referenced literature sources must be credible (credible sources). A scholarly writer who cites an unreliable source can break the trust of their readers. Reliable library sources include articles in scientific journals, books, monographs, or scientific papers that have been tested by the academic community of the same field of science and published in reputable journals or publishers. Indication of reputable publications, for example, indexed by Sinta, Scopus, or those with a high impact factor. Literary sources must be up-to-date, for example published a maximum of 10 years ago, although sometimes it can take longer related to topics and fields of science.

If you are going to use a source of information from an Internet site, that source should be evaluated more carefully. The site must be trustworthy, for example a site registered as belonging to a government or educational institution, for example a site with a .gov, .edu, or .ac domain. Sources on the site are accompanied by the name of the author whose reputation is clear. Sites with .com, .org, and .net domains are less trustworthy because they can be purchased and used individually. The Wikipedia site is categorized as an untrustworthy site because anyone can edit any page on this site. Relevant literature in the form of undergraduate thesis, master thesis, or dissertation can be cited in limited terms.

An information must be quoted correctly so as not to violate scientific ethics. When citing the work or opinions of others as a statement in their writing, an author is obliged to write down the source of reference. Some reference writing styles include the American Mathematical Society, the American Psychological Association, and the Council of Science (CSE), the Modern Language Association of America, The Chicago Manual of Style, and the Turabian style. Basically, reference sources are written with the same purpose, namely so that readers can easily trace them back.

The two different systems of reference are known as the Harvard (name-year) and Vancouver (number) systems. In the name-year system, the reference sources in the text are stated by the author's name and the year when the information was published, then the complete sources of information are arranged alphabetically in the References. In the number system, the reference sources in the text are stated with sequential numbers following the provisions listed in the order of numbers in the References.

The reference used at IPB uses the Harvard system by following the writing style of the 8th edition of the CSE reference source (2014). CSE (2014) offers a simpler format for reference and references compared to other styles.

The format offered is to reduce typing work, for example using abbreviations without punctuation marks; replace the ampersand sign (&) with 'and'; Use only capital letters at the beginning of the article title. Thus, work is easier and more efficient. The appearance of writing using the CSE style also looks cleaner than other styles. In CSE (2014), references from electronic sources were added. In addition, the system offered is also based on the basic principles following the International Organization for Standardization (ISO).

For ease of reference and compilation of references, online reference management software such as EndNote or Mendeley can be used. The software can be downloaded from the Internet and is easy to use by following the instructions provided in text or video at www.youtube.com.

7.1 Citations

There are two kinds of citations, namely direct and indirect citations. A direct citation is a statement that is written exactly like the original writing from a particular source, it can be a short or long citation. Short citation usually consists of less than four lines, while more than four lines are called long citation. Indirect citation is the author's statement written in their own style about what they read or hear from a particular source without changing the meaning of the information content of that source (Keraf 2001).

7.1.1 Direct Citations

a) Short citations

Short citations in the text are marked with quotation marks, while parts that are not quoted are written with ellipsis punctuation marks (...). Furthermore, the source of the information—the citation—is stated by writing the name of the author, the year, and on what page the citation is referred to. Note that the year, colon, and page number do not include space. Short citations of 2-3 lines can be inserted directly into the text.

Naim (1984:284) states "... migration for Minangkabau people has long been institutionalized and has become part of their social and personal life....".

or

"... migration for Minangkabau people has long been institutionalized and has become a part of their social and personal life ..." (Naim 1984:284).

b) Long citations

Reference sources for long citations are written in the same way as for short citations, but these citations are not included in the paragraph text. Long citations are written separately from the text, so they are written as their own paragraph with a font size smaller than the text font size and indented where it is located in the paragraph. This kind of citation is known as block citation.

... regarding the migration motives of ethnic groups in Indonesia, the author agrees with Naim's opinion (1984:284).

“... The presence of large numbers of Bugis and Banjar people in the coastal areas of the East Coast of Sumatra and in Malaysia seems to be more economically motivated than socially motivated by their respective social system in South Sulawesi and South Kalimantan. Observations made on the migration tradition among them did not succeed in finding a strong link in their social systems. The same is true for the Manado and Ambon people ...”.

Direct citations must be written the same as the original text, but if the author knows there are errors he can point them out by providing a description [sic] and the error is left as is. The author is not responsible for such errors.

“... Likewise with other language data in our paper, we always try to find word forms that contain the most distributed/[sic]central eating [sic] as material from the Swadesh list ...” (Keraf 2001:181).

If the author corrects the errors found and edits them, the corrective notes on the errors are more useful and the corrections are written in place of the word sic. So, the word in square brackets [...] is the author's correction.

“... Likewise with other language data in our paper, we always try to find word forms that contain the most distributed [or] central [meaning] as material from the Swadesh list ...“

7.1.2 Indirect Citations

Writing indirect citations is usually stated by writing only the name and year. If you want to write page numbers, do it like writing on a direct citation reference source. In quoting indirectly, the author arranges the information in paraphrases, so it is not just translating or cutting the original information.

7.1.3 Writing References in Citations

Only the author's surname or last name is written as a reference source in the text and what needs to be observed is that certain nations have their surnames in front, for example Chinese, Hungarian, and Vietnamese (Table 7.1).

If the author only consists of one person - as in the example in the direct citation in the Citation sub-section - for the full names of the authors 'Mochtar Naim' and 'Gorys Keraf', the reference source in the text is only the last names 'Naim' and 'Keraf'. If there are two authors, the surname of both is listed as the reference source 'Naim and Keraf', but if there are more than two authors, only the surname of the first author is written followed by the abbreviation et al., for example 'Naim et al.' Which means Naim and the others. Abbreviation et al. comes from the Latin word et alii. Some Latin words have been absorbed by the English language, especially those used in the scientific field so that in their use they are written as Roman letters.

Table 7.1 Various names of authors from different countries and their writing in the paper

Country name	Author's name ^a
USA, last name is a surname	Constantine J Alexopoulos Meredith Blackwell
Arab and Egypt , last name is a surname in Arab and Egypt, if there is a prefix that precedes it like el, ibn, abdel, abdul, abdoul, abu, abou, about, it is part of the surname and written using hyphen with the surname	Hassan Fahmy Khalil Ali Abdel-Aziz Ali Ibn-Saud
Brazil , the word do is placed as family member element	Virgilio E do Rosario
Asia	
China, there are authors using a western name as their given name followed by a surname	Michael Chang Go Ban Hong
China, first name is a surname and followed by given name	Kwik Kian Gie
India, last name is a surname, if preceded by the word Sen or Das, the word is included as part of the surname	Bimal C Sen Gupta AD Das Gupta
Indonesia, last name is a surname in Indonesia, last name is the husband name in Indonesia,	Andi Hakim Nasoetion Jajah Koswara
Indonesia, name consists of more than one word and not a surname	Ani Mardiastuti
Indonesia, name consists of one word	Siswadi
Japan, last name is a surname	Hiroko Yakamoto
Korea, last name is a surname	Han-Seung Lee
Thailand, last name is a surname	Anake Serimontrikul Morakot Tanticharoen
Vietnam, first name is a surname	Nguyen Van Thuan Ngo Van Hai
Europe , except Hungary, Portuguese, and Spain	
Singular surname, last name is a surname	Rosemary Bird
Compound surname written with a hyphen.	Henriette Carson-Peters
Compound surname containing a prefix. If the country is not known, the prefix is part of the surname: am, de, del, della, delle, des, di, du, l', la, las, les, li, los, ver, vom, zum, zur	Roberto Di Giacomo Aja ver Boven
These prefixes should not be used as part of a surname: den, op de, ten, ter, van, van den, van der, von, von der	Leo op de Beek Ludwig van Beethoven
Austria, prefix is a part of surname	
The Netherlands, prefix is a part of surname	Bertha von Suttner Mozart
Hungary, name always started with a surname followed by given name	Kees de Vries Farkas Karoly
Britain, with compound surname	Bartok Bela
Britain, with family rank	H. Vanden-Brink John Doc Sr

Table 7.1 Various names of authors from different countries and their writing in the paper (*continuation*)

Country name	Author's name ^a
French, prefix is part of surname, except the prefix de	Marie La Salle Antonie de Bary
Portuguese, prefix not part of surname	Maria Anna da Fonseca
Spanish, prefix is part of surname and written in capital letters, but the prefix and preposition are not used as part of a surname	Manuel Las Heras Jose de la Vega

^a The names in bold are the names written in the paper as a reference source in the name-year system.

Author can also be an institution and the name for the reference source is written with an abbreviation or acronym from the institution, for example FMIPA IPB for the Faculty of Mathematics and Natural Sciences, IPB University or Faperta IPB for the Faculty of Agriculture, IPB University.

Citations can be referred to from one or more reference sources. If two or more sources of reference are written by the same person in different years, the year of publication is written according to the chronology of time and separated by a comma (.). In the example, the author's last name is expressed as x.

... (x 2014, 2015).

If two or more sources of reference are written by the same person in the same year, after the year the letter 'a' is added for the first, 'b' for the second, and so on. The additional letters 'a', 'b', and so on are then sorted based on the chronology of publication time or can be sorted by page number published. The letter markers 'a', 'b' are also useful to make it easier for readers to find them in the references.

... (x 2017a, 2017b) or x (2017a, 2017b) ...

If the author has the same surname and writes in the same year, to distinguish the reference source, it is stated by the name and initials. For example, the reference source of Antonius Suwanto and Harry Suwanto in the text is written as:

... (x A 2018; x H 2018) or x A (2018) and x H (2018) ...

Reference sources written by two authors are referred to using the conjunction '*dan*' for text in Bahasa Indonesia; whereas if the text is in English, the conjunction used is 'and' according to the language of your writing.

... (x and y 2012) or x and y (2012) ...

If two authors have the same surname and write together, the reference source is written following the pattern of adding the initials.

... (x A and x H 2015) or x A and x H (2015) ...

If the reference source is written by more than three people—x A, Friska H, and Sudirman I—or more what is written as the reference source is only the first author's name followed by '*et al.*' and the year of publication.

... (x *et al.* 2016) or x *et al.* (2016) ...

If several reference sources consisting of three or more people are written by the same first author in the same year, to distinguish the reference sources, they are written as in the reference source of the same author by adding the letters 'a', 'b', and so on. . For example, articles x A, Suwanto H, and Suryanto D were published in 2010 and articles x A, together with Yuhana M and Numbers SL were also published in 2010 so to distinguish them, they are written as follows.

... (x *et al.* 2010a) or x *et al.* (2010a) ...

... (x *et al.* 2010b) or x *et al.* (2010b) ...

Citations can also be written using several reference sources. The reference sources are written in order of time of publication from the earliest to the most recent, not alphabetically. To differentiate between the reference sources, a semicolon is used (;).

... (Suhardjito 2008; Hutagaol 2009; Mandang 2010).

The name of the institution referred to in the text should be written in its abbreviated form, for example data taken from Statistics Indonesia or Badan Pusat Statistik (2016) is written as follows.

... (BPS 2016) or BPS (2016) ...

Writings that do not have the author's name are avoided. If needed, the reference source is indicated by writing the beginning of the title word followed by an ellipsis.

... (Handbook ... 2000) or Handbook ... (2000) ...

Writings that do not include the time of publication may be found in ancient documents. Reference sources are indicated by writing “unknown year” between square brackets.

... (Lederer [year unknown]) or Lederer [year unknown] ...

Articles that have not been read by the author themselves—referenced from secondary sources—are not recommended. The author should read the original writing himself.

Articles that have been accepted for publication, but are still in the process of being published, are referred to by adding the words “*siap terbit*” or “forthcoming” for articles in English. These reference sources are listed in references.

... (Priyarsono, *siap terbit*) or Priyarsono (*siap terbit*) ...

... (Priyarsono, forthcoming) or Priyarsono (forthcoming) ...

Articles that are being submitted for publication in scientific journals cannot be referred to in scientific papers because there is no statement that can be published.

In very special circumstances, personal communication with an expert may sometimes need to be referred to in writing. Preferably, the name referred to is a person whose expertise is known by the scientific community. For the reference, what is written is the name followed by the initials—without using an academic title or position—followed by time and separated by a comma (,) and space from the type of information referred to; everything is written in brackets (...). Sources of information like this are not listed in the references.

... (Nasoetion AH 8 Maret 1998, personal communication).

7.2 References

In the last part of a paper, all the reference sources used in the paper, including those used in tables and figures, are listed as references. So, only the literature referred to in the paper can be included in the references and thus the reference sources in the references must be the same as those in the paper. This list is organized according to the arrangement of a particular literature reference system. References in the name-year system are arranged in alphabetical order by author's name.

The order of the author's name in the year-name system references is based on the alphabetical order of the initial letter or the last name of the first author. Furthermore, the alphabetical order of the first author's name is based on the alphabetical order of letter by letter to the right and followed by the initial name; followed by the next author's surname—if there is more than one author—whose alphabetical order is based on the surname, followed by the initials (see 'List of author's name' Table 7.2).

7.2.1 Scientific journals

7.2.1.1 Components in references

- Author's name

The author's name in the References are a list of the names contained in the original manuscript of all reference sources used in the paper. Each author's name registered is the last name or surname of the author followed by the initials of the first name and the middle name without the punctuation 'period'. If there are 2 to 10 authors, all names are listed including the 10th author; if there are more than 10 authors, 10 names are listed then followed by “*et al.*”.

Surname and given name are separated by a space. Furthermore, each author's name is separated by the next name with a comma and space. Thus, in the row of authors' names there is no "and". A full stop is given to end the last author's name, unless there are more than 10 authors, then it ends in *et al.* or there is the word 'editor'.

Herry Suhardiyanto, Yonny Koesmaryono, Hermanto Siregar, Anas Miftah Fauzi, Arief Imam Suroso

written as

Suhardiyanto H, Koesmaryono Y, Siregar H, Fauzi AM, Suroso AI. Dewi Apri Astuti, Didik Suhardjito, Djoko Prijono, Ekawati Sri Wahyuni,

Mulia Purba, Parulian Hutagaol, Tineke Mandang, Upik Kesumawati, Laksmi Arianti, Suminar Setiati Achmadi, Agustin Wydia Gunawan, Sri Nurdiati, Ahmad Ridha

written as

Astuti DA, Suhardjito D, Prijono D, Wahyuni ES, Purba M, Hutagaol P, Mandang T, Kesumawati U, Arianti L, Achmadi SS, *et al.*

Suminar Setiati Achmadi, Laksmi Arianti, Agustin Wydia Gunawan, editor

written as

Achmadi SS, Arianti L, Gunawan AW, editor.

Table 7.2 Examples of author's name in references and references in the paper

Author's real name	Writing in references	Referred in the body
Defina	Defina. 2019.	... (Defina 2019) or Defina (2019) ...
Euis Sunarti	Sunarti E. 2005.	... (Sunarti 2005) or Sunarti (2005) ...
Euis Sunarti	Sunarti E. 2006.	... (Sunarti 2006) or Sunarti (2006) ...
Euis Sunarti and Rulli Purwani	Sunarti E, Purwani R. 2016.	... (Sunarti and Purwani 2016) or Sunarti and Purwani (2016) ...
Herien Puspitawati	Puspitawati H. 2009a.	... (Puspitawati 2009a) or Puspitawati (2009a) ...
Herien Puspitawati	Puspitawati H. 2009b.	... (Puspitawati 2009b) or Puspitawati (2009b) ...
Herien Puspitawati, Megawati Simanjuntak, and Latifatul Hayati	Puspitawati H, Simanjuntak M, Hayati L. 2012	... (Puspitawati <i>et al.</i> 2012) or Puspitawati <i>et al.</i> (2012) ...
Hadi Riyadi, Drajat Martianto, Dwi Hastuti, Evy Damayanthi, Kukuh Murtlaksono	Riyadi H, Martianto D, Hastuti D, Damayanthi E, Murtlaksono K. 2011.	... (Riyadi <i>et al.</i> 2011) or Riyadi <i>et al.</i> (2011)...
Noer Azam Achsani	Achsani NA. 2014.	... (Achsani 2014) or Achsani (2014)...
Nur Bambang Priyo Utomo	Utomo NBP. 2017.	... (Utomo 2017) or Utomo (2017)...
Huda S. Darusman, Dewi Ratih Agungpriyono, Vinka A. Kusumaputri, Dondin Sajuthi, Steven J. Schapiro, Jann Hau Dirk Berkelmann, Dominik Schneider, Martin Engelhaupt, Melanie Heinemann, Stephan Christel, Marini Wijayanti, Anja Meryandini, Rolf Daniel	Darusman HS, Agungpriyono DR, Kusumaputri VA, Sajuthi D, Schapiro SJ, Jann H. 2019 Berkelmann D, Schneider D, Engelhaupt M, Heinemann M, Christel S, Wijayanti M, Meryandini A, Daniel R. 2018	... (Darusman <i>et al.</i> 2019) or Darusman <i>et al.</i> (2019) (Berkelmann <i>et al.</i> 2018) or Berkelmann <i>et al.</i> (2018) ...
Yudi Setiawan, Lilik Budi Prasetyo, Hidayat Pawitan, Liyantono, Syartinilia, Arif Kurnia Wijayanto, Prita Ayu Permatasari, A Hadi Syafrudin, Patria Rachman Hakim	Setiawan Y, Prasetyo LB, Pawitan H, Liyantono, Syartinilia, Wijayanto AK, Permatasari PA, Syafrudin AH, Hakim PR. 2018	... (Setiawan <i>et al.</i> 2018) or Setiawan <i>et al.</i> (2018)...
Farit M. Afendi, Naoaki Ono, Yukiko Nakamura, Kensuke Nakamura, Latifah K. Darusman, Nelson Kibinge, Aki Hirai Morita, Ken Tanaka, Hisayuki Horai, Md. Altaf-UI-Amin, Shigehiko Kanaya	Afendi FM, Ono N, Nakamura Y, Nakamura K, Darusman LK, Kibinge N, Morita AH, Tanaka K, Horai H, Altaf-UI-Amin M, <i>et al.</i> 2013	... (Afendi <i>et al.</i> 2013) or Afendi <i>et al.</i> (2013) ...

Some general and specific provisions for writing the author's name are exemplified below.

- General

Academic titles (Ir., Dr., Prof., S.Si., M.Si.), religious titles (Hj., H.), and honorary titles (R., Rr.) that precede or follow the personal name are omitted.

Ir. Soekarno becomes Soekarno

H. Ansori Ahmad Mattjik becomes Mattjik AA

Dr. Nisa Rahmania Mubarik, M.Si. becomes Mubarik NR

- Specific

The author's name varies depending on the country:

- Stipulation position of rank in the family

Vincent T. DeVita, Jr. becomes DeVita VT Jr

James G. Jones II becomes Jones JG II

- The use of capital letters and spaces in the name in the reference source remains the same as the original

Van Der Korn KH or van der Korn KH De

Wolf F or de Wolf F

Le Sage R or LeSage R or Lesage R

- Surname using hyphens and quotation marks

Franz Magnis-Soeseno becomes Magnis-Soeseno F

Alan D. O'Brien becomes O'Brien AD

- Abbreviation for first and middle names using apostrophes, prefixes, and other particles

D'Arcy Hart becomes Hart D

W. St. John Patterson becomes Patterson

WS De la Broquerie Fortier becomes

Fortier D Craig McC. Brooks becomes

Brooks CM

- First and middle names use a hyphen Jean-Louis

Lagrot becomes Lagrot JL

Han-Seung Lee becomes Lee HS

Siu-Ting Chang becomes Chang ST

- Traditional first name abbreviation

Muh. Jusup becomes Jusup M

Ch. Wunderly becomes Wunderly C

Note: if the author only includes the first name but the last name is abbreviated (found in books published in Indonesia) it is written, Hartono H.S. become HartonoHS

- Organization as Author

Organizations such as universities, professional associations, companies, government institutions can also become authors. If the author's name and organization name are in the document title, the author's name should be used as the reference source. The writing of tiered organization names is written from the highest to the lowest hierarchy by using commas. The organizational components that exist in the reference source are written in the references.

Pusat Studi Satwa Primata, IPB University become IPB University, Pusat Studi Satwa Primata

If the names of organizational components with lower hierarchies are better known to the reader, the writing in references is Pusat Studi Satwa Primata. The name of the institution can remain as the original in Bahasa Indonesia or translated into English with square brackets.

Pusat Studi Satwa Primata
[Primate Research Center]

The word “the” is omitted if the organization name begins with that word, such as The National Cancer Institute.

National Cancer Institute

If there are two or more organizations that are authors, all of them are written as authors separated by a semicolon.

Indonesian Microbiology Association; Indonesian Phytopathological Association

In references, the name of the organization is written with the name abbreviation or its acronym in square brackets and followed by the full name.

[PFI] Indonesian Phytopathological Association.
[Permi] Indonesian Microbiology Association.

- Publication year

The year included in the references is the year of publication which can be found on the title page or cover of each issue of journals, books, and monographs. Some audiovisual publications and many electronic publications do not have pages, the date of publication is elsewhere. The year of publication of audiovisual products can be found on the opening screen, labels of audio-cassettes or video-cassettes, product packaging, or written documents that complement the product. Publication time information on the Internet can also be found in several locations, including on the welcome screen, at the bottom of the document, or at the end of the document, and in the uniform resource locator (URL) or other source code viewable via a web browser.

If the year of publication cannot be found at the location described, you can use the following method.

- If the year of publication is not found on the title or cover page of each issue of journals, books and monographs, but the year of publication can be determined from the section of the issue, write the time in square brackets.
- If the year of publication is not available, use the copyright year starting with the letter "c", for example "c2019".
- If the year of publication and copyright exist in a publication, only the year of publication is used, unless the difference between the two is at least 3 years. In this case, both are used, *i.e.* year of publication and copyright separated by a comma and space, for example “2019, c2016”

- If neither year of publication nor copyright exists, use “unknown year of publication” in square brackets [unknown year of publication]. This method does not apply to electronic publications. In electronic publications, the reference written is the time when updating/revising, while the time of publication is often not listed in the document.

The year of publication is required for all types of reference sources in References, while the time of publication in the form of month, date or season can be used when referring:

- a scientific journal that does not include the volume and edition number,
- patent,
- newspaper articles,
- electronic publication.

The month of publication is written from the first three letters following the year of publication, for example “2019 Aug”. If using a date, the date of publication is placed after the month abbreviation, for example "2019 Aug 21". For publications in countries that have four seasons, the season is used as the time of publication, so the time of publication is written in full using the initial capital letters, such as "Summer", "Fall", "Winter", and "Spring".

- Article title

The title quoted must be the same as the original title written on the publication. One important thing is not to change the words listed in the article title. There are three things you need to know in writing article titles.

- Article title that does not use Roman letters—for example Latin or Arabic letters—is written in Roman letters. If the article is written in a language with distinctive characters—for example Chinese, Japanese—the title is written in Roman characters or translated into the language used in the intended scientific journal in square brackets. The English translation is also written in square brackets.
- If the title contains Latin letters or other symbols that are not found in the available fonts, it can be replaced with the name of the symbol, for example Ω become omega.

Only the first letter of the first word of the article title is capitalized. Capital letters in article titles are only used for certain cases, for example standard abbreviations (such as DNA, IPB, pH, USDA) and taxon names following scientific nomenclature. Capital letters are also used for the beginning of words which in sentences are always written in capital letters, for example in German on all nouns.

Insertion und Assemblierung von Proteinen des Antennenpigment-Komplexes von *Rhodobacter capsulatus* im *in vitro* System

In the article title accompanied by a subtitle, writing the main title ends with a period and followed by a subtitle which is a new title, so the writing of the subtitle begins with a word that uses a capital letter in the initial letter. The second way is if the main title ends with a colon, the first letter of the first word in the subtitle starts with a capital letter.

Mechanism of infection with Epstein-Barr virus. I. Viral DNA replication and information of non-infectious virus particles in superinfected Raji cells
 Avian leukemia virus OK 10: analysis of its myc oncogene by molecular cloning

- Scientific journal's name

The names of scientific journals are written in italics. Names of scientific journals that only consist of one word are not abbreviated (eg *Biotropia*, *Nature*, *Science*), but generally journal names are written in abbreviated form (Table 7.3). The conjunction is omitted in the abbreviated names of scientific journals. Abbreviated names of scientific journals can be referred to from many sources, including the List of Journals Indexed for MEDLINE published by the National Library of Medicine, BIOSIS Serial Sources by Biological Abstract, or downloaded from <http://library.caltech.edu/reference/abbreviations> and other sources refer to ISO. The first letter of each word in the abbreviated name is capitalized and is not marked with a period, except for the abbreviation of the last word to distinguish it from the volume. For scientific journals of which the abbreviated names are not found in the list of abbreviations in the reference sources above, including publications of IPB, the names of scientific journals are written according to the names determined by the respective publishers.

Table 7.3 Examples of scientific journal names and their abbreviations

Scientific journal's name	Abbreviation
The Journal of Biocommunication	J Biocommun
La Pediatria Medica e Chirurgica	Pediatr Med Chir
L'Orthodontie Francaise	Orthod Fr
Nature ^a	Nature
Microbiology Indonesia	Microbiol Indones
Jurnal Ilmu Pertanian Indonesia	JUPI
Journal of the American Medical Association	JAMA

^a Names of scientific journals consisting of one word are not abbreviated.

- Volumes and pages

Volumes of scientific journals are written with Arabic numbers after their name and separated by full periods. Volume numbers that do not use Arabic numbers, for example volume XXVI are changed to 26. The volume number is followed by the edition number in parentheses, colons and page numbers (64–68 to represent pages 64 to 68), ended with a period. Everything is written directly without space.

J Biol Chem. 26(2):64–68.

- Digital object identifier number (DOI)

Issues that have a DOI should be listed in References. This number consists of two parts—separated by a slash mark—, namely prefix and suffix. The prefix is an identifier of the DOI directory and its owner; the suffix is an additional identifier that is determined by the publisher.

Note: Especially when writing references abbreviation DOI is written in lowercase (doi).

The doi number in the references is written after the article page number.
Microbiol Indones. 4(3):103–107. doi:10.5454/mi.4.3.1.

- Supplement number

Supplements are special publications or inserts of a volume of scientific journals. Reference articles originating from additional numbers contained in journal publications are indicated by a description, for example Supl 1 for Supplement or Supplement number 1; Special Ed 2 for Special Edition number 6; or Insert 1 for Insert number 1.

Farmaka 4(3 Supl 1).

Notes for Journal References from the Internet

Articles prepared from the Internet are basically the same as articles from print. Adding a URL or electronic address is not enough. Internet location may change or disappear without notice. Therefore, users of this reference source must clearly state information from the Internet. For example, time of publication is an indispensable item, but much of the information from the Internet is frequently updated or modified after time of publication. Thus, when referring, it is necessary to emphasize the acquisition of such information. If the reference source is obtained from the Internet, you must download it so that it can provide evidence when used as references.

7.2.1.2 Examples of scientific journals article writing

- Printed form

Author's name. Publication Year. Article title. *Scientific Journal Name*.

Volume (issue/issue number, if any): pages. doi number.

- One author

Journal publications are numbered

Kolopaking LM. 2016. Migrasi gaya hidup internasional dan peminggiran masyarakat di desa objectives wisata: Studi di Desa Tugu Selatan, Kecamatan Cisarua, Kabupaten Bogor, Jawa Barat. *Sodality*. 4(1):38–47. doi:10.22500/sodality.v4i1.14405.

Journal publications are not numbered

Syuaib MF. 2015. Anthropometric study of farm workers on Java Island, Indonesia, and its implications for the design of farm tools and equipment. *Appl Ergon*. 51:222–235. doi:10.1016/j.apergo.2015.05.007.

Reference form: ... (Syuaib 2015) or Syuaib (2015) ...

- Two authors

Sutiawan R, Hernowo JB. 2016. Analisis populasi dan habitat bangau tongtong (*Leptoptilos javanicus* Horsfields 1921) di Taman Nasional Alas Purwo, Jawa Timur. *Media Konserv*. 21(3):207–215.

Reference form: ... (Sutiawan and Hernowo 2016) or Sutiawan and Hernowo (2016) ...

- Three to ten authors

Darusman HS, Call J, Sajuthi D, Schapiro SJ, Gjedde A, Kalliokoski O, Hau J. 2014. Delayed response task performance as a function of age in cynomolgus monkeys (*Macaca fascicularis*). *Primates*. 55(2):259–267. doi:10.1007/s10329-013-0397-8.

Reference form: ... (Darusman *et al.* 2014) or Darusman *et al.* (2014) ...

- More than 10 authors

Kusrini MD, Lubis MI, Enderwin W, Yazid M, Darmawan B, Ul-Hasanah AU, Sholihat N, Tajalli A, Lestari V, Utama H, *et al.*. 2017. Elevation range shift after 40 years: the amphibians of Mount Gede Pangrango National Park revisited. *Biol Conserv*. 206:75–84. doi:10.1016/j.biocon.2016.12.018.

Reference form: ... (Kusrini *et al.* 2017) or Kusrini *et al.* (2017) ...

- Author is an organization

[SSCCCP] Scandinavian Society for Clinical Chemistry and Clinical Physiology, Committee on Enzymes. 1976. Recommended method for the determination of γ -glutamyltransferase in blood. *Scand J Clin Lab Invest*. 36(2):119–125.

Reference form: ... (SSCCCP 1976) or SSCCCP (1976) ...

- Article without author's name

If there is no author's name, the article title is assigned as author.

Tren kemasan praktis & inovatif. 2006. *Food Rev Indones*. 1(1):19–21.

Reference form: ... (Tren ... 2006) or Tren ... (2006) ...

- Type of article in the form of editorial

Hunter J, Duff G. 2016. GM crops—lessons from medicine [editorial]. *Science*. 353(6305):1187. [accessed on 2018 Des 15]. doi:10.1126/science.aaj1764.

Reference form: ... (Hunter and Duff 2016) or Hunter and Duff (2016)

- Type of article in the form of short communication

Wibowo RH, Mubarik NR, Rusmana I, Thenawidjaya M. 2017. Penapisan dan identifikasi bakteri kitinolitik penghambat pertumbuhan *Ganoderma boninense* in vitro [short communication]. *J Fitopatol Indones*. 13(3):105–111. doi:10.14692/jfi.13.3.105.

Reference form: ... (Wibowo *et al.* 2017) or Wibowo *et al.* (2017) ...

- Type of article in the form of research notes

Darmadi AAK, Hartana A, Mogeja JP. 2002. Perbungaan salak [catatan penelitian]. *Hayati*. 9(2):59–61.

Reference form: ... (Darmadi *et al.* 2002) or Darmadi *et al.* (2002) ...

- Type of article in the form of feedback

Ilyas S. 2006. Seed treatments using matricconditioning to improve vegetable seed quality [feedback]. *Bul Agron*. 34(2):124–132.

Reference form: ... (Ilyas 2006) or Ilyas (2006) ...

- Type of article in the form of reviews
Gunawan AW. 1997. Status penelitian biologi dan budi daya jamur di Indonesia [review]. *Hayati*. 4(3):80–84.
Reference form: ... (Gunawan 1997) or Gunawan (1997) ...
- Article with broken page
Crews D, Gartska WR. 1981. The ecological physiology of the garter snake. *Sci Am*. 245:158–64, 166–168.
Reference form: ... (Crews and Gartska 1981) or Crews and Gartska (1981) ...
- Issued as inserts, supplements, special editions
Rifai MA. 1992. Penggodokan peneliti taksonomi tumbuhan siap pakai. *Floribunda*. 1 Insert 3:22–24.
Reference form: ... Rifai (1992) or Rifai (1992) ...
- Article title translated into English
Ismayana A, Maddu A, Saillah I, Mafquh E, Indrasti NS. 2017. Sintesis nanosilika dari abu ketel industri gula dengan methods ultrasonikasi and penambahan surfaktan [Synthesis of nanosilica from boiler ash of sugar cane industry with ultrasonication method and addition of surfactant]. *J Teknol Indust Pert*. 27(2):228–234.
Reference form: ... (Ismayana *et al.* 2017) or Ismayana *et al.* (2017) ...
- Reprinted article
Young DS. 1987. Implementation of SI units for clinical laboratory data: style specification and conversion tables. *Ann Intern Med*. 106(1):114–129.
Reprinted in *J Nutr*. 1990;120(1):20–35.
Reference form: ... (Young 1987) or Young (1987) ...
- Research results are in publication, but not yet published
Satria A, Muthohharoh NH, Suncoko RA, Muflikhati I. 2017 Okt. Seaweed farming, property rights, and inclusive development in coastal areas. *Ocean Coast Manag.*, forthcoming.
Satria A, Muthohharoh NH, Suncoko RA, Muflikhati I. 2017 Okt. Seaweed farming, property rights, and inclusive development in coastal areas. *Ocean Coast Manag.*, forthcoming.
Reference form: ... (Satria *et al.* 2017) or Satria *et al.* (2017)...
- Article from Internet
Baez J, Caruso G, Mueller V, Niu C. 2017. Droughts augment youth migration in Northern Latin America and the Caribbean. *Climatic Change*. 140 (3–4): 423–435. [accessed on 2019 Aug 26]. doi:10.1007/s10584-016-1863-2.
Kolopaking LM. 2016. Migrasi gaya hidup internasional dan peminggiran masyarakat di desa objectives wisata: studi di Desa Tugu Selatan, Kecamatan Cisarua, Kabupaten Bogor, Jawa Barat. *Sodality*. 4(1):38–47. [accessed on 2016 Aug 26]. doi: 10.22500/sodality.v4i1.14405.

7.2.2 Book

7.2.2.1 Components in book

The arrangement of references for books is written in the following order: author's name, year of publication, title of book, city of publication, and name of publisher. Basically, the information for writing the author's name and year of publication is the same as in scientific journals, while other information will be explained below.

- Book title

Book title is written using a capital letter at the beginning of each word except the word assignment and italicized.

- Edition

Information about the edition is placed after the title and written as “8th ed” even though in the original book it is listed for example “Eighth Edition”. The first edition that is not followed by a subsequent edition does not need to be identified as “1st Ed”, but if it is later known that a new edition has been published, the first edition of the book needs to be stated as “1st Ed” if this edition is referred to.

Sudarwanto MB. 2020. *Pemeriksaan Kualitas and Keamanan Susu and Results Olahannya*. 2nd Ed. Bogor: IPB Press.

- Print

Books are often reprinted by publishers because supplies run out. So, the contents of the information in it are the same and there is no change whatsoever. If this book is used as a reference source, the year of publication that is written as the reference source is the year it was first published. For example: the book *Mushroom Breeding Business* which was published in 2000, was reprinted in 2009 for the 5th time, so the reference source is written in 2000.

Gunawan AW. 2000. *Usaha Pembibitan Jamur*. Jakarta: Penebar Swadaya.

- City of publication

City of publication can be found on the title page of the referenced book. If several cities of publications are listed, the name of the city that was first written is used to compile the references. City of publication in the United States is accompanied by state code in parentheses, for example: Waltham (MA). If the city where the book is published is not listed in the book, but can be identified by the name of the publisher, the name of the city is written in square brackets. If the city of publication is completely unknown, write unknown place in square brackets: [unknown place].

- Name of publisher

Publisher is a commercial company or government/private institution that publishes a book. The publisher's name is usually listed on the title page and should be abbreviated (Appendix 15).

The institution that acts as the publisher is the most relevant party and is responsible for the contents of the book, followed by the parties above it. For example "Pusat Studi Satwa Primata, IPB University" written as "PSSP IPB". If the publisher's name or the name indicating the publisher is not listed at all, write unknown publisher in square brackets: [unknown publisher].

- Page numbers

Page numbers are listed or not depending on the references applied. If the page number is displayed and the references is for the entire book, write for example "525 p" for a book of which the last page is written 525. If the reference is only to certain parts of the book, for example from pages 23 to 35, the writing is "pp 23-35" or "p 23-35"; or for limited reference on page 54 it is written "p 54".

7.2.2.2 Examples of writing reference sources from books

Author's name [or editor]. Publication Year. Book Title. Place of publication (state code if in the United States): Name of publisher.

- Book

Satria A. 2015. *Politik Kelautan and Perikanan*. Jakarta: Obor.

Reference form: ... (Satria 2015) or Satria (2015) ...

Dyball R, Newell B. 2015. *Understanding Human Ecology: A System Approach to Sustainability*. New York (NY): Routledge.

Reference form: ...(Dyball and Newell 2015) or Dyball and Newell (2015).

- Book with editor

Manuwoto S, Firdaus M, Manuwoto. 2015. *Tantangan Pendidikan High Pertanian: Pemilihan Calon Mahasiswa terhadap Bidang Studi, Keragaan Pendidikan High Pertanian, dan Status Sektor Pertanian*. Ihsan M, editor. Bogor: IPB Pr.

Reference form: ... (Manuwoto *et al.* 2015) or Manuwoto *et al.* (2015)...

- Book with institution or organization as author

[IPB] IPB University. 2017. *Panduan Program Pendidikan Sarjana Tahun 2017*. Bogor: IPB Pr.

Reference form: ... (IPB 2017) or IPB (2017) ...

[IPB] Insistut Pertanian Bogor. 2019. *Pedoman Penulisan Karya Ilmiah Tugas Akhir Mahasiswa Edisi ke-4*. Bogor: IPB Pr.

Reference form : ... (IPB 2019) or IPB (2019)

- Translated book without editor

Pelczar MJ Jr, Chan ECS. 1986. *Dasar-Dasar Mikrobiologi*. 1st Volume. Hadioetomo RS, Imas T, Tjitrosomo SS, Angka SL, translator. Jakarta: UI Pr..

Reference form: ... (Pelczar and Chan 1986) or Pelczar and Chan (1986)

- Translated book with editor

Hart H, Craine LE, Hart DJ. 2003. *Kimia Organik. Suatu Kuliah Singkat*. Ed ke-11. Achmadi SS, translator; Safitri A, editor. Jakarta: Penerbit Erlangga.

Reference form: ... (Hart *et al.* 2003) or Hart *et al.* (2003) ...

- Book series with the same volume title

Wijayakusuma MH, Dalimartha S, Wirian AS. 1998. *Tanaman Berkhasiat Obat di Indonesia*. 1st Volume. Jakarta: Pustaka Kartini.

Reference form: ... (Wijayakusuma *et al.* 1998) or Wijayakusuma *et al.* (1998) ...

- Book series with different volume titles

Phillips N, Hardy C. 2002. *Qualitative Research Method Series*. Vol. 50: Discourse Analysis: Investigating Processes of Social Construction. Newbury Park (CA): Sage.

Reference form: ... (Phillips and Hardy 2002) or Phillips and Hardy (2002) ...

- Article in Book

Author's name. Publication year. Article title. Inside: Name editor book, editor. Book Title. Place of publication: Publisher's name. article page.

Buchori D, Puspitasari S, Sahari B, Rizali A. 2017. Insect pollinators in decline: conservation challenges in the tropics. Inside: Aguirre AA, Sukumar R, editor. *Tropical Conservation: Perspectives on Local and Global Priorities*. New York (NY): Oxford University Press. pp 290–300.

Reference form: ... (Buchori *et al.* 2017) or Buchori *et al.* (2017)

- Articles in book series with different volume titles

Wahyuni ES. 2007. The impact of migration on family structure and functioning in Java. Inside: Loveless AS, Holman TB, editor. *The Family in the New Millenium. World Voices Supporting the "Natural" Clan*. Volume 3: Strengthening the Family. London: Praeger. pp 220–243.

Reference form: ... (Wahyuni 2007) or Wahyuni (2007) ...

7.2.3 Conference Proceedings and Conference Manuscripts

Books in the form of proceedings are often published after the seminar is over, while a collection of abstract books is published during the seminar. Abstract books are also published by an institution of which the job is to collect abstracts from the research results of the authors, regardless of the type of publication.

7.2.3.1 Components in proceedings

Conference proceedings often have two titles, namely book title and conference name. If both exist, write the book title and followed by the conference name. The composition of the referenced sources of conference proceedings is almost the same as that of the book, but generally the proceedings are edited by one or more editors.

7.2.3.2 Examples of writing reference sources from proceedings

- Articles in proceedings

Author's name. Publication year. Article title. Inside: Proceeding editor name, editor. Title of Publication or Name of Scientific Meeting or both; Meeting time (Year month [three letters] date); City of meeting, name of country. Place of publication (if published in a city in the United States add state code): Publisher's name. article page.

Nurtjahya E, Setiadi D, Guhardja E, Muhadiono, Setiadi Y, Mardatin NF. 2011. Status fungi mikoriza arbuskula pada sukseksi lahan pascatambang timah di Bangka. Di dalam: Budi SW, Turjaman M, Mardatin NF, Nusantara AD, Trisilawati O, Sitepu IR, Wulandari AS, Riniarti M, Setyaningsih L, editor. Percepatan Sosialisasi Teknologi Mikoriza untuk Mendukung Revitalisasi Pertanian, Perkebunan, dan Kehutanan. Kongres dan Seminar Nasional Mikoriza II; 2007 Jul 17–21; Bogor, Indonesia. Bogor: Seameo Biotrop. hlm 151–159.

Reference form: ... (Nurtjahya *et al.* 2011) or Nurtjahya *et al.* (2011) ...

- Articles in proceedings downloaded from the internet

Author's name. Publication year. Article title. Inside: Proceeding editor name, editor. Title of Publication or Name of Scientific Meeting or both; Meeting time (Year month [three letters] date); City of meeting, name of country. Place of publication: Publisher's name. article page; [accessed on year month date]. Location (URL).

Leiwakabessy M, Nurulita S, Hidayat SH. 2017. Disease incidence and molecular analysis of Banana bunchy top virus in Bogor, West Java. Inside: Efendi D, Maharijaya A, editor. The Future of Tropical Agriculture. Proceedings of the International Seminar on Tropical Horticulture 2016; 2016 Nov 28–29; Bogor, Indonesia. Bogor: pp 37–45; [accessed on 2017 Nov 29]. <http://pkht.ipb.ac.id/wp-content/uploads/2017/08/Upload-Proceeding-ISTH-2016.pdf>.

Reference form: ... (Leiwakabessy 2017) or Leiwakabessy (2017)

- Abstract in proceedings

Author's name. Publication year. Title abstrak. Inside: Editor's name, editor. Title of Publication or Name of Scientific Meeting or both; Meeting time; City of meeting, name of country. Place of publication: Publisher's name. Abstract page. Abstract number.

Rahayu G. 2010. Microbial aspects of agarwood production in Indonesia. Inside: Book of Abstracts. Harnessing the Power of Microbes for Better Food, Agro-Industry, Health, and Environment. International Seminar of Indonesian Society for Microbiology. International Seminar of Indonesian Society for Microbiology; 2010 Okt 4–7; Bogor. Bogor: [Permi Cabang Bogor]. pp 9. [Abstract number is unknown].

Reference form: ... (Rahayu 2010) or Rahayu (2010) ...

7.2.4 Undergraduate Thesis, Master Thesis, Dissertation (valid for print and electronic form)

References in the form of undergraduate thesis, master thesis, and dissertation can be referred to in print and electronic form. The procedure for writing is the same as below.

Author's name. Publication year. Title [publication type]. Place of institution: Name of the institution where the scientific work is available.

Febrizal R. 2017. Pengembangan methods pengukuran tingkat kematangan buah jambu kristal menggunakan pengolahan citra [skripsi]. Bogor: IPB University.

Reference form: ... (Febrizal 2017) or Febrizal (2017) ...

Palupi MP. 2016. Faktor risiko obesitas sentral pada orang dewasa di Indonesia [tesis]. Bogor: IPB University.

Reference form: ... (Palupi 2016) or Palupi (2016) ...

Amelia JR. 2017. Pengembangan teknologi pengelolaan limbah cair dan limbah padat secara terintegrasi untuk mendukung industri kelapa sawit berkelanjutan [disertasi]. Bogor: IPB University.

Reference form: ... (Amelia 2017) or Amelia (2017) ...

7.2.5 Others

a) Bibliography

Bibliography is a collection of references compiled with the objective of collecting a specific subject. Reference as a source of information is almost the same as a book, although there are some exceptions.

Author's name, compiler. Publication year. Title of [bibliography]. Place of publication: Publisher's name. Note.

Kusmayadi E, Mugiarti A, compiler. 2013. Bibliografi Hasil Penelitian Pertanian: Komoditas Tanaman Penyegar, 2008–2013 [bibliography]. Bogor: Pusat Perpustakaan and Penyebaran Teknologi Pertanian (PUSTAKA). 1140 acuan dari pangkalan data ProQuest, ScienceDirect, and TEEAL yang dilanggan PUSTAKA.

Reference form: ... (Kusmayadi and Mugiarti 2013) or Kusmayadi and Mugiarti (2013) ...

b) Patent

Name of the inventor of the patent, the word "inventor"; patent holder institution. Patent publication date (year month date). Patent title. Name of the country that granted the patent [space] country code [space] patent number.

Wijaya CH, Halimah, Kindly, Taqi F, inventor; IPB University. 2002 Nov 13. Komposisi permen cajuput untuk pelega tenggorokan. Paten Indonesia ID 0020829.

Reference form: ... (Wijaya *et al.* 2002) or Wijaya *et al.* (2002) ...

c) Printed newspaper with author

Author's name. Date of issue (year month date). title. Newspaper Name. Section Information, if any, replaces Volume and edition: article starting page number (column number).

Saf S. 2017 Apr 11. Merebut masa depan pertanian. Kompas. Rubrik Opini:6 (kol. 3–7).

Reference form: ... (Saf 2017) or Saf (2017) ...

If there is no author's name ¹, then the article title is placed at the beginning and followed by the year and other identities. Author's name may not be written as "anonymous".

d) Printed newspaper without author

Article title. Date of issue (year month date). Newspaper Name. Section Information, if any, replaces Volume and edition: article starting page number (column number).

Melepas Aceh dari ketergantungan. 2005 Jan 5. Kompas. pp. 33.

Reference form: ... (Melepas 2005) or Melepas (2005) ...

e) Online newspaper articles

Author. year month date. Title. Newspaper Name. Section Information, if any, replaces Volume and edition: article starting page number (column number). [Time and date of download]. UR AddressL.

Abdi AP. 2019 Aug 29. Pindah dari Jakarta, bagaimana keamanan ibu kota baru?. Tirtoid. Rubrik Politik. [accessed on 2019 Sep 1]. <https://tirtoid.com/pindah-dari-jakarta-bagaimana-keamanan-ibu-kota-baru-ehda>

f) Documents

[KMM-IPB] Kantor Manajemen Mutu, IPB University. 2015. Prosedur Operasional Baku Penyelenggaraan Program Pendidikan Sarjana Institut Pertanian Bogor. Ed ke-2. Bogor: KMM-IPB.

Reference form: ... (KMM-IPB 2015) or KMM-IPB (2015) ...

IPB University. 2019. Undergraduate Guideline Book 2019. [CD]. Bogor:IPB

Pr. Reference form: ... (IPB University 2019) or IPB University (2019) ...

g) Legal documents

Writing references and citation methods [Abbreviation of legal document types, for example UU, PP, Perpres, Perda] Name of document.

[Permen] Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 50 of 2015 on General Guidelines for Indonesian Spelling. 2015.

Reference form: ... (Permen 2015) or Permen (2015) ...

[UU] Law of the Republic of Indonesia Number 24 of 2011 on Social Security Administering Bodies. 2011.

Reference form: ... (UU 2011) or UU (2011) ...

If in one final project manuscript refers to several legal documents published in the same year, the year writing is added with the letters a, b, c, and so on.

7.3 References from Internet

Advances in technology that are developing very rapidly have caused people to easily access information via the Internet, but this convenience should not be misused to obtain information without paying attention to the scientific authority and expertise of the person or institution providing the information. References in the form of Electronic Scientific Journals, databases, and software for data analysis are available on the website with a certain world wide web, www, address.

¹ Article author's name in newspapers is not always written as "author", but can be given the term "reporter". The author's name/reporter of a newspaper article can be found at the beginning or at the end of the article. Often the author's name/reporter is written with the initials, so this kind of article can be considered to have no author's name.

Be careful when downloading information over the Internet because not all information on all websites can be scientifically verified and not all sites are permanent. For example, electronic discussion forums (chat) and Wikipedia are not permitted as sources of reference in writing scientific papers.

Sources from the Internet can be referred to by writing down all the necessary components such as writing references from scientific journals or other printed publications that have been described in this chapter. Furthermore, Internet-specific components are added in square brackets to refer to information that is unique to the Internet, for example Electronic Scientific Journals which do not provide printed form. References are sourced from world databases and software for analysis, just write the URL in the paper and do not put it in the References.

7.3.1 Electronic Scientific Journals

Scientific journals have print, electronic, or both versions. If the reference comes from the Internet and scientific journals has a doi number, the writing in the references follows the writing in printed form. The doi number can be used to search for reference sources via the Internet. So, only Electronic Scientific Journals do not have doi numbers written in electronic form.

Author's name. Publication year. Article title. *Name Scientific journals* [accessed on year month date]; Volume (edition/issue number): doi (if any) or article location page (URL).

Septiadi D, Harianto, Suharno. 2016. Dampak kebijakan harga beras dan luas areal irigasi terhadap pengentasan kemiskinan di Indonesia. *J Agribis Indones.* [accessed on 2017 Nov 21]; 4(2):91-106. <http://journal.ipb.ac.id/index.php/jagbi/article/viewFile/17090/12388>.

Reference form: ... (Septiadi *et al.* 2016) or Septiadi *et al.* (2016) ...

Sukaidawati L, Krisnatuti D, Megawangi R. 2016. Konsep diri ibu dan remaja pada keluarga cerai dan utuh. *J Ilmu Keluarga and Konsumen (J IKK)*. [accessed on 2019 Sep 01];9(1):11-20. <http://dx.doi.org/-10.24156/jikk.2016.9.1.11>

Reference form: ... (Sukaida *et al.* 2016) or Sukaida *et al.* (2016) ...

7.3.2 Database References from World Data Bank

Now a lot of data is available in databases that can be accessed online via the Internet, for example the database of the World Data Bank. The writing is to display the access number. The website reference sources for these databases are generally not listed, either in the paper or in the References.

Some examples of writing reference sources from databases in the paper:

Sekuen DNA gen penyandi asetat kinase dan fosfotransasetilase telah didepositkan di GenBank dengan nomor akses X89084.

Sekuen nukleotida dari 705-pb fragmen DNA penyandi *OriT* dari plasmid *Rhodobacter spheroides* 2.41 telah didepositkan pada GenBank dengan nomor akses M77638.

7.3.3 References for Analysis by Software

Reference sources for an analysis using software from the Internet are also generally not listed either in the paper or in the References. Example of writing in the paper:

Analysis using the Blast program on the Japanese DDBJ site.

Analysis using the IBM SPSS Statistics 21 program.

The DNA fragments of the transposon flanking genome were isolated using the inversion PCR technique and purified using the Gene Clean III Kit (Bio-101, Carlsbad, CA, USA).

The purified DNA fragments were then cloned into the pGEM-T Easy plasmid (Promega, Madison, WI, USA).

Computer software, Lasergene (DNASTAR, Madison, WI, USA) was used for DNA and protein sequence analysis.

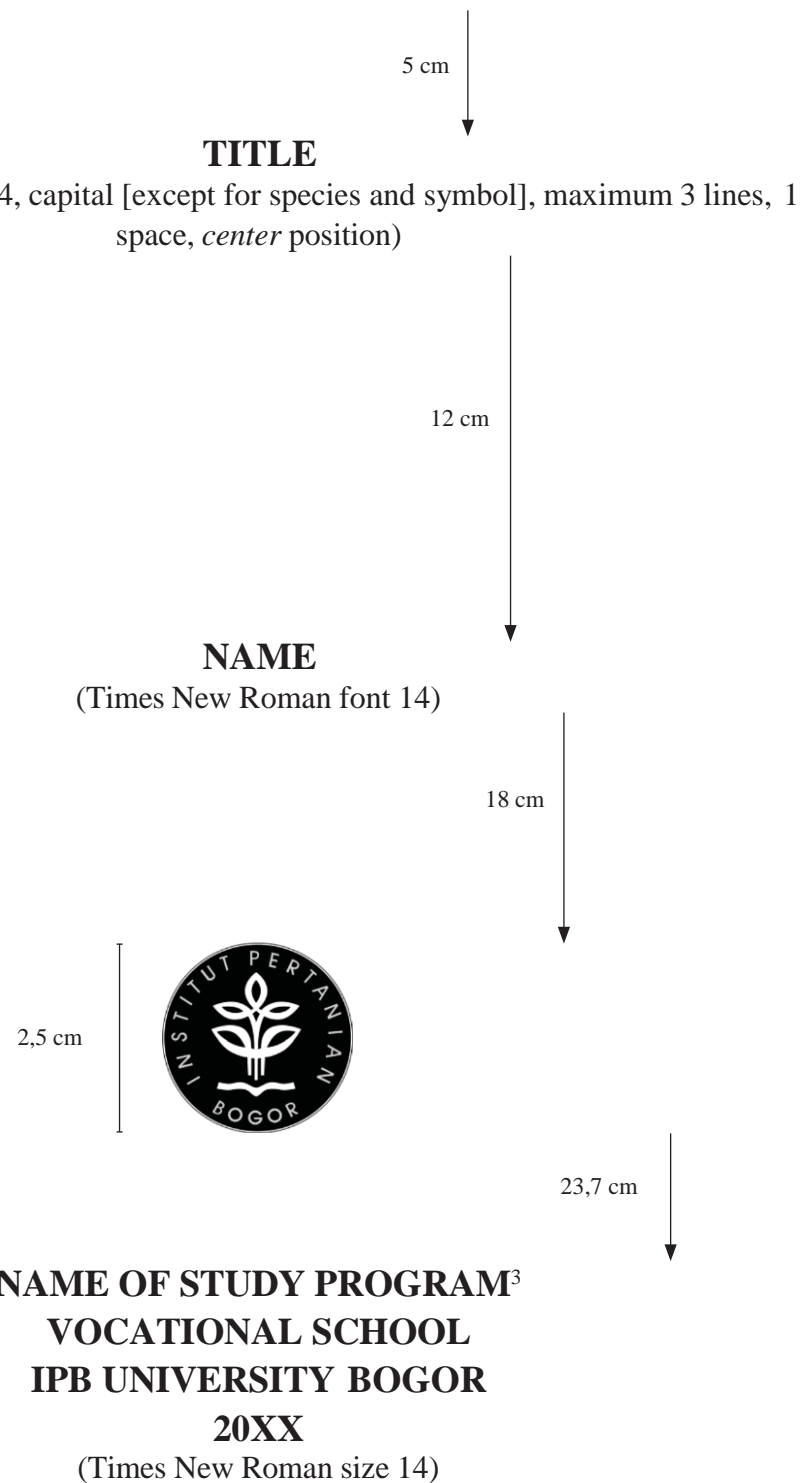
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- [CSE] Council of Science Editors. 2014. *Scientific Style and Format: The CSE Manual for Authors, Editors, and Publishers*. Ed ke-8. Chicago (IL): Univ Chicago Pr.
- Dasumiati, Miftahudin, Triadiati, Hartana A, Pronowo D. 2014. Increasing hermaphrodite flowers using plant growth regulators in andromonoecious *Jatropha curcas*. *Hayati J Biosci*. 21(3):111–120
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- O'Connor M. 1991. *Writing Successfully in Science*. London: Chapman & Hall.
- Pauwels E. 2007. *Ethics for Researchers: Facilitating Research Excellence in FP7*. Luxembourg: Office for Official Publications of the European Communities.
- [PRI] Pemerintah Republik Indonesia. 2002. Undang-Undang Republik Indonesia Nomor 19 Tahun 2002 tentang Hak Cipta. Jakarta: Sekretariat Negara.
- 2012. Peraturan Presiden Nomor 8 Tahun 2012 tentang Kerangka Kualifikasi Nasional Indonesia. Jakarta: Sekretariat Negara.
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- Siregar LA, Keng CL, Lim BP. 2009. Effects of medium constituents on growth and canthinone accumulation in cell suspension culture of *Eurycoma longifolia* Jack. *Hayati J Biosci.* 16(2):69–77
- Satria A. 2015. *Pengantar Sosiologi Masyarakat Pesisir*. Jakarta: Yayasan Pustaka Obor Indonesia.
- Situmorang ARF, Mubarik NR, Triadiati. 2009. The use of acid-aluminum toleran Bradyrhizobium japonicum inoculant for soybean growth on acid soils. *Hayati J Biosci.* 16(4):157–167.
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APPENDICES

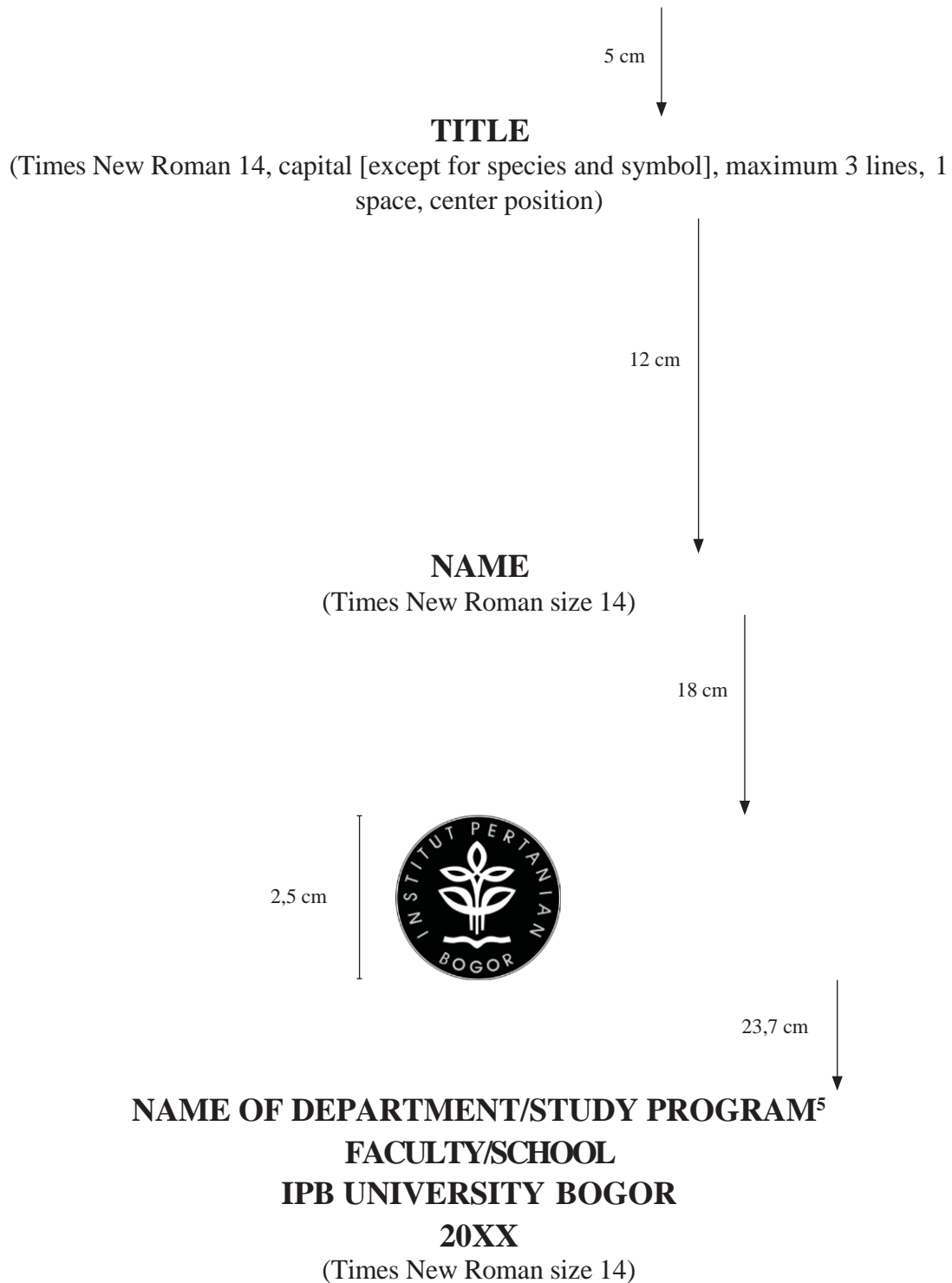
Appendix 1a Final report cover page reference²



² Note: The cover page of the final report is printed on thick laminated cardboard (soft cover) in orange color. All letters are printed in black ink.

³ If the name of the study program is too long, write it using font size 13 and/or in two lines.

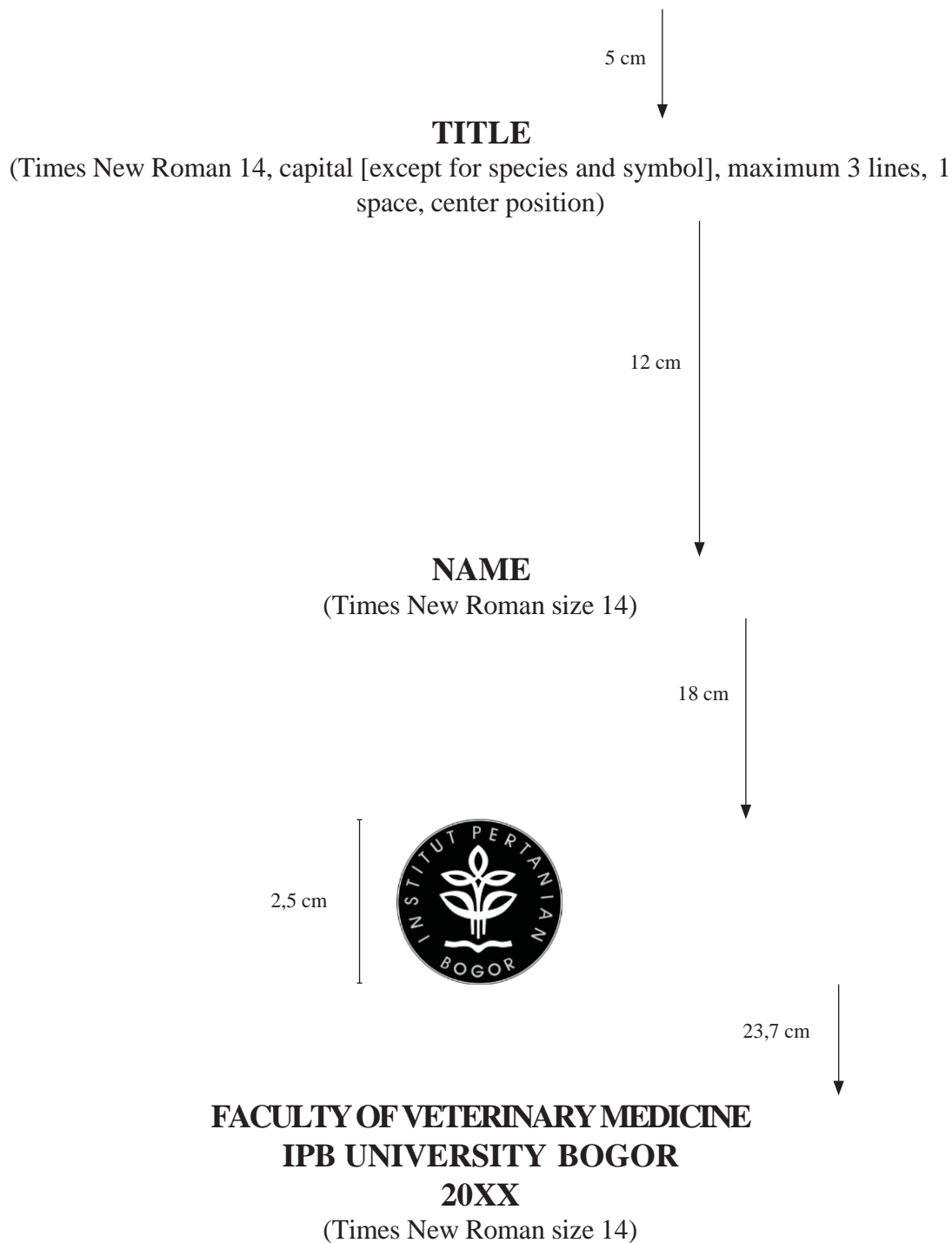
Appendix 1b Undergraduate cover page reference⁴



⁴ Note: The cover page of the undergraduate thesis is printed on thick laminated cardboard (soft cover) with colors tailored to the faculty/school. All letters are printed in yellow gold or black ink (according to the regulations of each faculty/school).

⁵ If the name of department/study program is too long, write it using font size 13 and/or in two lines

Appendix 1c Undergraduate thesis cover page reference



⁶ Note: The cover page of the undergraduate thesis is printed on thick laminated cardboard (soft cover) with color tailored to the faculty (purple). All letters are printed in golden yellow ink (according to faculty regulations).

Appendix 1d Master thesis cover page reference⁷

5 cm
↓
TITLE
(Times New Roman 14, capital [except for species and symbol], maximum 3 lines, 1 space, center position)

12 cm
↓
NAME
(Times New Roman size 14)

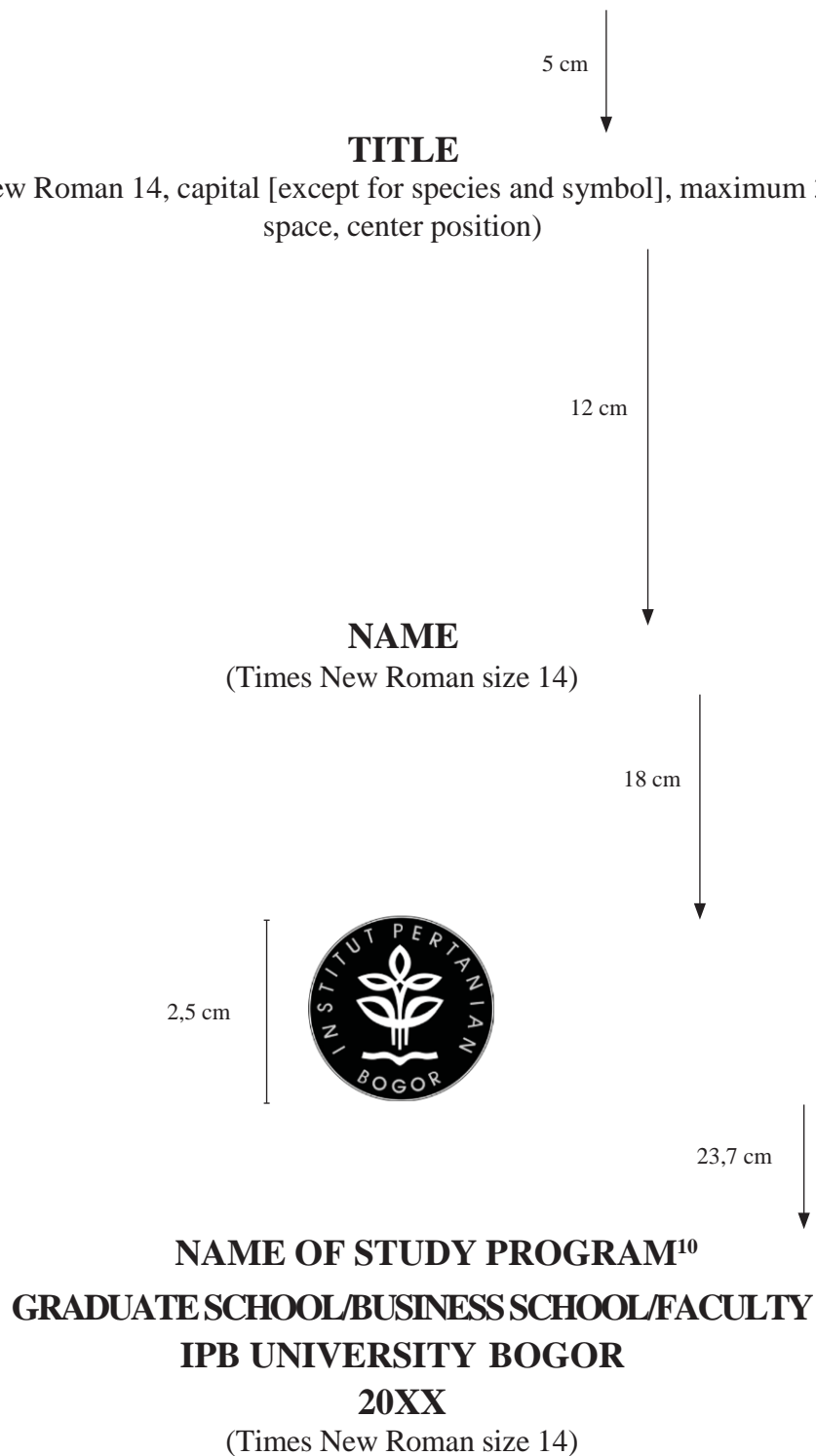


23,7 cm
↓
NAME OF STUDY PROGRAM⁸
GRADUATE SCHOOL/BUSINESS SCHOOL/FACULTY
IPB UNIVERSITY BOGOR
20XX
(Times New Roman size 14)

⁷ Note: Master thesis cover page is printed on thick laminated cardboard (maroon hard cover). All letters are printed in golden yellow ink.

⁸ If the name of study program is too long, write it using font size 13 and/or in two lines

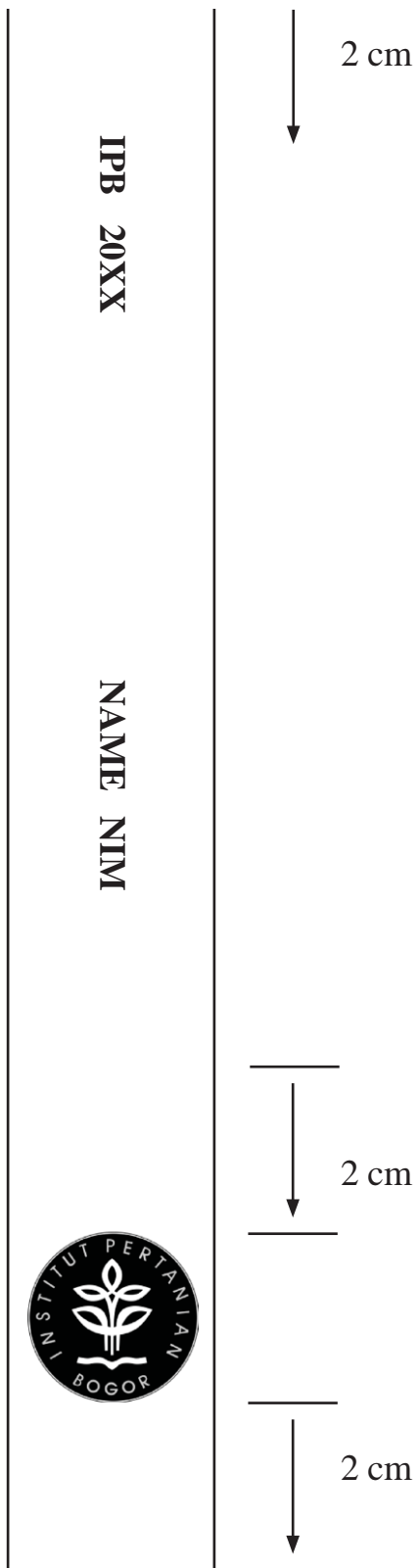
Appendix 1e Dissertation cover page reference⁹



⁹ Note: The cover page of the dissertation is printed on thick laminated cardboard (black hard cover). All letters are printed in golden yellow ink.

¹⁰ If the name of study program is too long, write it using font size 13 and/or in two lines

Appendix 2 Back cover of the final report/undergraduate thesis/master thesis/ dissertation



Appendix 3 Reference to the copyright declaration and transfer of the final report, undergraduate thesis, master thesis, and dissertation

DECLARATION ON THE FINAL REPORT/UNDERGRADUATE THESIS/MASTER THESIS/DISSERTATION ¹¹ AND INFORMATION SOURCES AND COPYRIGHT TRANSFER ¹²

I hereby declare that the final report/undergraduate thesis/master thesis/dissertation ¹ with the title "Title of Final Scientific Paper" is my work under the direction of the supervisory lecturers and has not been submitted in any form to any university. Sources of information derived from or quoted from published or unpublished work by other authors have been mentioned in the text and included in the References in the last part of this final report/undergraduate thesis/master thesis/dissertation.¹

I hereby transfer the copyright of my writing to IPB University.

Bogor, Month Year 20XX

Name

NIM

¹¹ Choose according to the stratum.

¹² The transfer of copyright for written works from collaborative research with parties outside IPB must be based on the relevant cooperation agreement.

Appendix 4a Reference and rules for writing abstract for undergraduate thesis

ABSTRAK

STUDENT NAME. Title of Undergraduate Thesis. Supervised by NAME of 1st SUPERVISOR and NAME of 2nd SUPERVISOR.

ABSTRACT

STUDENT NAME. Title of Undergraduate Thesis. Supervised by NAME of 1st SUPERVISOR and NAME of 2nd SUPERVISOR.

The narrative is arranged in one paragraph, the content is no more than 200 words, and is written on one page for *abstrak* and abstract. Abstract contains problem background (tentative), research objectives, methods, research results with an emphasis on new findings, and implications that are presented in an informative and factual manner. It is not allowed to refer to literature, figures, and tables. Abbreviations are only introduced if they are still used in other parts of the *Abstrak/Abstract*.

Kata kunci: written in Bahasa Indonesia, arranged alphabetically, maximum five words or phrases

Keywords: written in English, arranged alphabetically, maximum five words or phrases.

Appendix 4b Example of undergraduate thesis *abstrak*/abstract page (1 space and no before and after)

ABSTRAK

AHMADMUNAWARRANGKUTI. Perubahan *Post Mortem* Udang Vaname (*Litopenaeus vannamei*) Hingga 46 Jam setelah Kematian. Dibimbing oleh EVA HARLINA dan FADJAR SATRIJA.

Dalam dunia forensik veteriner, pembusukan dapat digunakan untuk menentukan waktu kematian hewan. Oleh karena itu, dibutuhkan suatu standar pembusukan pada satwa akuatik, khususnya udang. Penelitian ini bertujuan mempelajari perubahan *post mortem* udang vaname (*Litopenaeus vannamei*) 46 hours setelah kematian. Sebanyak 72 ekor sampel udang dieutanasia pada suhu 16 °C selama 120 menit. Kemudian, udang dibagi become 24 kelompok yang setiap kelompok terdiri atas 3 ekor. Perubahan makroskopik udang diamati setiap 2 hours, yaitu pada hours ke-0, 2, 4, 6, 8, 10, 12, 14, dan 46. Hasil penelitian menunjukkan perubahan setelah kematian, yaitu perubahan otot pada hours ke-2, bau busuk tercium pada hours ke-6, kekeruhan mata terjadi pada hours ke-8, kehadiran lalat mulai tampak pada hours ke-8, kekeruhan air terjadi pada hours ke-12 seiring dengan munculnya lendir, dan konsistensi otot udang become lunak pada hours ke-16. Hasil penelitian ini dapat digunakan sebagai acuan dalam forensik veteriner satwa akuatik khususnya udang air laut.

Kata kunci: forensik veteriner, pembusukan, udang vanamei

ABSTRACT

AHMAD MUNAWAWAR RANGKUTI. Post Mortem Changes of Vaname Shrimp (*Litopenaeus vannamei*) until 46 Hours After Death. Supervised by EVA HARLINA and FADJAR SATRIJA

In veterinary forensics, decomposition can be used to determine the time of death of an animal. Therefore, a standard of decomposition is needed for aquatic animals, especially vannamei shrimp. The study aimed to determine the post mortem changes of vannamei shrimp (*Litopenaeus vannamei*) during 46 hours after death. A total of 72 samples was euthanized at -16 °C for 120 minutes. Then the shrimps were divided into 24 groups, each group consisted of 3 shrimps. Postmortem changes were observed every 2 hours, i.e. at 0, 2, 4, 6, 8, 10, 12, 14, and 46-hour post-mortem. The results after death showed that muscle discoloration occurred at the second hour, foul odor smelled at the 6th hour, eye opacities occurred at the 8th hour, the presence of flies began to appear at the 8th hour, water turbidity occurred in 12th hour along with the appearance of mucus, and the consistency of the shrimp muscle became soft at 16th hour. The results of this study can be used as a reference in veterinary forensics of aquatic animals, especially seawater shrimp.

Keywords: decomposition, vannamei shrimp, veterinary forensic

Appendix 5a References and rules for writing a summary of the final report (1 space and no before and after)

SUMMARY

STUDENT NAME. Final report title in Bahasa Indonesia (Final report title in English).
Supervised by SUPERVISOR NAME(S)

Narratives are written in single space, arranged in several paragraphs, and not more than one page. Summary contains background problems, objectives, methods, results and discussion which are presented in a concise, informative, and factual manner. It is not allowed to refer to literature, figures, and tables. Abbreviations are only introduced if they are used again in other sections of the Summary.

Appendix 5b Example of writing a final report summary (1 space and no before and after)

RINGKASAN

KHAYDANUR. Analisis Kadar Fenol dan Flavonoid Total Kulit Buah Delima (*Punica granatum*). *Analysis of Total Phenolics and Flavonoid in Pomegranate Peel (Punica granatum)*. Dibimbing oleh WINA YULIANTI dan NUNUK KURNIATI NENGSIH.

Peningkatan penyakit degeneratif di Indonesia, memotivasi para peneliti untuk mengeksplorasi source daya alam guna dimanfaatkan sebagai salah satu cara pengobatan. Pengobatan dengan cara ini memiliki efek samping yang lebih rendah dibandingkan dengan pengobatan pada umumnya yang menggunakan bahan-bahan kimia. Pengobatan menggunakan bahan alam become daya tarik para peneliti dengan meneliti senyawa-senyawa kimia aktif dan aktivitas hayati yang berada dalam tumbuhan.

Buah delima yang sering dikonsumsi oleh masyarakat menghasilkan limbah berupa bagian kulit buah. Kulit buah ini become daya tarik para peneliti untuk diketahui lebih lanjut dan diharapkan mampu meningkatkan nilai ekonominya. Berdasarkan hasil penelitian-penelitian sebelumnya, kulit buah ini memiliki kemampuan antibakteri, antivirus, aktivitas antioksidan, dan sebagainya. Antioksidan merupakan senyawa yang mampu meredam radikal bebas. Aktivitas antioksidan tersebut umumnya berasal dari senyawa fenol dan turunannya. Flavonoid merupakan turunan senyawa fenol dan merupakan golongan terbesar yang diproduksi oleh tumbuhan.

Sampel kulit buah terlebih dahulu diekstraksi dengan metode maserasi dengan tiga jenis pelarut, yaitu air, etanol 70%, dan etanol 96%. Kadar fenol dan flavonoid total ditentukan dengan metode spektrofotometri. Prinsip metode ini didasarkan pada pengukuran sinar yang diserap oleh suatu analit yang berbanding lurus dengan konsentrasi analit tersebut. Kadar fenol total pada sampel ditentukan dengan menambahkan pereaksi Folin-Ciocalteu membentuk larutan kompleks berwarna biru yang diukur menggunakan spektrofotometer UV-Vis pada panjang gelombang 730 nm. Kadar flavonoid total ditentukan melalui beberapa tahap ekstraksi kemudian analit direaksikan dengan pereaksi $AlCl_3$ membentuk larutan kompleks berwarna kuning dan diukur menggunakan spektrofotometer UV-Vis pada panjang gelombang 425 nm.

Hasil analisis kadar fenol dan flavonoid total kulit buah delima yang diperoleh pada penelitian ini berkisar 268–1366 mg EAG/g dan 0.24 ± 0.75 mg EK/g dengan kadar tertinggi diperoleh pada ekstrak etanol 70%. Berdasarkan kadar fenol dan flavonoid total yang diperoleh, perlu diuji lebih lanjut aktivitas antioksidan pada kulit buah delima tersebut. Aktivitas antioksidan berkorelasi dengan senyawa fenol dan flavonoid.

Kata kunci: fenol, flavonoid, kulit buah delima, spektrofotometer UV-Vis

Appendix 5c References and rules for writing a summary for master thesis and dissertation

RINGKASAN

STUDENT NAME. Title of Master Thesis or Dissertation. Supervised by NAME of 1st SUPERVISOR 1st, NAME of 2nd SUPERVISOR, and NAME of 3rd SUPERVISOR.

SUMMARY

STUDENT NAME. Title of Master Thesis or Dissertation. Supervised by NAME of 1st SUPERVISOR 1st, NAME of 2nd SUPERVISOR, and NAME of 3rd SUPERVISOR.

Narratives are single-spaced, organized into several paragraphs, and no longer than two pages. Summary contains problem background, objectives, methods, results and discussion with an emphasis on new findings, and implications presented in a concise, informative, and factual manner. It is not allowed to refer to literature, figures, and tables. Abbreviations are only introduced if they are used again in other sections of the Summary.

Kata kunci: written in Bahasa Indonesia, arranged alphabetically, maximum five words or phrases

Keywords: written in English, arranged alphabetically, maximum five words or phrases.

Appendix 5d Example of master thesis and dissertation summary page (1 space and no before and after)

RINGKASAN

MIKO HARJANTI. Tipologi Pusat Pelatihan Pertanian dan Perdesaan Swadaya Berbasis Jaringan Komunikasi *Online-Offline* untuk Kemandirian Petani. Dibimbing oleh SUMARDJO, DJUARA P. LUBIS, dan NANI SUFIANI SUHANDA.

Kemandirian ditandai oleh kemampuan berdaya saring, berdaya saing, dan mampu bekerja sama saling menguntungkan. Hal tersebut penting bagi petani dalam mengelola usaha, namun penelitian terdahulu mengindikasikan kemandirian yang dimiliki petani masih rendah. Peningkatan kemandirian perlu diupayakan melalui interaksi pembelajaran partisipatif untuk komunitas petani.

Salah satu organisasi petani di Indonesia yang menyelenggarakan pembelajaran partisipatif adalah Pusat Pelatihan Pertanian dan Perdesaan Swadaya (P4S). Kegiatan P4S adalah menyampaikan informasi pertanian, menyelenggarakan pelatihan, magang, serta aktivitas pembelajaran pertanian others. P4S dikelola oleh petani-petani sukses baik secara perseorangan maupun kelompok. Proses pembelajaran di kelas didukung oleh praktik langsung yang dipandu oleh petani berpengalaman. P4S merupakan organisasi penyuluhan dari petani untuk petani (*farmer-to-farmer extension*) yang tumbuh dari upaya swadaya masyarakat untuk mengatasi kurangnya dukungan media massa dan melemahnya lembaga penyuluhan dalam menyediakan informasi bagi petani.

Kemajuan teknologi informasi mendorong pengelola P4S turut memanfaatkan Forum Diskusi *Online* (FDO) dalam proses pembelajaran bagi petani. Pernyataan pengelola P4S dalam diskusi mengungkapkan persepsi dan peran yang dilakukannya untuk masyarakat. Pendekatan kualitatif diterapkan pada tahap pertama kajian ini untuk menganalisis isi teks FDO. Peran P4S bagi petani pembelajar terungkap dari indikator kemandirian yang dimiliki petani pembelajar. Oleh karena itu, kajian ini tidak terbatas pada analisis teks FDO pengelola P4S, tetapi dikombinasikan dengan survei pada petani pembelajar.

Berdasarkan latar belakang tersebut, tujuan penelitian ini adalah (1) mendeskripsikan dan menganalisis isi FDO pengelola P4S mengenai pemanfaatan FDO, penggunaan FDO untuk meningkatkan kemandirian, peran P4S bagi masyarakat; serta pola pembelajaran petani di P4S; (2) mendeskripsikan dan menganalisis struktur jaringan komunikasi petani pembelajar berdasar pola pembelajaran; (3) menganalisis kemandirian petani pembelajar dan faktor-faktor yang memengaruhinya; dan (4) merumuskan strategi komunikasi yang tepat untuk meningkatkan kemandirian petani dengan memperhatikan pola pembelajaran P4S.

Paradigma pragmatis dengan strategi campuran bertahap (*sequential exploratory*) diterapkan dengan menggunakan metode-metode secara berurutan. Tahap pertama pendekatan kualitatif diterapkan untuk mengidentifikasi pemanfaatan FDO; penggunaan FDO untuk meningkatkan kemandirian; peran P4S bagi petani; serta pola pembelajaran

yang terjadi di P4S. Pada tahap pertama ditemukan tipologi pola pembelajaran di P4S yang dikaji lebih dalam pada tahap selanjutnya. Pada tahap berikutnya diterapkan pendekatan kuantitatif analisis jaringan komunikasi untuk mengungkapkan struktur jaringan dan faktor-faktor yang memengaruhi kemandirian.

Tahap pertama adalah pendekatan kualitatif dengan methods analisis isi atas teks FDO para pengelola P4S di Provinsi Jawa Barat dan Banten. Periode pengamatan sejak 24 Mei 2016 sampai 30 Juni 2017 menghasilkan 31.178 pernyataan. Metode analisis isi diterapkan untuk menganalisis seluruh pernyataan tersebut. Hasilnya memperlihatkan tahapan interaksi melalui FDO, pemanfaatan FDO sebagai sarana penyebarluasan informasi dan pemasaran, tahap kemandirian dalam diskusi, konstruksi peran sebagai pelaku *social entrepreneur*, pelaku kaderisasi pemuda pertanian, pandangan kritis pengelola atas keberadaan P4S bagi masyarakat, serta tipologi pola penyelenggaraan belajar di P4S. Identifikasi tipologi pembelajaran memperlihatkan ada tiga pola, yaitu informal (spontan dalam kehidupan sehari-hari di lingkungan sekitar); nonformal (terencana dalam bentuk pelatihan/magang); serta informal-nonformal (gabungan pola spontan dan terencana). Hasil tersebut dikaji lebih dalam pada tahap selanjutnya.

Tahap kedua ialah pendekatan kuantitatif analisis jaringan komunikasi pada level petani pembelajar di ketiga pola P4S. Responden petani pembelajar pada P4S berpola Informal sebanyak 48 orang; P4S Informal-Nonformal sebanyak 34; dan P4S Nonformal sebanyak 36 orang. Responden adalah para petani yang memperoleh pembinaan atau mengikuti pelatihan di P4S. Analisis jaringan komunikasi memperlihatkan perbedaan struktur komunikasi pada ketiga pola pembelajaran. P4S berpola pembelajaran informal memperlihatkan ketergantungan pada *Star* dan *Opinion Leader* serta kedekatan letak lokasi. Sebaliknya, petani pembelajar berpola pembelajaran nonformal tersebar di lokasi yang berjauhan, dan mampu berjejaring dengan memanfaatkan teknologi informasi. Struktur komunikasi berpola Informal-Nonformal memperlihatkan perpaduan dari pola Informal dan Nonformal.

Tahap ketiga ialah pendekatan kuantitatif methods *partial least square* pada faktor-faktor yang berpengaruh pada kemandirian petani pembelajar. Data berasal dari wawancara menggunakan daftar pertanyaan pada petani pembelajar di ketiga tipologi P4S. Variabel yang diukur meliputi (1) karakteristik individu; (2) dinamika P4S; (3) modal sosial; (4) kemandirian petani. Hasilnya memperlihatkan keempat variabel tersebut penting untuk peningkatan kemandirian pada semua jenis P4S. Ketiga P4S membutuhkan strategi berbeda sesuai dengan karakteristik pola pembelajaran. Strategi bagi P4S Informal adalah memperkuat fungsi tugasnya sebagai wadah memenuhi kebutuhan usahatani secara bersama-sama. P4S Informal-Nonformal perlu peningkatan keefektifan proses pembelajaran dan tekanan pada komunitas internal serta menjalin jaringan usaha dengan komunitas luar yang pernah belajar disana. Strategi bagi P4S Nonformal adalah memberdayakan petani muda berpendidikan tinggi, mengembangkan jejaring usaha, menjalin kerja sama dengan universitas dan school menengah kejuruan serta mengembangkan sistem pembelajaran yang menarik bagi petani muda. Perumusan strategi secara spesifik berdasar pola pembelajar akan mengarahkan upaya peningkatan kemandirian dengan lebih efektif.

Kata kunci: analisis jaringan komunikasi, analisis isi, forum diskusi *online*, kemandirian, organisasi penyuluh swadaya

Appendix 5e Example of master thesis and dissertation summary page (1 space and no before and after)

SUMMARY

MIKO HARJANTI. The Typologies of Farmers Agricultural and Rural Training Centre Based on Online-Offline Communication Networks to Achieve Farmer Interdependence. Supervised by SUMARDJO, DJUARA P. LUBIS, and NANI SUFIANI SUHANDA.

Interdependence is characterized by filter system ability, competitiveness, and ability to cooperate mutually. Interdependence is important for farmers in managing their business, however, previous researches indicate that the interdependence of farmers is still low. The efforts to increase interdependence need to be conducted through the interaction of participatory learning for the farmer community.

One of the farmer organizations in Indonesia that conducts participatory learning is Farmers Agricultural and Rural Training Center (FARTC). The FARTC activities are disseminating agricultural information, conducting training, apprenticeships, and other agricultural learning activities. The learning process is conducted in the classroom or direct practice guided by experienced farmers. The FARTC is a farmer-to-farmer extension organization as the effort from society to address the lack of mass media support and the weakening of extension agencies in providing information to farmers.

The advances in information technology encourage the FARTC organizer to utilize the Online Discussion Forum (ODF) in the learning process for farmers. The statements of FARTC organizers in the discussion revealed their perceptions and roles for the farmer community. A qualitative approach is applied in the first phase of this study to analyze the contents of the ODF text. The role of FARTC is revealed from the indicators of interdependence owned by learner farmers. Therefore, this study is not limited to the level of FARTC organizers but is combined with a survey for learner farmers.

Based on this background, the objectives of this research are: (1) to describe and analyze the contents of the ODF with participant FARTC organizers related themes of the use of ODF; the support of ODF for interdependence; the role of FARTC for society; and learning patterns in FARTC; (2) to describe and analyze the structure of communication networks of FARTC farmers based on learning patterns; (3) to analyze the interdependence of the learners' and its influence factors; (4) to formulate appropriate communication strategy to increase farmer interdependence concerning to learning pattern.

The pragmatic paradigm with the sequential exploratory strategy is applied by using the methods in sequence. A qualitative approach using content analysis methods for ODF text is applied to identify the benefit of ODF; the support of ODF for interdependence; the role of FARTC; as well as the learning patterns that occur in FARTC. The first stage reveals the typology of learning patterns in P4S which are examined more deeply in the next stage. In the next stage a quantitative analysis of network communication is applied to explore the network structure and the factors that influence interdependence.

The first stage is the qualitative approach with the content analysis method to the ODF text of FARTC managers in West Java and Banten Province. The observation period from May 24, 2016, to June 30, 2017, as much as 31,178 statements. The content analysis method is applied to analyze all statements. The results show the interaction stages through the ODF; the use of ODF as a means of disseminating information and marketing; the interdependence stages in the discussion; the role of FARTC as a social entrepreneur and agriculture regeneration; the organizer's critical view of the existence of FARTC for the society; and the typology of learning pattern in FARTC. The identification of the learning process in FARTC shows three patterns namely: informal (spontaneous in everyday life in the neighborhood); nonformal (planned in the form of training/apprenticeship); as well as informal-nonformal (combined spontaneous and planned patterns).

The second stage is the communication network analysis of the learner farmers in all three FARTC patterns. The respondents of informal patterned FARTC are 48 people; informal-nonformal FARTC is 34, and nonformal FARTC is 36 people. The respondents are farmers who have ever learned or attended training in FARTC. The analysis of the communication networks shows differences in the communication structure of the three FARTC learning patterns. Informal learning patterned FARTC shows dependence on Star and Opinion Leader and location proximity. On the other hand, the farmers of nonformal FARTC stay in spread locations and build the network using information technology. The communications of informal-nonformal FARTC shows the mix of informal and nonformal patterns.

The third stage is the quantitative analysis of the factors that affect the interdependence of FARTC learner farmers. Sources of data are interview using questionnaires on learner farmers of the three types FARTC, then processed using Partial Least Square method. The variables measured include (1) Individual characteristics; (2) Dynamics of FARTC; (3) Social capital; (4) Interdependence of farmers. The results show that these four variables are important for increasing interdependence in all FARTC types. Three types of FARTC require different strategies according to the characteristics of learning patterns. The strategy for informal FARTC is to strengthen the duty function to meet the needs of the farming business together. Informal-nonformal FARTC needs to improve the effectiveness of learning processes, pressure on the internal community, and establish business networks with external communities that have studied there. The strategy for the Nonformal FARTC is empowering high educated young peoples, developing business networks, collaborating with universities and vocational schools, and developing an appealing learning system for young farmers. The formulation of specific strategies based on the learning pattern will direct the efforts to increase interdependence more effectively.

Keywords: communication network analysis, content analysis, farmer-to-farmer extension organization, interdependence, online discussion forum.

Appendix 6 Example of final report, thesis, and dissertation copyright page reference

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¹³ The transfer of copyright for written works from collaborative research with parties outside IPB must be based on the relevant cooperation agreement

Appendix 7a Example of inner title page in final report

TITLE

(Times New Roman size 14)

NAME

(Full name, font Times New Roman size 14)

Final report
as one of the requirements to obtain an Associate
Expert degree in the Study Program

NAME OF STUDY PROGRAM
VOCATIONAL SCHOOL
IPB UNIVERSITY BOGOR
20XX

(Times New Roman size 14)

Appendix 7b Example of inner title page in undergraduate thesis

TITLE

(Times New Roman size 14)

NAME

(Full name, font Times New Roman size 14)

Undergraduate thesis
as one of the requirements to obtain a Bachelor's
degree in the Study Program

NAME OF DEPARTMENT/STUDY PROGRAM

FACULTY/SCHOOL

IPB UNIVERSITY BOGOR

20XX

(Times New Roman size 14)

Appendix 7c Example of inner title page in undergraduate thesis of FKH

TITLE

(Times New Roman size 14)

NAME

(Full name, font Times New Roman size 14)

Undergraduate thesis
as one of the requirements to obtain a Bachelor's
degree in the Study Program
Faculty of Veterinary Medicine

**FACULTY OF VETERINARY MEDICINE
IPB UNIVERSITY BOGOR
20XX**

(Times New Roman size 14)

Appendix 7d Example of inner title page in master thesis

TITLE

(Times New Roman size 14)

NAME

(Full name, font Times New Roman size 14)

Master thesis

as one of the requirements to obtain a Master's
degree in the Study Program

NAME OF STUDY PROGRAM
GRADUATE SCHOOL/BUSINESS SCHOOL/FACULTY
IPB UNIVERSITY BOGOR
20XX

(Times New Roman size 14)

Appendix 7e Example of inner title page in dissertation

TITLE

(Times New Roman size 14)

NAME

(Full name, font Times New Roman size 14)

Dissertation

as one of the requirements to obtain a Doctoral
degree in the Study Program

NAME OF STUDY PROGRAM
GRADUATE SCHOOL/BUSINESS SCHOOL/FACULTY
IPB UNIVERSITY BOGOR
20XX

(Times New Roman size 14)

Appendix 8a Example of the examiners in the final report exam page

External, Non-Supervisory Commission Supervisor in the final report exam: full name and degree

Appendix 8b Example of examiner team in undergraduate thesis exam page

External, Non-Supervisory Commission Examiner (Team*) in the Undergraduate Thesis Exam:

- 1 Full name and degree
- 2 Full name and degree

*) If the examiner is only one person do not use the word "team" and number

Appendix 8c Example of examiner in the master thesis exam page

External, Non-Supervisory Commission Examiner Team in Master Thesis Exam:

- 1 Full name and degree
- 2 Full name and degree

Appendix 8d Example of the examiner/promoter team in the dissertation exam (closed exam and open defense doctoral promotion) page

External, Non-Supervisory Commission Examiner in Dissertation Closed Exam:

- 1 Full name and degree
- 2 Full name and degree

External, Non-Supervisory Commission Promoter in Open Defense Doctoral Promotion:

- 1 Full name and degree
- 2 Full name and degree

Appendix 9a Example of final report validation page

Title of Final Report :
Name :
NIM :

Approved by

1st supervisor:

Full name and degree

2nd supervisor:

Full name and degree

Acknowledged by

Head of Study Program:

Full name and degree

NIP

Dean of Vocational

School: Full name and

degree NIP

Exam date:

(date of exam
implementation)

Graduation Date:

(date of signing by the Dean of Vocational
School)

Appendix 9b Example of undergraduate thesis validation page

Title of Undergraduate Thesis :
Name :
NIM :

Approved by

1st supervisor:

Full name and degree

2nd supervisor:

Full name and degree

Acknowledged by

Head of Study
Program.....:

Full name and degree NIP

Or (choose one)

Head of Department

Full name and degree NIP

Exam date:
(date of exam implementation)

Graduation Date:
(date of signing by the Dean of Faculty/
School ...)

Appendix 9c Example of FKH undergraduate thesis validation page

Title of Undergraduate Thesis :
Name :
NIM :

Approved by

1st supervisor:

Full name and degree

2nd supervisor:

Full name and degree

Acknowledged by

Vice Dean for Academic Affairs of Faculty of Veterinary

Medicine: Full name and degree

NIP

Exam date:

(date of exam implementation)

Graduation Date:

(date of signing by the Dean of FKH)

Appendix 9d Example of master thesis validation page

Title of Master Thesis :
Name :
NIM :

Approved by

1st supervisor:
Full name and degree _____

2nd supervisor:
Full name and degree _____

Acknowledged by

Head of Study Program:
Full name and degree _____
NIP

Dean of Faculty/School ... :
Full name and degree NIP _____

Exam date:
(date of exam implementation)

Graduation Date:
(date of signing by the Dean of Faculty/
School ...)

Appendix 9e Example of dissertation validation page

Title of Dissertation :
Name :
NIM :

Approved by

1st supervisor:

Full name and degree

2nd supervisor:

Full name and degree

3rd supervisor:

Full name and degree

Acknowledged by

Head of Study Program:

Full name and degree

NIP

Dean Faculty/school ... :

Full name and degree NIP

Exam date:

(date of exam implementation)

Graduation Date:

(date of signing by the Dean of Faculty/
School ...)

Appendix 10 Preface reference example for final report/undergraduate thesis/master thesis/ dissertation

PREFACE

The author would like to convey his/her praise and gratitude to Allah subhanahu wa ta'ala for all His blessings in making this scientific paper successfully completed. The theme chosen in the research conducted from the month of 20XX to the month of 20XX is

....., with the title “.....”.

The authors would like to thank the supervisors, ... (full name and degree) who have guided and provided many recommendations. Expressions of thankfulness are also extended to the academic supervisors (for the D-3 and S-1 programs), the moderator of the seminar, and the external, non-supervisory commission examiner. In addition, the author's appreciation goes to ... (full name and degree from the institution/company that has given the research permit), (name and degree or Mr./Mrs. if there is no degree) and the staff of Laboratory of..... and so on... who have given their assistance during data collection. Expressions of gratitude are also conveyed to father, mother, and the entire family (wife/husband/children if married) who have provided support, prayers, and affection ... and so on.

Hopefully this scientific work is useful for those who need it and for the advancement of science.

Bogor, Month Year

Name of Author

Appendix 11a Reference example for table of contents in final report**TABLE OF CONTENTS**

(2 spaces)

LIST OF TABLES (1 space and <i>after</i> 6)	viii
LIST OF FIGURES (1 space and <i>after</i> 6)	viii
LIST OF APPENDICES (1 space and <i>after</i> 6)	viii
I INTRODUCTION (1 space)	
1.1 Background	1
1.2 Problem statement	x
1.3 Objectives	x
1.4 Benefits	x
1.5 Scope (optional)	x
II LITERATURE REVIEW (optional) (1 space and <i>before</i> 6)	xx
2.1 Title of Subchapter	xx
2.1 Title of Subchapter	xx
2.1 Title of Subchapter	xx
III METHODS (1 space and <i>before</i> 6)	xx
3.1 Field Work Time and Place	xx
3.2 Tools and Materials	xx
3.3 Data Collection Techniques and Data Analysis (optional)	xx
3.4 Work Procedures	xx
IV GENERAL CONDITION OF COMPANY (1 space, <i>before</i> 6)	
4.1 History	xx
4.2 Institutional Activities	xx
4.3 Organizational Structures	xx
4.3 Functions and Objectives	xx
V RESULTS AND DISCUSSION/FIELD WORK TOPIC (1 space and <i>before</i> 6)	xx
VI CONCLUSIONS AND RECOMMENDATION (1 space and <i>before</i> 6)	xx
6.1 Conclusions	xx
6.2 Recommendation	xx
REFERENCES (1 space and <i>before</i> 6)	xx

Appendix 11b Reference example for table of contents in undergraduate thesis

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LIST OF FIGURES (1 space and <i>after</i> 6)	viii
LIST OF APPENDICES (1 space and <i>after</i> 6)	viii
I INTRODUCTION (1 space)	
1.1 Background	1
1.2 Problem statement	x
1.3 Objectives	x
1.4 Benefits	x
1.5 Scope (optional)	x
1.6 Hypothesis (optional)	x
II LITERATURE REVIEW (optional) (1-space title, <i>before</i> 6)	xx
2.1 Title of Subchapter	xx
2.1 Title of Subchapter	xx
2.1 Title of Subchapter	xx
III METHODS (1-space title and <i>before</i> 6)	
3.1 Time and Place	xx
3.2 Tools and Materials	xx
3.3 Work Procedures	xx
3.4 Data Analysis	xx
IV RESULTS AND DISCUSSION* (separated or joined) (1-space title and <i>before</i> 6)	
4.1 Results	xx
4.2 Discussion	xx
*) Note: for social science adjusted	
V CONCLUSIONS AND RECOMMENDATION (1-space title and <i>before</i> 6)	
5.1 Conclusions	xx
5.2 Recommendation	xx
REFERENCES (1-space title and <i>before</i> 6)	xx

Appendix 11c Reference example for table of contents in master thesis and dissertation with general pattern

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LIST OF FIGURES (1 space and <i>after</i> 6)	ix
LIST OF APPENDICES (1 space and <i>after</i> 6)	ix
I INTRODUCTION (1 space)	xx
1.1 Background	1
1.2 Problem statement	x
1.1 Objectives	x
1.2 Benefits	x
1.3 Scope (optional)	x
1.4 Novelty (for dissertation)	x
1.5 Hypothesis (optional)	x
II LITERATURE REVIEW (1-space title and <i>before</i> 6)	
2.1 Title of Subchapter	xx
2.2 Title of Subchapter	xx
III METHODS (1-space title and <i>before</i> 6)	
3.1 Research Time and Place	xx
3.2 Tools and Materials	xx
3.3 Work Procedures	xx
3.4 Data Analysis	xx
IV RESULTS AND DISCUSSION* (1-space title and <i>before</i> 6)	
4.1 Title of Subchapter	xx
4.2 Title of Subchapter	xx
4.3 Title of Subchapter	xx
4.4 Title of Subchapter	xx
4.5 Title of Subchapter	xx
*) Note: for social science adjusted	xx
V CONCLUSIONS AND RECOMMENDATION (1-space title and <i>before</i> 6)	xx
REFERENCES (1 space and <i>before</i> 6)	xx
APPENDIX (1 space and <i>before</i> 6)	xx

Appendix 11d Reference example for table of contents in master thesis and dissertation with research series pattern

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LIST OF FIGURES (1 space and <i>after</i> 6)	ix
LIST OF APPENDICES (1 space and <i>after</i> 6)	ix
I INTRODUCTION (1 space)	
1.1 Background	1
1.2 Problem statement	x
1.3 Objectives	x
1.4 Benefits	x
1.5 Scope (optional)	x
1.6 Novelty (<i>novelty</i>) (for dissertation)	x
1.7 Hypothesis (optional)	x
II LITERATURE REVIEW (1-space title and <i>before</i> 6)	
2.1 Title of Subchapter	xx
2.2 Title of Subchapter	xx
III 1 st TOPIC TITLE (1-space title and <i>before</i> 6)	
3.1 Abstrak	xx
3.2 Introduction	xx
3.3 Methods	xx
3.4 Results and Discussion	xx
3.5 Conclusions	xx
IV 2 nd TOPIC TITLE (1-space title and <i>before</i> 6)	
4.1 Abstract	xx
4.2 Introduction	xx
4.3 Methods	xx
4.4 Results and Discussion	xx
4.5 Conclusions	xx
V 3 rd TOPIC TITLE (and so on) (1-space title, <i>before</i> 6)	
5.1 Abstract	xx
5.2 Introduction	xx
5.3 Methods	xx
5.4 Results and Discussion	xx
5.5 Conclusions	xx
VI GENERAL DISCUSSION (1-space title and <i>before</i> 6)	xx
VII GENERAL CONCLUSIONS AND RECOMMENDATION (1 space and <i>before</i> 6)	xx
REFERENCES (1 space and <i>before</i> 6)	xx
APPENDIX (1 space and <i>before</i> 6)	xx

Appendix 12 Example of list of tables, list of figures, and list of appendices in final report, undergraduate thesis, master thesis, and dissertation

LIST OF TABLES

(2 spaces)

1 Title of Table 1	xx
2 Title of Table 2	xx
3 Title of Table 3 (and so on)	xx

LIST OF FIGURES

(2 spaces)

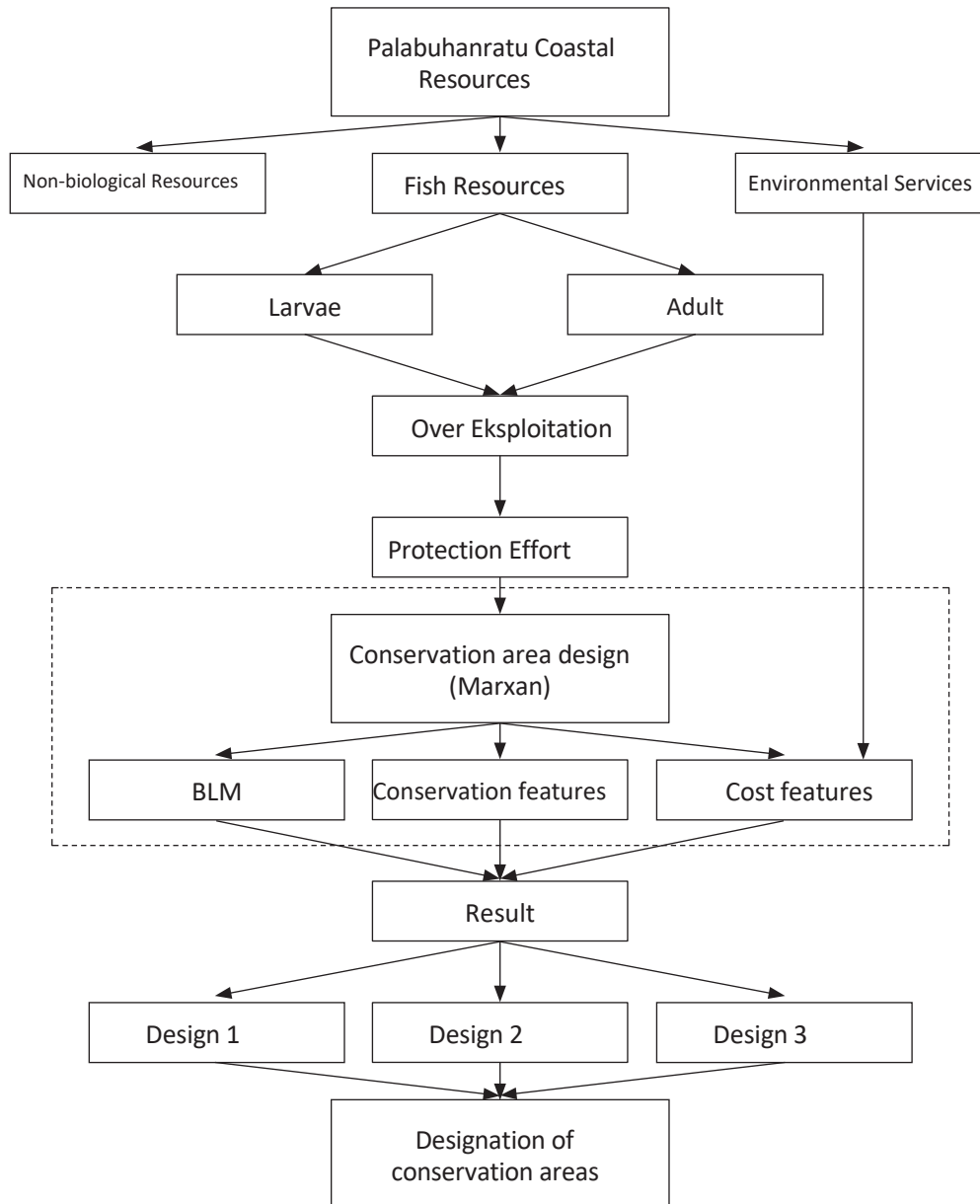
1 Title of Figure 1	xx
2 Title of Figure 2	xx
3 Title of Figure 3 (and so on)	xx

LIST OF APPENDICES

(2 spaces)

1 Title of Appendix 1	xx
2 Title of Appendix 2	xx
3 Title of Appendix 3 (and so on)	xx

Appendix 13 Flowchart example of process framework and problem statement in final report, undergraduate thesis, master thesis, and dissertation



———— = Relationship
 - - - - - = Research scope

Research framework scheme for Designing Regional Marine Protected Areas Based on Fish Larva Potential in Palabuhanratu Bay, Sukabumi District, West Java

Appendix 14a Example of life history writing reference in final report and undergraduate thesis

LIFE HISTORY

The author was born in the city on the day of the month of the year as theth child of ... and ... High school education (SMA) was taken at ... school, and graduated in In ..., the author was accepted as a diploma 3/undergraduate (D-3/S-1) student in the Study Program/ Faculty/School of ... at IPB.

While following the D-3/S-1 program, the author was active as a ... (organizational history and experience, academic assistant, and so on). The author has also participated in a competition (history of scientific activities) obtained or was elected as ... (history of academic achievement).

Appendix 14b Example of life history writing reference in master thesis and dissertation

LIFE HISTORY

The author was born in the city on the day of the month of the year as theth child of ... and ... Bachelor's education was taken at the ... Study Program, Faculty of ... University ... , and graduated in In ..., the author was accepted as a master's program (S-2) student in the ... Study Program at the Graduate School of University ... and finished it in (for S-2 student). The opportunity to continue to a doctoral program in the ... Study Program of IPB Graduate School was obtained in ... at his own expense/graduate education scholarship obtained from ... (for S-3 student).

The author has worked as ...at ... since ... and was placed in ... and so on (job history).

While following the S-2/S-3 program, the author was active as a ... (organizational history and experience). The scientific paper entitled ... has been presented at a seminar/symposium ... and/or published in a journal ... (publication history)¹⁴. The author has also received or been elected as ... (academic achievement history). These scientific papers were part of the author's S-2/S-3 program.

¹⁴ For a master thesis/dissertation, for one or all titles of publications that have been published/seminarized, the name of the journal(s) that published the article(s) or the name of the national/international seminar that was attended can be written. Alternatively, a list of publications can be made and placed in the appendix.

Appendix 15 List of publisher names and their abbreviations

Publisher full name	Abbreviation
Academic Press ⁵	Academic Pr
Addison-Wesley Publishing Company	Addison-Wesley
American Chemical Society ^{1,4}	American Chemical Soc
American College of Physicians ^{1,4}	American Coll of Physicians
American Institute of Physics	American Inst of Physics
American Mathematical Society	American Mathematical Soc
The Analytic Press, Inc	Analytic Pr
APS Press ^{1,3}	APS Pr
Blackwell Scientific Publications, Inc	Blackwell Scientific
Butterworth-Heinemann	Butterworth-Heinemann
Cambridge University Press	Cambridge Univ Pr
Churchill Livingstone, Inc	Churchill Livingstone
Cornell University Press	Cornell Univ Pr
CRC Press, Inc	CRC Pr
David R. Godine, Publisher	DR. Godine
Douglas & McIntyre	Douglas & McIntyre
Dover Publications, Inc	Dover
Elsevier Science Publishing Co., Inc	Elsevier Science
Éditions Flammarion ²	Flammarion
Futura Publishing Co., Inc.	Futura
The Galileo Press	Galileo
Geological Society of America	Geological Soc of America
Graphics Press	Graphics Pr
Harper & Row, Publisher, Inc.	Harper & Row
Harvard University Press	Harvard Univ Pr
Henry Holt & Co., Inc.	Henry Holt
Inkata Press Pty Ltd	Inkata
International Organization for Standardization ⁶	ISO
Jackdaw Press ^{1,3}	Jackdaw Pr
John Wiley & Sons ^{2,7}	J Wiley
Jones & Bartlett Publishers, Inc.	Jones & Bartlett
The Keynes Press	Keynes
The MIT Press ^{1,2,3}	MIT Pr
The University of Chicago Press ^{1,3}	Univ Chicago Pr
Little, Brown and Company ²	Little, Brown
Les Éditions INSERM ^{1,2,3}	Éditions INSERM
Longman Group	Longman
Macmillan Publishing Co., Inc.	Macmillan

Publisher full name	Abbreviation
McGraw-Hill Book Company ²	McGraw-Hill
McGraw-Hill, Inc. ²	McGraw-Hill
Merck & Co., Inc.	Merck & Co
Merriem-Webster Inc., Publishers ²	Merriem-Webster
Routledge Chapman & Hall	Routledge Chapman & Hall
Sage Publications, Inc.	Sage
The Shoe String Press, Inc.	Shoe String
Sinauer Associates	Sinauer
Springer Publishing Company ^{2,3}	Springer Publishing
Springer-Verlag ^{2,3}	Springer-Verlag
United States Pharmacopeial Convention ⁸	US Pharmacopeial Convention
Van Nostrand Reinhold Company	Van Nostrand Reinhold
W.B. Saunders Company ^{2,7}	WB Saunders
W.H. Freeman & Company	WH Freeman
Williams & Wilkins	Williams & Wilkins

¹ Eliminate the words “The” or “Les”; remove the conjunctions "of" and "de" except those contained in the name of the professional organization that acts as the publisher; ²Remove words such as “Cie”, “Co”, “Editions”, “Inc”, “Ltd”, “Press”, “S.A”, “Verlag”, “PT” that accompany the name of the publishing company; ³If the omission of the word causes the identity of the publisher to be unclear, then the word does not need to be omitted, but should still be written in abbreviation. Example “Press” is abbreviated as “Pr” and “University” is abbreviated as “Univ”; ⁴For professional organizations whose main function is not as a publisher, their names do not need to be abbreviated except for general terms such as “Association” abbreviated as “Assoc”, “Society” abbreviated as “Soc”, “Institute” abbreviated as “Inst”. Adjust the abbreviated name of scientific journals to those listed in the relevant publication; ⁵If by omitting some letters only an adjective remains, other words that accompany it need to be preserved; ⁶If in the references the abbreviation of the name of the publisher is listed as the author, then the abbreviation is also used for the name of the publisher; ⁷The first letter of the publisher's first name can be treated as the author's name. Therefore, the publisher's well-known name may be abbreviated following this reference; ⁸Commonly known abbreviations can be used to replace them.

Appendix 16 Summary of typing requirements, cover color, and maximum page count of undergraduate thesis/master thesis/dissertation

Paper Material and Size

- a. Paper type: HVS 80 gram
- b. Paper color: white
- c. Paper size: A4 (21.0 cm × 29.7 cm)

Note: Maps, figures, photos, diagrams, sketches, blueprints, decrees, and others can use different types, colors, and sizes according to needs.

Typing requirements

1. Font: Times New Roman with a 12-point font size for text, a 14-point font size for chapter title. There is another choice of font for displaying computer results, namely Courier New with an 11-point font size.
2. The left margin of the writing area is 4 cm, while the right, top, and bottom borders are 3 cm each.
3. The page number is typed in the top right or left corner (mirror) with a right or left border of 3 cm and an upper limit of 2 cm.
4. Manuscript is typed on back and forth including the first part, except for the confirmation sheet. The validation sheet is placed on the odd page and opposite the non-commission examiner page which is placed on the even page.
5. The typing line spacing is 1 space.
6. The first line of the paragraph protrudes 1 cm from the left side of the writing area and is justified.
7. The multilevel paragraph, numbered or is a description of the previous paragraph, is written indented 0.5 cm from the paragraph above it. For the next multilevel paragraph, the first line is indented again 0.5 cm from the paragraph above it.
8. The numbering of the chapters uses roman numbers, while the subchapters use Arabic numbers. Chaptering cannot be done more than 3 levels. If there are still details in the subchapters, the multilevel paragraphs are done with a, b, c, and so on; the details in the sub-chapters are a, b, c, and so on (see Appendix 17).
9. The chapter title is typed in capital letters, in bold, no period, not underlined. Chapter numbering uses Roman numbers without period, and is centered (see Appendix 17).
10. Title of subchapter is typed with capital letters at the beginning of each word, except for conjunctions (such as: and, as well as, by, with, for) and prepositions (such as: in, to, from, on), in bold, does not end with a period, and is not underlined. The title of the subchapter is 2 spaces from the chapter title or from the paragraph above and 1 space from the paragraph below. Subchapter numbering uses Arabic numbers without period and is typed on the left edge (see Appendix 17).

11. Title of sub-subchapter is typed with a capital letter at the beginning of each word, except for conjunctions (such as: and, and, by, with, for) and prepositions (such as: in, to, from, on), not in bold, does not end with a period, and is not underlined. Title of sub-subchapter is 1.5 spaces with paragraph above and 1 space with paragraph below. If the length of the section title exceeds the width of the writing field, make it 2 lines or more with a distance of 1 space. The numbering of sub-subchapters uses Arabic numbers without period and is typed on the left edge (see Appendix 17).
12. In the body of the writing, each new chapter is written on a new page, including the writing of References.
13. Page numbers starting from Abstract to List of Appendices are indicated by i, ii, iii, iv, and so on.
14. Page numbering starts from the Introduction chapter using Arabic numbers 1, 2, 3, 4, and so on.

Paper Type and Cover Color

1. The cover for the final report uses orange cardboard for all study programs, and is printed on soft cover.
2. The cover for the undergraduate thesis uses cardboard with different colors for each faculty, namely for Faperta: green, FKH: purple, FPIK: blue, Fapet: brown, Fahutan: gray, Fateta: red, FMIPA: white, FEM: orange, FEMA: signature green, and printed on soft cover.
3. The cover for the master thesis uses thick cardboard with dark red color, and is printed on hard cover.
4. The cover for the dissertation uses thick cardboard with black color, and is printed on hard cover.

Maximum Number of Words

1. Final report and undergraduate thesis of 5,000–20,000 words;
2. Master thesis and dissertation of 10,000–40,000 words;
3. Dissertation with research series pattern of at least 3 articles or publications;
4. This maximum word count does not include references and appendices.

Cover Page

1. The word order in the title forms an inverted triangle and is not more than 3 lines with 1 space apart;
2. Title is not more than 15 words long;
3. The distance between the title of the paper and the student's full name, with the logo and name of the department/study program/faculty/school must match the sample appendix;
4. The IPB logo according to the Statute is 2.5 cm in diameter, black color.

Appendix 17 Numbering examples of chapter, subchapter, sub-subchapter, and sub- sub-subchapter

II LITERATURE REVIEW

2.1 Title of Subchapter (Words in the title begin with a capital letter and are bolded)

Narration with description
.....
.....
.....

- a ...
- b ...
- c ...
 - 1) ...
 - 2) ...
 - 3) ...

2.1.1 Title of Sub-subchapter (Words in the title begin with a capital letter and are not bolded)

Narration with description
.....
.....

- a) ...
- b) ...
- c) ...
 - (1) ...
 - (2) ...
 - (3) ...

2.1.2 Title of Sub-subchapter

2.2 Title of Subchapter

Narration with description
.....
.....
.....

- a ...
- b ...
- c ...
 - 1) ...
 - 2) ...
 - 3) ...

2.2.1 Title of Sub-subchapter

Narration with description

.....

.....

.....

a) ...

b) ...

c) ...

(1) ...

(2) ...

(3) ...

2.2.2 Title of Sub-subchapter

2.2.3 Title of Sub-subchapter

2.2.3.1 Title of Sub-sub-subchapter* (Only the first word in the title begins with a capital letter and is not bolded)

* The 4-level chaptering is not recommended in the writing of the Final Project