ACKNOWLEDGEMENT

First of all, writer would like to thank God for His love and blessings to the writer, so that the writer could finish the analysis and the writing of this thesis. This thesis report is one of the requirements for obtaining the bachelor degree in Food Technology UPH. The writer conscious that this thesis report could not be finished well without the help from others. In this opportunity, writer wants to give big gratitude to those who both directly and indirectly give support to the writer, including:

1) Prof. Dr. C. Hanny Wijaya, as thesis supervisor for the time, guidance, support, information, and tutelage for the writer before, during, and after the analysis and in the writing of this thesis.

2) Mr. Jeremia Manuel, MP as thesis co-supervisor for the guidance and support before, during, and after the analysis and in the making of thesis report.

3) Ms. Julia Ratna Wijaya, MAppSc as the Head of Food Technology Department who has given the chance for this research to be done.

4) Mrs. Sisi Patricia, MEng as the Vice Head of Food Technology Department for the support and advice during writing this report.

5) Mrs. Tince Rumalutur as a lecturer in Universitas Cendrawasih, Jayapura, Papua for the information regarding matoa fruit and the support during writing of thesis.

6) Family members who always pray for the writer and gave their support for this thesis started from the beginning until the end of this thesis writing.
7) Families and relatives in Sorong and Jayapura for the supply of matoa fruit, support, and pray to the writer in the making of this report.

8) Karina, Valencia, Christie Mandasari, Evelyn, Dessy Wijaya, Kevie Aditya, Jesslyn Eben, Gabriella Dhea, and Tan Edwin Tanadi as best comrades for time, support, and willingness to follow the training and QDA test.

9) Mr. Hendra, Mr. Donny, Mr. Aji, Ms. Merri and Mr. Darius who have given their helps and supports for the writer during the work in the laboratories.

10) My best friend Maggie Tantra for the support and pray during composing of this report.

11) All C class member of Food Technology 2009 UPH for the support and encouragement during thesis research.

12) All people and relatives who are not mentioned yet but have also support the writer during research and completion of final report.

The writer realizes that this report is far from being perfect. Therefore, the writer wants to apologize if there were any mistakes in thesis report. Moreover, the writer wants to appreciate for everyone who read this report and hopefully it will give useful information regarding the Matoa fruit. Finally, the writer also wants to say thank you for the attention, suggestions, and critics that are given to this report.

Karawaci, January 2013

Writer
# TABLE OF CONTENT

COVER
STATEMENT OF THESIS AUTHENTICITY
APPROVAL BY THESIS SUPERVISORS

**ABSTRACT** ............................................................................................................ i

**ACKNOWLEDGEMENT** .................................................................................... ii

**TABLE OF CONTENT** ........................................................................................ iv

**LIST OF TABLES** ............................................................................................... vi

**LIST OF FIGURES** ............................................................................................ vii

**LIST OF APPENDICES** ................................................................................... viii

**CHAPTER I INTRODUCTION** ........................................................................ 1

1.1 Background ......................................................................................................................... 1

1.2 Research Problem .............................................................................................................. 2

1.3 Objective ......................................................................................................................... 2

**CHAPTER II LITERATURE REVIEW** ........................................................ 4

2.1 Matoa (*Pometia pinnata*) ............................................................................................ 4

2.2 Volatiles in Fruits ........................................................................................................... 9

2.3 Jam ................................................................................................................................. 11

2.4 Jelly ............................................................................................................................... 12

2.5 Fruit in Syrup .................................................................................................................. 13

2.6 Physicochemical Analysis ............................................................................................. 13

2.6.1 Physical Analysis ........................................................................................................ 14

2.6.2 Chemical Analysis ...................................................................................................... 15

2.7 Sensory Analysis ............................................................................................................. 17

**CHAPTER III RESEARCH METHODOLOGY** ............................................ 23

3.1 Materials and Equipments ............................................................................................ 23

3.2 Methods ....................................................................................................................... 24

3.2.1 Physicochemical Analysis ......................................................................................... 24

3.2.2 Matoa Fruit as Processed Products ......................................................................... 29
3.2.3 Flavor Analysis ........................................................................ 32

CHAPTER IV RESULT AND DISCUSSION .............................................. 38

4.1 Physicochemical Analysis of Matoa ........................................... 38
4.2 Matoa Fruit as Processed Products ............................................. 41
  4.2.1 The Processing of Matoa Fruit as Several Different Processed Products ....................................................... 41
  4.2.2 The Acceptance of Matoa Fruit and Several Different Processed Products ....................................................... 43
4.3 Descriptive Flavor Analysis............................................................ 48

CHAPTER V CONCLUSION AND SUGGESTION ................................. 55
5.1 Conclusion ................................................................................... 55
5.2 Suggestion ................................................................................... 56

BIBLIOGRAPHY .................................................................................. 57
APPENDICES ....................................................................................... 63
LIST OF TABLES

Table 2.1 The Spread of *Pometia pinnata* plant in Indonesia................................. 5
Table 2.2 Fruit Description and Habitat of *Pometia pinnata*................................. 6
Table 2.3 Volatile Compound Present in Fruit Flavor............................................. 10
Table 2.4 Quality Parameter of Fruit Jam (SNI 3746-2008) ................................ 11
Table 2.5 Syrups for Use in Canning Fruit............................................................ 13
Table 3.1 Ingredients of Matoa Jam Making .......................................................... 29
Table 3.2 Ingredients of Matoa Jelly Making .......................................................... 30
Table 3.3 Ingredients of Fruit in Syrup Making ....................................................... 31
Table 3.4 Solution Concentration Used in Triangle Test........................................ 34
Table 3.5 Set of Aroma’s Triangle Test................................................................... 34
Table 3.6 Training Activity of Quantitative Descriptive Analysis ......................... 35
Table 4.1 Matoa Fruit Weight, % Fruit Flesh, and % Fruit Seed ......................... 38
Table 4.2 Proximate Analysis Result of Matoa Fruit ............................................. 39
Table 4.3 TSS, Lightness, TTA, and pH of Matoa Fruit ....................................... 40
Table 4.4 Average Score of Matoa Flavors Compared to Longan, Rambutan and durian........................................................ 49
LIST OF FIGURES

Figure 2.1 Stalk of Matoa *Kelapa* Tree ................................................................. 7
Figure 2.2 Example of QDA’s Spider Web ............................................................... 21
Figure 2.3 Example of Biplot Graph ...................................................................... 22
Figure 3.1 Procedure of Matoa Jam Making ......................................................... 30
Figure 3.2 Procedure of Matoa Jelly Making ......................................................... 31
Figure 3.3 Procedure of Matoa in Syrup Making .................................................... 31
Figure 4.1 Matoa Fruit ............................................................................................ 38
Figure 4.2 Matoa Fruit and Its Processed Products ................................................. 43
Figure 4.3 Hedonic Test Result of Taste Acceptance ............................................ 44
Figure 4.4 Hedonic Test Result of Aroma Acceptance .......................................... 45
Figure 4.5 Hedonic Test Result of Color Acceptance ............................................ 46
Figure 4.6 Hedonic Test Result of Overall Acceptance .......................................... 47
Figure 4.7 Spider Web of Fruit Flavor in Matoa Compared to Longan, Rambutan, and Durian .............................................................. 49
Figure 4.8 Biplot Graph of Fruit Flavor in Matoa Compared to Longan, Rambutan, and Durian .............................................................. 52
LIST OF APPENDICES

Appendix 1. Plant Identification Letter ................................................................. 64
Appendix 2. Example of Hedonic Questionnaire .................................................... 65
Appendix 3. Prescreening of QDA Questionnaire .................................................. 66
Appendix 4. Triangle Test-Taste Questionnaire ..................................................... 70
Appendix 5. Triangle Test-Aroma Questionnaire .................................................. 71
Appendix 6. QDA Training-Taste Scaling Questionnaire ....................................... 72
Appendix 7. QDA Training-Aroma Scaling Questionnaire ...................................... 73
Appendix 8. QDA Training-Taste Ranking Questionnaire ...................................... 74
Appendix 9. QDA Training-Aroma Ranking Questionnaire ................................... 75
Appendix 10. Quantitative Descriptive Analysis-Taste Questionnaire .................... 76
Appendix 11. Quantitative Descriptive Analysis-Aroma Questionnaire .................. 76
Appendix 12. Matoa Fruit Weight, % Fruit Flesh, and % Fruit Seed ....................... 78
Appendix 13. Moisture Content of Matoa Fruit ..................................................... 79
Appendix 14. Ash Content of Matoa Fruit ............................................................ 80
Appendix 15. Fat Content of Matoa Fruit .............................................................. 81
Appendix 16. Protein Content of Matoa Fruit ....................................................... 82
Appendix 17. Carbohydrate Content of Matoa Fruit ............................................... 83
Appendix 18. TSS, Lightness, Total Titratable Acid, and pH of Matoa Fruit ............. 84
Appendix 19. Hedonic Score of Matoa Jam .......................................................... 85
Appendix 20. Hedonic Score of Matoa Jelly .......................................................... 87
Appendix 21. Hedonic Score of Matoa in Syrup ..................................................... 89
Appendix 22. Hedonic Score of Matoa Fruit .......................................................... 91
Appendix 23. Statistical Analysis of Hedonic Test of Matoa Fruit and Its Processed Products ................................................................. 93
Appendix 24. Quantitative Descriptive Analysis of Longan Fruit ......................... 95
Appendix 25. Quantitative Descriptive Analysis of Rambutan Fruit ...................... 97
Appendix 26. Quantitative Descriptive Analysis of Durian Fruit ............................ 99
Appendix 27. Quantitative Descriptive Analysis of Matoa Fruit ............................ 101
Appendix 28. Statistical Analysis of QDA of Matoa, Longan, Rambutan,