

TABLES OF CONTENT

APPROVAL PAGE	i
SELF DECLARATION AGAINST PLAGIARISM	ii
ABSTRACT	iii
PREFACE.....	iv
TABLES OF CONTENT.....	v
LIST OF FIGURES	viii
LIST OF TABLES	xvi
CHAPTER I INTRODUCTION.....	1
1.1 Background	1
1.2 Problem to Solved.....	2
1.3 Research Objective.....	3
1.4 Problem Scope	3
1.5 Hypothesis.....	3
1.6 Research Method.....	4
1.7 Research Methodology.....	4
1.8 Systematics of Writing.....	5
CHAPTER II BASIC CONCEPT	6
2.1 Tea.....	6
2.2 Empoasca	6
2.3 Digital Image Processing	8
2.4 Multispectral Camera	8
2.5 Convolutional Neural Network (CNN).....	11
2.5.1 Concept of Convolutional Neural Network	11
2.5.2 Architecture Convolutional Neural Network	12
2.6 ResNet-50.....	12

2.7	Confusion Matrix	13
2.7.1	Accuracy	14
2.7.2	Precision.....	14
2.7.3	Recall	14
2.7.4	F1-Score.....	14
2.8	Thresholding	14
2.9	State of The Art.....	16
CHAPTER III DESIGN OF EXPERIMENTAL METHODS AND MODELS		
	23
3.1	Design Proposed Method	23
3.2	Block Diagram Proposed Method	23
3.3	Preprocessing.....	24
3.4	Dataset Collection	26
3.4.1	Multispectral Camera for Dataset Collection	30
3.4.2	Convolutional Neural Network Architecture.....	33
3.4.3	ResNet-50 Architecture	35
3.5	Testing Scenario	36
3.6	Scenario Analysis	37
CHAPTER IV RESULTS AND ANALYSIS.....		38
4.1	System Testing	38
4.2	Testing Data.....	38
4.2.1	Test Scenario with Single Channel.....	39
4.2.1.1	Testing Green Channel	39
4.2.1.2	Testing NIR Channel	40
4.2.1.3	Testing RED Channel	42
4.2.1.4	Testing REG Channel	43

4.2.2	Test Scenario with Double Channel	45
4.2.2.1	Testing Green and NIR Channel.....	45
4.2.2.2	Testing Green and RED Channel.....	46
4.2.2.3	Testing Green and REG Channel.....	48
4.2.2.4	Testing NIR and RED Channel	49
4.2.2.5	Testing NIR and REG Channel	51
4.2.2.6	Testing RED and REG Channel	52
4.2.3	Test Scenario with Three-Channel Combinations.....	54
4.2.3.1	Testing Green, NIR, and RED Channel.....	54
4.2.3.2	Testing Green, NIR, and REG Channel.....	55
4.2.3.3	Testing NIR, RED, and REG Channel	57
4.2.3.4	Testing RED, REG, and Green Channel.....	58
4.2.3.5	Testing REG, Green, and NIR Channel.....	60
4.2.4	Test Scenario with Four-Channel Combinations	61
4.2.4.1	Testing Green, NIR, RED and REG Channel.....	61
4.3	Performance Comparison.....	63
CHAPTER V CONCLUSION		64
5.1	Conclusion.....	64
5.2	Future Research.....	64
REFERENCE		65