

Table of Contents

	Page
Acknowledgement	iii
Abstract in English.....	v
Abstract in Thai.....	vii
List of Tables	xiii
List of Figures	xvi
List of Appendices	xvii
Abbreviations	xviii
Chapter 1 Introduction.....	1
1.1 Background of the study.....	1
1.2 Statement of the problem.....	2
1.3 Objectives of the study.....	4
1.4 Usefulness of the study.....	4
Chapter 2 Rice production and marketing in Vietnam.....	5
2.1 Trend of rice production in Vietnam.....	5
2.2 Rice production in agro-economic regions in Vietnam.....	7
2.2.1 Northern Uplands	7
2.2.2 Red River Delta.....	9
2.2.3 Northern Central Coast.....	10
2.2.4 Southern Central Coast.....	11
2.2.5 Central Highlands.....	11
2.2.6 South Eastern.....	11
2.2.7 Mekong River Delta.....	12
2.3 Fertilizer and pesticide use.....	13
2.4 Rice marketing performance.....	16
2.5 Vietnam in the world rice market	19

Chapter 3 Literature review	22
3.1 Importance of agricultural productivity as an economic efficiency indicator in agriculture production.....	22
3.2 Concept of efficiency.....	23
3.3 Techniques of efficiency measurement.....	25
3.4 Previous related studies.....	27
Chapter 4 Research methods.....	33
4.1 Scope of the study.....	33
4.2 Sampling technique.....	33
4.3 Data collection	34
4.3.1 Secondary data	34
4.3.2 Primary data	35
4.4 Data analysis	35
4.4.1 Descriptive analysis.....	35
4.4.2 Quantitative method	36
Chapter 5 Production environment in the study site.....	42
5.1 General information.....	42
5.1.1 General profile of the study site	42
5.1.2 Economic structure.....	43
5.1.3 Land use	44
5.1.4 Agricultural structure	45
5.1.5 Cropping pattern and sown area.....	46
5.1.6 Rice production system.....	48
5.2 Information on the sample households	49
5.2.1 Characteristics of the sample households.....	49
5.2.2 Land ownership.....	50
5.2.3 Farmer's access to technical information of rice production.....	51
5.2.4. Category of farmer's occupation and source of income	53
Chapter 6 Rice production management	55

6.1 Rice production practice	55
6.1.1 Land preparation	55
6.1.2 Crop establishment	55
6.1.3 Pest management	56
6.1.4 Water management	56
6.1.5 Seed use	56
6.1.6 Weeding	57
6.1.7 Harvest and post-harvest operation.....	58
6.2 Input application	58
6.2.1 Schedule of fertilizer application	59
6.2.2 Method of pesticide application.....	60
6.2.3 Measurement of input application.....	61
6.3 Labor allocation	64
6.4 Rice yield	66
6.5 Marketing aspect.....	67
6.5.1 Input market	67
6.5.2 Rice market	68
6.6 Economic returns from rice production.....	70
6.7 Factors influencing farmer's rice growing decision.....	75
Chapter 7 Estimation of production frontier and determinants of technical inefficiency.....	77
7.1 Model specification.....	77
7.1.1 Cobb- Douglas production frontier.....	77
7.1.2 Model for assessing determinant of technical inefficiency.....	78
7.1.3 Description of variables and expected results.....	79
7.2 Estimated result of production frontiers	83
7.2.1 Estimated result of production frontier for hybrid rice	83
7.2.2 Estimated result of production frontier for conventional rice.....	87
7.3 Measurement of technical efficiency.....	91
7.4 Estimated result of models for assessing the determinants of technical inefficiency	93

7.5 Evaluation of allocative efficiency	100
7.5.1 Method of evaluation	100
7.5.2 Allocative efficiency of hybrid rice	101
7.5.3 Allocative efficiency of conventional rice	102
Chapter 8 Summary, conclusions and recommendations	104
8.1 Summary and conclusions	104
8.2 Recommendations	108
References	109
Appendices	117
Curriculum Vitae	126

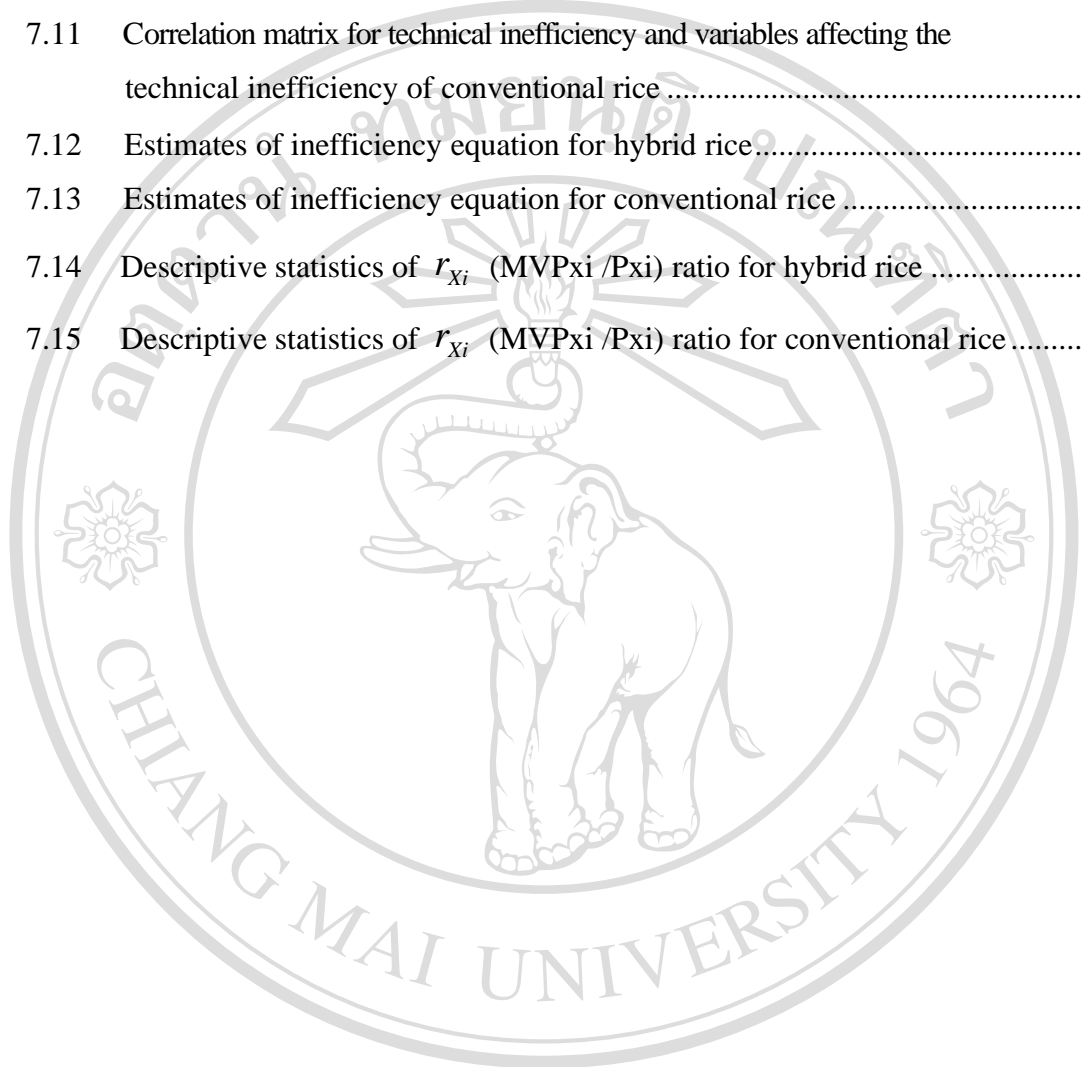
ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
 Copyright © by Chiang Mai University
 All rights reserved

List of Tables

Table	Page
2.1 Rice production in Vietnam in the period 1980-2000	5
2.2 Export of agricultural commodities	7
2.3 Land utilization in 2000	8
2.4 Average farm size and cultivated rice area by regions in 2000	9
2.5 Rice production by regions in 2000	9
2.6 Seasonal distribution of production by regions	13
2.7 Fertilizer use in rice production.....	14
2.8 Growth rate of rice yield and fertilizer consumption in South East Asia	15
2.9 Proportion of rural households growing and selling rice	16
2.10 Marketing channels for farmers	18
2.11 Vietnam's rice export and its share in world export	20
5.1 Gross domestic product of Hatay province.....	43
5.2 Land use in Hatay province	44
5.3 Agricultural structure in Hatay province	45
5.4 Annual sown area in Hatay province	48
5.5 Types of rice system	49
5.6 Information on the sample households	49
5.7 Land holding of the sample households.....	50
5.8 Rice land size distribution of the sample households	51
5.9 Category of occupation of the sample households	53
5.10 Income of the sample households in 2001	54
6.1 Rice varieties used by the sample households	57
6.2 Schedule of input application of the sample households	59
6.3 Percentage of farmers following schedule of fertilizer application.....	60
6.4 Classification of sample households based on pesticide application.....	61

6.5	Input applications to hybrid rice	62
6.6	Input applications to spring conventional rice	63
6.7	Input applications to summer conventional rice	63
6.8	Labor allocation in rice farming activities	65
6.9	Labor use in rice production	66
6.10	Rice yield of the sample households.....	67
6.11	Proportion of respondents buying input from various input suppliers	68
6.12	Rice marketing information	69
6.13	Rice price in 2002	70
6.14	Descriptive statistics of cost and economic returns of hybrid rice	71
6.15	Descriptive statistics of cost and economic returns of spring conventional rice	72
6.16	Descriptive statistics of cost and economic returns of summer conventional rice	72
6.17	Return ratios of rice production.....	74
6.18	Ranking of factors affecting farmer's rice growing decision	76
7.1	Expected signs for estimated variables	82
7.2	Correlation matrix for the logarithm of the yield and variables affecting the hybrid rice yield	83
7.3	Estimates of stochastic Cobb-Douglas production frontier for hybrid rice	84
7.4	Correlation matrix for the logarithm of the yield and variables affecting the conventional rice yield	88
7.5	Estimates of stochastic Cobb-Douglas production frontier for conventional rice	89
7.6	Technical efficiency of farm households in producing hybrid rice	91
7.7	Technical efficiency of farm households in producing conventional rice	92
7.8	Descriptive statistics for technical inefficiency and variables affecting the technical inefficiency of hybrid rice	94
7.9	Descriptive statistics for technical inefficiency and variables affecting the technical inefficiency of conventional rice	94
7.10	Correlation matrix for technical inefficiency and variables affecting the	

technical inefficiency of hybrid rice	95
7.11 Correlation matrix for technical inefficiency and variables affecting the technical inefficiency of conventional rice	95
7.12 Estimates of inefficiency equation for hybrid rice.....	96
7.13 Estimates of inefficiency equation for conventional rice	98
7.14 Descriptive statistics of r_{xi} (MVPxi /Pxi) ratio for hybrid rice	101
7.15 Descriptive statistics of r_{xi} (MVPxi /Pxi) ratio for conventional rice	103



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
 Copyright © by Chiang Mai University
 All rights reserved

List of Figure

Figure	Page
2.1 Rice marketing channel in Vietnam.....	17
3.1 Technical and allocative efficiencies.....	24
4.2 Map of Hatay province.....	34
4.3 Stochastic frontier production function.....	38
5.1 Cropping pattern in the study site.....	46
5.2 Extension hierarchy in the study site.....	52
7.1 Distribution of technical efficiency for hybrid rice.....	92
7.2 Distribution of technical efficiency for conventional rice.....	93

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
 Copyright © by Chiang Mai University
 All rights reserved

List of Appendix Table

Table	Page
1 Comparison of hybrid rice yield between districts.....	117
2 Comparison of conventional rice yield between districts.....	117
3 Comparison of spring and summer conventional rice yields.....	117
4 Technical efficiency for individual observation of hybrid rice production.....	118
5 Technical efficiency for individual observation of conventional rice production.....	119
6 Estimates of stochastic Cobb-Douglas production frontier and inefficiency equation for hybrid rice.....	121
7 Estimates of stochastic Cobb-Douglas production frontier and inefficiency equation for conventional rice.....	122
8 Estimates of stochastic Cobb-Douglas production frontier (without pesticide variable) and inefficiency equation for conventional rice.....	123
9 Test for economic return indicators.....	124
10 Average price of some input commodities in 2002.....	124
11 t calculation of r_{X_i} and test allocative efficiency hypothesis for hybrid rice.....	125
12 t calculation of r_{X_i} and test allocative efficiency hypothesis for conventional rice.....	125

Abbreviations

CV	= Coefficient of Variation
DEA	= Data Envelopment Analysis
ha	= Hectare
IFPRI	= International Food Policy Research Institute
kg	= Kilogram
Max.	= Maximum
Min.	= Minimum
MP	= Marginal Product
MVP	= Marginal Value Product
SOEs	= State Owned Enterprises
VND	= Vietnamese Dong currency

Equivalents

1 sao	= 0.036 hectares
1 hectare	= 27.8 sao
US\$ 1	= 15300 VND (as of October, 2002)

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
 Copyright © by Chiang Mai University
 All rights reserved