

**ANALYSIS ON EFFECTIVENESS, SUITABILITY AND
FINANCIAL VIABILITY OF COMBINE HARVESTER IN
AMPARA DISTRICT**

By

MOHAMED MEERASAHIB ZAHIR AHAMED

A RESEARCH REPORT
SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR
THE ADVANCED COURSE
IN



AGRICULTURAL ECONOMICS

FOR

THE AWARDED DEGREE OF
BACHELOR OF SCIENCE IN AGRICULTURE

FACULTY OF AGRICULTURE


EASTERN UNIVERSITY, SRI LANKA

SEPTEMBER 2006

Approved by



Project Report
Library - EUSL


.....
Mr. A. Nazeer Ahamed

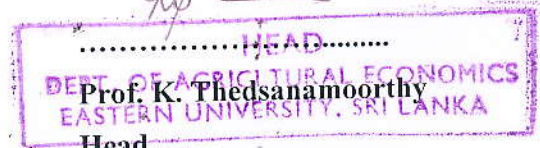
Supervisor

Dean / Faculty of Applied science

South Eastern University

Sri Lanka

Sammanthurai



Head

Department of Agric Economics

Faculty of Agriculture

Eastern University

Sri Lanka

Vantharumoolai.

PROCESSED
Main Library, EUSL

ABSTRACT

The objectives of the study were to analyze the impact of using combine harvesters for harvesting paddy on timeliness, harvesting cost, and labour use, and to identify the suitability and evaluate the financial viability of the combine harvesters. The major reason given for the use of combine harvester was severe shortage of labour during the peak season.

The primary data needed to this study were gathered through a survey from 61 farmers and 62 owners of combine harvesters. A descriptive evaluation and analysis were carried out to identify the objectives. The analysis of Variance (ANOVA) was used to find out the suitability and effectiveness of combine harvesters and the Net Present Value (NPV) and Internal Rate of Return (IRR) were used to analysis the financial viability of the combine harvesters. In addition to these techniques the partial budgeting was also carried out to compare the cost reduction in harvesting by combine harvesters.

The combine harvesters ensure rapid harvesting, reduces harvesting cost, minimize the labour requirement, and raises the farmer's income as well as machine owner's profit. The combine harvesters replaced the labour by 75 to 85 %, reduced the harvesting cost by 50%.

The results from the machine owner's survey indicated that the combine harvesters were financially viable for the owners, and it was proved by the positive and NPV and higher IRR when compared to opportunity cost of capital of the different type of

combine harvesters and the results also indicated the initial investment is an important factor while deciding the financial viability.

The negative aspects of using combine harvesters were also reported as displacement of labours, low quality paddy, climatic and soil constrains for the tyre type harvesters, non availability of local technical supports and the difficulties in fixing charges due to competitions. However it could be shows that the prospects for using combine harvesters for harvesting paddy is becoming popular in the Ampara district. With proper technical support, practical demonstration and appropriate training program profit of the farmers as well as machine owners can be increased.

Table of Contents

	Page No.
Abstract	i
Acknowledgment	iii
Table of Contents	iv
List of Tables	viii
List of Figures	x
Abbreviations & Acronyms	xi
Chapter 1.0 Introduction	1
1.1 Back round	1
1.2 Statement of problem	3
1.3 Objectives of the study	5
Chapter 2.0 Review of Literature	6
2.1 Paddy harvesting	6
2.1.1 Types of Paddy Harvesting	6
2.1.1.1 Hand/Manual harvesting	6
2.1.1.2 Mechanized harvest	7
2.1.2 Harvesting Systems Overview	7
2.2 Combine harvesting	10
2.2.1 Operations in Combine Harvesting	10

2.2.1.1 Header	10
2.2.1.2 Conventional combine	11
2.2.1.3 The Threshing Process	11
2.3 Advantages of combine harvesting	12
2.4 Research Findings in Combine Harvesting	13
2.5 Financial Viability	18
2.6. Partial budgeting	19
Chapter 3.0 Research Methodology	20
3.1 Theoretical Frame Work	20
3.2 Description of the Study Area	24
3.2.1 Physical Features	24
3.2.2 Population	24
3.2.3 Economics of the Regions	25
3.2.4 Nature of Employment	25
3.3 Sample Survey	25
3.4 Data Collection	27
3.5 Data Analysis	28
3.6 Limitations in the study	28
Chapter 4 .0 Results and Discussion	30
4.1 General Information	30
4.1.1 Family Size	30
4.1.2 Female Support in Farming	30

4.1.3 Housing Type	30
4.2 Information on Education	31
4.2.1 Education Level	31
4.2.2 Training/Workshop Participation	32
4.3 Machine Ownership	33
4.3.1 Number of machine	33
4.4 Information on income	33
4.4.1 Source of Income	33
4.4.2 Average Annual Income	34
4.5 Information on Cultivation	34
4.5.1 Seasons of Cultivation	34
4.5.2 Variety of Cultivation	35
4.6 Information on Land Ownership	35
4.6.1 Ownership Type	35
4.7 Suitability of Combine Harvester	36
4.7.1 Average Selling Price of paddy	36
4.7.2 Average Cost per Acre of paddy	38
4.7.3 Average Time Requirement per Acre of paddy Harvest	40
4.7.4 Average Adulteration in the paddy Harvest	42
4.7.5 Farmers Suggestions and Reasons for suitability	44
4.8 Effectiveness of Combine Harvesters	44
4.8.1 Average Cost per Acre of paddy harvesting.	45
4.8.2 Average Fuel Requirement per Acre of paddy harvesting	46

4.8.3 Average Charge per Acre of harvesting.	47
4.8.4 Average Time Requirement per Acre Harvest	49
4.9 Financial Viability of Combine Harvesters	51
4.9.1 The Balkar harvester.	51
4.9.2 The Standard harvester.	52
4.9.3 The Claas harvester.	53
4.9.4 The Agrotech harvester.	54
4.9.5 Partial budgeting	56
4.10 Problems faced during the Combine Harvest Use	59
4.10.1 Social Problems	59
4.10.2 Financial Problems	60
4.10.3 Transport Problems	60
4.10.4 Quality Problems	60
4.10.5 Environmental Problems	61
4.10.6 Other Problems	62
Chapter 5.0 Summary and Conclusions	64
References	69
Appendix: 1 Survey Research Questionnaires (Farmer)	74
Appendix: 2 Survey Research Questionnaires (Owner of Harvesters)	82
Appendix: 3 Excel Outputs	88
Appendix: 4 Technical data of different types of Combine Harvesters	89