SURVEY OF VILLAGE LEVEL POSTHARVEST PROCESSING ACTIVITIES IN THE MUNICIPALITIES OF MEMOEZ, SILANG AND TAGAYTAY CITY, CAVITE

Thesis

MARICRIS T. PANGANIBAN

College of Engineering and Information Technology

CAPITE STATE UNIVERSITY

Indang, Carite

April 2008

SURVEY OF VILLAGE LEVEL POSTHARVEST PROCESSING ACTIVITIES IN THE MUNICIPALITIES OF MENDEZ, SILANG AND TAGAYTAY CITY, CAVITE

Undergraduate Thesis
Submitted to the Faculty of the
Cavite State University
Indang, Cavite

In partial fulfillment of the requirements for the degree of Bachelor of Science in Agricultural Engineering



Survey of village level post harvest processing activities in the 631.55 P19 2008 T.3864

MARICRIS T. PANGANIBAN April 2008

ABSTRACT

PANGANIBAN MARICRIS T., "Survey of Village Level Postharvest Processing Activities in the Municipalities of Mendez, Silang and Tagaytay City, Cavite". An undergraduate Thesis, Bachelor of Science in Agricultural Engineering. April 2008. Cavite State University. Adviser: Dr. Marilyn M. Escobar

This study was conducted to survey the village level postharvest processing activities in the municipalities of Mendez, Silang and Tagaytay City, Cavite. Specifically, it aimed to observe the actual processing operations of the micro enterprise engaged in three major crops/commodities of the selected municipalities, outline the series of processing operation for a specific commodity, describe the specification of the processing equipment and facility; document the problems encountered by the owners of the micro enterprise; and determine the relationship between age, gender, civil status, educational attainment and the annual gross income and expenses of the farmer/processor respondent.

Survey questionnaire was prepared, and was used to collect information regarding post harvest processing activities by micro enterprise in the said municipalities. The lists of respondents were gathered from each municipality's municipal agricultural office active files. Slovin's formula and stratified random sampling with proportional allocation were used to determine the sample respondents who were engaged in the micro enterprise using the three major crops in the three municipalities. Major crops were selected based on total production per year, number of farmers served, and the total land area planted with the crop. The major crops of Mendez, Silang, and Tagaytay City were coffee, pineapple and banana.

Coffee is the major commodity in the three selected municipalities with a total number of coffee respondents of 360. The coffee farmer processors practiced two postharvest processing activities, namely: a) harvesting, cleaning/ sorting, sun drying, packaging and storing, and transportation/ distribution/ marketing; and b) harvesting, cleaning/ sorting, sun drying, mechanical drying, pulping, packaging and storing, and transportation/ distribution/ marketing. Among the facilities and equipment used by the respondents were mats/woven materials, roads, and concrete pavements. Coffee mills like "Esqueta" and "Jewels" were the brands used by the processors. Mechanical dryers were also used to maintain the desired moisture content. Other equipment that were used are coffee blower, separator, weighing scale and moisture tester. Coffee products were sold as dried berries and green beans.

Multiple cropping was practiced in the three municipalities, which implies that almost all farmers engaged in pineapple enterprise has also banana as their crop. Pineapple, as the second major crop found in Tagaytay and Silang has a total of 314 respondents. Workers used ordinary and jute sacks, as their packaging materials. Freshly harvested pineapples were sorted according to size and weight and were sold directly to the middleman. Others sold the pineapple directly to their "pondahan" or to the market.

Banana has 346 respondents from the three municipalities. Bolos were used as the major equipment and the processing activities were done manually. As for transporting the banana, heavy-duty passenger jeepneys were used. "Latundan", "lacatan", "saba" and "señorita" banana varieties were harvested and cleaned using bolos and were sold directly to the market. No secondary processing was observed after harvest of the banana in the three municipalities

Problems commonly encountered by the respondents were on financing for the maintenance of machines, severe damage on fan belts, screens, and huller blades; laziness of the laborers for the coffee processors; pineapple fruits being eaten by rats, diseased pineapple which they call "pasik" for pineapple processors; breakage of bolos during harvest, banana plants affected by storms, and banana fruits eaten by birds.

Multiple regression analysis showed that age and educational attainment of the coffee processors have a significant relationship with income and expenses. Whereas, Chi-square analysis showed that gender, age and educational attainment have a significant relationship to coffee products produced by the processors.

TABLE OF CONTENTS

	Page
BIOGRAPHICAL DATA	iii
ACKNOWLEDGMENT	iv
ABSTRACT	vii
LIST OF TABLES.	xiv
LIST OF FIGURES.	xvi
LIST OF APPENDICES.	xviii
LIST OF APPENDIX TABLES.	xix
INTRODUCTION	1
Significance of the Study	2
Objectives of the Study	2
Time and Place of the Study	3
Scope and Limitations	3
Definition of Terms	4
REVIEW OF RELATED LITERATURE	6
Coffee Processing.	6
Preparation of Parchment Coffee (Wet Processing)	7
Preparation of Cherry Coffee (Dry Processing)	10
Postharvest Management of Pineapple.	13
Primary Processing of Banana.	15
	17

Postharvest Handling Technology for Banana	17
Control of Postharvest Diseases.	18
Postharvest Treatment	19
MATERIALS AND METHODS	21
Materials	21
Methods	21
The respondents	21
Consultation with government agencies	22
Development of the questionnaire	22
Pre-testing of the questionnaire	23
Data collection	23
Data gathering	23
Data Analysis	24
RESULTS AND DISCUSSION	25
Coffee Postharvest Processing Activity	26
Demographic profile of the respondents.	27
Managerial category	30
Economic profile	30
Coffee products produced	32
Coffee processing activities	32
Problems encountered	46
Relationship between economic profile	
and demographic profile	48

and coffee products produced	51
Relationship between status of the respondents and coffee products produced.	52
Relationship between educational attainment of the respondents and coffee products produced	52
Relationship between age of the respondents	54
Pineapple Postharvest Processing Activity	55
Demographic profile of the respondents	55
Managerial Category	58
Economic profile	58
Pineapple products produced	60
Pineapple processing activity	61
Problems encountered	67
Relationship between economic profile vs. demographic profile	69
Banana Postharvest Processing Activity	72
Demographic profile of the respondents	72
Managerial Category	75
Economic profile	75
Banana products produced	77
Banana processing activity	78
Problems encountered	83
Relationship between economic profile	
vs. demographic profile	25

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS		
Summary	89	
Conclusion	90	
Recommendation	92	
BIBLIOGRAPHY	94	
APPPENDICES	96	
Appendix A	97	
Appendix B	101	
APPENDIX TABLES	104	
Appendix Table 1	105	
Appendix Table 2	106	
Appendix Table 3	107	
Appendix Table 4	108	

LIST OF TABLES

Γable		Page
1	Presentation of major commodities in each municipality	25
2	Distribution of sample respondents for coffee processing in three municipalities.	27
3	Demographic profile of coffee respondents	29
4	Managerial category of the coffee respondents	30
5	Distribution of annual income and expenses by age of coffee respondents	31
6	Distribution of respondents for each coffee product produced	32
7	Specification of the flatbed dryer used by the coffee respondents	39
8	Specification of pulpers used by coffee respondents	42
9	Result of the stepwise analysis showing the models that describe the effect of the demographic factors of the respondents to income	49
10	Result of the stepwise analysis showing the models that describe the effect of the demographic factors of the respondents to expenses.	50
11	Relationship between the gender of the respondents and coffee products produced.	52
12	Relationship between the status of the respondents and coffee products produced.	53
13	Relationship between the educational attainment of the respondents and coffee products produced	53
14	Relationship between the age of the respondents and coffee products produced.	54
15	Distribution of respondents for pineapple enterprise in three municipalities of Cavite.	55

Table		Page
16	Demographic profile of the pineapple respondents	57
17	Managerial category of the pineapple respondents	58
18	Distribution of annual income and expenses cum age of pineapple respondents.	60
19	Pineapple product produced by the pineapple respondents	60
20	Result of the stepwise analysis showing the models that describe the effect of the demographic factors of the respondents to income	70
21	Result of the stepwise analysis showing the models that describe the effect of the demographic factors of the respondents to expenses	71
22	Distribution of sample respondents for banana processing in three municipalities	72
23	Demographic profile of the banana respondents	74
24	Managerial category of the banana respondents	75
25	Distribution of annual income and expenses by age of banana respondents.	77
26	Distribution of the banana of product produced	77
27	Result of the stepwise analysis showing the models that describe the effect of the demographic factors of the respondents to income	87
28	Result of the stepwise analysis showing the models that describe the effect of the demographic factors of the respondents to expenses	88

LIST OF FIGURES

Figure		Page
1	Series of dry processing energian for a ff	
1	Series of dry processing operation for coffee	33
2	Cleaning and sorting of coffee berries	35
3	Sun drying of coffee	36
4	Photographic view of flatbed dryer located at Malabag, Silang, Cavite	38
5	Photographic view of Jewel coffee pulper located at San Isidro St. Palocpoc, Mendez, Cavite.	40
6	Photographic view of Esqueta coffee pulper located at Pooc II, Silang, Cavite	41
7	Photographic view of coffee blower located at Mabini St., Mendez, Cavite	44
8	Photographic view of weighing scale located at Maitim II, Central, Tagaytay City	45
9	Warehouse storage located at Silang Cavite	47
10	Series of processing operation in pineapple enterprise	62
11	Harvesting of pineapple	63
12	Harvesting using sacks	64
13	Sorting of pineapple	65
14	Pineapple with defects	66
15	Loading of pineapple in the trailer truck	68
16	Series of processing operation for banana.	79

Figure		Page
17	Freshly harvested banana located at Anuling, Mendez,	00
10	Classics Class	80
18	Cleaning of banana	81
19	Sorted banana in terms of size located at Anuling Lejos I, Mendez, Cavite	82
20	Sorted banana by variety located at Palocpoc, Mendez, Cavite	84

LIST OF APPENDICES

Appendices		
Α	Field evaluation questionnaire	97
В	Determination of actual number of respondents for each major crop	101

.

LIST OF APPENDIX TABLES

Appe	ppendix Table		Page
	1	Total number of coffee processors in Mendez, Silang and Tagaytay City	105
	2	Total number of pineaaple processors in Mendez, Silang and Tagaytay City	106
	3	Total number of banana processors in Mendez, Silang and Tagaytay City	107
	4	List of respondents from Mendez, Silang and Tagaytay City, Cavite	108

SURVEY OF VILLAGE LEVEL POSTHARVEST PROCESSING ACTIVITIES IN THE MUNICIPALITIES OF MENDEZ, SILANG AND TAGAYTAY CITY, CAVITE ¹

MARICRIS TIMPLE PANGANIBAN

¹An undergraduate thesis submitted to the Department of Agricultural and Food Engineering, College of Engineering and Information Technology, Cavite State University, Indang, Cavite in partial fulfillment of the requirement for graduation with the degree of Bachelor of Science in Agricultural Engineering with Contribution No. BSAE-2007-08-001. Prepared under the supervision of Dr. Marilyn M. Escobar

INTRODUCTION

The quality of fruits and vegetables cannot be improved, but it can be preserved. Good quality is obtained when harvesting is done at the proper stage of maturity. Immature fruits when harvested will give poor quality and erratic ripening. Similarly, vegetables harvested too soon may stay green longer but are of poor quality. On the other hand, delayed harvesting of fruits and vegetables may increase their susceptibility to decay, resulting in poor quality and hence, low market value.

Postharvest systems are still characterized largely by a multitude of small enterprises, often household businesses with limited access on modern technology and poor integration with urban markets. Knowing the appropriate postharvest handling and storage, proper handling during harvest and production practices will help produce high quality, disease free and better storable fruits and vegetables.

Cavite is known as one of the agricultural lands in the country and is recognized for its coffee. Aside from coffee processing in District III of Cavite, a number of village