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Department of Agriculture

Upland Development Programme in
Southern Mindanao (UDP)

**A MARKETING EFFICIENCY STUDY
ON**

CARDAVA

**IN BARANGAY CABUYO-AN, MABINI,
COMPOSTELA VALLEY**

MAY 2001

PREFACE

This report is one of a series of market efficiency studies conducted in the UDP-covered areas for selected commodities. The marketing efficiency of cardava in Barangay Cabuyo-an, Compostela Valley was evaluated through the deconstruction of existing marketing margins. Recommendations to improve marketing efficiency are herein offered.

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Processors:

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Dealer
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DEFINITION OF TERMS

Cash costs	-	costs where actual money is involved.
Cash returns	-	the earnings, where actual money is involved, from the sale of the farm produce.
Depreciation	-	the expense brought about by the wear and tear of a piece of equipment, building or tool used in an enterprise for a given period of time.
Economies of scale	-	the economic concept wherein production at a larger scale (more output) can be achieved at a lower cost.
Exchange labor	-	the value, non-monetary in nature, of the work (in man-days) put in by neighbors, friends or other laborers in exchange for the farmers help with similar farm activities in their respective farms.
Hired labor	-	the cash expense for engaging the services of farm laborers.
Losses/shrinkage of produce	-	the value, non-monetary in nature, of the damages and spoilage sustained by the produce.
Market information	-	basic information on prices and quantities traded of major commodities, from all markets—assembly, wholesale and retail.
Marketing channel	-	the inter-organizational system composed of interdependent institutions tasked in moving the product from production to consumption.
Marketing efficiency	-	the maximization of the input-output relationship where inputs refer to resources (land, labor, capital) used in moving the products from point of consumption to the point of production and output referring to consumer satisfaction on goods and services made available in the market.
Marketing margin	-	the difference in prices between the different levels of the marketing system.
Marketing	-	series of services performed in moving the product from the point of production to the point of consumption.

Net farm income	-	returns of the use of capital and labor. The overall profit of the farm after all the expenses, cash and non-cash, have been paid off.
Non-cash costs	-	costs items used in the production process wherein no direct outlays occurred or the costs incurred are not monetary in nature.
Non-cash returns	-	the value, non-monetary in nature, of the farm produce consumed by the farmer and his family or those given away.
Opportunity cost of capital	-	the price of foregone opportunity in the use of the capital invested in the enterprise. It is usually pegged at the current savings interest rate.
Point of consumption	-	last sale of the product.
Point of production	-	point of first sale.
Profit margin	-	the return to the middlemen for their entrepreneurship, the risks and the cost of money.
Return on investment	-	measures the amount of cash that the entrepreneur gets from the capital investment after first paying the opportunity expenses on the value of family labor and management. It also determines how much money the producer got in return for every one peso invested.
Unpaid family labor	-	also called own labor. The value, non-monetary in nature, of work (valued in man-days) by the farmer and his family.

CARDAVA

INTRODUCTION

1. The banana (*Musa sapientum*) is a large herbaceous plant and is a non-seasonal bearer reaching to a height of 1.5 to 3.0 meters (www.agrolink.moa.my). Its stem grows underground like the taro plant and is made up of tightly woven leaves. The banana fruit grows upside down in bunches called a hand. The hand contains fingers, which are the bananas. Approximately 5 to 8 hands will grow on a tree. The banana plant bears fruit only once, and then it is cut down. With the banana plant, planting seeds are not necessary. Before a tree is fully grown it suckers grow or sprout from the roots to replace the old stem (www.k12.hi.us/~kapunaha).

2. Bananas grow well on flat land but can tolerate slightly undulating areas. Suitable soil types are sandy clay loam, well drained with a pH greater than 4.5 and with good moisture holding capacity. The banana thrives well in the tropical climate and requires a rainfall of 1000 – 2000 centimeters a year but should not be in damp conditions for too long. The optimum temperature is 21 - 32°C (www.k12.hi.us/~kapunaha).

3. There are about 70 different varieties of banana (www.k12.hi.us/~kapunaha), and the Cardava variety was identified as a key commodity in Barangay Cabuyo-an, Mabini, Compostela Valley.

4. Since it is possible to only cut the most developed upper hands from the bunch and leaving the rest for another week (www.proscitech.com.au/trop/b.htm), the farmers can harvest cardava weekly. Once picked, bananas ripen at variable rates largely dependent on temperature.

5. The marketing efficiency study for cardava in Barangay Cabuyo-an, Mabini, Compostela Valley was conducted last March 21, 2001.

Objectives

5. The main objective of the study is to assess the impact of existing marketing systems of cardava vis-à-vis income of the farmers.

6. Specifically, the study aims to determine the levels of participants in the marketing chain of cardava;

7. Determine the marketing practices involved in terms of storage, handling, pricing, delivery systems and terms of payment;

8. Determine the percentage of consumer price that the producer receives through the deconstruction of marketing margins of cardava at each level in the system, exclusive of production costs;

9. Identify strengths and weaknesses of the existing marketing system of cardava; and
10. Determine appropriate marketing interventions needed to improve economic efficiency of cardava in the Barangay Cabuyo-an, Mabini.

Methodology

11. Upon consultation with the Municipal Agriculturist's Office and the farmers themselves, it was determined that there are a total of 40 cardava growers in the area, 13 of whom actively tend to the cardava and market their produce. Of the 13 farmers, four (4) were interviewed for this study.
12. The farmers were asked about their production and marketing practices, volume and value of sales, production and marketing costs of durian. They were also asked on available market information with emphasis on what they need to know to improve their production and marketing practices, thereby increasing the farmers' income.
13. The respective buyers of cardava from each farmer were then traced accordingly.
14. The traders were, in turn, asked about their marketing, costs, sales and the problems and constraints they have encountered in the marketing of cardava.
15. The marketing margins were then deconstructed and the profitability of each marketing participant's enterprise was also analysed. In the case of the farmers, the Net Farm Income (NFI) was determined. An NFI greater than zero (0) would mean that the production and marketing activities of the cardava farm is profitable, whereas an NFI less than zero (0) would mean that the farm is at a loss.
16. On the part of the trader, the Return on Investment (ROI) was compared with the opportunity cost of capital, pegged at the existing current savings interest rate of eight percent (8%) per annum. An ROI higher than the opportunity cost of capital would mean that marketing cardava is more profitable than just saving the trader's money in a bank, while a ROI less than the opportunity cost of capital would mean that it would be more profitable for the trader to invest his money in a bank rather than spend it on marketing cardava.
17. The percent share to the consumer peso of each marketing participant was also determined by getting the percentage of the marketing participant's selling price (in the case of traders, less their buying price) relative to the final buying price of the consumer. This indicates the proportion of the final buying price that goes to each marketing participant for cardava.

18. Moreover, focused group discussions (FGDs) with key informants and selected farmers were conducted to probe into the importance and the demand for market information in each province. This provided rapid feedback on the available market information and the information dissemination strategies existing in the area.

19. Also, key informants such as the Municipal Agriculturists and the Agricultural Technicians were interviewed to obtain an overview of the local agriculture industry.

Limitations and Constraints

17. During the interviews, it was observed that the farmers relied on their memories in recalling their past production level, income, farm tools and equipment. There were no record-keeping practices. Thus the cost and return that were analysed were only estimates. The Return on Investment (ROI) was excluded on the analysis of the farmer income due to the ambiguity of the values arrived at. This is mainly due to the fact that some factors on capital investment were not properly quantified in the study. For instance, land valuation was excluded because none of the farmers hold titles to the land that they cultivate. Land, therefore, was not considered a fixed investment in this enterprise and was merely considered as an expense through the credit of land cost (land tax if owned, rent if tenanted).

18. In the marketing aspect, the respondents interviewed were the middlemen named by the farmers. Most of the respondents interviewed also based their answers on their memories since they do not keep records regarding their marketing operations.

19. On the analysis of the marketing efficiency on the part of the farmers, only the Net Farm Income (NFI) analysis was utilized since the available data only allows for this kind of analysis and not the more complicated input-output efficiency analyses.

20. Lastly, the size of the cardava market, specifically, the estimation of demand was not included in the study.

Margin of Error

22. Using the population size of 13 for the farmers who actively produce and market cardava in Barangay Cabuyo-an, the margin of error was established at 42.44 % at a 95% confidence level. This means that there is a 95% confidence that the real values of the parameters used in this study are within 57.56 to 142.44% of the computed values established using the data from the respondents.

THE MARKETING SYSTEM OF CARDAVA

Marketing Channels

22. The marketing participants involved in the cardava marketing system in Barangay Cabuyo-an are as follows:

a. Farmer

A person engaged in cardava production for sustenance or commercial purposes. They usually sell their produce direct to the municipal assembler;

b. Municipal Assembler

A municipal-based person or entity that sources his stocks from farmers in Mabini. He usually sells the assembled ripe cardava to the local processor and the unripe cardava to the provincial assembler.

c. Provincial Assembler

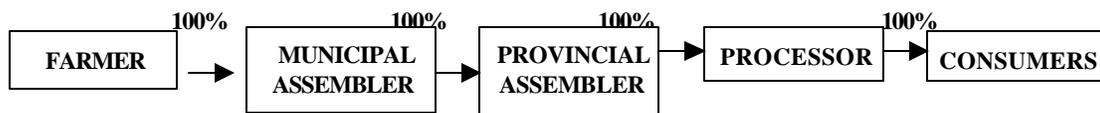
A trader based in Tagum City and buys cardava from farmers and/or traders from Mabini, Maco and Tagum. He delivers and sells the assembled cardava to Tagum-based processors;

d. Processor

A trader based in Mabini or Tagum City who converts the cardava into “maruya” and “banana-que,” in the case of the Mabini processor, or banana chips in the case of the Tagum-based processor.

23. Based on farmer interviews, an estimated 136 kilograms of cardava were sold for the month of February 2001 and the following product flow was established:

Figure 1. Product flow of Cardava from Barangay Cabuyo-an, Mabini.



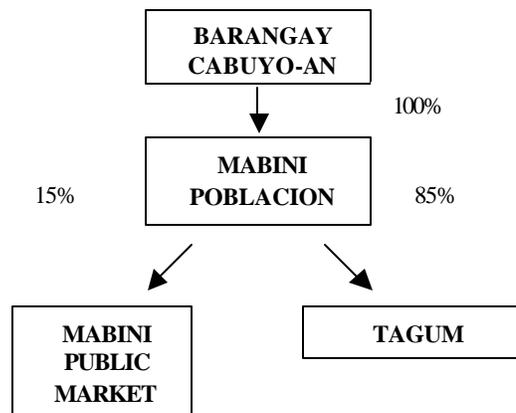
Selling Price(P/kg):

Farmer	Municipal Assembler	Provincial Assembler
2.25	2.50	2.90

24. The cardava harvested in Barangay Cabuyo-an are bought and picked up by a municipal assembler. The municipal assembler then sells the cardava either to the local Mabini-based processor or to a provincial assembler who brings the assembled cardava to a processor in Tagum City.

25. The geographic flow of cardava, on the other hand, follows the following path/structure:

Figure 2. Geographical flow of cardava from Barangay Cabuyo-an, Mabini.



27. From the farmers in Barangay Cabuyo-an, the cardava are brought by the municipal assembler to his house in the Mabini poblacion and sorted. The ripe cardava are then brought to the “maruya” and “banana-que” processor based in the

Mabini Public Market, while the unripe bananas are picked up by the provincial assembler and brought to the processor in Tagum City.

Marketing Practices and Costs

28. At harvest, the developed hands of cardava are cut off from the bunch then picked or cleaned for stray leaves and twigs, at no cost to the farmer, before selling. The undeveloped hands are left on the bunch for later harvest and selling.

29. From the farm, the farmers carry the bananas to the barangay center where it is sold to an assembler at P2.50 per kilogram. This happens every Thursday.

30. At the barangay center, the municipal assembler loads the bananas onto a tricycle and brings them to his house in the Mabini poblacion where he segregates the ripe from unripe hands. The unripe bananas are then put into sacks, baskets or boxes to wait for the arrival of the provincial assembler's truck. The ripe bananas, on the other hand, are brought by the municipal assembler to a "maruya" and "banana-que" processor in the Mabini Public Market. The end-buyers or consumers, in this case, are the Mabini locals.

31. Losses are very minimal since the volume of cardava handled is relatively small and, for both municipal and provincial assemblers, the cardava are sold immediately (one to two days) after purchase. Product handling is relatively appropriate thereby avoiding any undue bruising of the fruit.

32. The unripe, packed bananas are picked-up by the provincial assembler twice a week. The bananas are loaded on a 20,000-capacity truck and, along with the cardava bought from neighboring municipalities. These are then brought to a processing plant in Tagum City for banana chips production. The processor, in turn, ships the banana chips to different Asian and European countries on a regular basis.

33. Table 1 presents the costs, per kilogram, incurred by the different marketing participants in marketing cardava.

Table 1. Marketing cost for different marketing levels of cardava (P/kg).

ACTIVITY	FARMER	ASSEMBLER	
		Municipal	Provincial
Cleaning	-	<i>na</i>	<i>na</i>
Transportation	<i>na</i>	0.12	0.30
Labor	<i>na</i>	-	0.02
Supplies and Materials	<i>na</i>	0.06	-
Utilities and other fees	<i>na</i>	0.01	0.01
Non-cash costs	0.59	0.01	0.01
TOTAL	1.24	0.20	0.34

34. The non-cash costs incurred by the farmer include the cost of harvesting and bringing down the bananas to the barangay center.

35. Since Barangay Cabuyo-an is only two kilometers from the Mabini poblacion, the municipal assembler's transportation expense is largely for the 0.3 liter of gasoline that his tricycle uses up for the trip to the barangay. Supplies and materials on the part of the municipal assembler include the sacks, baskets and boxes used for packing the bananas, utilities and other fees are comprised mainly of the electricity, water and business permit fees for his cardava buy-and-sell business, and the non-cash costs is for the value of his own labor and management.

36. On the part of the provincial assembler, the cost of transportation is P0.30 per kilogram since the bananas traverse a longer distance. The P0.02 labor cost is paid to the provincial assembler's "trabajantes" or helpers, while the utilities and other fees are for the electricity, water and business permit fees for his trading activities. Similar to that of the municipal assembler's non-cash costs, the value of the provincial assembler's labor and management are also the main components of his non-cash costs.

Price Formation

37. The farm-gate price of cardava has been relatively stable for the last seven (7) years at a range of P2 to 2.50 per kilogram. This has led the farmers to gradually decrease their production and shift to other, more profitable endeavours.

Marketing Margins

38. Shown on Table 2 are the marketing margins of the traders and the Net Farm Income of the farmer (as established in Appendix A).

Table 2. Marketing margins and the Net Farm Income for cardava at different marketing levels.

ITEM	FARMER	ASSEMBLER	
		Municipal	Provincial
Selling Price (P/kg)	2.25	2.50	2.90
Buying Price (P/kg)	<i>na</i>	2.25	2.50
Marketing Margin (P/kg)	<i>na</i>	0.25	0.40
Marketing Cost (P/kg)	0.59	0.20	0.34
Profit Margin (P/kg)	<i>na</i>	0.05	0.06
Net Farm Income (NFI) (P/kg)	-0.95	<i>na</i>	<i>na</i>

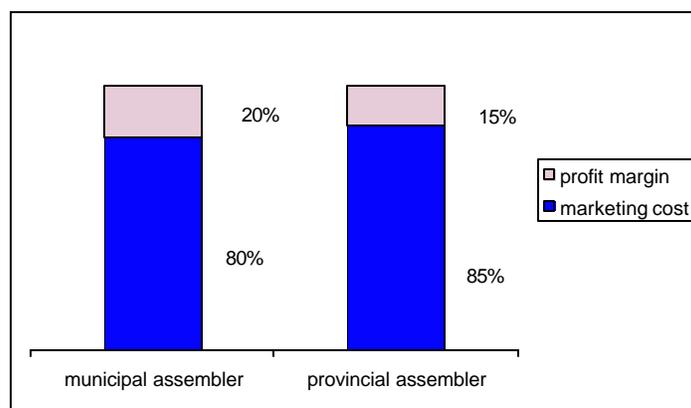
MC as % of MM	<i>na</i>	80%	85%
PM as % of MM	<i>na</i>	20%	15%
%ROI	<i>nil</i>	13%	23%
Opportunity Cost of Capital	<i>na</i>	8%	8%

39. The P -0.95 Net Farm Income (NFI) of the cardava farmer, being less than zero (0), indicates that cardava production and marketing in Barangay Cabuyo-an is not profitable.

40. The total value added to the cardava per kilogram as it moves along one marketing channel to another is indicated by the marketing margin (MM). In the case of cardava, the marketing margin of the municipal assembler is P0.25 per kilogram, P0.20 (80%) and P0.05 (20%) of which are the marketing cost and profit margin, respectively. On the other hand, the provincial assembler has a P0.40 marketing margin comprised of 85% marketing cost and 15% profit margin.

38. To illustrate the marketing margin of the assemblers, Figure 3 shows the percentage of the marketing cost and the profit margin relative to the marketing margin.

Figure 3. Marketing margins of at different marketing levels of cardava, Barangay Cabuyo-an.

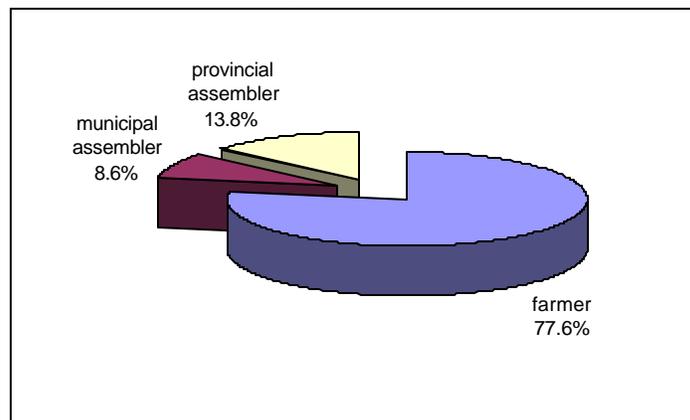


39. The percentage of the processor peso is indicated on Table 3 and Figure 4.

Table 3. Percentage share to the processor peso.

MARKETING LEVEL	SELLING PRICE (P/kg)	% SHARE
Farmer	2.25	77.5
Municipal Assembler	2.50	8.6
Provincial Assembler	2.90	13.8

Figure 4. Percentage share of the processor peso.



40. This means that 77.6%, 8.6% and 13.8% of the final buying price of P2.90 goes to the farmer, municipal assembler and provincial assembler, respectively.

STRENGTH AND WEAKNESSES

41. Upon interview of the banana chips processor based in Tagum City, it was determined that there is a constant high demand for cardava for banana chips processing. This particular processor, alone, requires a maximum of 45 metric tons daily and is willing to buy the bananas at P2.55 per kilogram. Upon further consultation, it was also established that this processor is willing to pick up cardava on a large-scale basis, the volume of which can be negotiated, and bought at a marked-down price of only P2.35 to 2.40 per kilogram to cover for the transportation costs. The strength in the cardava market, therefore, is the large demand of the existing cardava processors. This means that given a sizeable increase in production, the market would still be able to absorb the produce.

42. A weakness established in the marketing system cardava, however, is the inherently low price of cardava. This is compounded by the long marketing chain. It is important to note, however, that the farmers would still be at a loss if the processor buys the bananas straight from the farmers since the production cost of cardava is already P2.48 (refer to Appendix B), and by adding the other marketing costs would total P3.21, which is already P0.81 to 0.86 higher than the buying price of the processor.

OTHER KEY FINDINGS

43. Production was established at a high cost of P2.48 per kilogram. This is largely due to the farmers' own labor brought about by frequent weeding and regular visits to the farm to see if the bananas are fruiting. Another possible reason for the relatively high production cost is that the volume of harvest is still small such that the economy of scale in the production of cardava is not achieved.

44. Other factors in cardava production and marketing that were determined in this study include the strong presence of the “tibagnol” disease, which causes the banana fingers to harden, thereby rendering the fruit inedible.

CONCLUSION

44. An analysis of the Net Farm Income (NFI) of the farmer show that the P –0.95 per kilogram NFI of the farmer means that cardava production and marketing in Barangay Cabuyo-an is not profitable.

45. On the side of the traders, an analysis of the marketing margins of cardava as it was transferred from one marketing participant to another was done to determine which among the cost and the profit have the most share in the marketing margin (Table 2). Results show that, for both the municipal and provincial assemblers, the marketing cost makes up more than 80% of the price mark-up.

46. The return on investment was also determined to show if the enterprise of the assemblers is efficient, specifically if the sale of cardava by the assemblers is profitable and efficient. A positive ROI, this indicates a profitable marketing of banana by the assembler. By further comparing this ROI to the opportunity cost of capital and determining that it is higher, it can be concluded that the marketing of cardava, by both the municipal and provincial assembler are efficient.

RECOMMENDATIONS

45. Based on the strength, weaknesses, other findings and conclusions made on the marketing of cardava in Barangay Cabuyo-an, the following recommendations are offered:

- ?? To revive the interest in cardava production in Barangay Cabuyo-an by informing the farmers of the relatively high buying price and the willingness of a processor to pick up cardava in the area;
- ?? To facilitate a collective marketing of all cardava harvests at regular intervals such that a large volume is achieved. This would enable farmers to reach the economies of scale in production and increase the bargaining power of farmers in transactions;
- ?? When the volume of production is large enough, negotiate with processors to pick up and buy the cardava in Barangay Cabuyo-an.
- ?? Lastly, study on the production of cardava should be done to identify which production factors lead to the low production by the farmers.

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APPENDIX A. Cost and Returns per kilogram of Cardava in Barangay Cabuyo-an,
Mabini (in pesos).

ITEM	P/kg
RETURNS	
Cash	
Sales	2.25
Total Cash Returns (A)	2.25
Non-cash	
Total Non-cash Returns (B)	-
TOTAL RETURNS (C)	2.25
COSTS	
Cash	
Hired labor	0.29
Land cost	0.76
Total Cash Costs (D)	1.05
Non-cash	
Unpaid family and/or exchange labor	1.91
Depreciation	0.11
Opportunity cost of capital	0.13
Total Non-cash Costs (E)	2.15
TOTAL COSTS (F)	3.20
Net Returns Above Cash Costs (C-D)	1.20
Net Farm Income	(0.95)

**APPENDIX B. Breakdown of costs per unit of cardava, Barangay
Cabuyo-an, Mabini.**

ITEM	P/kg
I. Production Cost	
Land cost	0.76
Depreciation	0.11
Own labor	1.32
Hired labor	0.29
Total Production Cost	2.48
II. Marketing Cost	
A. Transportation	0.59
Own labor	0.59
Sub-Total	0.59
Total Marketing Cost	
III. Opportunity cost of capital	0.13
TOTAL COSTS	3.20