

**INTERMEDIATE TRADE IN CATTLE,  
FRUITS, ROOTS AND TUBERS IN  
THE ATLANTIC ZONE OF COSTA RICA**

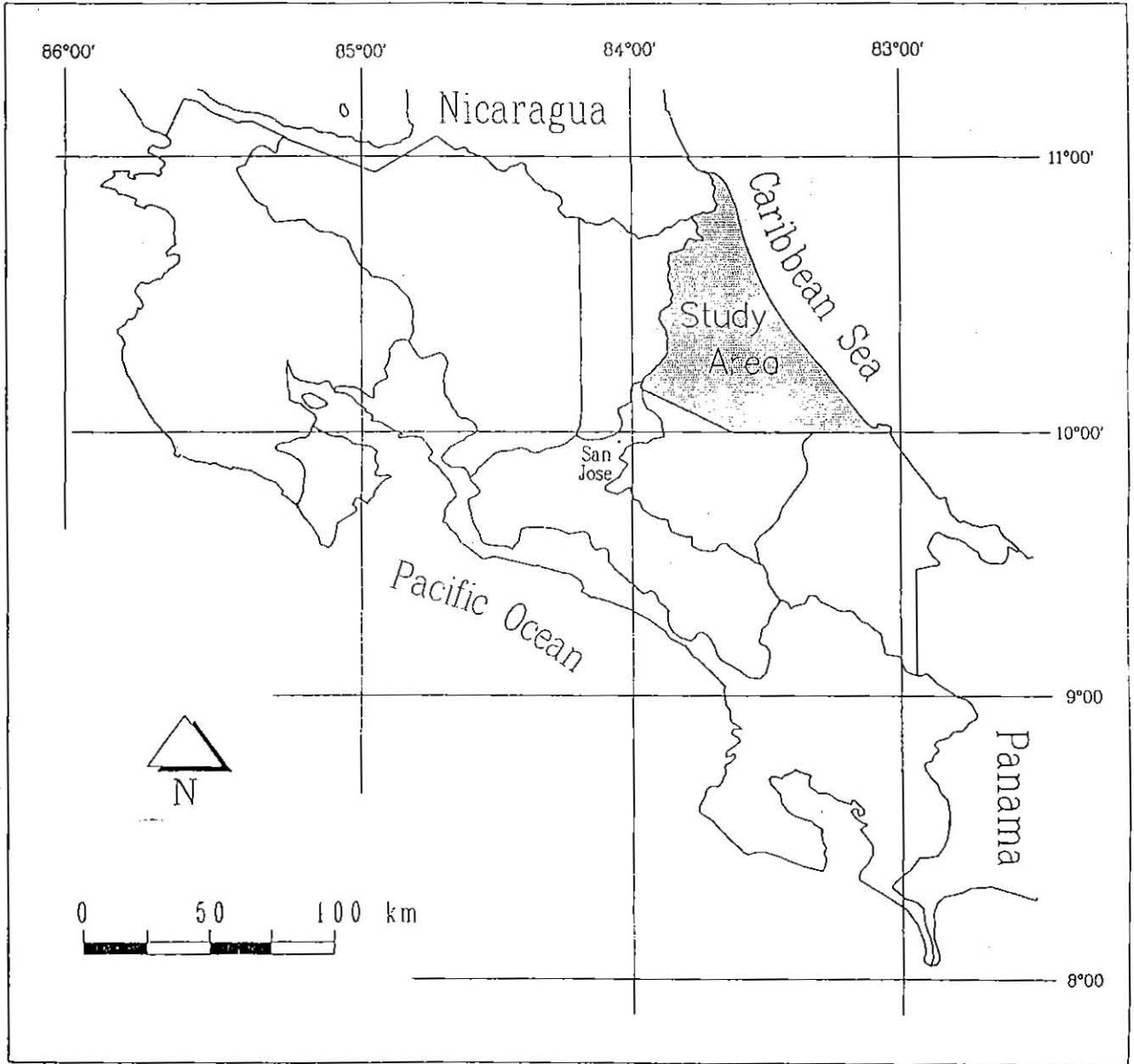
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**CENTRO AGRONOMICO TROPICAL DE  
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## PREFACE

### General description of the research programme on sustainable Landuse.

The research programme is based on the document "elaboration of the VF research programme in Costa Rica" prepared by the Working Group Costa Rica (WCR) in 1990. The document can be summarized as follows:

To develop a methodology to analyze ecologically sustainable and economically feasible land use, three hierarchical levels of analysis can be distinguished.

1. The Land Use System (LUS) analyses the relations between soil type and crops as well as technology and yield.
2. The Farm System (FS) analyses the decisions made at the farm household regarding the generation of income and on farm activities.
3. The Regional System (RS) analyses the agroecological and socio-economic boundary conditions and the incentives presented by development oriented activities.

Ecological aspects of the analysis comprise comparison of the effects of different crops and production techniques on the soil as ecological resource. For this comparison the chemical and physical qualities of the soil are examined as well as the pollution by agrochemicals. Evaluation of the groundwater condition is included in the ecological approach. Criteria for sustainability have a relative character. The question of what is in time a more sustainable land use will be answered on the three different levels for three major soil groups and nine important land use types.

#### Combinations of crops and soils

	Maiz	Yuca	Platano	Piña	Palmito	Pasto	Forestal I II III
Soil I	x	x	x		x	x	x
Soil II						x	x
Soil III	x			x	x	x	x

As landuse is realized in the socio-economic context of the farm or region, feasibility criteria at corresponding levels are to be taken in consideration. MGP models on farm scale and regional scale are developed to evaluate the different ecological criteria in economical terms or visa-versa.

Different scenarios will be tested in close cooperation with the counter parts.

The Atlantic Zone Programme (CATIE-AUW-MAG) is the result of an agreement for technical cooperation between the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), the Agricultural University Wageningen (AUW). The Netherlands and the Ministerio de Agricultura y Ganadería (MAG) of Costa Rica. The Programme, that was started in April 1986, has a long-term objective multidisciplinary research aimed at rational use of the natural resources in the Atlantic Zone of Costa Rica with emphasis on the small landowner.

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## PREFACE

This thesis is about the marketing of different fruits, roots and tubers in the Atlantic Zone of Costa Rica. I stayed in Costa Rica from April 1992 until the end of September 1992 with an interruption of two months because of an illness. I have done some fieldwork. I visited middlemen in the Zone and middlemen at different markets.

I want to thank all the people in Costa Rica who assisted me completing my work, especially my companion John Belt and Dr A. van Tilburg from the department Marketing and Market research of the Agricultural University of Wageningen.

## 1. SUMMARY

The objective of the study was to collect concrete information about the actors and their performance in the different marketing channels of some agricultural products cultivated in the Atlantic Zone of Costa Rica.

I collected data through literature research, by interviewing key-informants and middlemen at different markets in Costa Rica.

I interviewed 17 middlemen. Some were living in the Atlantic Zone and were trading in some other region of the country. Other middlemen were living outside the Atlantic Zone but were buying products from the Atlantic Zone.

I hardly met middlemen except for some cattle traders, who were both living and trading in the Zone.

I interviewed some retailers in Guápiles, a supermarket chain and a processing plant near San José.

I collected quantitative data on volumes and prices at the Ministry of Agriculture (MAG) and the PIMA.

The depth interviews contain questions about personal characteristics, purchase, sales, distribution channels, transport and degree of competition.

The most important products cultivated in the Atlantic Zone are pineapple (piña), papaya, hot chili (chile picante), plantain (plátano) roots and tubers (raíces y tubérculos). Animal husbandry is an important activity. Except for cattle all products are perishable; this means that commercialization of the products has to be fast.

Adequate storage or transformation into more durable goods, is scarce. Processing of yuca, pineapple and hot chilies only occurs for exportation, mainly to the USA.

The different markets in the study are the CENADA, the Borbon market, the market in Avenida 10, the Ferias del Agricultor, the cattle auction in Guápiles and the national cattle cooperative, Coopemontecillos.

CENADA is the only real wholesale market in Costa Rica. It seems to function well. The prices are determined by negotiation and they depend mainly on demand and supply.



The market in Avenida 10 has lost a lot of its importance as a wholesale market when the CENADA was founded in 1977. Its function has changed into a retail market.

The Borbon market is a 50 years old retail market. During the night the retailers of the market buy all kind of products in the street in front of the market from farmers, wholesalers and transporters. The products are sold to consumers who visit the market, but also to retailers (supermarkets, grocers) and restaurants.

The 'feria del agricultor' was founded with the purpose to establish direct links between farmers and consumers. This would strengthen the position of the farmers and reduce the participation of the middlemen. Advantages of this market type are the stimulative effect on production, higher quality, product diversification, farmers participation and cost reduction.

The disadvantage is the lacking control of the 'carnet'. The middlemen are still participating at the feria. Participation of middlemen can be either positive or negative. Positive, because it has a stimulative effect on efficiency. Negative, because it discourages farmers to participate at the feria.

Coopemontecillos is the only national cooperative for cattle slaughtering. It plays an important role both as the national and export meat market.

Actors in the marketing channel supply products to other actors or to the ultimate users of the product, the consumers. Different types of actors are: farmers, collectors/transporters, wholesalers and retailers. Combinations of these also exist. They all fulfill a trading function in the marketing channel.

The relationship between actors at the markets is quite good. They accept each other and their performance. Traders who own or organize transport seem to have a more powerful position. They can easily move between the different markets and trading places. Traders with durable relations also seem to be powerful, because their sales are more secure. These relations prevent new traders from entering the market.

Marketing channels differ depending on the final destination of the product: national consumption or export. The number of transactions in the channel is high, sometimes a product passes four up to five middlemen before it reaches the consumer.

Sometimes products pass different markets. For example, a wholesaler buys at the CENADA and sells at the 'feria del agricultor' or at the Borbon market.

In Costa Rica a few big cooperatives exist and they all function well. The smaller cooperatives do not function, mainly because of ineffective organization.

For the marketing of cattle, a lot of different channels exist. The channel followed is determined by the trader and depends on his intentions to either slaughter, breed, fatten or sell the cattle directly.

The functions to be fulfilled by the middlemen are: exchange, facilitating and physical functions.

The physical function is the most important because transport, from the rural zone to the urban zone, is a very restrictive factor in marketing in the Atlantic Zone.

Facilitating functions like promotion and information, packing and cleaning are very scarce. Exchange functions like price agreement and negotiation result in prices which vary a lot. There are hardly any 'fixed' contracts.

The structure of the market and the conduct of the middlemen play a very important role in determining the characteristics of the markets and the performance of the middlemen.

The market structure in Costa Rica differs per market type.

At a wholesale market like the CENADA one mainly meets middlemen in contrast with the 'feria del agricultor' where one mainly meets farmers and consumers.

In Costa Rica there are both a lot of farmers and consumers. There are less middlemen but their participation in the marketing process of perishable products is high. At the production side a situation of oligopsony is found: many farmers and not so many middlemen. At the consumption side, a situation of oligopoly is found; a few middlemen and many consumers.

There are no formal entry barriers to start trading at a market. Durable relations, know-how of the functioning of the market and working capital ease the entry to a market.

The marketing channels are hardly vertically integrated. A lot of products pass about two up to five different hands before reaching the consumer.

The Conduct of the traders is not very aggressive. They don't have a detailed price policy. They await the situation of supply and demand to set their price. Sometimes quality is taken in account. Quality standards hardly exist. Most of the traders know the competitive prices and they hardly use any form of sales promotion.

The Performance of the middlemen results of product, assortment and service decisions. From the marketing mix, the product and its distribution channel are the most important aspects. Promotion is the less important aspect. Prices of the different products are determined mainly by supply and demand. Quantity and quality play a inferior role in determining the price.

The level of prices and profits also depends on the degree of competition in the market.

The transport is the most important cost factor from the different costs components the middlemen have.

A high amount of tax has to be paid for the purchase of a vehicle; petrol is expensive and roads are sometimes bad because of the rainfall. The number of traders with or without a lorry is about the same. If they do not own transport they rent it, sometimes together, and pay a compensation 'flete'. The 'fletero' is a middleman who is specialized in distribution.

The resulting gross margins for the middlemen differ per product, per market type and per type of trader. Pineapple and papaya seem to have a higher margin than plantain and cassava. Plantain, roots and tubers do have a more traditional character and their demand and supply are more stable.

This can be one of the reasons for the lower margins.

~~During the years 1982 until 1991, the prices of the products have increased and decreased. The increase of papaya and yuca prices in US dollar value (resulting from regression analysis) is caused by the fact that price increase exceeds price decrease.~~

~~When the volume of these products increased, the prices decreased.~~

~~More supply results in more competition and lower prices.~~

~~As the volume of plantain increased, its price decreased.~~

~~When the volume of pineapple increased, the price of pineapple also increased a little. This might indicate that the quality of the products offered, increased as well.~~

The variation in the price at the mercado municipal, a market type that can be compared to the Borbon market, seems to have the biggest influence at the feria price. Prices of the more traditional products like plantain and yuca are less sensible to price variations at other markets than the more perishable products like papaya and pineapple.

Cattle prices vary a lot. There are many different marketing channels. During the years prices in colones have increased about seven times. This might be caused by inflation but also by increase of demand, increase of population, an increase production costs.

The prices in US dollar value probably wouldn't have increased that much.

## CONCLUSIONS & RECOMMENDATIONS

Costa Rica has the disposal of many different soil types and various climates. The people are willing to work. This gives opportunities to ensure the farmers an income.

The main marketing problems are the 'cobweb theorem' (starting with the cultivation of a product when prices are high), the lack of transport, the lack of know-how of the functioning of the market and the lack of marketing boards or institutional executives to organize sales.

The middlemen have a powerful position towards farmers. They pass at the farm to buy the quantity of products they want and fix the prices. Farmers depend on them. If the outlets are not available for the products of the farmers, a lot of the harvest might get lost.

There are different types of middlemen in Costa Rica. Every one of them has his own role to play in the marketing of agricultural products. They take advantage of the situation of scarce and expensive transport. Transport from the Atlantic Zone to the main markets in the Central Valley, takes a few hours and is not always easy while passing the mountains in the Braulio.

The Feria del Agricultor and the cattle auctions both were constituted with the purpose to give farmers a chance to go to a market in the neighbourhood and sell their products. The feria also has the purpose of establishing direct contact between farmers and consumers. In this way the farmer gets the chance to be informed about the functioning of the market; about quantities, qualities and prices. This gives him a stronger position towards the middlemen.

The wholesales market, the CENADA, seems to function well as long as one has durable relations and the disposal of transport.

The mercado Borbon and the market in Avenida 10 play a less important role for middlemen from the Atlantic Zone. The products sold at the markets like pineapple, papaya, roots and tubers mostly are cultivated in other zones. Middlemen selling at these markets are mainly retailers who live in the Central Valley.

In my view a more direct contact should be established between the (export) processing plants or supermarket chains on one side and the farmers on the other side to reduce the number of middlemen participating in the channel and to keep costs down.

Farmers should go on organizing themselves in collecting, transporting and selling their products together.

Maybe marketing boards could be constituted to ease the marketing process and make farmers sales more secure.

## **2. INTRODUCTION**

### **2.1. PROGRAMA ZONA ATLANTICA**

This study has been completed within the framework of the "Programa Zona Atlantica", a program for agricultural research in Guápiles in the Atlantic Zone of Costa Rica. The program is a cooperation of the Ministry of Agriculture (MAG = Ministerio de Agricultura y Ganadería), CATIE; a Costa Rican research institute and the Agricultural University of Wageningen (AUW).

The programme exists since 1986. The main, long-term objective of the programme is to contribute to ecologically sound, socially acceptable and economically viable ways of sustainable land use in the Atlantic Zone of Costa Rica. The central issue of the programme is research on sustainable land use. Sustainable land use has to be studied both from the 'supply side', e.g. soil type and climatic conditions, and from the 'demand side', e.g. the produce the farmer wants to grow for consumption or for the market (A. van Tilburg, 1992).

The project research area is situated in the north of the road Guápiles-Limón, in the Eastern part of Costa Rica along the Atlantic Ocean. It is estimated that about 70% of the cultivated area consists of pasture land (with trees), about 20% of (mainly banana) plantations and 10% of arable land cultivated by farmers. Subareas are the cantons Pococi, Matina, Guacimo, Siquirres, Talamanca and Limón. The studies of the project have been concentrated in the IDA settlement scheme Nequev, in Rio Jimenez and Cocori.

The climate in the Atlantic Zone is very humid, rain fall is up to 3500-4000 mm a year. There's no dry season. The temperature reaches to about 28 degrees Celsius. The soils are from volcanic origin (field report nr 36).

### **2.2. PROBLEM DEFINITION**

During the last decade, the Atlantic Zone of Costa Rica experienced several changes. International companies invested on a large scale in plantations of (mainly) bananas which have been exported to the port of Limón. IDA (Instituto de Desarrollo Agrario) developed several settlement schemes on former hacienda's in the Atlantic Zone. The farmers taking part in these schemes originated from different parts of Costa Rica. They acquired property titles in this way. Forests were changed in to arable land and IDA supplied the necessary physical infrastructure. The Consejo Nacional de Producción (CNP), the marketing

board for basic grains (maize, sorghum, paddy and beans), opened buying centers and purchased directly from farmers at support prices which were increased almost every year (Morales 1991).

The support price system was abandoned and the buying centers were closed in 1991 as part of Costa Rica's Structural Adjustment Program (SAP). For other products such as cacao, plantains, roots and tubers, and beef no formal marketing channels were available. The farmers might sell to middlemen who visit them.

## **2.3. THE MARKETING STUDY & OBJECTIVES OF THE STUDY**

### **2.3.1. the marketing study**

The main question of the study is to find out which products or group of products cultivated in the Atlantic Zone, can compete at the domestic and/or at the foreign market.

The marketing study consists of three sub studies:

The first part concerns an investigation at the farmer level, done by Patty Portier.

Second part concerns an investigation at the intermediate level.

The marketing channels used by the middlemen to buy from farmers and sell to consumers. This investigation is done by Marjon van Logtestijn.

The third part concerns a marketing investigation at export level.

Which products are exported, to which countries and by what kind of company. This investigation is done by Suzan Hoekstra.

John Belt did some investigation about small farmers organizations and the big banana plantations.

### **2.3.2. objectives of the study**

The final objective of the research study is to get an idea of the economic performance (effectiveness, efficiency, and equity) of the agricultural or food marketing system in Costa Rica, especially in and related to the Atlantic Zone.

Effectiveness measures how well customers demand for service outputs is reached. Equity measures the extent to which problem market segments are served. Productivity measures the physical efficiency of the resources used, and profitability is a financial measure (Kotler, 1988).



Study of the marketing system of agricultural products in the Atlantic Zone of Costa Rica;

- organization of different and possible marketing channels, structure, market types;
- which actors participate in the channel, their conduct and performance;
- interrelationships/power structures between actors, their transaction costs and margins;
- market opportunities and constraints.

The objective of the sub study is:

To investigate the functioning of the different marketing channels and within these the functioning of the middlemen in the process of buying and selling different agricultural products from the Atlantic Zone of Costa Rica.

The interviews contain the following types of questions: questions about personal characteristics, bargain, sales, distribution and market situation. The investigation about different markets and characteristics. Markets like the feria del agricultor, where farmers sell direct to consumers; CENADA, a wholesales market; mercado Borbon, a covered municipal market in the capital; Avenida 10, the predecessor of CENADA; Coopemontecillos, a cooperation to buying cattle, slaughtering and selling and the cattle auction in Guápiles.

### 3. ORGANIZATION OF THE STUDY

At the intermediate level the marketing study is organized as follows:

- small questionnaires with actors trading in products from the Atlantic Zone at different markets;
- interviewing key-informants discussing the functioning of these markets;
- open-ended interviews with traders in the different products living or trading in the Zone discussing in broad terms marketing issues;
- analysis of price and supply statistics of CENADA, ferias and supermarkets, Coopemontecillos and the cattle auction in Guápiles;
- literature review from CATIE, the programme and the Ministry of Agriculture, MAG.

#### 3.1. PRODUCTS IN THE STUDY

The emphasis of the study has been on the specific crops grown by (small) farmers. In several IDA settlement schemes, the main activity, in particular a few years after the clearance of the forest, has been animal husbandry. Main crops grown by farmers are plantain (platano), roots and tubers (yuca (=cassava), ñame, tiquisque, ñampi), papaya, pineapple (piña) maize (elote), pumpkin (ayote), soursop (guanabana), orange (naranja) and lemon. A relative new product is palm heart (palmito) which is mainly for export. The fruit of the palm (pejibaje) is consumed as well.

As results from the interviews of Patty Portier (1992), pineapple, papaya, roots and tubers, hot chili, plantain and palm heart, are the most important products in the research area, so the investigation focuses on these products. As hot chili, yuca and palm heart are cultivated especially for export, Susan Hoekstra (1993) will investigate more about these. Cattle breeding and trading seems to be a very important activity. It doesn't take a lot of time and the sale is not time dependent. It often seems to be an extra activity beside for example cultivating a product. Banana is also very important but the whole production and business is in the hands of a few multinationals like Dole and Chiquita. A lot of people do find a job in this business and consequently pay less attention to establish their own production. Products that are not included in the study but are, in my view, important for the Zone are melon, oranges, maracuya and for exportation black pepper.

### 3.2. SAMPLING PROCEDURE

#### explorative research:

The research study was explorative: objective was to gain insights and ideas about the intermediate level of the marketing channel. The emphasis in exploratory research is on developing tentative explanations and hypothesis not on demonstrating the viability of a given explanation. This type of research is appropriate for any problem of which little is known. This was the case in the Atlantic Zone, the farmers and consumers hardly seem to know anything about marketing. This results in a lot of freedom in trading for the middlemen. Exploratory research can be used to establish priorities in further research. It can also be used to become familiar with the problem or to clarify concepts. Exploratory research hardly ever uses detailed questionnaires, so the interview I made had some general questions but while interviewing I also asked things coming up at that right moment.

In general explorative research can be done by:

- literature research;
- survey among key-informants; this attempts to tap the knowledge and experience of those who are familiar with the general subject being investigated (G.A. Churchill, 1987). For example the administrator of the different markets or people working at the ministry of agriculture.

The interviews were all informal. A probability sample seemed to be a waste of time because it was difficult to meet any middlemen of concern at all.

#### the sampling procedure

Taking into account a sampling procedure for the interviews, my population existed of all kinds of middlemen like assemblers, wholesalers, retailers, transporters and combinations of them. Some were living in the Zone and were trading in the Central Valley of the country; other middlemen were living in other parts of the country but were buying from farmers in the Zone.

The sampling frame consisted of middlemen who are somehow related to the Atlantic Zone and trade in the following products: pineapple, papaya, plantain, roots and tubers, palm heart, hot chili and cattle for meat production.

The sample size consists of 40 middlemen.

20 Middlemen were selected at random at the different market types like the ferias, mercado Borbon, Mercado Avenida diez and the CENADA. They were trading in the products of the study. These products were not always bought in the Atlantic Zone. Only some of the traders were living in the Atlantic Zone.

I interviewed 10 middlemen whose names were given by the farmers in the investigation of Patty Portier (1992).

I met 10 middlemen by accident or with help of the cooperators of the programme.

Sampling elements:

I made three different lists of questions.

- an interview with general questions about the functioning of the markets;
- a depth interview for cattle traders (see annex 3);
- a depth interview for middlemen trading in papaya, pineapple, hot chili, plantain or roots and tubers.

sources of data:

- a literature review;
- interviews with key-informants;
- the depth and general interviews;
- collection of quantitative data on price, demand and supply developments from all kinds of institutions like MAG, PIMA and so on.

The different marketing outlets which I investigated are:

The permanent markets:

- CENADA, a wholesales market in Heredia;
- mercado (= market) Borbon, a retail market in San Jose for both consumers and retailers;
- wholesale/retail market in Avenida diez (10) in San Jose, the former wholesale market before CENADA was founded (1977).

The periodic markets:

- different feria's del agricultor, special markets where farmers sell directly to consumers, about 30 in the whole country;
- the cattle auction in Guápiles;
- the meat processing plant of the cooperative "Coopemontecillos" in Alajuela;
- the market of Montecillos in the same town.

Direct marketing channels:

- some processing plants, to which the farmers sell directly by means of a farmers organization, without the intervention of middlemen.

It's hard to make a distinction in marketing between the Atlantic Zone and the rest of the country, because the majority of marketing activities are organized at national level (A. Villalobos, 1992).

#### 4. THEORETICAL FRAMEWORK

##### 4.1. MARKETING CHANNEL

A marketing channel is defined (Kotler, 1991) as a set of interdependent organizations involved in the process of making a product or service available for use or consumption.

Marketing channels can be characterized by actors supplying products to other actors or to the ultimate users of the product, the consumers, through markets (A. van Tilburg, 1992). Each of the actors have their goal (desired output level), a macro-environment, a task environment and resources to reach its aim. The marketing channel is an open system but has boundaries: geographic, economic and human boundaries. The separation of production from consumption, because of the economic rules of specialization, necessitates the performance of the various marketing functions or flows to meet expressed demand for service outputs. (Stern en el-Ansary, 1988).

Markets and marketing channels for different crops may be partly the same, especially in the assembling stage of the marketing process.

Food marketing channels vary in complexity depending on, among others, the variety of consumer needs, the variation in purchasing power among consumers, the class of products, the variety of products available, the number of transactions, the quality of the infrastructure and so on.

Intermediaries arise in the process of exchange because they can improve the efficiency of the process. "You can eliminate the middlemen but you can not eliminate his functions", (Stern en el-Ansary, 1988).

The producer mostly sells his products to a wholesaler.

"Wholesaling is concerned with the activities of those persons or establishments which sell to retailers and other merchants, and/or to industrial, institutional, and commercial users, but who do not sell in significant amounts to ultimate consumers", (Stern en el-Ansary, 1988).

Task is coordinating consumption and production.

## 4.2. S-C-P ANALYSIS

"Workable competition" or "effective competition" is the basis of the market structure, conduct and performance method of analyzing actual market behavior in relation to a realistic competitive form, competition which is judged 'workable' if the market structure, conduct and performance does not diverge 'too far' from the norm (Hill & Ingersent, 1982).

hypothesis: market structure and market conduct determine market performance. The level of prices and profits determined in a market (performance) depend on the degree of competition in that market (structure).

### 4.2.1. structure

Farmers or small traders, both in the collective and distributive trade, may have little market power (oligopsony or monopsony). The perishability and heterogeneity of agricultural products and the inefficient functioning of the marketing channels are two of the reasons why small farmers have so little power and a low profit rate (Villalobos, 1992). They often sell homogeneous products in a competitive market: they are price-takers. Competition through product differentiation seems to be difficult.

The participation of middlemen is high (Villalobos, 1992). Wholesalers, in the assembly, distributive or interregional trade, may operate in an oligopsonistic market, an oligopolistic market or dual oligopoly of homogeneous products. Their competitive advantage has to be sought in efficiency in logistics and competitive prices based on low costs. They can be called 'price and distribution oriented marketers' (van Tilburg, 1992).

There's not a lot of vertical integration. a lot of products pass about two up to five different hands before reaching the consumer. Only the big supermarket chains like Mas por Menos and the big export plants organize their own acquisition of products. There's not a lot of horizontal integration either, the middlemen hardly cooperate nor compete. Everyone has it's own business. When I asked middlemen whether there's a lot of competition, they confirmed. The products are perishable, and are not processed or differentiated.

The middlemen have to contend with a lot risk. For example risks like product loss during transport, damage to the vehicle or a sudden price decrease. Most of them don't have any strategy to avoid these risks.

This situation caused the intervention of different organizations like MAG, PIMA and the foundation of the CENADA, a well-organized wholesale market with a good infrastructure, and of the "Ferias del agricultor". Furthermore there is movement towards foundation of farmer's cooperatives. They all have the same objectives: to organized the farmer's profit, to establish prices and to improve distribution and storage (Villalobos, 1992).

Four principal dimensions of market structure are:

1. Degree of seller concentration;
2. Degree of buyer concentration;
3. Degree of product differentiation;
4. Conditions of access to market, barriers to entry.

(Hill & Ingersent, 1982)

About the market structure in Costa Rica the following can be said:

1. There are a lot of small farmers, there are less middlemen but their participation in the marketing process is high.
2. Costa Rica has 3 million inhabitants, a lot of production for own consumption. There are verdulerias (greengrocer) and pulperias (grocer).
3. Most of the agricultural products for the national consumption are perishable, there's hardly any storage or processing; there are only two or three different product qualities which mostly depend on the size of the product.
4. Concerning the access to markets there are no formal entry barriers but one definitely needs clients, know-how of the market and working capital.

#### 4.2.2. conduct

Market conduct is related to "the patterns of behavior which middlemen/enterprises follow in adapting or adjusting to the markets in which they buy or sell". The dimensions of market conduct are:

1. The methods used in determining prices and output;
2. Policy relating to the design and quality of products;
3. Sales promotion policy;
4. The means whereby the price, product and sales promotion policies of competing sellers are co-ordinated and adapted to each other;



5. The extent to which predatory or exclusionary tactics are directed against either established rivals or potential entrants.  
(Hill & Ingersent, 1982)

Concerning these points market conduct in Costa Rica can be described as follows :

1. As results from the interviews most of the middlemen don't have a detailed price policy. Price seems to depend on demand and supply and only sometimes on quality or quantity.
2. At least for the national consumption, quality standards only seem to exist when a product has different sizes or maturation steps, e.g. pineapple has got 3 sizes.
3. Asking the middlemen if they had any sales promotion at all, most of them answered none. Only a few have promotion activities on the radio or in the local newspaper.
4. Most of the competing sellers know each others prices and adapt their prices to these competitive prices. Otherwise they won't be able to sell at all.
5. Tactics are not used against rivals, but they are used to farmers especially to small farmers, they do not seem to have a lot of power and depend on the middlemen to sell their products.

#### 4.2.3. performance

The performance in the marketing channel implies the functioning of the trader in the marketing system;

Important questions to ask about the performance of middlemen are:

1. What type of middlemen;
2. Are they organized or not;
3. Do they have a specific target group or not (target market decision);
4. Product, assortment and service decision;
5. What looks the marketing mix of the middleman like: place, price, distribution, promotion.
6. Rate of profit, gross- and net margins in relation to marketing functions, returns on investment; costs of sales promotion;
7. Attitudes of the middlemen.

Concerning these points market performance of the middlemen in Costa Rica can be described as follows:

1. All types of middlemen exist; transporters, collectors, wholesalers, retailers.
2. Middlemen are not organized in the sense of being member of a

certain organization. Except for cooperatives like Coopemontecillos.

3. They do have more or less specific customers groups, depending on their trade purpose. They sell to whom ever wants to buy.
4. Their product, assortment and service depends on their trade purpose. For example a trader buying at the CENADA and distributing/selling in the Zone will buy all the product which he will be able to sell. A Trader specialized in pineapple will concentrate on the distribution of this product and try to sell the pineapple to as many traders as possible.
5. The marketing mix depends on trade purpose as well. The transport for distribution is owned or rented. The distribution costs are high and the condition of the roads can vary a lot.  
The market situation is transparent. The prices are shown and it is easy to get informed.  
The middlemen do not have costs of sales promotion because they hardly ever advertise. They do not transform the products. The main function of the middleman is buying and selling.
6. A wholesaler buying at the Cenada and selling in the Atlantic Zone has a profit rate of 10-20%. Retailers gross margins are 20% up to 60% depending on the shop type and the products. Margins on plantain and cassava are lower than on pineapple or papaya.
7. Most of the middlemen try to make the highest possible profit. They hardly think of future activities.

#### 4.3. TYPES OF COSTA RICAN MIDDLEMEN

##### 4.3.1. Types of Costa Rican middlemen

According to Barbara Harriss (1987) there are three different types of trade agents:

1. trader as entrepreneur: 'agents of development'; no innovation but reaping of profits; use of scarce resources to deliver economic services in rural zones, traders who stimulate rural development.

2. trader as powerless agent of stagnation: 'subsistence trade'; short term easy profits involving if necessary cheating, black marketing and adulteration. Trade reflects economic stagnation.

3. trader as powerful agent of underdevelopment: role of traders as a class; monopoly position, traders are redundant because they are unproductive. They cause rural pauperization and underdevelopment.

In Costa Rica the first type of trader is assumed to be dominant. He goes to the Zone to buy products at the farm.

In Costa Rica three types of middlemen can be distinguished:

- farmers who trade;
- wholesalers;
- retailers.

##### Farmers who trade:

###### producer: (productor)

The farmer is the first actor in the marketing channel; he actually produces the products. He sells the products at his farm, at the market or to a processing plant. Farmers often use a small open wooden lorry to transport their products, sometimes they use a pushcart. When a farmer transports his products himself, he produces one product only but in a large volume, he has a good administrative capacity and financial possibilities (A. Villalobos, 1989).

##### Wholesalers

Different types are:

###### 1. wholesale market users;

They have their fixed place at the most important markets like Avenida 10, CENADA and the Borbon market. They buy from transporters/collectors, producers and collectors, they sell to retailers visiting these markets.

## 2. commercial wholesale trade-agents:

They collect products in rural production zones from producers or traders. They don't have any storage but sell to wholesale market users or to retailers. They load and unload.

Within the class of commercial wholesale trade-agents, exist some subtypes:

### collector : (acopiador);

He collects products at the farm, has a extensive knowledge about the product its price and the commercialization of the product. They have their own clients. He collects products in the Zone with the purpose to form more homogeneous and larger unities and to use transport effectively and to ease other marketing functions like buying, selling, storage and price formation. The acopiador has an important function because quantities of the farmers are too small to go to the market (Villalobos, 1983).

### transporter (camionero): 'transportista';

As the name already indicates they only transport big amounts of products from the rural to the urban zone. They often have their own transport, otherwise they'll rent a lorry. They buy the products and take the risks. The functions they complete are collecting, transporting, providing products to wholesalers. They mostly trade in the same products and have their own clients. The most important function is collecting small quantities from the different farms, group these together and then sell in large quantities to wholesalers or agro-industry.

A transporter fulfills the same functions as a collector, when he is both collecting and transporting.

### 'fletero'

A fletero only transports the product, without buying it. They don't become owner and they don't run risk either. They just ask a compensation (flete) for the transport, depending on the distance and the volume. The transport vehicle often is their own.

The transporter and the 'fletero' are no rivals; the camionero is a real commerciant while the 'fletero' just transports the product.

Sometimes the camionero fulfills a credit function; he buys the products before the physical transaction. This is to stimulate the farmer to keep on cultivating and to ensure supply for the camionero.

wholesaler (mayoristas):

(This type can also be a wholesale market user)

He buys from a transportista, a cooperative, a collector, another wholesaler or from a farmer. Most of the time he will pay directly in cash.

The middlemen mostly sell their products to retailers. The wholesaler becomes the owner of the product for a while. They know a lot about the functioning of the market; they have their own clients and working capital. The price depends on demand and supply. They hardly ever store their products, e.g. at the CENADA. Storage costs are very high. They hardly ever pack their products, nor do they have any standardization.

**Retailers:**

A retailer (minorista) mostly buys from a wholesaler and sells to consumers in the street, in the groceries, at markets or in supermarkets, by showing their products. They play a very important role in the distribution of the products because consumers and farmers often don't have the opportunity to sell or buy directly to each other (except for the feria del agricultor). The 'pulperias' (grocery) and 'tramo's (a covered market stand) take advantage of their localization and specialization and are specialized retailers in selling fruits and vegetables. The 'pulperias' also sell other types of products, like eggs and canned products. The 'carniceros' are specialized in selling different classes of meat.

The retailers fulfill the following functions:

- buying and selling of the products;
- keep sufficient products in store to be able to deliver to the consumers at all times;
- guarantee the freshness of the products;
- balancing, pack and measure small quantities.

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Different types can be distinguished:

market retailer (minoristas de mercado):

Those who visit the most important markets and buy at these markets to store in their groceries. They trade in larger volumes than the rural or urban retailers.

urban retailers (minoristas urbanos):

Their shops are located in the Central Valley (San Jose). They have larger volumes than rural retailers, smaller than market retailer.

rural retailers (minoristas rurales):

Grocers in rural zones (far away from the capital of the canton). They trade small trade volumes;

other types:

Traders from different supermarkets, retailers who buy at one market to sell at an other market: buy at CENADA or feria and sell at mercado Borbon. (Villalobos, 1989)

My experiences with middlemen in Costa Rica:

I interviewed two transporters: both worked for a processing plant ; one did buy products (roots and tubers) from the farmers, the other one only transported products (hot chili).

I interviewed some middlemen who buy at the CENADA and sell to retailers in the Atlantic Zone. The all owned a lorry for transport.

I found some middlemen who do not live in the Zone but who buy products from the Atlantic Zone to sell at the wholesale market.

The cattle traders I met all lived in the Zone. They bought cattle at the auction, in the street or at the farm. They sold the cattle to Coopemontecillos, at the auction or they had the cattle slaughtered to sell the meat in their own butchery. Some just kept the cattle out in the fields for some time.

I interviewed some retailers; supermarkets and green grocers in Guápiles. They bought plantain, roots and tubers from farmers who pass at the shop. One grocer bought the products except for plantain, roots and tubers, at the CENADA. Other grocers bought the products from a wholesaler passing at the shop.

#### 4.4. FUNCTIONS OF THE COSTA RICAN MIDDLEMEN

The marketing functions to be performed in the channel:

Functions to be fulfilled by the middlemen in a marketing channel are:

- facilitating functions (credit, price information, packing and cleaning);
- exchange functions (price formation);
- physical functions (storage, transport).

##### facilitating functions:

- \* information: the collection and dissemination of information;
- \* promotion: disseminations of communications about the offer;
- \* financing acquisition and allocation of funds to finance the trade (inventories);
- \* risk taking: the assumptions of risk in connection with the trade;
- \* price discovery;
- \* packing and /or cleaning of the product.

The facilitating functions are scarcely performed by the middlemen in Costa Rica. They hardly collect information, don't promote their products. Only sometimes they clean the products or pack them in plastic bags or newspapers.

They don't take risk in account when trading.

##### exchange functions:

- \* negotiation: the attempt to reach final agreement on price and other terms of trade (buying and selling);
- \* price determination and payment for the products and services to provided;
- \* title: the actual transfer of ownership.
- \* ordering: ~~backward communication of intentions to buy;~~

Most of the traders do negotiate about the prices. They pay directly and in cash. The communication between the traders is scarce. The transfer of ownership is easy and direct.

##### physical functions:

- \* distribution means planning, implementing, en controlling the physical flows of materials and final goods from points of origin to points of use to meet customer needs at a profit;
- \* physical possession: the purpose of storage is to overcome a time gap between harvest and sales. There's hardly any storage in Costa Rica

at all, the costs made aren't worth the extra profit. A lot of products are cultivated all year round. The relatively small scale storage takes place in the collecting centers (centros de acopio) and in storage accommodation of the wholesales markets.

\* transformation of the physical products from raw materials to the final product or service. Processing of products has different reasons like:

- making the product more easy to use;
- to join different products;
- to reduce the risk of losing everything.

To be able to transport products from one place to another, the infrastructure is very important. In Costa Rica the main roads are in a good condition except from some holes. Reaching the rural zone, the roads get worse. Most of the transport is carried out by transporters like 'fleteros' and 'camioneros'. Most processing is done by agro-industry, mostly for exportation. A lot of the national consumption of pineapple, papaya, plantain and roots and tubers is fresh (Villalobos, 1983).

The functions have three things in common: they use up scarce resources, they may be performed better through specialization, and they are shiftable among channel members (Stern en el-Ansary, 1988).



#### 4.5. CONCLUSIONS

The marketing channel in Costa Rica consists of many different interdependent organizations. They are involved in the process of making a product or service available for use or consumption.

The actors in the marketing channel supply products to other actors or to the ultimate users of the product, the consumers.

Different actors are: collectors/transporters, wholesalers and retailers.

The goal of the actors is a desired output level to acquire a sufficient income.

In reaching their goal, actors face:

- a macro-environment, e.g. a region or marketplace;
- a task environment, e.g. consumers or middlemen;
- resources to reach their aim, e.g. a lorry or place at the market.

Trading has its boundaries. Geographic boundaries, like mountains or distances to markets or insufficient infrastructure. Economic boundaries, like scarce financial resources. And human boundaries, one isn't able to do more than one thing at the time.

The structure of the market and the conduct of the middlemen play a very important role in determining the characteristics and the performance of a market.

The market structure in Costa Rica differs per market type.

In general there are both a lot of farmers and consumers. There are less middlemen but their participation in the marketing process of perishable products is high. At the production side a situation of oligopsony is found: many farmers and not so many middlemen. At the consumption side, a situation of oligopoly is found; a few middlemen and many consumers.

~~There are no formal entry barriers to start trading at a market. Durable relations, know-how of the functioning of the market and working capital ease entry.~~

The marketing channels are hardly vertically integrated. A lot of products pass about two up to five different hands before reaching the consumer.

Conduct of the traders is not a very aggressive. They don't have a detailed price policy. They await the situation of supply and demand to fix their price. Sometimes quality is taken in account. Quality standards hardly exist. Most of the traders know the competitive prices. They hardly use any form of sales promotion.

Performance of the middlemen results from product, assortment and service decisions. From the marketing mix, the product and its distribution channel are the most important aspects. Promotion is the less important. Prices of the different products are determined mainly by supply and demand. Quantity and quality play a inferior role in determining a price.

The level of prices and profits also depend on the degree of competition in the market.

Transport is the most important cost factor for middlemen.

A high amount of tax has to be paid for the purchase of a vehicle; petrol is expensive and roads can be damaged by the rain.

The number of traders with or without a lorry is about the same. If they do not own transport they rent it, sometimes together, and pay a compensation 'flete'. The 'fletero' is specialized in distribution.

The resulting gross margins for the middlemen differ per product, per market type and per type of trader. Pineapple and papaya seem to have a higher margin than plantain and yuca. Plantain, roots and tubers do have a more traditional character and the demand and supply are more stable.

These can be one of the reasons for the lower margins.

The marketing functions the middlemen perform (exchange, facilitating and physical) have three things in common: they use up scarce resources, they may be performed better through specialization, and they are shiftable among channel members. The physical function is the most important because of the fact that transport is a restrictive factor in trading in Costa Rica.

## 5. GENERAL INFORMATION ABOUT MARKETS AND PRODUCTS

### 5.1 MARKETING IN COSTA RICA

#### 5.1.1. Marketing problems

The most important marketing problems in Costa Rica are;

- Relative small amount of middlemen with a lot of power, who regulate supply and demand;
- If there's a lot of supply the middlemen gain less, if not the margin can be about a 50%;
- The market information about prices to the consumer as well as to the farmer is very insufficient;
- The 'cob-web theorem'; if the price of a product is high, everybody starts cultivating it with the consequence of high supply and when harvest enters the market, price falls down ;
- The distances between production area and the different markets often are enormous. The foundation of the "feria del Agricultor" tried to solve this problem; but still the participation of middlemen at the feria's seems to be very high;
- There is a lot of trade between markets. A lot of middlemen buy at one market and sell at another one, the price is driven up. A lot of retailers buy directly or indirectly at the Borbon market, at the CENADA or at the feria's;
- In Costa Rica exist a lot of cooperatives, but they lack on aggressive market approach and the interests between the members are too diverse;
- The big cooperatives like Dos Pinos for dairy products, are functioning well for the big farmers but not for the smaller ones. They can't compete with the high quality of the big farmers;
- The prices vary during the year because of for example the climate, depending on the region. In december the middlemen expect the highest turnover because of the higher consumption with Christmas;
- The infrastructure of most of the markets in the study is insufficient. A good infrastructure is necessary for the treatment and the storage of the products. The CENADA market has the disposal of storage space and a good infrastructure. These determinate supply and demand and so the price;
- The farmer's knowledge of the market is low, he is in a weak position compared to the middlemen who have a lot of experience.  
(An interview with A. Villalobos, agricultural economist at the AID, San José, 1992).

Four fundamental barriers for the functioning of an efficient marketing system are:

1. The high degree of trade at the intermediate level;
2. The high costs of the distribution partly because of the large numbers of middlemen;
3. The high margins for the middlemen, or the low price paid to the farmer and the high price the consumers have to pay;
4. The lack of institutional executives in commercialization (Cordero & Vedova, 1984).

### 5.1.2. Marketing channels

In Costa Rica the different products have different marketing outlets. The products reach the consumer at different manners.

In some channels the interference of different middlemen is big, in some it is less.

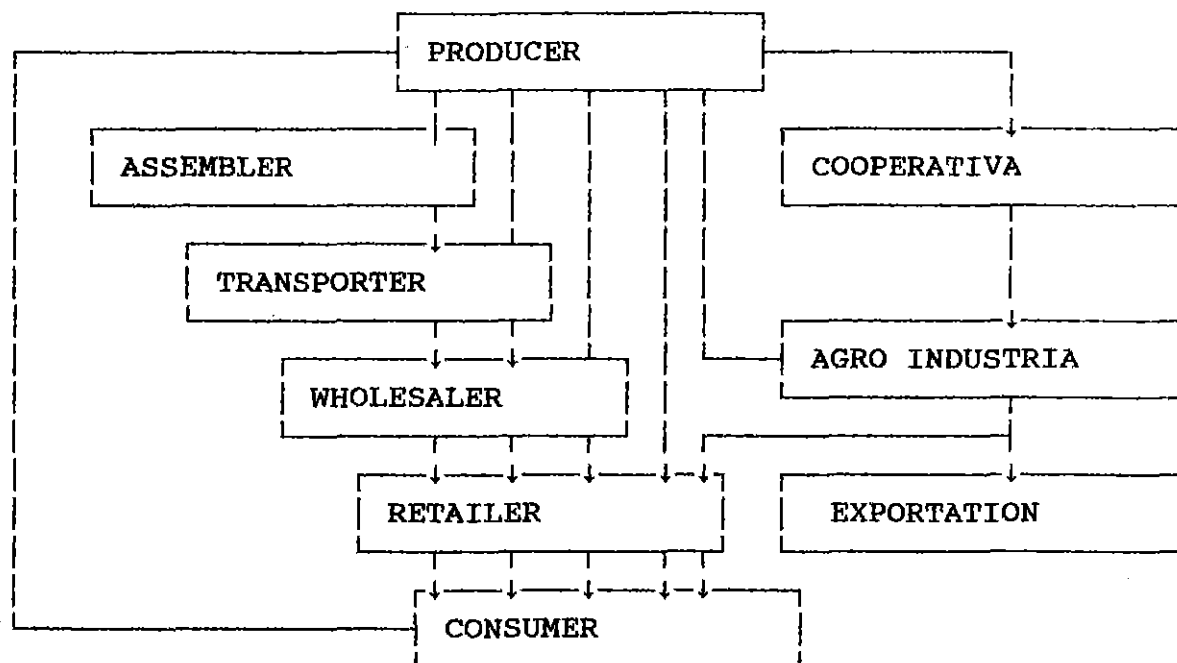
In Costa Rica there are three different product types:

- 1) Traditional export products like coffee, sugar, banana;
- 2) Basic grains concentrated at the internal market, the CNP (Consejo Nacional de Produccion) used to play an important role in the marketing of these products;
- 3) Perishable products, which experience the most problems. Commercialization of vegetables, roots and tubers and fruits has to be fast because of the perishability of the products. The commercialization of cattle is more easy. If the price is bad the cattle just remains in the field for some more time. The channels per product do not differ a lot. To give an idea, I drew some a channel.

General scheme of the marketing process of agricultural products.

Channels of perishable products:

- a. producer-assembler/transporter-wholesaler-retailer-consumer.  
(most common)
- b. producer-assembler/transporter-retailer-consumer.
- c. producer-wholesaler-retailer-consumer.
- d. producer-retailer-consumer.
- e. producer-consumer (feria).
- f. producer-cooperativa-agro industria-retailer-consumer.
- g. producer-agro industria-retailer-consumer
- h. producer-cooperative-agro industria-exportation.
- i. producer-agro industria-exportation.

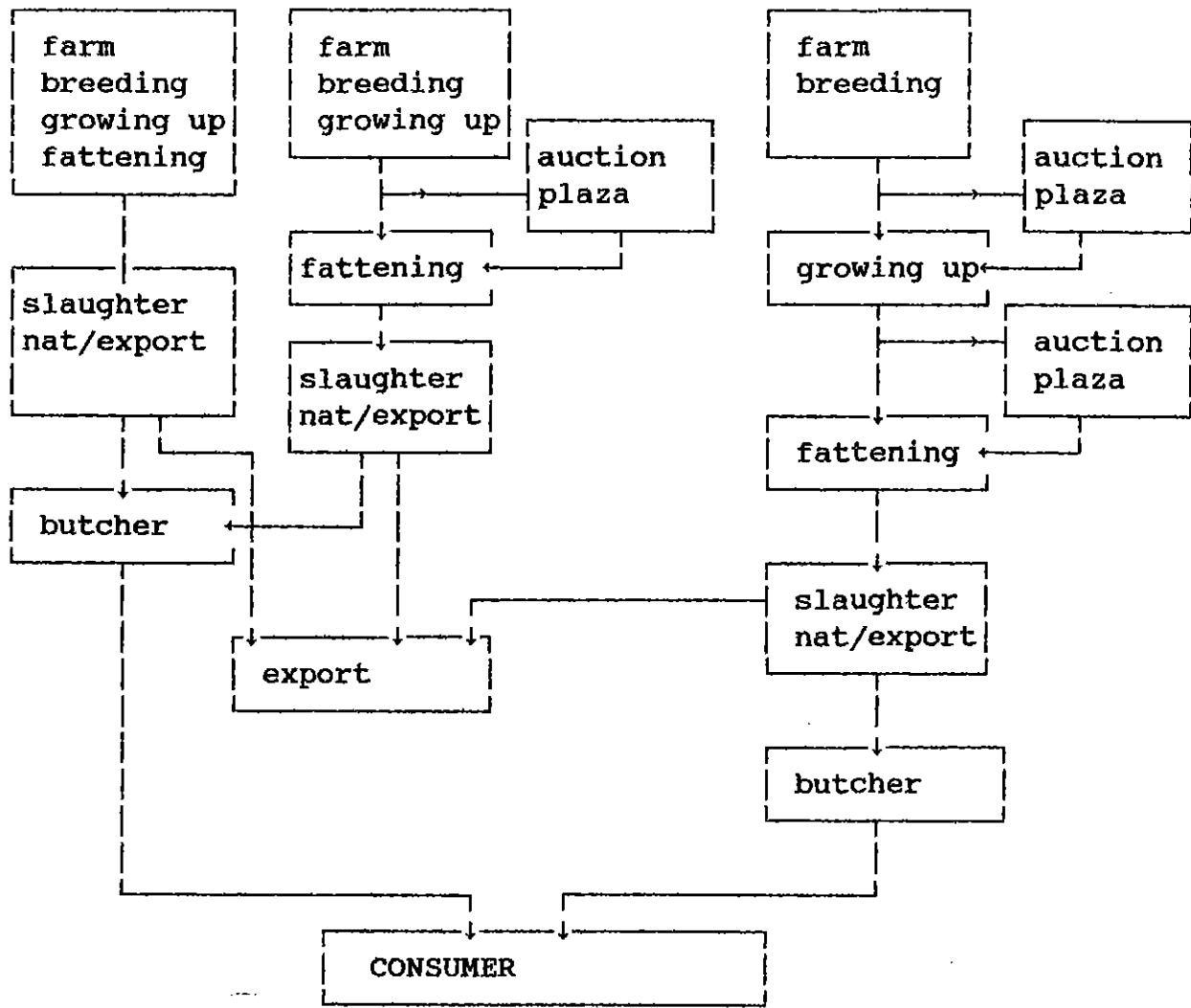


A producer can sell his product to an assembler passing at his farm, to a transporter or to the cooperative. But also to the agro industry, directly to consumers at the 'feria del agricultor' or e.g. to wholesalers at the CENADA, or e.g. to retailers in town or at the Borbon market. To whom ever he sells, this person can sell it to the next person in the chain.

The marketing channel of cattle is different.

Cattle can be kept at the farm for breeding, and/or for fattening and/or for slaughtering. Buying and selling takes place in the street, at the farm, at a market (plaza) e.g. plaza de Montecillos, or at the auction. The cattle can be slaughtered at the cooperative (Coopemontecillos) or in the rural slaughterhouses. The meat can be sold abroad or to butchers (and other retailers). Final destination is the consumer.

# Different marketing channels of cattle



## 5.2. CHARACTERISTICS OF THE MARKET

Bucklin (1991) distinguishes four types of retail markets in a developing economy: periodic markets; permanent markets; fragmented markets and vertical integrated markets.

At the periodic market trade takes place in local produced products. The market days are at different places at different times. The feria del agricultor is an example of this market type.

The permanent markets offer a larger assortment of fruits and vegetables. Wholesalers take care of the supply of products from outside the Zone and for bargain of non-local products. The mercado Borbon and the market in Avenida 10 are examples of these markets.

The fragmented markets are a consequent of the increase of consumers demand for a more variate food basket (smaller but deeper assortment), I didn't meet any markets of this type.

At the vertical integrated markets a lot of different products groups are sold next to each other (a warehouse). The supermarket chain, Mas x Menos is an example of this market.

Market days at the different markets are :

CENADA	: sunday night, monday, thursday
Avenida 10	: tuesday and saturday
Mercado Borbón	: no special market days, delivering in the early morning
Feria del agricultor:	friday or saturday or sunday
Cattle auction	: tuesday and thursday afternoon
Coopemontecillos	: no special market day
Plaza Montecillos	: sunday

### 5.2.1. CENADA

#### PIMA

The PIMA was constituted as an institution in 1977. PIMA is the abbreviation of Programa Integral de Mercadeo Agropecuario.

Its purpose is to improve the complex process of agricultural marketing of the country and especially of the vegetable and fruit sector.

PIMA has the following functions:

- improvement of marketing systems;
- technical assistance for municipal markets;
- organization and administration of the CENADA.
- collection of information about prices, quantities and origin of the products and number of traders at the CENADA market;

- publishing different bulletins about supply, demand, prices and transport (PIMA, 1991).

#### characteristics of the wholesale market

The abbreviation of CENADA is el Centro Nacional de Abastecimiento y Distribucion de Alimentos.

CENADA is a wholesales market for fruits and vegetables, located in Heredia near the capital, San Jose. Wholesalers from all over the country come to sell one or two different products to other wholesalers who distribute these products in their region; or to retailers, institutions, hotels and restaurants.

#### history

Until 1970 all the agricultural products were marketed at the Borbon market and at the market in Avenida Diez in San Jose. The accessibility of these markets and the hygiene was bad. There wasn't enough space to make the market transparent. This led to the establishment of the CENADA, financed by the national bank of Costa Rica (BNC). The CENADA was founded with the purpose to improve the urban development of San Jose.

The purpose was to concentrate supply and demand of different fruits and vegetables and roots and tubers and to set bounds to the profit of the commercial dealers. The CENADA is situated in Heredia, 11 km from San Jose. The connection with all the production zones is right. The CENADA started performing its functions in april 1981, it was the first project from PIMA. It is a market type with open doors, broad opening hours, not a lot of commercial restrictions, not a lot of requirements from the users, no entry barriers and a good infrastructure around the CENADA. About 60-80 % of the perishable products in Costa Rica is being distributed by the CENADA.

Main purposes:

- to ease trade transactions;
- greater efficiency in packing, unpacking and treatment of the products;
- stimulate open competition and transparency of the market;
- reduce the number of middlemen;
- improve storage and distribution;
- knowledge of prices, quantity and quality of the products (Rodríguez, 1985).



### products and traders

The fresh products are for national consumption, not for exportation or agro industry. That means that fruits like papaya and pineapple are more important for this market type as hot chili and palm heart. Everybody is welcome to buy and/or sell. Although for farmers it is hardly impossible to sell within the framework of the market works due to lack of knowledge. There are about 110 permanent users. At a usual market day you'll meet about 4000 traders and other people working at the CENADA.

Two user groups can be distinguished; The first group are the abastecedores, producers, assemblers, wholesalers and so on. The second group are traders who come to market to buy and to sell in another Zone. About eleven hundred different cars enter the market at a usual market day.

### market days

The CENADA is opened every sunday-monday night, monday afternoon and thursday afternoon for selling to retailers. For storage and delivering from transporter to wholesaler the market is opened daily except for sundays from 3 AM until 5 PM. One pays per hour being on the market. At the entrance of the market the traders receive a paper where they have to write the hours being present, the type of products, the quantities bought or sold, the prices received or paid and the origin of the trader. The next market day the minimum, mean and maximum prices will be shown at the entrance to inform the traders. The prices seem to vary a lot. Prices of roots and tubers seem to fluctuate less because of a more stable demand (traditional product) and supply (constant production).

### marketing functions

Storage at the CENADA is possible: prices vary from 133 to 167 colones per square meter per month depending on the location of the place. Fixed contracts on paper do not exist between the traders, all the agreements are verbal. The assembler (transporter) comes to the market in his little lorry and there he sells to the wholesaler or retailer. There are also other possibilities like e.g. the wholesaler comes to the market and sells to a retailer; or one wholesaler sells to another wholesaler, who buys all kinds of different products to sell to retailers (redistribute) in his region. The assembler-transporter doesn't have to stay a long time at the CENADA; he just sells his products directly to wholesalers and goes back. If they don't sell all their products they'll go to another market e.g. the Borbon market; where the main market days are on tuesday and friday.

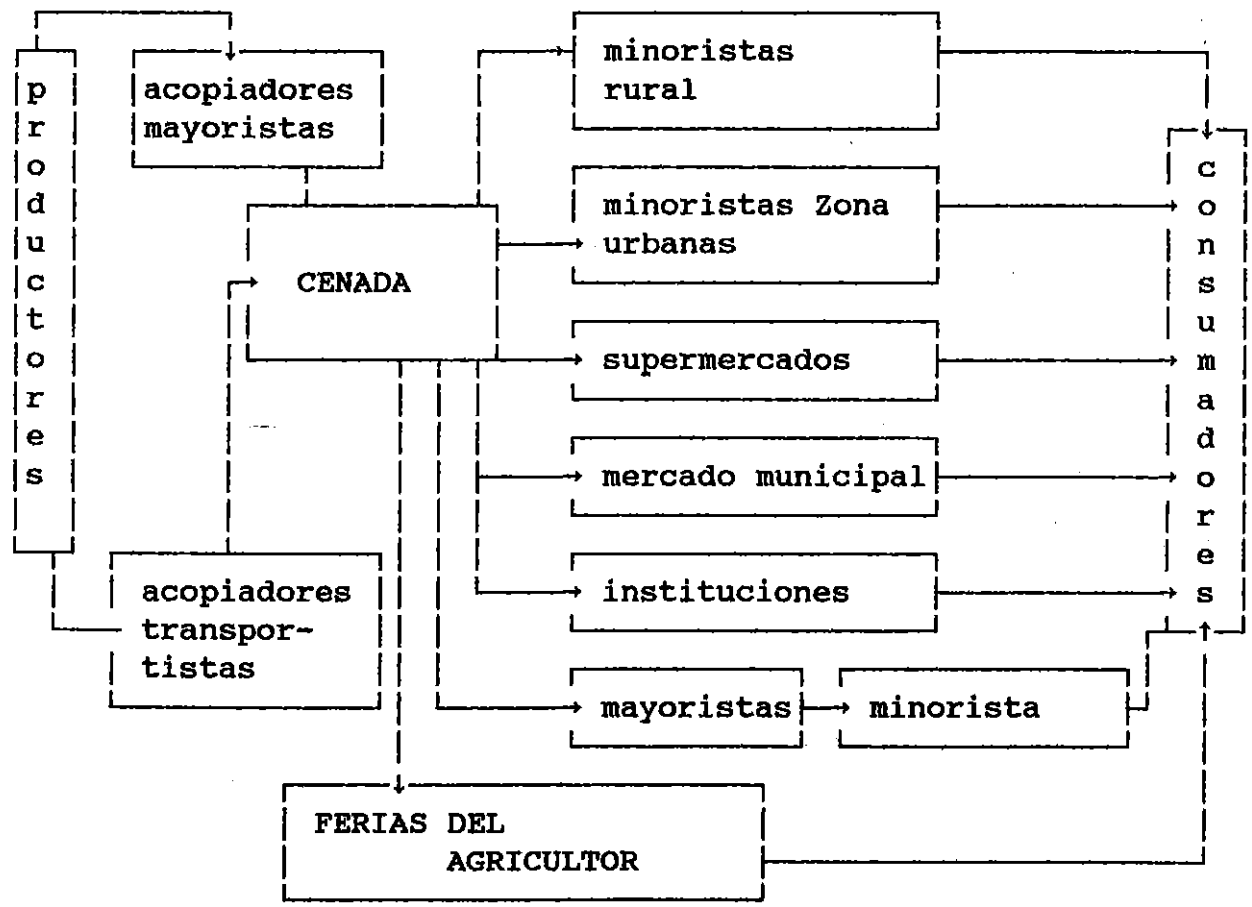
The wholesalers have the advantage that they are not obliged to sell everything the same day, they have the possibility to store their products at the CENADA to sell them the next market day.

Only men trade at the CENADA. There's a lot of competition. To make the market more transparent, all the products have their fixed selling points. Everybody can compare the prices of their neighbourhoods.

The CENADA stimulates direct contact between wholesalers and retailers e.g between hospitals and wholesalers. To buy products the retailers (pulperias, restaurants, supermarkets) pass in their cars or lorries along the products stored in the lorries of the wholesaler. The lorries of the wholesalers are larger than the cars or lorries of the retailers. It might even happen that the assembler/transporter sells directly to the retailers without the intervention of the wholesalers (Humberto Madrigal, PIMA april 1992).

The most common marketing channel at the CENADA is the following: assembler (transporter)- wholesaler - retailer.

commercialization over the CENADA



Source: Villalobos, 1983.

results from the interviews at the market.

I interviewed four middlemen trading at the CENADA in papaya, pineapple and the different roots and tubers. All of them lived in the Central Valley. They all said to be wholesalers, mayoristas. They have been trading at the CENADA from two up to twelve years. One of them cultivated some papaya at his farm in Guacimo, in the Atlantic Zone. They sell two times a week to different retailers at the CENADA. One also sold pineapple to a processing industry, the price he receives there is worse but the volume is bigger. They do not have fixed contracts, only verbal agreements. Some of the pineapple and the papaya came from the Atlantic Zone; plantain all came from Talamanca in the Atlantic Zone. Roots and tubers came from San Carlos and from the Atlantic Zone.

Pineapple also has different quality classes: I, II and III; depending on the size; so has plantain.

Price depends on the price published at the entrance of the market, the one who sells determines the price. The prices are paid directly. One trader in pineapple said to have a profit margin of 20%. A farmer/trader in papaya said to have a profit of 5 colones at each kilo sold. Transport cost are 3 colones per kilo, 20% of his harvest is lost. The farmer sells 2700 papayas a week. A trader in plantain and root and tubers said to have transport costs of 100 colones per kilometer. The profit of yuca is about 5 colones per kilo; plantain has a profit of 3 colones per kilo. Most of the traders at the CENADA do own a lorry. Their main activity is trading at the wholesales market.

Transport from the Atlantic Zone to the CENADA isn't always easy. It is about 120 km and takes a long time. Main problems to enter the market, as the middlemen say, are: clients, competition and knowledge of the market.

#### 5.2.2. Avenida Diez

##### characteristics of the market

The market in Avenida diez exists since 24 years. It is located in Avenida 10 in the capital, San Jose. The market is owned by the municipality. The market is the predecessor of the CENADA market. The market in Avenida 10 has become a retail market. Retailers buy from farmers, transporters or wholesalers in the early morning at the market place. All kinds of fruits and vegetables are sold.

The market is opened 24 hours a day. Fruits and vegetables are sold in open air and in covered stalls. There's no administrative control of the buying and selling process (prices or quantities); everybody is free to enter. The traders have to pay 'derechos de piso' to the Municipali-

ty, which means they have to pay for the right to sell at the market. The only thing arranged by the municipality is rent for the place and the division of the area.

The only differences between selling in- and outdoor are the price for renting and possibilities for storage. The outdoor retailers are able to rent storage also.

It is not difficult to enter the market while there are no entry fees. You'll meet all kinds of traders; farmers, wholesalers, retailers, transporters and so on. The main advantage is its central location. There are no relations with other markets; market days are tuesday and saturday. Sometimes the traders buy at the Avenida market to sell at the Borbon market or vice versa; depending on the market days of the different markets.

#### Results of the interviews at the market.

The traders live around San Jose; they have been selling for about 6 up to 20 years at the Avenida 10 market. They are all retailers selling to consumers or verdulerias, pulperias, hotels, restaurants and sodas. They sell all kinds of fruits, vegetables, roots and tubers which they bought at the Borbon market or at the market in Avenida 10 in the early morning.

Some products come from the Atlantic Zone, like plantain but transport is difficult and expensive as they say.

They do not have any form of cooperation; they just work 6 days a week. Plantain and pineapple do have different quality classes. Some only sell first quality because of the perishability of the products. Price is determined by demand and supply, depending on quality as well. Prices are paid directly. They do not own transport because they do not transport their products. There is quite some competition at this market. There's hardly any space left at the market to rent. Street retailing might result.

#### **5.2.3. Mercado Borbon**

##### characteristics of the market

Borbon is a private owned market by people from Costa Rica and El Salvador. It is a limited liability company. It exists since 50 years already, so it has quite some tradition and experience to build on. It is mainly a retailers market but wholesale also takes place when wholesalers sell to retailers like hotels, restaurants, supermarkets and verdulerias (green grocers). The market is located in the center of San Jose. There's an administration who takes care of the rent, the

opening hours and the staff (e.g. guards).

The whole market is covered, inside the market there are 400 stalls which are rented to wholesalers or retailers.

The traders sell all kind of products; fruits, vegetables, dairy products, fish and meat. Products from the Atlantic Zone are pejibaje (fruit of the palm tree), palm heart, banana, plantain and some roots and tubers (cassava). Different quality classes exist.

#### marketing functions

The buying process occurs after midnight in the street (calle 8) out of lorries. The market is open for delivery from 4 am until 6 am.

And the market is open for consumption sale from monday until saturday from 5.30 am until 6 pm . On sundays 80% of the stalls are closed.

Farmers, assemblers/transporters, wholesalers come to this market to sell their products to the retailers inside the market. Hotels, restaurants, sodas and supermarkets order the products they want to buy. The products are delivered by the retailers or picked up at the market by themselves.

Rent for the stalls differs from C/ 2000 up to C/4000 per month depending on the size of the stall. Light, water and electricity are paid separately. The company pays the municipality for the right to sell. Sometimes a product seems to pass five hands before finally reaching the consumer.

A man said that the traders at the feria in San Jose, the traders of the Borbon market and at the Avenida diez market are all the same. Prices seem to be determined by demand and supply. Most of the retailers show their prices in their stalls. It is difficult to reach the market and there is no parking space.

The traders do not have fixed contracts with each other but do have verbal agreements. The entrance to the market for outsiders is difficult, because of a family tradition. The street retailing in front of the market is a consequence of this family tradition and shortage of market place inside the market.

Despite the competition of the markets like the feria and Avenida diez, the Borbon market seems to survive mainly thanks to its large assortment, different quality classes, honest prices and its loyal clients.

The traders don't receive any information or help (Gerardo Carvajal, the administrator of the Borbon market, 1992).

#### results of the interviews:

Plantain, roots and tubers are bought from transporters who got it from the Atlantic Zone. Pineapple mostly comes from San Carlos, in the

province of Heredia. Price is determined by agreement and depends of supply and demand. When products are sold to other retailers, prices are sometimes paid after two weeks. Most of the traders do not transport their products except when they distribute the products sold to different retailers.

The traders know each others prices.

#### 5.2.4. Feria del Agricultor

##### history

In 1981 the idea of a feria del agricultor was founded; a periodic market where farmers sell directly to consumers.

The main purpose of the foundation of the Feria Del Agricultor (FDA) is to stimulate a higher participation of the national agricultural production sector. The objective is to realize a direct contact between producers and consumers; to lower the costs of participation and to eliminate the middlemen.

The program started in 1979 with a feria in Zapote, a suburb of San Jose; 64 farmers participated. The initiative came from the Ministries of Economy, Industry and Trade (MEIC). The Ministry of Agriculture (MAG) by means of the 'Dirección General de Mercado Agropecuario' (DGMA) is responsible for the regulation, permanent control and coordination. The 'Departamento Información de Mercados' consisting of 'sección ferias del agricultor' and 'sección análisis e información de mercados' is a part of the DGMA.

During 1981 about 12 ferias (FDA) were founded, at the end of the same year 40 ferias existed already, this has gone down to 31 Feria's in 1992; some have been closed again because of the economic recession. In the Atlantic Zone, the feria of Limón and Siquirres are the only ones. ('La República', 1992).

##### characteristics of the market

To set up a feria every federation, association or cooperation has to apply at the nearest Centro de Extensión Agrícola (CEA).

The CEA applies at the Feria Department of the Ministry. Then the DGMA has to ask permission of the municipality and the DGMA has to take care of the necessary sanitary facilities.

Every farmer who wants to participate has to present his situation at the CEA. He needs to buy an identification cart "a carnet de identificación", to be allowed to sell, which costs 410 colones (1992).

Necessary prerequisites to obtain a 'carnet':

- name and qualities of the farmer;
- which products that the farmer wants to offer for sale;

- localization of the farm;
- documentation of property.

This carnet has a photo of the farmer on it; it tells the farmer's name, which products the farmer cultivates and is allowed to sell. There are two different 'carnets' a white one for the farmer himself and a pink one for his family. The carnets have to be prolonged every 6 months which costs 30 colones.

The "Centros Agrícolas Cantonales" of the DGMA visit the farms to control the production system and to see if the farmer is cultivating the products indicated at his 'carnet'. If the farmer is cheating, the DGMA is allowed to prevent the farmer from selling by taking the carnet. The purpose of the carnet is to avoid the interference of middlemen (Cordero & Vedova, 1984).

The market days are periodic; on Saturdays or Sundays and in Siquirres on Fridays. Farmers mostly sell at more than one feria. They sell in Siquirres on Fridays and then leave for Limón to sell there on Saturdays.

On Thursday the farmers harvest, pack and sometimes transport their products.

The feria starts at 5 a.m. and ends at 1 p.m. Before the feria starts the farmers discuss the price that can be asked that day. Prices will be lower at the end of the market day. The price at a market day is determined taking into account the prices published in the newspapers, on the radio and TV by the DGMA. These prices are referred to the prices of other marketplaces. A maximum price is given, below this price the farmer is free to determine its own price. Price regulation is one of the most important tasks of the DGMA.

#### marketing functions

The products are sold from a lorry or wooden boards. Sometimes a few different quality classes exist. The products with a higher quality are then sold first. But at the end of a day most of the products are sold. The farmers know more or less how much they can sell. Sometimes the maximum quantity to be transported determines quantity offered for sale. Products which are not suitable enough to sell at different markets, will be given to hospitals and charity. If suitable products remain, they will be sold to the municipal market or at a different feria the next day. The farmers have to pay C/ 50 up to C/100 for their place and for the service of the municipality. They do not have a fixed place to sell at the market. There's not a lot of competition. Everybody sells his products and quality at his price. At the feria in Siquirres about 17 farmers sell their products; 15 of them also sell in Limón. Administrators of the feria and the 'Unidad the Ferias del Agricultor

del MAG walk around at the feria to control prices and quality; this stimulates the transparency of the market.

The regulations describes what the products ought to look like: e.g. color, size, maturity. The regalement allows the administrators to take bad products away.

Most of the consumers visit the feria every week. Most of them walk, others come by car or bus. The average distance to the feria is about 2 up to 15 kilometers. The availability of the different products is good.

The proportion of farmers participating at the different ferias, differs per region. For example in Cartago 60% of the farmers participate, in Limón only 30%. (R. Rodríguez, 1992)

#### advantages & disadvantages

The biggest advantages of the development of the feria are (as result from an investigation realized by PROCESDESAROLLO) higher production and quality, diversification of the products and a reduction of the costs and the influence of middlemen. The feria allows a quick distribution of perishable products. A good reason for the farmer to sell at the feria is the better price. The system of direct selling has positive consequences for the involvement of the farmer in marketing of his products. Inspection of the farm stimulates effective production. The creation of the feria stimulates the decentralization and market transparency (C. Monge).

The cooperation between the farmers is good. For example, they rent transport together to get to the feria. Before the foundation of the feria most of the farmers sold their products at different markets or to middlemen passing at the farm.

The biggest problems of the ferias are farmers lack of transport and time and the lacking control of the 'carnet' which results the appearance of the middlemen at the feria (Rodrigo Rodríguez, 1992). How will that be possible with the system of the 'carnets'?

But what is the definition of distributive trade? When a farmer also sells the products of his neighbour, because this neighbour hasn't got time, can we then talk about intervention of middlemen? A lot of farmers cultivate only one product but also sell the products of others. One farmer can never cultivate that much products as he sells at the feria. Besides the cultivation of a crop, some farmers also trade. Besides trading some middlemen also cultivate products.

(R. Rodríguez, 1992). So they do posses a 'carnet'. The ideas of the 'carnet' seems to be good but control fails.



### Results from the interviews:

I visited the ferias in Siquireres and Limón several times. The feria consists of a long row of stalls at one side and lorries at the other side in a street covered with plastic.

Prices are per unity or per kilogram, and were shown at a piece of paper. The products looked good to me. Products are weighted and packed in plastic bags or newspapers. Quite some farmers/traders came from Cartago.

Quality differences exist depending on size and maturity. Papaya, pineapple and melón for example are products with different qualities and prices. Pineapple costs 20, 40, 50 or 100 colones per unity depending on the size. At the market in Siquirres there's more space for selling than in Limón. But in Siquirres there are only 40 farmers registered who own a carnet, in Limón at the contrast, there are 140 farmers registered.

I only interviewed farmers, who were cultivating papaya, pineapple, palm heart or roots and tubers.

They sell their own production, sometimes products of their neighbours. One bought some products at the CENADA when his harvest wasn't sufficient. They sell one or a few different products.

Some sell both at the feria in Limón and in Siquirres; others only sell at one of the two markets but do also sell to middlemen passing at the farm.

Their families often help selling the products.

Most have more or less fixed clients. Quantities sold per farmer are about 1000 plantains, 200 kilograms papaya or 300 pineapples per market day (1992). The farmer determines the price. Price of roots and tubers are quite stable because of the stable demand and supply. Prices are paid directly. Some own transport; others pay 'flete', a compensation for transport. The farmers live in the neighbourhood of one of the feria.

One farmer was member of 'asociación de pequeños agricultores' in the Nequev. Suzan Hoekstra and John Belt will investigate more about these associations.

### 5.2.5. Cattle Auction (Guápiles)

#### history

The auction in Guápiles exists since august 1987.

The auction is owned by 'grupo costarricense de ganaderos GCG S.A. (asociación anónima= limited liability company), a private company of cattle traders in the whole country. They also have auction in other places in the country for example in Barranca. The main office is located in San José. They rent the terrain from Expo Pococí. The auction has its own regulation.

#### characteristics of the market

Market days are on tuesday and thursday from 9 a.m. until 5 p.m.

All types of cattle are sold at all ages. Weighing and selling of the animal is the responsibility of the auction. The auction retains 4% of the price to pay the costs of the auction and its employees.

The present Banco de Costa Rica functions as follows:

The bank pays the one who sells minus 4% in check which he can change for cash right away. The one who buys pays the auction.

#### marketing functions

Purposes of the buying and selling of the animals are breeding, fattening and slaughtering. Every auction day about 70 buyers and 50 sellers come to visit the market. Per person one up to five animals are bought or sold. Purposes of the auction are to give farmers a chance to obtain higher prices and to avoid the middlemen. All traders are awarded a number to ease the administration of the animals bought or sold. The day before the auction takes place the traders have to tell the president of the auction how much animals they plan to sell and how they will transport them. The animals are shown in a space between gates. With the help of an auctioneer a price is bidden. The price rises with 50 centivos per kilo meat. Once the animal is sold the number of the trader who bought it will be written on the back of the animal. There is quite some supply of cattle.

For example, in july 1992 (during 8 market days), a 3688 animals were sold. Supply fluctuates as a result of price fluctuations. Since the beginning of 1992 price has risen with 40%. Price fluctuations are caused by:

- supply of cattle and demand for cattle from the province of Guanacaste: at the end of the dry season (april/may) demand for cattle increases for production during the wet season, so the price rises. And when at the beginning of the dry season (october/december) this cattle enters the market, the price falls down;

- meat consumption has risen, because of the population growth and the growth of tourism;
  - Because of the competition from the auction, the meat processing plants had to establish their prices; they could not regulate the price anymore;
  - the export market of cattle for breeding has been released by the government;
  - prices in the butcher have been released, consumer prices have risen.
- In Costa Rica 13 cattle auctions exist:  
 In Barranca-Guápiles- Santa Anna- Liberia 3x- Santa Cruz- Cañas 2x- Tilarán-Guatuzo- San Carlos and Muelle; and the amount is increasing (Gamacho, 1992).

#### 5.2.6. Coopemontecillos

##### history

In 1964 the national cooperative Coopemontecillos, for cattle and pig slaughtering, was constituted. Coopemontecillos is a cooperative 'de congestión', which means that the employees are members as well. Alajuela has 400-500 employees; 120 are working in the slaughtering process (Pérez, 1992).

In Costa Rica, besides the rural slaughter houses, 8 meat processing plants exist. 4 For both export and national consumption (ECCSA S.A.; GISA S.A.; Coopemontecillos; CAMSA) and 4 for the national consumption only. The government has closed some export plants to stimulate production on an economic scale. But the existing plants enlarged their capacity: 1575 animals a day while the total number of animals diminished from 2.115.000 in 1988 to 1.741.615 in 1992 (Crawford, 1992). The small slaughter houses for the national consumption have problems to survive. A lot of the capacity is unused and fixed costs are high. In fact there are too many slaughter houses. The plants meet a situation of oligopsony; a few processing plants and slaughter houses who encounter a lot of suppliers. (E. Pérez, 1992). Advantage of the plants is that they can make special deals with some of the farmers while Coopemontecillos has to treat all its members equal.

##### characteristics of the market

Coopemontecillos is responsible for 35% of the pork meat and 50% of the cattle meat of the national consumption.

The most important activities of the cooperative are:

- two meat processing plants: one in Barranca for export and one in Alajuela for national consumption;
- sausage industry;

- processing of leather;
- flour of bones and gelatine;
- processing of fish and sea animals;
- research for cattle breeding.

Montecillos has about 2000 members in the whole country; about 150 in Pococi. The cooperative has to be open for everybody (E. van der Kamp, report 51) To become a member of the cooperative, the responsible man in the region where the farmer lives, visits the farm to see what the possibilities are. The farmer has to pay 2000 colones as entrance fee, and then he has to deliver at least 20 cows a year (E. Crawford, 1992). The farmers receive a magazine of the cooperative every two weeks. They also receive technical assistance of the cooperative and the Ministry of Agriculture. The cooperative does not organize transport to the plant.

Being a member has the following consequences for the farmer:

- competitive prices;
- availability of all kinds of services like courses, credit and medical services;
- share in profit once in a year.

The entrance fee is been capitalised by the cooperative and the profit will be shared among the members depending to what they brought in (animals and money that has been capitalised the last year).

In general the farmer has four options to sell his cattle: to a middleman passing at his farm; at the auction; to an export plant; or to Coopemontecillos (Pérez, 1992).

### marketing functions

When the animal arrives in Alajuela the animal is controlled alive, it is weighted 'en pie' to calculate the profit  $\text{kg canal/kg pie} \times 100\%$ . Before the animal is slaughtered it is kept outside for 18 hours.

Slaughtering takes place 5 days a week and 50 animals are slaughtered per hour at the plant. Monday and Friday more animals are slaughtered because of the higher demand for the weekend.

Animals are slaughtered for members and for non-members, the non-members pay 1200 colones for the slaughtering. 40% of the slaughtered animals come from non-members, most of their animals are bought at the Montecillos market.

The animal is killed by a shot. Its head, hoofs, skin and entrails are taken of, now we can talk about kilograms 'en canal'.

The meat is disinfected and its quality is judged.

There's one quality standard. There are two quality classes above and nine classes below this standard. The judgement depends on the sexe, age, breed, color of the meat, fat proportion inside and outside the animal. There's a quality difference in meat for export and for national consumption.

The meat for export is all first quality. This meat mostly comes from bulls (90%) who are homogenous and hardly vary in weight (the minimum weight is 350 kg, the average 440 kg).

Meat for national consumption differs a lot: all kind of animals, thin and fat, young and old, are slaughtered.

Coopemontecillos pays the meat 'en canal' in Alajuela. The price of meat 'en canal' is related to the price 'en pie' so the price of leather has been counted for as well. Farmers don't get paid for the leather separately (E. Pérez, 1992). Price varies every week; two specialized men of the cooperative visit the different market to inform the cooperative about the actual prices.

The cooperative registers how many animals are slaughtered of which members. The farmer gets paid directly after the animal is slaughtered. The maximum price for the entrails is 1200 colones, determined by law. All the cabbage is been processed to sausages and dog food.

When demand is low less animals are slaughtered for the members but more animals are slaughtered for butchers. The regional offices describe every member the number of animals to be delivered to the plant at a certain time. The maximum capacity (Alajuela) is 600 animals a day, they slaughter about 400 a day. Retailers earn about 15% and wholesalers about 5%.

Coopemontecillos transports most of the meat. This is the best way to conserve the quality and the hygiene of the meat; it is been transported almost frozen and packed in little plastic bags.

### 5.2.7. Plaza Montecillos

I visited this market place for cattle in august 1992.

Beside the cooperative Coopemontecillos there is a market called Montecillos which is older than the cooperative.

At the market of Coopemontecillos, which has nothing to do with the cooperative, everybody is allowed to buy and sell. They have to pay 100 colones fee for entrance and they are allowed to use all the facilities. All kinds of cattle are marketed, horses and pigs as well. The market starts sunday afternoon at 3 PM and ends the next day at 3 PM. There's no health control of the animals. Sometimes people of the Ministry are walking around to check the hygiene. The market is important for the national consumption, not so much for exportation. The animals come from all over the country and are sold all over the country. The price is fixed by negotiation (Corrajal, 1992).

### 5.3. CONCLUSIONS

The different markets in the study are CENADA, mercado Borbon, the market in Avenida 10, the Ferias del Agricultor, the cattle auction in Guápiles and the national cattle cooperative Coopemontecillos.

CENADA is the only real wholesale market in Costa Rica. It seems to function well. The prices are determined by negotiation and depend mainly on demand and supply.

The market in Avenida 10 has lost a lot of its importance when the CENADA was founded in 1977. Its function has changed from a wholesale market into a retail market.

Products are bought in the early morning at the market from farmers and wholesalers and are sold in covered stalls and outdoor to mostly consumers.

The Borbón market is privately owned covered, 50 years old market. It mainly is a retail market. The retailers of the market buy all kind of products from farmers, wholesalers and transporters every night in the street. The products are sold to consumers visiting the market but also to retailers (supermarkets, grocers) and restaurants.

The 'feria del agricultor' was founded with the purpose to establish direct links between farmers and consumers to strengthen the position of the farmers by eliminating the middlemen.

Advantages of this market type are the stimulative effect on production, higher quality, product diversification, farmers participation and cost reduction. The disadvantage is the lacking control of the 'carnet'. Middlemen are still participating at the feria. Participation of middlemen doesn't always mean negative influence.

The cattle auctions are founded with the same purpose of the ferias; eliminate the middlemen and give farmers the opportunity to receive a higher price. Price is determined by the process of bidding.

Coopemontecillos is the only national cooperative for cattle slaughtering and plays an important role both as the national and export meat market. Different quality classes exist. Price varies every week and is determined by the cooperative. De plaza de Montecillos is a market where cattle is bought and sold. Price is determined by negotiation.

## 6. RESULTS OF THE DEPTH INTERVIEWS IN THE ATLANTIC ZONE

### 6.1. QUALITATIVE RESULTS OF THE DEPTH INTERVIEWS

I interviewed 17 middlemen who were either living in the Zone and trading in some other region of the country or who were living outside the Zone but who were buying products from the Zone. Except for cattle traders, I hardly met middlemen who were both living and trading in the Atlantic Zone. Middlemen living in the Zone and buying at for example CENADA, do trade in multiple products; other middlemen mostly trade in one or two products.

See the annex for the interviews. I went trading one whole day with two of these middlemen; collecting hot chilies in the Zone and transporting them to an export plant and buying on the CENADA and redistributing in the Zone. Furthermore I interviewed some retailers, verdulerias and supermarkets in Guápiles to get an idea of their position.

I analyzed the answers to the questions with factor analysis. This wasn't possible for the question concerning the market situation and the distribution.

#### 6.1.1. qualitative results of the depth interviews

##### personal characteristics

The first part of the questionnaire consisted of personal information. Most of the middlemen trading on the different markets seem to have been trading for 5 -10 years. Middlemen trading in cattle have been trading for about 15 up to 30 years already, cattle trading is often a family business. Hardly any of the middlemen do have fixed contracts with farmers or with retailers. Only some do have 'fixed' contracts with an processing plant, but the question is how 'fixed' this contract is. Some of the traders do cooperate with their family or friends. Experience is sometimes gained from former jobs. Some do have other activities beside trading. Some have some production of fruits or vegetables or keep cattle. Some who own a lorry let this lorry and get paid 'flete', a compensation for transport.

##### physical distribution

The next point in the interview, is physical distribution. The number of middlemen who own transport is more or less the same as the number who doesn't. When a middleman doesn't own transport he rents it and pays 'flete', a compensation for transport. The advantage of not owning a lorry is that you just rent a lorry with the size you need.



The 'fleteros' (transporters) in cattle have a minimum number of animals they want to transport for the middlemen, otherwise the trouble is not worth it. Middlemen specialized in distribution do own a lorry. It costs them a lot of time to buy and redistribute the products.

Middlemen working for an export plant sometimes do own a lorry and if not, they rent transport. If the middlemen owns a processing plant; the farmers selling to him, often have to deliver their products at the plant themselves.

The distance to the market or sales point differ depending on the objective of the trade. If they trade at the CENADA or feria or auction. From the Atlantic Zone to the CENADA or Coopemontecillos takes about 2-3 hours (one way) and is about 100 kilometers. During transport the lorries are often loaded completely full to bring the price per unity or kilo down.

The roads in the Zone are bad after high rainfall or earthquakes. But only sometimes it is impossible to reach the farmer or supermarket. Middlemen buying or selling products in the Atlantic Zone often do have a fixed route.

#### purchase

The buying process is the next point to be discussed.

A 'transportista', middleman who collects and transports doesn't buy the products and doesn't become the owner of the products.

The price the farmer receives from the export plant is 'fixed' and determined by the plant. The farmer receives the money after one or two weeks. Some plants buy second quality because the product is for processing, not for fresh consumption.

Middlemen buying products in the Zone fix the price. The price depends on supply and demand, quality plays a less important role in price determination. Prices are paid directly in general.

~~The middlemen often have a fixed route and pass at the same farms. The~~ number of farmers differs from 5 up to 100.

The quantity bought per farmer differs depending on harvest and if the quality is right.

Middlemen living in the Zone and buying at the wholesale market, the CENADA, go there 2-3 times a week. All day they are busy buying all kinds of products from a lot of different middlemen (about 1-3 products per middlemen). The middlemen who sells determines the price, which depends on supply, demand, quality and the price published by the PIMA. The middlemen go back to the Zone and start selling to different retailers; hotels, restaurants and groceries, (pulperia, verdulerias).

The middleman fixes the price which depends directly on the price paid at the CENADA.

Middlemen buying at the CENADA know more or less how much the different (about 30-40) retailers want to buy. The margin is about 30%. Products that have deteriorated during transport are sold at a lower price. They receive the money after one or two weeks. The supply of the different roots and tubers is quite regular. A more stable price results.

The traders in cattle buy their animals 'in the street', at the auction in Guápiles or Santa Anna, at the market of Montecillos or at the farm. The supply of cattle in the 'street' is very irregular. It just depends where they can get the best price. The price often is fixed by the one who buys. Sometimes traders buy from other traders, sometimes from farmers. Some traders keep the animals for a while, others sell them within two weeks. It depends on the traders objective of buying. It is hard to say which way of selling is the best. One trader bought cattle for slaughter at the auction; at the same auction he sold his own milking cows, he didn't want to slaughter his own cattle.

The price is paid directly and depends a lot on the quality of the animal, its meat proportion, and its weight. If it is not possible to weigh the animal; the middleman estimates the weight of the animal. Bulls are worth more money than cows.

#### sales

Most of the middlemen do not have any storage except for the ones selling at the CENADA or owning an export plant. They sell overseas and rent big trucks for transport.

Middlemen selling at the CENADA have more or less their fixed clients and sell most of their products. Middlemen sell to different retailers, like supermarkets, pulperías, verdulerías, sodas and restaurants or to consumers at the feria or the other wholesalers at the CENADA.

Cattle traders have different options to sell their animals. They can slaughter the animals for a butcher. They can sell the cattle to the cooperative, Coopemontecillos and it doesn't matter if they are a member or not. They can sell at the market of Montecillos, at the auction, in the street or at the farm. Price is determined by negotiation or is fixed by Coopemontecillos or at the auction and it depends a lot on quality of the meat.

### costs

Concerning the costs the middlemen have, transport seems to be the most important. Transport costs from the Atlantic Zone to the Central Valley are up to 1500 colones (there and back).

Passing the "Braulio Carillo", they have to pay toll, 170 up to 200 colones one-way.

When a lorry is rented to transport cattle a compensation has to be paid per animal; e.g. from Cariari (Atlantic Zone)- to Coopemontecillos ( $\pm$  110 km) in Alajuela costs 1100 colones per animal, 110 colones per animal per kilometer; from Cariari to the auction in Guápiles ( $\pm$  25 km) costs 500 colones per animal; 200 colones per animal per km and from Cariari to the auction in Santa Anna costs 1100 colones per animal. From the auction in Guápiles to the slaughter in Siquirres ( $\pm$  33 km) costs about 550 colones per animal; 170 colones per animal per km.

Veterinary control at Coopemontecillos costs 1500 colones per animal. Other costs for cattle traders are medicines and maybe extra food for the animals.

Most of the middlemen do have one or more employees who get paid about 1000 colones a day.

Hardly any middlemen has credit costs because they do not have loans at the bank. Sometimes they do have loans for cattle or a lorry sometimes but the interest rate is very high (45%). Middlemen trading at the CENADA, the feria or the Borbón market have costs for renting a place.

During transport and harvest products get lost, from 3 up to 25%. The animals lose about 8% of their weight during transport depending on the breed, the character of the animal and the distance.

### market situation

The market situation differs per product.

In august 1992 there was quite some supply of papaya; as a consequence of the fact that a few years ago the price was good and a lot of farmers started cultivating papaya, the harvest now enters the market (cob-web theorem).

The market situation for cattle is quite good; prices have risen and there's enough demand and supply. A few plants and slaughter houses are closed because of the high amount of unused capacity.

The market situation for roots and tubers is quite stable because the national demand for these traditional products is stable.

The number of middlemen at the CENADA, and other market seems to have risen, more competition between the traders is a result. Although some traders answered that because of the competition the number of middlemen decreased. They couldn't survive the competition.

Most of the middlemen I interviewed didn't have any plans to invest in the future.

Middleman hardly use any form of publicity. Only when they own a shop (butcher) they might advertise in the local newspaper or at the radio.

A lot of middlemen say they do not have any problems but I think that is doubtfull. Trading brings problems. Most of them say that trading is a risky job. Sometimes you lose, sometimes you win. And hardly anything is done to avoid this risk. Some buy or sell more than one product to spread the risk. The impression is one needs durable relations to ensure sale.

Price information is very scarce. Most of the middlemen know the prices of the traders and at the markets.

Concerning cattle there's quite some competition from the province of Guanacaste. The market is distorted when the dry or rainy season starts (as I explained in the auction subparagraph 5.4.5).

One said that the number of cattle traders decreased because a lot of traders could not survive; an other one said the number has risen because cattle trading is a good business. Some cattle traders are enthusiastic about being a member of Coopemontecillos, others aren't (see Coopemontecillos subparagraph).

### margins

I found it difficult to find the margins the middlemen earn.

A papaya trader at the CENADA pays a farmer in the Atlantic Zone 8-15 colones per kilo. He sells this papaya at the CENADA and receives 30-35 colones per kilogram. His gross margin is 130%.

A trader at the CENADA buys plantain from farmers in the Atlantic Zone and pays them 7-10 colones per kilogram. He sells it for 11-12 colones per kilogram. His gross margin is 20-50%.

A farmer who sell pineapple at the feria has a gross margin of 150%.

A palmito trader who sells his palmito to Horti Fruti (part of the supermarket chain Mas x Menos) has a gross margin of 20%.

A processing plant pays farmers 9 colones per kilogram yuca; 14 colones per kilogram pineapple, 12 colones er kilogram papaya.

These products are all of second quality.

An animal bought at the auction slaughtered and sold 'en canal' to a butcher gives 1000-2000 colones profit.

Cows bought as calves give about 40.000 colones profit.

I tried to give an overview of the transport cost of petrol and the toll that has to be paid in the mountains near San Jose (Braulio).

I must say that I am not sure that all the interviewed middlemen did understand what I meant with the question transport costs. I do not know what they include in these costs (oil for example). Some do pay 'flete', a compensation for rented transport. Cattle traders pay for each animal to be transported when they rent transport. The costs do depend on the number of animals transported.

Transport cost are in colones

trader	transport 'flete' or benzin	toll Braulio	distance to market and back	Col/km benzin + toll	type of trader
1	2500	480	240	12.40	transport ista
2	4000	400	200	22.00	mayorista
3	5000	400	210	25.80	mayorista
4	9000	280	240	38.60	farmer
5	15000	400	420	36.70	mayorista
6	11000	--	230	47.80	mayorista
7	12000	--	250	48.00	mayorista
8	3600	--	60	60.00	minorista
average	7762		231	36.40	

### 6.1.2. Case studies of middlemen from the Atlantic Zone

CASE 1: hot chili 'a treading day with Abraham Jiménez from Pocora, in the Atlantic Zone', August 1992.

#### personal characteristics

Abraham Jiménez is a man who has been cultivating 1 ha hot chili for 12 years. Ten years ago the Ministry of Agriculture advised Agriquimsa, the export plant in Cartago, to ask Abraham to transport hot chili from the Atlantic Zone to Cartago. Abraham accepted, bought a lorry with credit from the bank, while Agriquimsa was the guarantor.

#### Agriquimsa

The plant is located in Cartago. Agriquimsa works with about 100 small (1-2 ha) farmers in the whole country.

The plant processes the chili to pulp with or without the seed and exports it to the USA. Sometimes Abraham takes seed back to Río Jiménez to let them dry. He gets 15000 colones paid per 28 barrels.

#### his work

He is a transporter; he transports his own chili harvest and the chili production of 25 farmers from the Nequev, Río Jiménez and Guácimo to Agriquimsa, both chili jalapin and chili tabasco.

Abraham doesn't become the owner of the products. There are no risks for him of not selling. The farmers have a fixed contract with Agriquimsa, Abraham hasn't, that's a matter of faith.

About 3 times a week he goes to Agriquimsa; every time he passes at about 8 farms. Abraham has given these farmers names to Agriquimsa. He transports about 30.000 kilograms of chili per week; about 200 kilograms of chili of his own.

Every farmer delivered about 20 up to 30 kilograms, packed in nylon bags. Abraham weighs the bags and writes down the farmers name and the weight of the product delivered. The farmers know which day of the week Abraham comes. He leaves at 6 am in Pocora. It costs him a whole day to collect, transport, deliver and get back.

#### product

Chili harvest is every 3 months; the plant produces one year. Plagues are a big problem. Because of heavy rainfall, Abraham adds calcium to the plants to protect the soil from getting sour. He also gives fungicides and insecticides. He buys the seed in Costa Rica. He's content with the cultivation of chili.

### loss

Chili is very sensible for transport and the chili tabasco type is the most sensible; 5% gets lost. These costs are for Agriquimsa because the weight when leaving the Atlantic Zone counts for the price paid to the farmers. Agriquimsa weighs the products again. Abraham has no storage, no telephone or office.

### price

Besides what he gets paid for his products, he gets paid 15.000 colones per journey. The price of chili is fixed by Agriquimsa for one year, in August 1992 they paid 27 colones per kilogram. The farmers get paid every 8 days; Abraham delivers the money at a pulperia in Pocora, where the farmers can collect it.

### transport

The lorry, a Mutsibushi, is seven years old and bought second hand in June 1992. It's his second lorry; the first one became too small. It costed 1000.400 colones, its new price is 4000.000 colones. He wants to pay his loan at the bank for the lorry in 20 months because of the high costs of interest; costs are now 68.000 colones per month. Abraham has an insurance which costs 1000.000 colones per year. If the lorry breaks down he will pay for the costs. When he can't pass 'the Braulio' mountains on the way to San José he has to go through Turialba which costs in five hours instead of two hours. From Pocora to Cartago is about 100 km. The lorry is made out of wood and is multi functional. He sometimes uses it to transport his pineapple or rents it to transport furniture.

### other activities

Before the chili business he worked with cattle and maize, he received help from MAG (that's how the MAG knew him).

~~He owns 17 ha of an IDA settlement scheme.~~

He has got 18 pieces of cattle; milk is for his own consumption.

He has got a credit of 100.000 colones at the bank for his cattle.

Cattle gives him a good security.

He cultivates 7000 pineapple plants for own consumption, for the consumption of his neighbours and to sell at the Borbon market.

**CASE 2: all kinds of fruits and vegetables**

**'a trading day with Wilberth Martinez from Roxana, in the Atlantic Zone', August 1992.**

personal characteristics

Wilberth works together with his brother. He lives in Roxana in the Atlantic Zone. Since 10 years they are buying all different fruits and vegetables at the CENADA, a wholesale market in Heredia.

his work

On Mondays at 8 a.m. he goes to the CENADA to buy about 42 different fruits, vegetables, roots and tubers. He will redistribute these on Tuesdays and Wednesdays to hotels, restaurants, supermarkets and groceries in the Atlantic Zone, about 50 in total. They tell him which products and how much they want and he unloads. He buys from 35 different often the same, middlemen and he sometimes buys from farmers. The buying process costs him about seven hours.

Other market days (Sunday night and Thursday afternoon) his brother does the buying and selling.

He thinks the functioning of the CENADA is alright, prices are higher than at Avenida 10, but the infrastructure is better.

He also buys banana and other products from the Atlantic Zone at the CENADA. It takes too much time to buy these products separately in the Zone although they are cheaper there. He doesn't buy plantain or cassava because the retailers buy these themselves in the Zone.

transport

They own three lorries; one smaller one and two bigger ones. He bought the lorry 2 years ago second hand with a loan at the bank which they got for their cattle. Transport costs during 4 days are 4000 colones. During transport losses are limited. He sells the bad products for a lower price.

products

All the products have a fixed place in the lorry, the lorry is always full. During the night the products stay in the lorry; he has no storage. He buys different quality classes.

price

Sometimes the retailers pay directly and sometimes after 8 days. Wilberth fixes the price which depends directly on the price he paid at the CENADA, which depends on supply and demand. At the CENADA he pays directly.



### costs

Transport from Guápiles to the CENADA costs C/4000 to go there and get back; 2 times C/ 200 toll and about C/420 for staying at the CENADA (C/ 70 per hour).

Further more diesel costs C/ 4000 during 4 days (buying and distribution)

His three employees get C/ 5000-6500 paid each. He has no credit.

### other activities

They have 140 pieces of cattle for breeding. They cultivate 1,5 ha of nãme which they sell to an exporting plant for 25 colones per kilo. They also rent the lorry for 'flete' but the main activity is the buying and selling activity at the CENADA.

### 6.1.3. a processing plant, a supermarket chain and retailers in Guápiles

#### YUCA TICA

Yuca Tica is an exporting plant located in Tres Ríos, a suburb of San José. They export different fruits (pineapple, papaya, palm heart) and roots and tubers (yuca).

The reason I write something about Yuca Tica is because lot of farmers in the Atlantic Zone sell to them.

### the plant

Yuca Tica has been constituted in 1973. Yuca Tica has two different plants; one in Tres Ríos where 70% of the processing takes place.

All products come from the Central Valley. The other plant in Roxana processes roots and tubers, coco and bananas. The plant cultivates some products themselves. It also buys from about 200 farmers in the Atlantic Zone: Guácimo, Ticaban, la Colonia, Río Frío, Guápiles, La Rita.

After cleaning and packing the products are exported to the USA, Canadá, Puerto Rico. The banana is sold to Del Monte, cassava is cut in pieces and sold frozen.

### marketing functions

At its own farm in Roxana, Yuca Tica cultivates 200 ha cassava, 600 ha banana and 200 ha coconuts. Every week 2400 kilograms of cassava is been processed; about 1200 kilograms stems from the farmers in the Zone. About 40% of the cassava gets lost, all carbage. The quality is bad if more than 55% of the cassava will be carbage, Yuca Tica will not buy the cassava. When the price is low and when the harvest of Yuca Tica

is low, Yuca Tica buys from the farmers, to protect their own harvest from a bad price. The farmers transport their products to the plant. If the delivering of cassava is not sufficient, Yuca Tica visits the farmers in the field to supply their deficit. Yuca Tica tells the farmers how much they want and when, whether the farmer agrees or not. They do not have a contract; trading is a matter of faith. Sometimes they visit the farmers to see what the production is like and if necessary to give some assistance.

There's no further communication between the farmers and Yuca Tica. The farmer receives C/ 375 per quintal (10%) if the farmer transports to the plant. If Yuca Tica collects the products, the farmers get C/350 paid per quintal (90%). The farmers get paid in check once in a week. Yuca Tica says the price they pay is C/ 20 higher than the price of middlemen passing at the farm. Price depends on demand and supply.

In 1992 the market situation is bad: there's a lot of supply and not enough demand. In the past when the price was right, everybody started cultivating cassava ('cob-web theorem'). The cassava production is all year round.

(Igaldo, 1992)

## HORTI FRUTI

### the plant

Horti Fruti is part of a supermarket chain, it processes, cleans and packs fruits, vegetables and roots and tubers for the national consumption. Horti Fruti is a company within the cooperative Más por Menos, a vertical integrated cooperation. Más por Menos is a cooperative of companies with Más x Menos and Palí supermarkets at the end of the chain and Horti Fruti and other plants at the beginning.

The supermarkets Palí and Más x Menos are obliged to buy products from Horti Fruti. Más x Menos orders quantity and quality to Horti Fruit. Más por Menos started as a small supermarket. Más por Menos and Horti Fruti have been cooperating since 32 year. This form of cooperation is unique in Costa Rica.

Horti Fruti has 250 employees. Horti Fruti buys directly from farmers; 200 farmers in total; 20 from the Atlantic Zone.

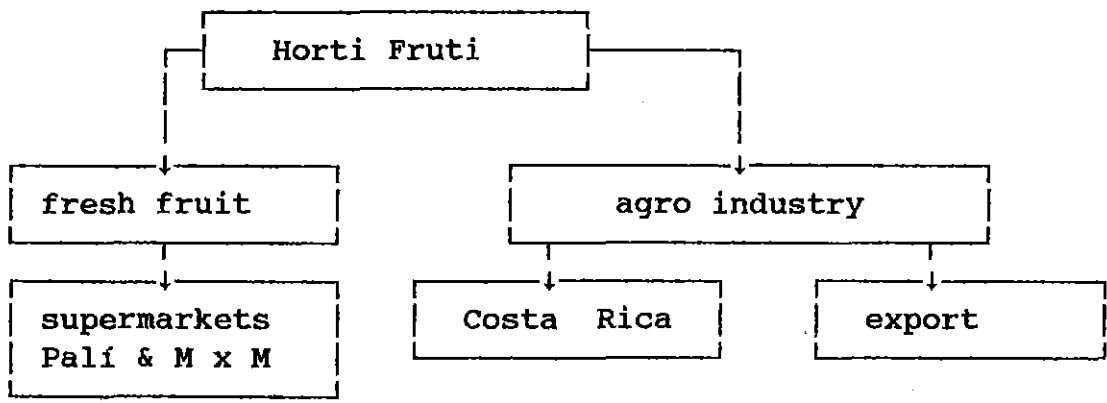
The farmers have more or less fixed contracts.

### marketing functions

Products coming from the Atlantic Zone are cassava, tiquisque, ñampí, ñame, plantain, pineapple, bananas, coconuts(pipa), carambolas, palm heart and hot chili picante (jalapín).

All the products are fresh; within one or two days the products will be in the supermarkets.

Farmers come in their own or rented transport to Curidabat; sometimes they organize transport together to keep the costs low. Price depends on supply and demand; the maximum wholesale price at the CENADA is taken as a guide line. Horti Fruti pays directly in cash. Quantity isn't the problem; quality sometimes is. For this reason Horti Fruti gives technical assistance to the farmers to improve the quality; they only buy first quality. The margins Horti Fruti earns are 15-20% for basic products like grains and rice and 25-30% for fruits and vegetables. The supermarkets earn another 15-20% and 25-30% respectively.



Source: Curidabat, 1992.

#### 6.1.4. results of the interviews at the retail level in Guápiles

##### Supermarket PALI, Guápiles

Horti Fruti fixes the prices of vegetables and fruits sold in this supermarket which is part of the cooperative of Más por Menos. Some products are packed at the plant others aren't packed at all. Pali calls every day to Horti Fruti to tell which fresh products they need; it will be delivered the same day. Sometimes products are not available because of national shortage or seasons. All the products have a fixed place in the supermarket, determined by Horti Fruti.

##### Superrinde supermarket

This supermarket exists 12 years. They buy from a middleman who buys at the wholesales market, the CENADA. They buy plantain and yuca from a farmer who passes the supermarket about once a week. They agree when the farmer will come and how much he'll deliver. Prices are fixed by the farmer and are paid directly to him.

The middleman comes every tuesday and thursdays. The supermarket orders their supply and pay after one week.

The margin for the supermarket is 30% and for the middleman about 20%. About 8% of the products in the supermarket get lost because of maturation.

The supermarket only buys first quality products. They don't receive any market information and do not make any publicity either.

There's quite some competition in retailing. The supermarket can avoid the risk of non selling because they can spread this risk over a lot of different products.

(the administrator, Guápiles 1992)

##### A grocery in the center

This grocery exists 10 years and was one of the first groceries in Guápiles. The grocer works on his own and sells to consumers. He buys his products from Wilberth Martínez, a middleman which I interviewed (case study 2) who buys at the CENADA and redistributes in the Atlantic Zone, once in a week. The grocer tells Wilberth what he wants, Wilberth determines the price and receives his money directly. The grocer buys papaya, cassava and plantain from a farmer in the zone who pass at his shop. The grocer thinks pineapple is too expensive. He won't be able to sell it. He determines the sale price. The margin of the grocer is

about 12%. About 2% of the products is lost. The prices have to be shown in the shop as the law determines. He doesn't like that because the competition can see his prices.

#### **A grocery near the bus station**

This verduleria is owned by two brothers who have been working together for 10 years. They have 5 employees.

They buy from 13 different middlemen at the CENADA, two times a week in their own lorry for their own verduleria. Because their lorry has multiple functions, it is cheaper for them to buy at the CENADA in his own lorry.

They buy plantain, yuca, tiquisque and coconut from farmers in the Zone, passing once in a week. The farmer fixes the price and gets paid directly. The retailer determines the sale price; his margin is about 20%.

About 8% of the products get lost during transport and in the shop because of maturation.

He doesn't have market information, except from the CENADA. Sometimes he advertises at a calendar or at the local radio (the retailer himself, Guápiles 1992).

#### **A grocery near the hospital**

This retailer has been buying and selling fruits and vegetables for 7 years. He buys from farmers and at the CENADA, transports the products in his own lorry for his grocery and sells them to 30 different retailers, in the neighbourhood. They pay him directly, so he also performs the functions of a wholesaler.

He only buys first quality.

About 5% of the products get lost during transport and when they are stored in the grocery. Because he deals in large volumes this business is rentable for him (the retailer himself, Guápiles 1992).

I tried to give an overview of the volumes and the price paid and received by the retailers. Quantity is total quantity of different quality classes sold per day.

Prices are in colones and per unity (un) or kilograms (kg)

RETAIL PRICES IN Guápiles

product	price paid	price received	quantity sold	shop
plantain	-	17,55 un	70 un	Palí
pineapple	-	103,9 un	12 un	Palí
papaya	-	37,80 kg	8 kg	Palí
yuca	-	36,25 kg	-	Palí
plantain	10,00 un	15,00 un	1000 un	Superrinde
pineapple	70-100 un	117,00 un	20 un	Superrinde
papaya	45,00 kg	65,00 kg	50 un	Superrinde
yuca	18,00 kg	25,00 kg	-	Superrinde
plantain	9,00 un	11,00 un	90 un	verduleria
pineapple	-	-	-	verduleria
papaya	35-40 kg	45 kg	120 kg	verduleria
yuca	15 kg	20 kg	100 kg	verduleria
plantain	10 un	15 un	-	verduleria
pineapple	110 un	130 un	-	verduleria
papaya	25 kg	40 kg	-	verduleria
yuca	30 kg	18-20 kg	-	verduleria

## 6.2. QUANTITATIVE RESULTS OF THE DEPTH INTERVIEWS

Factor analysis is a generic name given to a class of multivariate statistical methods whose primary purpose is data reduction and summarization. It addresses itself to the problem of analyzing interrelationships among a large number of variables and to explaining these variables in terms of their common underlying dimensions (factors). Factor analysis is an interdependence technique in which all variables are simultaneously considered.

The general purpose of factor analytic techniques is to find a way of summarizing information contained in a number of original variables into a smaller set of new composite dimensions (factors) with a minimum loss of information (J.F. Hair & R.E. Anderson, 1990).

I tried to analyze the answers to the 42 questions at the same time. They were too diverse for analysis.

I split the questions in the following parts: personal characteristics, purchase, sales, distribution and market situation. Factor analysis on the data of the distribution channel and the market situation still wasn't possible or significant. The factor matrix of the market situation was ill-conditioned because of negative eigen values and too much missing values. Resulting data of factor analysis on the data of distribution were very insignificant. So I didn't do any further analysis on the answers to the questions concerning the market situation and the distribution channel.

The high proportion of missing values is caused by lack of time of the middleman, by misunderstanding because of language difficulties or because they just refuse to answer.

## PERSONAL CHARACTERISTICS 'datos personales'

The first group of data which were analyzed by factor analysis are the answers to the questions concerning personal information (see the annex for the questions).

First I tested if factor analysis on the data was suitable. There are a few different ways of examining this suitability (see the annex for the explanation of the parameters).

The questions are very heterogenous and not linked together.

Correlation between the variables is not very strong.

Only a few correlations exceed +/- 0.3.

The correlations differ between -0.52778 and 0,40911 for the questions 3 and 7.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.43435) is very low.

This indicates that the questions do not belong together.

Bartlett Test of Sphericity = 14.73051 is not significant

(Significance = 0.83623) : Measure of Sampling Adequacy should be higher than 0.6; this is only the case in question 2; so  $H_0$  is rejected there's not enough correlation between the questions for factor analysis.

There are 24 (57.1%) off-diagonal elements of AIC Matrix higher than 0.09. This means that variance can not be explained sufficiently by the factors.

Most communalities are about 0.7.

The proportion of variance in the questions can be explained by all other questions in the analysis.

Eigen values which are higher than 1.0 or equal to 1.0, should be included in the study. Eigen values of the questions 1,2 and 3 exceed 1.0.

The three resulting, extracted factors explain 65% of the total variance.

All these criterions indicate that the data are not suitable for factor analysis. May be not a lot of results will be booked with factor analysis.

If we do take a look at the questions in the rotated factor matrix, that load high ( $> 0.3$ ) (in sequence of magnitude of the loading) following factors result:



The first factor is determined by the questions: if the contracts are fixed (\*); if the trader has former work experience; the type of middleman and the work field.

Summarizing factor 1 can be called 'the job'.

On the second factor the following questions load high: the number of years in trade; work field and if the middleman cooperates with others (\*).

Summarizing factor 2 can be called 'way of working'.

The questions that load high on the third factor are: sidelines of the middleman; if the middleman has former work experience (\*) and if there are fixed contracts.

Summarizing factor 3 can be called 'other activities'

#### **PURCHASE 'compra'**

The second group of data to be analyzed are the answers to the questions concerning purchase.

I first tested if factor analysis on the data was suitable.

The correlations between the different questions are not very strong. Some correlations are negative. Only a few correlations exceed +/- 0.3. The questions are very heterogenous and not linked together.

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.54757) is very low. The questions are not linked.

Bartlett Test of Sphericity = 34.50250 with a significance of 0.18482. Significance is not very high but higher than in the case of the personal characteristics. The variance can not be explained sufficiently by the factors.

There are 30 (53.6%) off-diagonal elements of AIC Matrix  $> 0.09$  with a significance of 0.83623. Measure of Sampling Adequacy should be higher than 0.6. This is the case in the questions 13 and 14.

There's not enough correlation between the questions for factor analysis.

Communalities differ between 0.53 and 0.89. The proportion of variance in the questions can be explained by all other questions in the analysis.

The eigen values which are  $> 1.0$  should be included in the study. The eigen values of the questions 8,9 and 10 will be included. The resulting three factors explain 73% of the total variance.

All these criterions indicate that the data are not suitable for factor analysis. May be not a lot of results will be booked with factor analysis.

If we do take a look at the questions in the rotated factor matrix which load high ( $> 0.3$ ) (in sequence of magnitude of the loading) the following factors results:

The questions hat load high on the first factor are: the way of payment; if the price is fixed (\*); the way the price is determined and from whom is bought (\*).

Factor 1 can be called 'payment'.

The second factor is determined by the following questions: if the middleman passes at farm; from who the products are bought; if there are different quality classes (\*) and from how many different people products are bought.

Factor 2 can be called 'buying where and from whom'.

The third factor is determined by the questions concerning which products bought and from how many different people (\*).

Factor 3 can be called 'product'.

\* = negative loading

#### SALES 'venta'

The third group of data which were analyzed, concerns sales.

First it was tested if factor analysis was suitable.

The correlation between the different questions are not very high. Some correlations are negative. Only a few correlations between the questions exceed  $\pm 0.3$ . Questions are very heterogenous and not linked together.

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.39067) is very low. The questions are not linked at all.

Bartlett Test of Sphericity = 38.22020 with a significance of 0.00084.

The variance can be explained sufficiently by the factors.

There are 12 (40.0%) off-diagonal elements of AIC Matrix higher than 0.09, which is not a lot. The Measure of Sampling Adequacy on the diagonal should be higher than 0.6; this is not the case in any of the questions.

There's not enough correlation between the questions for factor analysis.

Communalities differ between 0.63 and 0.95. The proportion of variance in the questions can be explained by all other questions in the analysis.

The eigen values of the questions 16 and 17 exceed 1.0 and are included in the analysis. The eigen value of question 18 is almost '1' (0.9905) so I extracted 3 factors which explain 68% of the total variance together.

These criterions except for the communalities and the MSA, indicate that the data are suitable for factor analysis. But I still doubt how much results will be booked with factor analysis.

If we do take a look at the questions in the rotated factor matrix, which load high on one of the factors, ( $> 0.3$ ) (in sequence of magnitude of the loading) following factors result:

The first factor is determined by the questions; to who many different middlemen products are sold; if the middleman distributes the products (\*) and if the price is fixed.

Factor 1 can be called 'sales to whom and how'.

The second factor is determined by the questions of the way of payment (\*); who determines the price; if the price is fixed and to how many different traders the products are sold.

Factor 2 can be called 'price'.

The third factor is determined by the questions to whom products are sold; and the way of payment (\*).

Factor 3 can be called 'sales to whom'.

\* = negative loading

### 6.3. CONCLUSIONS

There's no perfection relation between two or more questions: if the answer to one question is yes doesn't implicitly mean that the answer to another question should be yes or no.

It is hard to give any conclusions of the factor analysis because the results are not completely reliable; the sample is very small and there are quite some missing values.

The qualitative analysis allows some conclusions.

Most of the middlemen have been trading since 2 up to 20 years; cattle traders since more time in general. Traders often cooperate with their family or friends. The traders accept their work as it is, they hardly ever have any plans to invest or to change anything.

Number of traders with as without a lorry is the same. If they do not own transport they rent it, sometimes together, and pay a compensation 'flete'.

Some middlemen are living in the Atlantic Zone, buying at the CENADA and redistributing in the Zone; some are living in the Central Valley but buy products from farmers in the Zone.

Fixed contracts hardly exist; trading is a matter of faith.

Prices mostly are paid directly; working capital plays an important role.

Most important costs are transport; hardly any middlemen has credit because interest is high. They are running risk of losing everything for example, but hardly anything is done to avoid risk

Street retailing occurs often because of lack of a selling place or to keep costs low.

I interviewed 17 middlemen. Some were either living in the Atlantic Zone and trading in some other region of the country. Others were living outside the Zone and buying products cultivated in the Atlantic Zone. Except for cattle traders, I hardly met middlemen who were both living and trading in the Atlantic Zone.

Middlemen living in the Zone and buying at for example CENADA, do trade in multiple products; other middlemen mostly trade in one or two products.

## 7. RESULTS OF THE QUANTITATIVE ANALYSIS

### **7.1. REGRESSION ANALYSIS ON CENADA DATA OF DIFFERENT FRUITS & ROOTS AND TUBERS**

Regression analysis is a asymmetric data analysis method which means that within the whole set of variables one dependent variable and one or more independent variables are distinguished. Regression analysis test if there's a relation between the dependent (criterion) and the independent variables and it tries to give a numeric explanation of the dependent variable.

Interval or ration scaled variables are required. Prices, volumes and time are ratio scaled variables.

I collected data about volumes and prices of pineapple, papaya, plantain, roots and tubers at the PIMA (CENADA). Hot chili is hardly marketed at the CENADA.

With the help of the statistical analysis program, SPSS, I analyzed these data. I disposed of the volumes, the prices in US dollars and in colones, and the exchange rate of one dollar expressed in colones, of the last ten years; 1982 until 1991.

This exchange rate has changed quite a lot, in the beginning of 1982 one dollar value was worth 39.77 colones, at the end of 1991 one dollar was worth 134.75 colones already (see the annex).

I took the price in dollars as if it was the deflated price, to give an idea how much the value was of a kilogram or a unity of a product. I didn't use any dummy variables because production is all year round and no seasonabilty in the prices was discovered.

I decided after some research to take the price in dollars as the dependent variable because this price should reflect more or less the inflation rate. The independent variables then had to be the month numbers, to give an idea of the course of the prices in time; and the volume, to see what influence volume had on price.

The dependent variable in the study is:

price in US dollars: PRDOL

The independent variables are:

MNDNR = Month number

CVOL = volume commercialized at the CENADA

PDOL = price in dollars at the CENADA

### pineapple prices and volumes at the CENADA from 1982 until 1991.

I tried to explain an increase or a decrease in the price of pineapple during the years 1982 until 1991, by a trend in time and by the amount of supply offered at the wholesale market, the CENADA.

There is not a lot of correlation between price, volume and time. The R square indicates that 0.12896 of the variance in the price is explained by volume and time; the adjusted R indicates that the variance explained by the independent variables is even smaller.

The F value of 8.66117 is very significant ( $F = 0.0003$ ). The proportion of variance explained exceeds '0'.

The T test ( $\alpha=0.10$ ) rejects the hypothesis of zero influence. This means that the regression coefficients of both volume and time do have more influence than '0' on the price. They are both significant but correlation was found low already.

Both time trend and volume have a negative influence on price. During the years pineapple has become less expensive. If the volume of pineapple offered at the CENADA, rises, the price of pineapple at the CENADA decreases.

### papaya prices and volumes at the CENADA from 1982 until 1991.

I tried to explain an increase or a decrease in the price of papaya during the years 1982 until 1991, by a trend in time and by the amount of supply offered at the wholesale market, the CENADA.

There is not a lot of correlation between the dependent variable price and the independent variables, volume and time.

The R square indicates that 0.12896 of the variance in price is explained by volume and time.

F value of 8.39757 is very significant ( $\text{Sig } F = 0.0004$ ). The amount of variance in the price explained by the independent variables (R square) isn't equal to '0'.

The T test ( $\alpha=0.10$ ) rejects the  $H_0$  which means that the regression coefficients of both volume and time do have more influence than '0' on the price; both are very low but significant.

The amount of supply of papaya at the CENADA has a negative influence on the price of papaya. Time has a positive influence; the more papaya is sold, the lower the price. During the years the price of papaya has risen. If life becomes more expensive, prices of products rise, the price of papaya as well. If there's a lot of supply prices are lower because of the competition.

plantain prices and volumes at the CENADA from 1982 until 1991.

I tried to explain an increase or a decrease in the price of plantain during the years 1982 until 1991, by a trend in time and by the amount of supply offered at the wholesale market, the CENADA.

The multiple R is 0.66983 which indicates that there is quite some correlation between price, volume and time. The variance in price is explained for 45 % by the variation in time and volume as the R square indicates.

The F value of 72.02110 is very significant ( $F = 0.000$ ); the  $H_0$  is rejected and the variance explained (R square) isn't equal to '0'.

The T test ( $\alpha=0.10$ ) rejects the  $H_0$  which means that the regression coefficients of both volume and time do have more influence than '0' on the price. The beta coefficients are both negative but significant. During the time price has decreased, only little though. When the volume of plantain at the CENADA increases, the price of plantain decreases. The influence of time and volume is about 0.50. The price may have decreased during the years because of an increase in supply of plantain or because of the traditional character of the product.

yuca prices and volumes at the CENADA from 1982 until 1991.

I tried to explain an increase or a decrease in the price of cassava during the years 1982 until 1991, by a trend in time and by the amount of supply offered at the wholesale market, the CENADA.

The multiple R is 0.45266 which indicates that there is some correlation between price and volume and time. The variance in price is explained for 20 % by the variation in time and volume.

The F value = 15.07604 which is very significant (Sig F = 0.0000).

The variance in the price of cassava explained by its volume and time, (R square) isn't equal to '0'.

The T test ( $\alpha=0.10$ ) rejects the  $H_0$ . This means that the regression coefficients of both volume and time do have more influence than '0' on the price. The beta coefficients are very low. The influence of volume is negative but significant. During the time price has increased little.

When the volume of cassava offered at the CENADA, increased, its price decreased.

## 7.2. REGRESSION ANALYSIS ON PRICES AT THE DIFFERENT MARKETS OF PLANTAIN PAPAYA, PAPAYA, PINEAPPLE AND CASSAVA.

The following data for analysis come from the ministry, MAG, they have collected prices at the different markets as well during the years 1990, 1991 and part of 1992. Note that the prices at the feria do not include the prices at the ferias in Limón or Siquirres. Prices are in colones.

If we analyze the price of the products of the study at the different markets; a supermarket, a mercado municipal (market of the municipality more or less like Borbon), the CENADA and the ferias and we assume that the price determined at the feria depends on the prices at the other markets, following results are booked. Prices are collected weekly.

The price at the feria is taken as the dependent variable assumed that this price is influenced by the prices at the different markets because the MAG publishes these prices every week to inform the farmers which price they can ask at the feria.

I also analyzed the prices taking the price at the supermarket as the dependent variable because this market is the most organized retail buying place; the others are different market types and because a supermarket chain like Mas x Menos takes the CENADA price as an indication for the price in the supermarket.

FE = feria  
MER = mercado municipal (like the Borbon market)  
SU = supermarket  
CE = CENADA  
PLAT= plantain  
PI = pineapple  
PA = papaya  
YU = yuca

See the annex for the results of the regression analysis on the prices of the different products and markets.

### Pineapple prices at the different markets: the feria

Price of pineapple at the feria is the dependent variable. The prices of pineapple at the other markets are the independent variables.

Correlations between the prices at the feria and the different markets



are very high. There is some relation between the prices. This could be caused by the fact that pineapple is a very perishable product. Supply varies a lot depending on the harvest.

Mean price of pineapple at the different markets are: at the feria, 70 colones; at the mercado municipal, 74 colones; in the supermarket, 97 colones and at the CENADA the price of pineapple is 67 colones (MAG, 1990-1992).

Multiple R indicates that correlation between the independent variables and the dependent is quite high. The R square indicates that 86% of the variance in the price at the feria is explained by the prices at the other markets. T-test indicates that all the variables do have significant influence at the price at the feria. The influence fluctuates around 0.30(B).

The feria price is influenced most by the price at the mercado municipal, Influence of the price at the CENADA, a wholesales price, is smaller.

#### Papaya prices at the different markets: the feria

The price of papaya at the feria is the dependent variable. The prices of papaya at the other Markets are the independent variables.

The correlations between the prices at the different markets and the price at the feria are all quite high; especially between the mercado municipal and the feria. The correlation can be caused by the fact that pineapple is a very perishable product. Supply varies a lot depending on the harvest.

Mean prices of pineapple at the different markets are: at the feria, 70 colones; at the mercado municipal, 74 colones; in the supermarket, 97 colones and at the CENADA the price of pineapple is 67 colones (MAG, 1990-1992).

The mean prices for plantain at the different markets are: 33.350 colones at the feria 39.024 at the mercado municipal; 42.683 at the supermarket and only 27.154 at the CENADA.

The variance in the price of papaya at the feria is explained for 90% by the prices at the other markets. The prices at the CENADA and at the mercado municipal do have a positive influence as the T-test indicates. If the price increases at the CENADA or at the mercado, the price of

papaya at the feria also increases.

The relation between the CENADA and the feria is clear. The Ministry of Agriculture publishes the prices determined at the last market day at the CENADA, in the newspapers, as a reference for the feria prices. The relation between the prices at the mercado and at the feria can be a consequence of similarity between the two markets.

#### Plantain prices at the different markets: the feria

The price of papaya at the feria is the dependent variable. The prices of papaya at the other markets are the independent variables.

The prices of plantain at the feria and at the mercado municipal, a market type like Borbon, are strongly correlated. The price at the cenada, the feria and mercado show little correlation. The price at the cenada and the supermarket are weakly correlated. The price in the supermarket shows little correlation with the price at the feria and the mercado. I expected stronger correlation between the price at the CENADA and at the supermarket because a supermarket chain like Mas x Menos takes the cenada prices as a reference for its retail prices. The fact that the prices at the feria and at the mercado are highly correlated can be explained by the fact that the markets have the same identity; a market with stalls where different fruits and vegetables are sold mainly to consumers.

The mean price of plantain at the feria is 9,4 colones; at the CENADA 9, colones at the mercado municipal 11,6 and in the supermarket 14 colones.

(MAG, 1990-1992).

The variance in the price at the feria is explained for 67% by the independent variables. There's more influence than zero of the independent variables on the dependent.

The price at the mercado municipal and the feria are correlated and the value of beta 0.736856. I expected more influence of the CENADA price on the feria price. These prices are more or less the same.

#### Yuca prices at the different markets: the feria

Price of cassava at the feria is the dependent variable. The prices of cassava at the other markets are the independent variables.

The prices at the different markets are not very strongly correlated.

This might be caused by the fact that just like in the case of plantain, yuca is a more traditional product, with a more stable supply and a more stable price. Price at one market is not very sensible for price fluctuations at other markets. The correlation between the price at the mercado municipal and the feria is the strongest again.

Mean prices of yuca at the different markets are:

25,7 colones at the feria; 32,1 colones at the mercado municipal;  
36,226 colones in the supermarket and 20,637 colones at the feria.

Adjusted R square indicates that 64% of the variation in the yuca price at the feria is explained by the prices at the other markets. F test rejects  $H_0$ ; there's more influence than zero on the dependent variable. Except for the constant, all the regression coefficients (B) do affect the price at the feria. In the case of plantain the price at the mercado municipal (Borbon) has the strongest influence at the price at the feria.

I also analyzed the market prices taking the price at the supermarket as the dependent variable. This market is the most organized retail buying place.

#### Pineapple prices at the different markets: the supermarket

Correlation between the prices is quite strong. 76% of the variance in the price at the supermarket is explained by the prices at the other markets (feria 86%). There's more than 'zero' influence on the price at the supermarket. T test indicates that all variables do have significant influence. The price at the mercado municipal has the biggest influence (B) on the pineapple price in the supermarket.

#### Papaya prices at different markets: the supermarket

There's quite some correlation between the prices, but less correlation compared to the analysis with the feria price as dependent.

70 % of the variance in the supermarket price is explained by the other variables. The prices do have more than 'zero' influence at the supermarket price. The influence of the price at the CENADA is the only significant influence though as the T test indicates. This can be explained by the fact that supermarket chains like Mas por Menos for

example take CENADA prices as a reference for their retail prices.

### Plantain prices at different markets: the supermarket

There's not so much correlation between the prices, compared to the analysis with the feria price as dependent. Only 15% of the variance in the supermarket price is explained by the other variables. The prices do have more than 'zero' influence at the supermarket price. Only the influence of the price at the mercado municipal is significant though as the T test indicates.

Maybe because the mercado municipal and the supermarket are both market types which are opened daily, which are located in cities and where most products are sold directly to consumers.

### Yuca prices at different markets: the supermarket

correlation between the dependent and the independent prices is not very strong, compared to the analysis with the feria price taken as dependent (0.80). Only 32% of the variance in the supermarket price is explained by the prices at the other markets. There's is more than 'zero' influence of the independent variables at the dependent variable. The influence of the yuca price at the feria is the only significant influence.

Concerning cattle I analyzed the price of both female and male animals at the cooperative, Coopemontecillos. I expected price to depend on time and number.

### Cattle number and prices at Coopemontecillos during 1981-1990

The multiple R is 0.99155 which indicates that correlation is almost perfect between the price, the number of animals and the time, the dependent variable and the independent variables respectively.

Variance in price is explained for 98% by the variation in time and the number of animals as the R square indicates.

The F value of 204.36657 is very significant.

The variance explained (R square) isn't equal to '0'.

The T test ( $\alpha=0.10$ ) indicates that trend in time has no influence on the price but the number of animals do have influence ( $B=0.946963$ ).

This variable even has a very large influence, logical because the more animals sold the higher the price added up. But during time it can't be said that the cattle price significantly increases or decreases.

### 7.3. CONCLUSIONS

During the years 1982 -1991, the prices of the different products at the CENADA have increased and decreased.

The prices of papaya and yuca in US dollar value increased, as regression analysis indicates.

The administrated prices (see the annex) of these products at the market do not show a gradual increase.

The difference between the price in 1982 and 1990 is small. During these years there are periods of price increase and of price decrease.

The price increase resulting from regression analysis can be explained by the fact that increase during the years, probably exceed the decrease.

As the volume of papaya and cassava, offered at the CENADA increases, their price decrease: more supply results in more competition and lower prices. The positive influence of time exceeds the negative influence of volume.

A price increase results.

The prices of pineapple and plantain in US dollars decreased during the years. The decrease in the price of plantain was even higher than the decrease in the price of pineapple.

The administrated prices do not show a big difference between 1982 and 1990. The periods of price increase of these products at the CENADA, exceed the periods of decrease, as regression analysis implies.

An increase in the volume of plantain and pineapple respectively offered at the CENADA, results in a price decrease of plantain and a small price increase of pineapple, respectively. The price increase might indicate that the quality of the pineapple increases as well; pineapple has 3 different quality classes at the CENADA.

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The price in colones of the different products have increased much more than the price in dollars, during the years. The dollar value is a good deflator to check what the real of the products is.

Cattle prices vary a lot. There are many different marketing channels. During the years the cattle prices in colones have increased.

In 1990 they were 7 times as high as in 1982.

This might be caused by inflation but also by an increase of demand, an increase of the population or an increase in production costs.

The prices in US dollars probably wouldn't have increased that much.

Prices at the different markets.

I expected quite some influence of the prices at the different markets at the price at the feria. Especially of the CENADA price because of its wholesale character and because of its functions as a reference for these prices.

dependent-variable	regression analysis	papaya	pine-apple	yuca	plantain
FERIA price	Multiple R	0.95	0.92	0.80	0.81
	R square	0.90	0.86	0.64	0.67
explanatory variables	Cenada Mercado super mercado	yes yes no	yes yes yes	no yes no	no yes no
Super market price	Multiple R	0.85	0.87	0.57	0.39
	R square	0.71	0.76	0.32	0.15
explanatory variables	Cenada mercado feria	yes no no	yes yes yes	no yes no	no yes no

If the explanatory variables do have significant influence 'yes' is given, if not 'no' is written. As the table indicates the price at the mercado municipal, a market comparable to the Borbon market, seems to have the biggest influence at the feria price, often the only significant influence. Correlation between the variables is high; an average of 77% of variance in the feria price is explained by the prices at the other markets. Feria prices of papaya and pineapple are explained even better. The variance in the supermarket price at contrast is explained less by the independent variables. The price of yuca and plantain is less dependent of prices at the other markets. The price of pineapple price seems to most sensible to prices at other markets. The prices of the more traditional products like plantain and yuca seem

to be less sensible to prices at other markets than the more perishable products like papaya and pineapple.

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## **ANNEX 1: THE PRODUCTS**

### **ROOTS & TUBERS**

#### **production characteristics & production area:**

Yuca is cultivated all year round, harvest is after 9 to 10 months, most important harvest period in the Atlantic Zone is from January to March and from October to December. The products are treated by hand and don't need a lot of investment. The production is mostly on small scale; 60% of the farmers cultivate between 0.25 and 1 ha mono culture.

Main production Zones are the Atlantic Zone (cantón Pococí) and the Northern Zone of San Carlos.

#### **market situation:**

Roots and tubers do not belong to the basic food of the Costa Rican people. The national consumption of roots and tubers is low; only the fresh product is been consumed. The applied technology is low. Commercialization costs are high because of the long distances from the rural to the urban zones. The producers prefer to export their products because of the better price, because of the higher quality. For exportation the products is been processed. For the national consumption prices vary a lot, quality is low, there are hardly any contracts between farmers and middlemen. The price in the rural zone is determined by supply and demand and per quintal, the farmer often gets a low price. In the wholesale and retail the price is per kilo. (Smit, 1991)

### **PLANTAIN**

#### **production area**

Plantain is one of the products of which the production is concentrated in the Atlantic Zone (77% 1989), more precise in Talamanca (PAM, 1989).

Most of the plantain (88%) comes from Limón (Talamanca) and Puntarenas. harvest is the whole year round; only the volume differs. The national demand is 96% consumption, agro industry, public institutions and hotels and restaurants (MAG, 1990).

#### **market situation**

Plantain encounters a high demand for national fresh consumption. Prices are determined by demand and supply. But the farmer receives a low price and as the quantities sold per farmer are small, it is not worthwhile to go to a market; 30% of the production get lost because of lack of transport and means for commercialization (PIMA, 1990).

## **PINEAPPLE**

### **product characteristics:**

Pineapple is a product that doesn't need a very good soil; it needs high temperatures of the soil and the air.

The national production of pineapple has got two varieties; Monterillo a white colored type with a small heart not very sensible for illnesses and easy to multiply. This type has priority for the national consumption. The yellow variety coming from Hawaii, named Cayena Lisa, is mainly for the export and processed by PINDECO (PIMA, 1990).

Pineapple is sowed at the beginning of the rain season and the biggest harvests take place between April and July.

The first harvest is after 14 to 18 months, the second after 10 months; the production cycles takes about 24 to 28 months.

The main production zones are located in Buenos Aires de Puntarenas (62%), in San Carlos, Grecia, Los Chiles, San Ramón and Upala in the province of Alajuela (31% from which San Carlos 16%), Sarapiquí (5,03%) in Alajuela, Siquirres, Matina en Central in the province of Limón (1,25%) at last in Pérez Zeledón in San José.

### **market situation:**

Pineapple is hardly ever stored, only at the CENADA and indirectly at other covered markets or at the farm. Pineapple has different quality classes; I, II and III depending on the weight of the fruit ranged from 2.43- 1.89 and 1.5 kilograms (higher class for more weight) (PIMA, 1990).

The most important market is for fresh consumption, pineapple is canned or processed as marmalade or juice. Pineapple is hardly ever packed, only when the fresh product is exported in cardboard boxes which contain about 8-14 pineapples (MAG, 1990).

## **PAPAYA**

### **product characteristics & production areas:**

Puntarenas, Alajuela, Guanacaste and Limón are the most important production areas. Puntarenas and Alajuela together are responsible for 95% of the supply the CENADA. Only 3% comes from Limón and only in November (1986). Papaya grows well in a warm climate with sufficient rainfall. The plant can become 15-20 years old, but after 3 years quantity and quality of the product start decreasing. The fruit needs 8-10 months to grow. The highest supply is in October until December, the lowest in January and February.

Quite a lot of the total production is lost because of early maturity before harvest takes place, or when the products comes at the market at a time of high supply or quality fails. A 15 to 20% is lost by bruises during transport for example, or is eaten insects; the fruit is very sensible for pressure and illnesses. During transport the product is packed in newspapers in big baskets. The product is very perishable; within 14 days it is rotten (MAG, 1992).

Problems are the expensive transport over bad roads, loss during transport and the fluctuation of the price.

There are no quality standard for papaya. Packing hardly ever occurs either (PIMA, 1990).

The main market is national consumption of the fresh product, a little is processed to juices and marmalade (MAG, 1992).

## HOT CHILI

### product characteristics & production area

Different types of hot pepper are chile serrano, caribe, pico de pájaro, jalapeño and panamá. In Costa Rica the most common are jalapeño, panamá and cayenne. The profit of the jalapeña type is 8-18 tm/ha, of the panamá type 30-35 tm/ha and of the cayenne type 25-30 tm/ha.

The plant needs well drained soils, well prepared and deep. The plant is ensile for cold, the best altitude for cultivation is between 500 and 1200 meters. Harvest is possible during half a year ever week, it costs a lot of handwork. The plant needs five months to grow. A technical analysis of the soil is very important to see if the necessary elements are there because these have a big influence on the growth of the plant.

production areas: San Carlos 24,89% of the total cultivated area; Sarapiquí 19,05%; Siquirres 16,30% and Limón with 11,23%. The remaining 28,5% is to be found among other places in Pococí and Guácimo (MAG, 1989).

Regarding the whole country the cayenne type is cultivated the most (47,68% = 108,25 ha); followed by the panamá type ((28,85% = 65,5 ha) and the jalapeño type (20,37% = 46,25 ha).

Quality depends on the application purpose but important are the size, the color and the maturity.

The product is sold per kilogram, only sometimes for exportation in metric tons. Commercialization of hot chili is a bit different because the product often is processed.

### market situation

There's hardly any fresh consumption of chili.

Quite a lot of small enterprises process hot chili for sauces for example; Horti Fruti is one of these enterprises.

### CATTLE

Animal husbandry is very important for Costa Rica, after banana and coffee, the most important agricultural product for foreign exchange rates. The main food for the animals is grass. Animal husbandry is very extensive, the food value of grass per animal is low. The average farms in Pococí in Guácimo have a surface of 20 ha.

Animal husbandry in the Atlantic Zone started 80 years ago during the development of Pococí, Siquirres, and Guácimo. The markets though were far away. So in the forties a lot of farmers started cultivating other products like maize. During the seventies stock farming developed more mostly in Guápiles and Cariari.

The meat production in this Zone is all year round; in Guanacaste for example the production varies in the season. The last years the importance of cattle in the Zone decreased because the banana plantations buy a lot of land so land prices rise. At the moment there is a lot of demand and not so much supply of meat. In the plants there's a lot of unused capacity. Consumption per head of the population declines (Crawford, 1992).

Most of the cattle in the Atlantic Zone is kept for meat production. If cattle is kept for milk production, the farmer often is a member of one of the biggest cooperatives like Borden or Dos Pinos. Otherwise it's too difficult for the farmer to sell his milk.

The cooperatives collect the milk at the farms. In Guápiles Borden is more represented than Dos Pinos. They assist in the production with technical and financial aid. The cows only give about 10 liters of milk a day. In the Atlantic Zone is quite difficult to keep cattle for milk production because the Holstein breed is very sensible for the tropical wet and warm climate; in contrast to Braham, a cow suitable for the meat production and used to the topical climate and who needs a lot of space to walk around. The Central Valley is the place where most of the milk is produced.

The most known breed for meat production are Brahaman and Indobrasil; and a lot of crosses with the Holstein or Pardsuisso for double purpose breeding (Aragón, 1992).

## ANNEX 2: CENADA

Prices per hour being on the CENADA:

private cars:	22,0 c/per hour	944 c/per month
small lorries:	28,0 c/per hour	944 c/per month
bigger lorries:	42,0 c/per hour	1880 c/per month

### CENADA REGULATIONS AND TARIFFS

A. Estacionamiento	C/70 per uur	C/1850 per maand
vehículo particular	C/70 per uur	C/1850 per maand
vehículo carga liviana	C/70 per uur	C/3312 per maand
B. Locales (tarief per vierkante meter per maand)		
medianero	C/176	
esquinero	C/260	
bodega 2-3	C/330	
bodegas	C/201	
ocasional medianero plaza	C/480	
ocasional esquinero plaza	C/840	
oc. med. no plaza	C/360	
oc. esq. no plaza	C/600	
C. Derechos de piso		
diario	C/1770	
mensual (solo sandia)	C/5400	
D. Camara de refrigeración		
para mantenimiento	C/44/m3/dia	
para congelación	C/66/m3/dia	

source: PIMA; Programa de Divulgación Institucional Aspectos Técnicos sobre mercadeo de perecedores, generalidades sobre PIMA-CENADA, Januari 1990



## ANNEX 3: THE INTERVIEWS

### DEPTH INTERVIEW FOR MIDDLEMEN LIVING IN THE ATLANTIC ZONE AND TRADING IN THE PRODUCTS OF THE STUDY

#### DATOS PERSONALES Y TERRITORIO DE TRABAJO

- \* hace cuantos años esta usted intermediario;
- \* su trabajo del pasado fue otro tipo de trabajo? que tipo;
- \* con cuáles productos comercia usted: piña, yuca (raíces y tubérculos), chile picante, plátano (banano, palmito, maíz, pejibaye);
- \* que tipo de intermediario es usted, mayorista, transportista, negociante, fletero, minorista (niet rechtstreeks vragen);
- \* donde vive usted;
- \* en qué región trabaja usted y en qué tipos de mercados (compra y venta);
- \* tiene usted otras actividades (como agricultor, fletero);
- \* trabaja usted junto con otros intermediarios, con su familia u otra forma de cooperación;

#### DISTRIBUCION

- \* tiene usted su propio transporte, qué tipo de transporte, si no como transporta usted sus productos (fletero);
- \* qué es el volumen del camión y esta el camión lleno cuando usted compra;
- \* como es el estado de la carratera para llegar al agricultor/mercado;
- \* tiene usted una ruta fija para llevar y vender los productos;
- \* qué es la distancia de la lugar de compra (finca) al lugar de venta (mercado) para cada producto;
- \* ~~cuantas horas gasta en traer los productos;~~

#### COMPRA

- \* de quién compra usted (import) sus productos y donde (type voor type en regio);
- \* de cuantos diferentes agricultores/intermediarios compra usted cada producto, usted pasa a las fincas cada semana;
- \* son siempre los mismos agricultores de quien compra usted: tiene contratos fijos (de palabra) con ellos;
- \* va usted al agricultor para comprar y donde y cuantas veces por semana;

- \* cuanto compra usted de cada agricultor;
- \* compra usted diferentes classes de calidad;
- \* quién fija el precio, usted o el productor o es negocio;
- \* son los precios fijos o variables y a causa de (calidad, oferta y demanda);
- \* paga usted directamente, antes o después la compra y contado o por el banco;

#### VENTA

- \* a quién vende usted: minoristas como verdulerías, almacenes, pulperías, mayoristas, exportación etc. (type voor type en regio);
- \* lleva usted los productos al comprador o viene el comprador a usted;
- \* a cuantas diferentes personas vende usted;
- \* cuantos productos vende usted por vez y por persona;
- \* vende usted todo lo que compra;
- \* tiene usted algún tipo de almacenamiento/oficina, no. tel.:
- \* quién fija el precio, usted o el comprador o es negocio;
- \* son los precios fijos o variables y a causa de;
- \* recibe usted su dinero antes o después o directamente de la venta;

#### COSTOS

- \* cuanto cuesta para transportar los productos de la finca hasta el mercado, como gasolina, aceite por km;
- \* cuantos productos (qué porcentaje) pierde usted durante el transporte o almacenamiento a causa de plagas, insectos, podrido;
- \* qué otros costos tiene como empleado, crédito, almacenamiento y cuantos son;

#### MARGENES DE COMMERCIALIZACION

- \* qué es la diferencia entre el precio que usted paga y el precio que usted recibe, qué porcentaje gana usted;
- \* es rentable para usted el negocio, o pierde usted una vez y gana usted otra vez;
- \* hay mucho riesgo en su trabajo (de no vender, el precio es muy variable, transporte);
- \* qué hace usted para evitar este riesgo;

## LA SITUACION DE MERCADEO

- \* como es la situación de la demanda y de la oferta:  
hay mucha competencia por producto, hay épocas;
- \* que hace usted para competir;
- \* tiene algún tipo de información de mercadeo;
- \* conoce usted los precios de otros intermediarios;
- \* tiene usted algún tipo de publicidad, de propaganda;
- \* fue difícil para usted empezar con este trabajo  
cuáles son los problemas para entrar al comercio como plata,  
experiencia y de donde tiene su experiencia;
- \* hay más intermediarios en esto(s) producto(s) ahora que en el pasado,  
hace como tres años;
- \* tiene usted problemas de negocio, cuáles;
- \* comercia usted en otros productos ahora que en el pasado y porqué;
- \* piense usted que el funcionamiento de mercado ahora esta bien o  
quiere cambiar alguna cosa
- \* quiere invertir su ganancia en el futuro alguna cosa como en su  
caso su camión;

## DEPTH INTERVIEW FOR CATTLE TRADERS

### datos personales

- \* hace cuántos años comercio usted en ganado;
- \* donde vive usted;
- \* que tipo de intermediario es usted;
- \* en que tipos de ganado comercia usted; (terneros, novillos, toros)
- \* cuántos animales tiene usted por medio;
- \* trabaja usted junto con otros, su familia por ejemplo;
- \* su trabajo del pasado fue otro tipo de trabajo? que tipo, porque cambio;
- \* tiene usted otras actividades como fletero o tiene usted una finca para criar ganado, para leche o una carnicería;
- \* cuál es su objetivo para comprar y vender ganado, para criar, para engordar o para la carnicería;

### distribución

- \* tiene usted su propio transporte, qué tipo de transporte, si no como transporta usted sus productos (fletero);
- \* cuál es el tamaño del camión, cuántos animales;
- \* está el camión lleno cuando usted transporta su ganado;
- \* cuántos kilos pierden los animales durante el transporte;
- \* quien transporta los animales al matador y quien los lleva;
- \* cuántos kilometros son del lugar de compra al lugar de venta;

### compra

- \* que tipo de animales compra usted, novillos, terneros, vacas flacas, hembras o machos;
- \* donde compra usted sus animales, en la subasta, en la calle o usted los cría;
- \* que edad tienen los animales cuando usted los compra;
- \* cuántos animales compra por vendor o por semana;
- \* para cuanto tiempo tiene usted los animales;
- \* de cuantas diferentes personas compra usted;
- \* son siempre los mismos de quien usted compra;
- \* tiene usted contratos fijos o de palabra;
- \* quién fija el precio, usted o el vendedor o negocio como a la subasta;
- \* de que depende el precio, de calidad, de peso de edad;
- \* son los precios fijos o variables y a causa de qué;

- \* compra usted por kilo en canal o en pie;
- \* cuanto paga usted por animal, por kilo en canal o en pie;
- \* paga usted directamente cuando usted compra un animal;

#### venta

- \* que tipos de animales vende (zie boven);
- \* que edad tienen los animales cuando usted le vende;
- \* a quién vende usted su ganado, carnicería, engordador;
- \* donde vende usted sus animales, a la subasta;
- \* lleva usted los animales al comprador;
- \* a cuantos diferentes personas vende usted y que tipos
- \* cuantos animales vende usted por persona o por semana
- \* quién fije el precio
- \* de que depende el precio, calidad, edad, de peso del animal;
- \* es el precio variable o noy a causa de que;
- \* que es el precio que usted recibe por animal, por kilo en canal o en pie;
- \* recibe usted su dinero directamente y como (contado);

#### costos, precios y margenes

- \* que da usted a los animales para comer, sal, miel, pasto;
- \* quién controla el higiene el dalus de los animales;
- \* qué hace usted por el estado de salud (medicinas, lavar);
- \* cuánto cuesta la comida por animal o por mes;
- \* cuánto cuesta 'la salud';
- \* cuánto cuesta el transporte, comestible, aceite;
- \* tiene crédito y cuánto cuesta;
- \* tiene empelados, cuánto paga;
- \* cuánto recibe usted para sus otros actividades (como fletero);
- \* ~~es rentable para usted el negocio;~~
- \* cuál es la ganacia, porcentaje;

#### situación de mercadeo

- \* es usted socio de Coopemontecillos, porqué;
- \* qué piensa usted del funcionamiento de la subasta;
- \* tiene usted algún tipo de publicidad, de propaganda;
- \* tiene usted algún tipo de información (de precio por ejemplo);
- \* conoce usted los precios de otros;
- \* tiene mucho riesgo que tipo (perder peso, transporte, precio);
- \* que hace para evitar este riesgo;

- \* hay mas intermediarios de ganado ahora qué hace como tres años y por qué;
- \* estaba difícil para usted de empezar con este trabajo y a causa de que,;
- \* necesita clientes, experiencia, conocimiento en mercado;
- \* cómo es la situación de mercado, la oferta y la demanda
- \* hay mucha competencia;
- \* que piensa usted de la situación de mercado de ganado;
- \* tiene usted problemas de comercialización;
- \* quiere usted cambiar alguna cosa de su trabajo;
- \* quiere usted invertir su ganancia;

## ANNEX 4: FACTOR ANALYSIS

Meaning of the parameters used in FACTOR ANALYSIS

Criterion for the suitability for factor analysis.

KMO-measure of sample adequacy (MSA) measures if the attributes (the answers at the questions) belong together and so if they are suitable for factor analysis. A MSA measure is a measure that counts the quantity that the items belong together.

Bartlett's test of sphericity tests if the correlation matrix is a identity matrix, on the diagonal '1'; and off-diagonal '0'.

If  $H_0$  is rejected there's not enough correlation between the attributes (questions) for factor analysis.

anti-image correlation matrix the anti-image of an item is that part of the correlation that is unique; that can not be predicted by all other variables. If a lot off-diagonal elements are bigger than 0.00, data are not suitable for factor analysis.

eigen values contain the quantity of variation that one factor accounts for. communalities give the proportion of the variance in an item that can be explained by all other items in the analysis.

factor linear combination of the original variables.

rotated factor matrix to get more meaningful and simpler factor solutions.

### PERSONAL CHARACTERISTICS 'datos personales'

#### - - - - FACTOR ANALYSIS - - - -

#### Anti-Image Correlation Matrix

	VR1	VR2	VR3	VR4	VR5	VR6	VR7
VR1	.30819						
VR2	-.00172	.63563					
VR3	.41117	.10318	.40928				
VR4	-.14173	.01912	-.27754	.28622			
VR5	.05187	.16796	.15072	.08537	.55599		
VR6	.17826	-.03369	.54955	-.28092	.24376	.46119	
VR7	-.48098	-.00614	-.42396	.11898	.24962	-.01221	.49670

Correlation Matrix:

	VR1	VR2	VR3	VR4	VR5	VR6	VR7
VR1	1.00000						
VR2	.05250	1.00000					
VR3	-.15595	-.14027	1.00000				
VR4	.04764	.00000	.12729	1.00000			
VR5	-.14488	-.16843	-.14586	-.16540	1.00000		
VR6	-.02079	.14027	-.52778	.18185	-.14586	1.00000	
VR7	.38976	.00000	.40911	.02087	-.33079	-.22846	1.00000

Initial Statistics:

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
VR1	1.00000	* 1	1.88081	26.9	26.9
VR2	1.00000	* 2	1.55255	22.2	49.0
VR3	1.00000	* 3	1.12649	16.1	65.1
VR4	1.00000	* 4	.96688	13.8	79.0
VR5	1.00000	* 5	.74807	10.7	89.6
VR6	1.00000	* 6	.46477	6.6	96.3
VR7	1.00000	* 7	.26044	3.7	100.0

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3
VR3	-.86269	.06275	.31685
VR6	.79769	-.12769	.29876
VR2	.40317	.25276	.13813
VR1	.18754	.80561	-.13177
VR7	-.40272	.75590	.18354
VR4	.03898	-.12520	.79452
VR5	-.06336	-.45760	-.62706



PURCHASE 'compra'

- - - - F A C T O R   A N A L Y S I S   - - - -

Correlation Matrix:

	VR8	VR9	VR10	VR11	VR12	VR13	VR14
VR8	1.00000						
VR9	.41754	1.00000					
VR10	-.04992	-.19089	1.00000				
VR11	-.23187	.16469	-.10847	1.00000			
VR12	.01434	.52099	.18232	.20337	1.00000		
VR13	-.01393	-.44928	.50694	-.08251	-.14564	1.00000	
VR14	-.06647	-.49418	.17070	-.21731	-.38252	.12856	1.00000
VR15	.22528	.46020	-.83452	-.01493	-.07377	-.53722	-.30389

VR15

VR15 1.00000

Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .54757

Anti-Image Correlation Matrix:

	VR8	VR9	VR10	VR11	VR12	VR13
VR8	.37675					
VR9	.50224	.50921				
VR10	.03929	-.37383	.52569			
VR11	.29082	-.27880	.31744	.33444		
VR12	.20594	-.48619	-.00447	.00236	.57948	
VR13	-.26805	.37612	-.25489	-.08155	.04694	.69756
VR14	-.14402	.26032	-.00771	.10514	.19715	.23346
VR15	.00336	-.45782	.80942	.30638	.23854	.04270

VR14      VR15

VR14 .72852

VR15 .15234    .56391

Measures of sampling adequacy (MSA) are printed on the diagonal.  
Extraction 1 for Analysis 1, Principal-Components Analysis (PC)

Initial Statistics:

Var	Communality	Factor	Eigenvalue	Pct of Var	Cum Pct
VR8	1.00000 *	1	2.83563	35.4	35.4
VR9	1.00000 *	2	1.72091	21.5	57.0
VR10	1.00000 *	3	1.30226	16.3	73.2
VR11	1.00000 *	4	.77085	9.6	82.9
VR12	1.00000 *	5	.67221	8.4	91.3
VR13	1.00000 *	6	.36942	4.6	95.9
VR14	1.00000 *	7	.23687	3.0	98.9
VR15	1.00000 *	8	.09185	1.1	100.0

PC Extracted 3 factors.  
Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3
VR10	.93028	.08556	.06264
VR15	-.92065	.12263	.17485
VR13	.70866	-.23689	.05860
VR12	.19012	.83223	-.09808
VR9	-.35091	.81022	.27275
VR14	.21253	-.69323	.08760
VR8	-.09124	.23657	.84237
VR11	-.08595	.35712	-.70186

SALES 'venta'

- - - - FACTOR ANALYSIS - - - -

Anti-Image Correlation Matrix:

	VR16	VR17	VR18	VR19	VR20	VR21
VR16	.20339					
VR17	.39637	.43739				
VR18	.46875	.23268	.58788			
VR19	.50604	.79833	.45690	.23320		
VR20	-.32060	-.94931	-.01465	-.65669	.48315	
VR21	.39116	.47524	.40057	.42208	-.44659	.21628

Measures of sampling adequacy (MSA) are printed on the diagonal.

Initial Statistics:

Var	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
VR16	1.00000	*	1	2.79176	46.5	46.5
VR17	1.00000	*	2	1.29594	21.6	68.1
VR18	1.00000	*	3	.99053	16.5	84.6
VR19	1.00000	*	4	.69579	11.6	96.2
VR20	1.00000	*	5	.20810	3.5	99.7
VR21	1.00000	*	6	.01788	.3	100.0

PC Extracted 3 factors.

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3
VR17	.89020	.38214	.11025
VR19	-.85218	.26901	-.07025
VR20	.74041	.57696	.14276
VR18	-.16588	-.82584	-.40659
VR21	-.00546	.75224	-.26659
VR16	.11859	-.00904	.94690



DISTRIBUTION

question	'yes'	'no'	'didn't answer'	'other'
loss	5	8	4	
storage	10	7		
transport	own	'flete	none	
lorry full	4	8	5	
route fixed	7	6	4	
purchase how many times a week	8 : 0-2 times	6 : 2-4 times	3	
distance bargain sales	1: 0-20 km	2: 50-100 km	6: 100-200 km	4: 200 and more 4 didn't answer
# hours (retour)	1: 0-5	3: 5-10	3: 10-15	7 didn't know

1. loss: 8 middlemen answered 'no'; 5 answered 'yes' and 4 didn't answer.
2. storage: 7 'no', 10 'yes'.
3. transport: 8 'own', 6 'flete', 3 'none'.
4. lorry full: 4 'yes', 8 'no', 5 didn't answer.
5. fixed route: 6 'no', 7 'yes', 4 didn't answer.
6. bargain how many times a week: 8 '0 up to 2 times', 6 '2 up to 4 times' 3 didn't know.
7. distance bargain- sales: 1 '0 up to 20 km', 2 '50-100', 6 '100-200', 4 '200 km and more', 4 didn't answer
8. number of hours there and back: 1 '0 up to 5', 3 '5-10', 3 '10-15', 3 '15 and more', 7 didn't know or didn't answer.

## MARKET SITUATION

1. work rentable: 14 'yes', 3 'no'.
2. running risk: 13 'yes', 3 'no'.
3. avoidance of risk: 5 'yes', 12 'no'.
4. competition: 11 'a lot', 2 'fair', 1 'little'.
5. market information; 8 'yes', 9 'no'.
6. advertising: 3 'yes', 12 'no', 2 didn't know or answer.
7. number of middlemen compared to 3 years ago: 7 'more', 2 'less', 1 'same', 7 didn't know or answer.
8. knowledge of prices others: 10 'yes', 5 'no', 2 didn't answer.
9. problems: 5 'yes', 6 'no', 6 didn't know or answer.
10. barriers to entry: 2 'knowledge', 1 'money', 5 'clients', 9 didn't know or answer.
11. investment: 3 'yes', 5 'no', 9 didn't know or didn't answer.

## ANNEX 5: MULTIPLE REGRESSION ANALYSIS

Meaning of the parameters used in MULTIPLE REGRESSION.

multiple R: the correlation coefficient for simple regression, the degree of association between the dependent and the independent variables; the higher this parameter the higher and the better the correlation.

R square gives the proportion variance in the dependent variable explained by the independent variables. If the R square is '1' a complete linear relation exists between the dependent and the independent variables; if it approaches '0' only means that there's no linear relation but non linear relation may exist.

adjusted R square R square corrected for degrees of freedom and number of independent variables.

standard error is the standard deviation of the residuals; the higher the R square, the lower the standard error.

variance analysis

regression part of variance in the dependent variable explained by the independent variables, degrees of freedom =  $k-1$ .

residual part of variance not explained at all, degrees of freedom  $n-1-k$ .

F value of the regression equation is the estimation of the variance declared by regression (mean square regression) divided by the estimation of the variance around the regression line.

The level of significance is that the  $H_0$  says that the amount of declared variance is zero (R square = 0). When the F value is low,  $H_0$  is rejected.

regression coefficient B how much will the dependent variable increase or decrease when the independent variable(s) increase with '1'; this coefficient is standardized in beta:

Beta, which signifies the relative and not the absolute importance of the coefficient.

constant variable indicates that there's a constant influence.

T value is B divided by SE B and tests the null hypothesis ( $H_0$ ) that B does not diverge significantly from '0' and so has no influence on the value of the dependent variable.

regression analysis of pineapple prices and volumes at the CENADA from 1982 until 1991.

\* \* \* \* M U L T I P L E R E G R E S S I O N \* \* \* \*

Listwise Deletion of Missing Data

Equation Number 1      Dependent Variable..      PRDOL

Variable(s) Entered on Step Number

- 1..      MNDNR      Month number
- 2..      CVOL      volume at the

Multiple R                      .35911  
R Square                          .12896  
Adjusted R Square                .11407  
Standard Error                    .29925

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	1.55122	.77561
Residual	117	10.47736	.08955

F =            8.66117            Signif F =    .0003

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
MNDNR	-.003464	8.37237E-04	-.378996	-4.137	.0001
CVOL	4.126988E-07	2.27363E-07	.166273	1.815	.0721
(Constant)	.253491	.070390		3.601	.0005

~~regression analysis of papaya prices and volumes at the CENADA from 1982 until 1991.~~

\* \* \* \* M U L T I P L E R E G R E S S I O N \* \* \* \*

Listwise Deletion of Missing Data

Equation Number 1      Dependent Variable..      PRDOL

Block Number 1. Method: Enter

Entered on Step Number

1.. CVOL  
2.. MNDNR

Multiple R .36252  
R Square .13142  
Adjusted R Square .11577  
Standard Error .09176

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.14140	.07070
Residual	111	.93452	.00842

F = 8.39757 Signif F = .0004

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
CVOL	-5.91495E-07	1.46039E-07	-.570977	-4.050	.0001
MNDNR	.001476	4.16175E-04	.499851	3.546	.0006
(Constant)	.295728	.019807		14.930	.0000

End Block Number 1 All requested variables entered.

regression analysis of platano prices and volumes at the CENADA from 1982 untill 1991.

\* \* \* \* M U L T I P L E R E G R E S S I O N \* \* \* \*

Listwise Deletion of Missing Data

Equation Number 1 Dependent Variable.. PRDOL

Block Number 1. Method: Enter

Variable(s) Entered on Step Number

1.. CVOL  
2.. MNDNR



Multiple R .66983  
 R Square .44867  
 Adjusted R Square .44244  
 Standard Error 23.78419

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	81482.87837	40741.43919
Residual	177	100126.69898	565.68756

F = 72.02110      Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
CVOL	-1.62218E-04	1.51381E-05	-.619904	-10.716	.0000
MNDNR	-.468884	.058364	-.464744	-8.034	.0000
(Constant)	48.681886	3.011921		16.163	.0000

End Block Number 1 All requested variables entered.  
 regression analysis of yuca prices and volumes at the CENADA from 1982  
 untill 1991.

\* \* \* \* MULTIPLE REGRESSION \* \* \* \*

Listwise Deletion of Missing Data

Equation Number 1      Dependent Variable..      PRDOL

Block Number 1.      Method: Enter

Variable(s) Entered on Step Number

1.. CVOL  
 2.. MNDNR

Multiple R .45266  
 R Square .20490  
 Adjusted R Square .19131  
 Standard Error .05270

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	.08375	.04188
Residual	117	.32499	.00278

F = 15.07604      Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
CVOL	-5.68771E-07	1.24177E-07	-.410953	-4.580	.0000
MNDNR	6.939575E-04	1.51167E-04	.411881	4.591	.0000
(Constant)	.213262	.019598		10.882	.0000

End Block Number 1 All requested variables entered.

Pineapple prices at the different markets: the feria

\* \* \* \* MULTIPLE REGRESSION \* \* \* \*

Listwise Deletion of Missing Data

	Mean	Std Dev	Label
PIFE	69.426	17.665	PINEAPPLE PRICE AT FERIA
PIMER	73.607	21.611	PINEAPPLE PRICE AT MERCADO MINICIPAL
PISU	96.926	21.321	PINEAPPLE PRICE IN SUPERMARKET
PICE	66.516	16.679	PINEAPPLE PRICE AT CENADA

N of Cases = 122

Correlation:

	PIFE	PIMER	PISU	PICE
PIFE	1.000	.905	.844	.855
PIMER	.905	1.000	.856	.822
PISU	.844	.856	1.000	.795
PICE	.855	.822	.795	1.000

Equation Number 1      Dependent Variable..      PIFE

Block Number 1. Method: Enter

Variable(s) Entered on Step Number

1.. PICE  
2.. PISU  
3.. PIMER

Multiple R .92911  
R Square .86325  
Adjusted R Square .85977  
Standard Error 6.61516

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	32596.11734	10865.37245
Residual	118	5163.71873	43.76033

F = 248.29275 Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
PICE	.315649	.066567	.298032	4.742	.0000
PISU	.131654	.057369	.158900	2.295	.0235
PIMER	.428414	.060207	.524111	7.116	.0000
(Constant)	4.135617	2.938700		1.407	.1620

End Block Number 1 All requested variables entered.

~~Papaya prices at the different markets: the feria~~

I tried to explain the price of papaya at the feria by the prices at the other markets.

\*\*\* MULTIPLE REGRESSION \*\*\*

	Mean	Std Dev	Label
PAFE	33.350	9.041	PAPAYA PRICE AT FERIA
PAMER	39.024	9.336	PAPAYA PRICE AT MERCADO MINICIPAL
PASU	42.683	13.947	PAPAYA PRICE IN SUPERMARKET
PACE	27.154	10.066	PAPAYA PRICE AT CENADA

N of Cases = 123 weeks

Correlation:

	PAFE	PAMER	PASU	PACE
PAFE	1.000	.906	.774	.861
PAMER	.906	1.000	.682	.740
PASU	.774	.682	1.000	.839
PACE	.861	.740	.839	1.000

Equation Number 1 Dependent Variable.. PAFE PAPAYA PRICE AT FERIA

Variable(s) Entered on Step Number

- 1.. PACE PAPAYA PRICE AT CENADA
- 2.. PAMER PAPAYA PRICE AT MERCADO MINICIPAL
- 3.. PASU PAPAYA PRICE IN SUPERMARKET

Multiple R .94998  
 R Square .90247  
 Adjusted R Square .90001  
 Standard Error 2.85887

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	8999.36282	2999.78761
Residual	119	972.60466	8.17315

F = 367.02963 Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
PACE	.345009	.052128	.384136	6.618	.0000
PAMER	.568922	.041807	.587474	13.608	.0000
PASU	.032828	.034612	.050644	.948	.3448
(Constant)	.378050	1.148341		.329	.7426

End Block Number 1 All requested variables entered.

Plantain prices at the different markets: the feria

\* \* \* \* MULTIPLE REGRESSION \* \* \* \*

Listwise Deletion of Missing Data

	Mean	Std Dev	Label
PLATFE	9.398	2.983	PLANTAIN PRICE AT FERIA
PLATMER	11.585	3.214	PLANTAIN PRICE AT MERCADO MUNICIPAL
PLATSU	13.951	9.003	PLANTAIN PRICE IN SUPERMARKET
PLATCE	9.033	5.440	PLANTAIN PRICE AT CENADA

N of Cases = 123 weeks

Correlation:

	PLATFE	PLATMER	PLATSU	PLATCE
PLATFE	1.000	.819	.345	.311
PLATMER	.819	1.000	.390	.335
PLATSU	.345	.390	1.000	.159
PLATCE	.311	.335	.159	1.000

Equation Number 1 Dependent Variable.. PLATFE

Block Number 1. Method: Enter  
 Variable(s) Entered on Step Number

1.. PLATCE  
 2.. PLATSU  
 3.. PLATMER

Multiple R .81999  
 R Square .67238  
 Adjusted R Square .66412  
 Standard Error 1.72872

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	729.85265	243.28422
Residual	119	355.62703	2.98846

F = 81.40782 Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
PLATCE	.022404	.030554	.040856	.733	.4648
PLATSU	.009417	.018892	.028423	.498	.6191
PLATMER	.736858	.055463	.793840	13.286	.0000
(Constant)	.527856	.590594		.894	.3732

End Block Number 1 All requested variables entered.

yuca prices at the different markets: the feria

\* \* \* \* MULTIPLE REGRESSION \* \* \* \*

Listwise Deletion of Missing Data

	Mean	Std Dev	Label
YUFE	25.734	4.449	YUCA PRICE AT FERIA
YUMER	32.097	4.558	YUCA PRICE AT MERCADO MINICIPAL
YUSU	36.226	4.361	YUCA PRICE IN SUPERMARKET
YUCE	20.637	6.381	YUCA PRICE AT CENADA

N of Cases = 124

Correlation:

	YUFE	YUMER	YUSU	YUCE
YUFE	1.000	.715	.560	.613
YUMER	.715	1.000	.479	.474
YUSU	.560	.479	1.000	.397
YUCE	.613	.474	.397	1.000

Listwise Deletion of Missing Data

Equation Number 1      Dependent Variable..      YUFE

Block Number 1.      Method:      Enter

Variable(s) Entered on Step Number

- 1..      YUECE
- 2..      YUSU
- 3..      YUMER

Multiple R                      .80144  
R Square                         .64231  
Adjusted R Square               .63337  
Standard Error                  2.69365

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	1563.526220	521.17540
Residual	120	870.69154	7.25576

F = 71.82917                      Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
YUCE	.213814	.044306	.306702	4.826	.0000
YUSU	.217863	.065043	.213590	3.350	.0011
YUMER	.456677	.064856	.467855	7.041	.0000

(Constant)      -1.228747      2.227194      -0.552      .5822

End Block Number    1    All requested variables entered.



Pineapple prices at the different markets: the supermarket

\* \* \* \* MULTIPLE REGRESSION \* \* \* \*

Listwise Deletion of Missing Data

Equation Number 1 Dependent Variable.. PISU  
PINEAPPLE PRICE IN SUPERMARKET

Block Number 1. Method: Enter

Variable(s) Entered on Step Number

- 1.. PICE PINEAPPLE PRICE AT CENADA
- 2.. PIMER PINEAPPLE PRICE AT MERCADO MINICIPAL
- 3.. PIFE PINEAPPLE PRICE AT FERIA

Multiple R .87670  
 R Square .76860  
 Adjusted R Square .76272  
 Standard Error 10.38588

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	42278.09056	14092.69685
Residual	118	12728.24551	107.86649

F = 130.64945 Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
PICE	.244370	.111793	.191168	2.186	.0308
PIMER	.449194	.105162	.455305	4.271	.0000
PIFE	.324518	.141410	.268873	2.295	.0235
(Constant)	25.077940	4.039144		6.209	.0000

End Block Number 1 All requested variables entered.

Papaya prices at different markets: the supermarket

\* \* \* \* MULTIPLE REGRESSION \* \* \* \*

Listwise Deletion of Missing Data

Equation Number 1      Dependent Variable..    PASU  
                                     PAPAYA PRICE IN SUPERMARKET

Variable(s) Entered on Step Number  
 1..      PACE            PAPAYA PRICE AT CENADA  
 2..      PAMER           PAPAYA PRICE AT MERCADO MINICIPAL  
 3..      PAFE            PAPAYA PRICE AT FERIA

Multiple R                      .84539  
 R Square                         .71468  
 Adjusted R Square             .70749  
 Standard Error                 7.54335

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	16961.28349	5653.76116
Residual	119	6771.35065	56.90211

F =            99.35944            Signif F =    .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
PACE	.937471	.136004	.676597	6.893	.0000
PAMER	.070635	.176246	.047279	.401	.6893
PAFE	.228551	.240969	.148150	.948	.3448
(Constant)	6.847832	2.965655		2.309	.0227

End Block Number    1    All requested variables entered.

Plantain prices at different markets: the supermarket

\* \* \* \* MULTIPLE REGRESSION \* \* \* \*

Listwise Deletion of Missing Data

Equation Number 1      Dependent Variable.. PLATSU  
                          PLANTAIN PRICE IN SUPERMARKET

Block Number 1. Method: Enter

Variable(s) Entered on Step Number

- 1.. PLATCE      PLANTAIN PRICE AT CENADA
- 2.. PLATFE      PLANTAIN PRICE AT FERIA
- 3.. PLATMER      PLANTAIN PRICE AT MERCADO MINICIPAL

Multiple R                    .39366  
 R Square                     .15497  
 Adjusted R Square          .13367  
 Standard Error              8.37936

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	1532.28697	510.76232
Residual	119	8355.42035	70.21362

F =            7.27441            Signif F = .0002

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
PLATCE	.046985	.148372	.028389	.317	.7520
PLATFE	.221259	.443875	.073310	.498	.6191
PLATMER	.898611	.415557	.320763	2.162	.0326
(Constant)	1.036609	2.870719		.361	.7187

End Block Number 1 All requested variables entered.

Yuca prices at different markets: the supermarket

\* \* \* \* M U L T I P L E R E G R E S S I O N \* \* \* \*

Listwise Deletion of Missing Data

Equation Number 1     Dependent Variable..     YUSU  
                          YUCA PRICE IN SUPERMARKET

Block Number 1.     Method:     Enter

Variable(s) Entered on Step Number

1..	YUCE	YUCA PRICE AT CENADA
2..	YUMER	YUCA PRICE AT MERCADO MINICIPAL
3..	YUFE	YUCA PRICE AT FERIA

Multiple R	.57413
R Square	.32963
Adjusted R Square	.31287
Standard Error	3.61530

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	771.22992	257.07664
Residual	120	1568.44750	13.07040

F = 19.66862     Signif F = .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
YUCE	.053409	.064797	.078144	.824	.4114
YUMER	.148965	.102581	.155664	1.452	.1491
YUFE	.392454	.117167	.400305	3.350	.0011
(Constant)	20.242929	2.354448		8.598	.0000

End Block Number 1     All requested variables entered.

Cattle number and prices at Coopemontecillos during 1981-1990

\*\*\*\*\* MULTIPLE REGRESSION \*\*\*\*\*

Listwise Deletion of Missing Data

Equation Number 1      Dependent Variable..    PRT TOTAL PRICE  
  (MACHOS & HEMBRAS)

Block Number 1.    Method:    Enter

Variable(s) Entered on Step Number

1..    NT    NUMBER OF ANIMALS  
2..    J     YEARS

Multiple R                     .99155  
R Square                        .98316  
Adjusted R Square              .97835  
Standard Error                 251.63978

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	25882035.55764	12941017.77882
Residual	7	443258.04236	63322.57748

F =        204.36657                  Signif F =    .0000

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
NT	.946963	.071736	.913152	13.201	.0000
J	60.464585	39.075777	.107039	1.547	.1657
(Constant)	-120387.3304	77262.89479		-1.558	.1632

End Block Number    1    All requested variables entered.

**ANNEX 6: QUANTITIES & PRICES**

MINISTERIO DE AGRICULTURA Y GANADERIA, DIRECCION MERCADEO AGROPECUARIO  
 DEPARTAMENTO FERIAS DEL AGRICULTOR  
 BOLETIN INFORMATIVO  
 LISTA COMPARATIVA DE PRECIOS EN LOS MERCADOS  
 DE PRODUCTOS HORTIFRUTICOLAS AL CONSUMIDOR Y AL POR MAYOR (MAG, 1990,  
 1991 and 1992)

PAPAYA per kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
900107	20.00	25.00	30.00	15.00
900114	20.00	25.00	30.00	12.00
900121	20.00	25.00	15.00	15.00
900128	20.00	25.00	22.00	14.00
900203	20.00	25.00	22.00	15.00
900210	20.00	25.00	25.50	15.00
900217	20.00	25.00	13.80	15.00
900224	20.00	25.00	28.50	15.00
900304	20.00	25.00	20.00	13.00
900311	20.00	25.00	27.00	13.00
900318	20.00	25.00	25.00	15.00
900325	-----	-----	-----	-----
900401	-----	-----	-----	-----
900408	-----	-----	-----	-----
900422	-----	-----	-----	-----
900429	35.00	40.00	52.50	25.00
900902	35.00	40.00	52.50	30.00
900909	30.00	40.00	52.50	25.00
900916	40.00	45.00	52.50	35.00
900923	40.00	45.00	52.50	35.00
900930	45.00	50.00	60.00	40.00
901007	35.00	35.00	72.00	30.00
901014	30.00	40.00	52.50	30.00
901021	35.00	40.00	59.50	30.00
901028	30.00	35.00	61.00	25.00

PAPAYA per kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
920209	40.00	50.00	40.00	30.00
920216	40.00	50.00	40.00	35.00
920223	40.00	50.00	40.00	30.00
920301	40.00	50.00	56.00	30.00
920308	40.00	40.00	39.00	30.00
920315	35.00	50.00	45.00	25.00
920322	35.00	40.00	40.00	28.00
920329	35.00	40.00	40.00	28.00
920405	35.00	40.00	-----	25.00
920412	35.00	40.00	-----	30.00
920419	-----	-----	-----	-----
920426	30.00	40.00	36.00	30.00
920503	35.00	45.00	37.00	-----
920510	30.00	40.00	36.00	20.00
920517	35.00	40.00	48.00	25.00
920524	30.00	40.00	36.00	20.00
920531	30.00	35.00	36.00	22.00
920607	35.00	40.00	40.00	30.00
920614	35.00	40.00	40.00	25.00
920621	35.00	40.00	40.00	30.00
920628	40.00	40.00	48.00	30.00
920705	40.00	50.00	48.00	30.00
920712	35.00	50.00	39.95	25.00
920719	30.00	40.00	45.00	20.00
920726	35.00	40.00	40.00	25.00
920802	40.00	40.00	40.00	30.00
920809	35.00	50.00	40.00	25.00
920816	25.00	40.00	40.00	18.00

MINISTERIO DE AGRICULTURA Y GANADERIA, DIRECCION MERCADEO AGROPECUARIO  
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 DE PRODUCTOS HORTIFRUTICOLAS AL CONSUMIDOR Y AL POR MAYOR (MAG, 1990,  
 1991 and 1992).

PINEAPPLE per unity

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
900107	50.00	60.00	70.20	45.00
900114	40.00	40.00	77.20	50.00
900121	50.00	45.00	68.00	50.00
900128	40.00	40.00	72.50	40.00
900203	45.00	50.00	60.00	30.00
900210	50.00	50.00	68.00	55.00
900217	50.00	40.00	77.20	60.00
900224	60.00	50.00	75.00	50.00
900304	60.00	60.00	70.20	50.00
900311	50.00	60.00	75.00	50.00
900318	40.00	60.00	70.20	50.00
900325	40.00	50.00	62.50	45.00
900401	45.00	50.00	60.00	40.00
900408	50.00	60.00	68.00	55.00
900422	50.00	50.00	68.00	55.00
900429	60.00	50.00	68.90	50.00
900506	50.00	50.00	68.00	50.00
900513	50.00	50.00	68.00	50.00
900520	50.00	50.00	69.00	50.00
900527	50.00	50.00	68.00	40.00
900603	50.00	50.00	68.00	40.00
900610	50.00	50.00	68.00	42.00
900617	50.00	50.00	53.00	35.00
900624	45.00	50.00	57.50	40.00
900701	50.00	50.00	79.00	60.00



PINEAPPLE per unity

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
900708	40.00	50.00	84.25	60.00
900715	70.00	50.00	75.00	75.00
900722	75.00	70.00	98.30	85.00
900729	80.00	70.00	98.30	70.00
900805	50.00	50.00	67.50	48.00
900812	70.00	70.00	83.75	60.00
900819	70.00	50.00	86.25	60.00
900826	55.00	60.00	99.00	60.00
900902	50.00	50.00	83.00	60.00
900909	55.00	50.00	91.25	70.00
900916	45.00	45.00	96.50	55.00
900923	70.00	60.00	98.30	65.00
900930	70.00	60.00	100.00	65.00
901007	60.00	70.00	98.00	60.00
901014	60.00	60.00	94.00	50.00
901021	70.00	60.00	93.50	65.00
901028	70.00	60.00	83.00	70.00
901104	60.00	70.00	84.25	65.00
901111	60.00	60.00	93.50	60.00
901118	70.00	70.00	98.30	75.00
901125	70.00	70.00	98.30	70.00
901202	65.00	70.00	60.00	60.00
901209	70.00	60.00	99.00	70.00
901216	65.00	70.00	99.00	60.00
901223		70.00	99.00	60.00
910106	50.00	60.00	70.20	45.00
910113	40.00	40.00	77.20	50.00
910120	50.00	45.00	68.00	50.00
910127	40.00	40.00	72.50	40.00
910203	65.00	60.00	99.00	60.00
910210	70.00	70.00	99.00	65.00
910217	60.00	70.00	99.00	50.00
910224	60.00	60.00	99.00	60.00

PINEAPPLE per unity

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
-------	--------	------------------------	------------------	------------------------

910303	-----	-----	-----	-----
910310	60.00	60.00	99.00	50.00
910317	60.00	70.00	99.00	60.00
910324	70.00	70.00	99.00	65.00
910407	70.00	70.00	103.95	70.00
910414	60.00	70.00	100.00	60.00
910421	70.00	80.00	99.00	70.00
910428	65.00	70.00	105.30	60.00
910505	70.00	80.00	99.00	70.00
910512	70.00	80.00	99.00	60.00
910519	65.00	70.00	99.00	70.00
910526	60.00	60.00	99.00	60.00
910602	70.00	75.00	95.00	50.00
910609	60.00	100.00	105.00	90.00
910616	70.00	60.00	75.00	70.00
910623	70.00	75.00	98.00	60.00
910630	70.00	70.00	99.00	70.00
910708	-----	80.00	105.00	70.00
910715	70.00	80.00	112.00	90.00
910722	-----	115.00	115.00	80.00
910729	80.00	70.00	115.00	75.00
910804	90.00	90.00	100.00	90.00
910811	60.00	100.00	115.00	75.00
910818	75.00	80.00	113.00	70.00
910825	80.00	85.00	100.00	70.00
910901	75.00	80.00	-----	-----
910908	90.00	100.00	125.00	90.00
910915	-----	-----	-----	-----
910922	80.00	80.00	117.00	75.00
910929	70.00	80.00	100.00	70.00
911006	70.00	90.00	98.00	60.00
911013	70.00	70.00	99.50	75.00

PINEAPPLE per unity

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
911020	75.00	75.00	105.00	70.00
911027	80.00	70.00	98.00	60.00
911103	-----	90.00	120.00	75.00
911110	75.00	80.00	110.00	75.00
911117	80.00	90.00	122.50	75.00
911124	75.00	70.00	109.90	70.00
911201	75.00	80.00	115.00	80.00
911208	70.00	90.00	115.00	60.00
911215	80.00	90.00	105.00	80.00
911222	85.00	90.00	100.00	60.00
920105	100.00	100.00	115.00	90.00
920112	95.00	100.00	115.00	85.00
920119	90.00	90.00	115.00	80.00
920126	90.00	100.00	100.00	80.00
920202	75.00	100.00	113.00	65.00
920209	85.00	90.00	99.00	75.00
920216	90.00	100.00	110.00	80.00
920223	85.00	100.00	105.00	75.00
920301	90.00	100.00	129.00	75.00
920308	90.00	100.00	115.00	70.00
920315	80.00	90.00	105.00	65.00
920322	90.00	100.00	130.00	85.00
920329	90.00	100.00	113.00	85.00
920405	90.00	100.00	-----	90.00
920412	90.00	100.00	-----	80.00
920419	-----	-----	-----	-----
920426	90.00	100.00	120.00	85.00
920503	90.00	100.00	125.00	-----
920510	90.00	100.00	120.00	90.00
920517	100.00	110.00	120.00	90.00
920524	90.00	100.00	140.00	75.00
920531	85.00	100.00	120.00	75.00
920607	90.00	90.00	110.00	95.00

PINEAPPLE per unity

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
920614	90.00	100.00	155.00	60.00
920621	95.00	100.00	115.00	95.00
920628	90.00	100.00	120.00	90.00
920705	100.00	120.00	140.00	125.00
920712	100.00	125.00	130.00	95.00
920719	110.00	120.00	140.00	100.00
920726	110.00	120.00	140.00	100.00
920802	110.00	120.00	120.00	100.00
920809	100.00	110.00	140.00	85.00
920816	100.00	110.00	126.00	100.00

MINISTERIO DE AGRICULTURA Y GANADERIA, DIRECCION MERCADEO AGROPECUARIO  
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 DE PRODUCTOS HORTIFRUTICOLAS AL CONSUMIDOR Y AL POR MAYOR (MAG, 1990,  
 1991 and 1992)

PLANTAIN per unity

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
900107	7.00	8.00	8.00	5.50
900114	6.00	8.00	8.75	5.50
900121	6.00	8.00	8.75	5.00
900128	7.00	8.00	8.75	6.00
900203	7.00	8.00	8.75	6.00
900210	6.00	8.00	8.75	6.50
900217	6.00	5.00	7.80	4.54
900224	5.00	8.00	8.75	60.00
900304	6.00	8.00	8.75	6.00
900311	6.00	8.00	8.75	6.50
900318	6.00	8.00	8.75	6.50
900325	7.00	8.00	8.75	6.50
900401	7.00	8.00	8.00	6.50
900408	7.00	10.00	8.00	7.00
900422	6.00	8.00	8.00	6.50
900429	6.00	8.00	8.00	6.00
900506	7.00	8.00	8.00	6.00
900513	7.00	10.00	8.00	6.00
900520	7.00	10.00	8.10	6.00
900527	6.00	20.00	27.50	17.40
900603	7.00	8.00	8.25	6.50
900610	7.00	8.00	8.75	6.50
900617	5.00	8.00	8.00	5.50
900624	7.00	10.00	8.75	5.50
900701	7.00	8.00	8.50	6.00
900708	5.00	8.00	8.75	6.00

PLANTAIN per unity

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
900715	7.00	8.00	8.75	6.00
900722	7.00	8.00	8.75	6.00
900729	7.00	10.00	8.75	6.00
900805	6.00	8.00	8.75	6.00
900812	6.00	8.00	8.95	6.50
900819	7.00	8.00	9.75	6.50
900826	7.00	8.00	9.65	6.00
900902	6.00	8.00	9.75	5.00
900909	7.00	10.00	9.80	7.00
900916	7.00	10.00	10.00	6.50
900923	7.00	9.00	8.00	6.50
900930	6.00	8.00	9.75	7.00
901007	7.00	10.00	9.75	6.00
901014	8.00	10.00	9.75	6.50
901021	7.00	10.00	9.75	6.50
901028	8.00	10.00	9.00	5.00
901104	8.00	10.00	9.75	6.00
901111	7.00	8.00	9.25	5.00
901118	8.00	10.00	8.75	6.50
901125	7.00	10.00	9.75	5.00
901202	8.00	10.00	9.75	6.00
901209	7.00	10.00	9.75	7.00
901216	8.00	10.00	9.75	6.50
901223		10.00	9.75	6.00
910106	7.00	8.00	8.00	5.50
910113	6.00	8.00	8.75	5.50
910120	6.00	8.00	8.75	5.00
910127	7.00	8.00	8.75	6.00
910203	7.00	10.00	9.85	5.00
910210	8.00	10.00	9.50	6.00
910217	7.00	10.00	9.85	6.00

PLANTAIN per unity

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
910224	8.00	10.00	9.85	6.00
910303	-----	-----	-----	-----
910310	8.00	10.00	9.85	6.00
910317	8.00	10.00	9.50	7.00
910324	7.00	10.00	9.85	6.00
910407	7.00	8.00	9.85	5.00
910414	8.00	20.00	9.85	6.00
910421	8.00	10.00	9.50	6.00
910428	8.00	8.00	9.85	7.00
910505	10.00	15.00	14.00	10.00
910512	12.00	15.00	14.50	10.00
910519	10.00	15.00	14.50	11.00
910526	10.00	12.00	14.50	10.00
910602	10.00	12.00	14.50	7.00
910609	-----	10.00	14.50	9.00
910616	10.00	12.00	14.50	8.00
910623	10.00	15.00	14.50	10.00
910630	10.00	10.00	14.75	10.00
910708	-----	12.00	14.75	10.00
910715	10.00	12.00	15.00	8.00
910722	10.00	15.00	15.15	10.00
910729	10.00	12.00	16.00	9.00
910804	10.00	12.00	16.00	10.00
910811	10.00	15.00	17.00	10.00
910818	10.00	15.00	15.75	12.00
910825	15.00	15.00	19.00	12.00
910901	12.00	15.00	-----	-----
910908	12.00	14.00	20.00	12.00
910915	-----	-----	-----	-----
910922	10.00	15.00	19.00	12.00
910929	12.00	14.00	19.00	10.00

PLANTAIN per unity

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
911006	10.00	15.00	19.00	7.00
911013	12.00	15.00	18.00	12.00
911020	10.00	12.00	18.00	12.00
911027	12.00	12.00	18.00	10.00
911103	10.00	12.00	18.00	10.00
911110	10.00	12.00	17.55	11.00
911117	12.00	15.00	17.55	11.00
911124	12.00	15.00	16.50	12.00
911201	12.00	12.00	11.50	10.00
911208	10.00	12.00	17.50	10.00
911215	12.00	14.00	11.00	12.00
911222	10.00	12.00	17.50	10.00
920105	12.00	15.00	17.50	12.00
920112	14.00	12.00	17.50	13.00
920119	13.00	15.00	17.50	12.00
920126	14.00	15.00	17.00	12.00
920202	13.00	15.00	17.50	12.00
920209	14.00	15.00	17.50	12.00
920216	14.00	15.00	17.50	12.00
920223	14.00	15.00	17.50	13.00
920301	14.00	15.00	18.00	13.00
920308	14.00	15.00	19.50	11.00
920315	14.00	14.00	17.50	11.00
920322	14.00	15.00	17.50	11.00
920329	13.00	15.00	17.28	11.00
920405	12.00	15.00	-----	13.00
920412	15.00	15.00	-----	12.00
920419	-----	-----	-----	-----
920426	12.00	15.00	17.50	13.00
920503	12.00	15.00	17.75	-----
920510	12.00	15.00	18.00	13.00



PLANTAIN per unity

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
920517	15.00	16.00	18.00	14.00
920524	14.00	16.00	20.00	12.00
920531	14.00	16.00	18.00	12.00
920607	14.00	16.00	18.00	12.00
920614	14.00	16.00	18.00	13.00
920621	14.00	15.00	18.00	13.00
920628	15.00	15.00	18.00	13.00
920705	12.00	16.00	20.00	12.00
920712	12.00	15.00	18.00	10.00
920719	14.00	16.00	18.00	10.00
920726	15.00	16.00	18.00	13.00
920802	14.00	13.00	18.00	13.00
920809	12.00	15.00	17.00	11.00
920816	14.00	16.00	18.00	12.00

MINISTERIO DE AGRICULTURA Y GANADERIA  
DIRECCION MERCADEO AGROPECUARIO  
DEPARTAMENTO FERIAS DEL AGRICULTOR  
BOLETIN INFORMATIVO  
LISTA COMPARATIVA DE PRECIOS EN EL MERCADO  
DE PRODUCTOS HORTIFRUTICOLAS AL CONSUMIDOR Y AL POR MAYOR

YUCA ¢ kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
900107	35.00	40.00	32.35	25.00
900114	25.00	30.00	39.15	22.00
900121	25.00	30.00	40.00	25.00
900128	30.00	30.00	42.60	22.00
900203	28.00	30.00	34.50	23.00
900210	30.00	35.00	45.00	25.00
900217	30.00	30.00	37.50	22.00
900224	30.00	30.00	36.00	25.00
900304	30.00	30.00	31.00	25.00
900311	30.00	30.00	39.15	25.00
900318	30.00	30.00	34.50	25.00
900325	30.00	30.00	34.50	25.00
900401	30.00	35.00	34.50	25.00
900408	30.00	40.00	37.50	30.00
900422	28.00	30.00	39.20	25.00
900429	30.00	30.00	39.15	25.00
900506	30.00	40.00	39.15	25.00
900513	30.00	40.00	34.00	25.00
900520	28.00	40.00	39.15	25.00
900527	25.00	30.00	38.00	25.00
900603	28.00	35.00	39.20	25.00
900610	30.00	40.00	39.00	25.00
900617	30.00	40.00	39.00	28.00
900624	30.00	35.00	43.10	28.00

## YUCA ¢ kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
900701	35.00	40.00	43.10	30.00
900708	35.90	40.00	43.10	30.00
900715	35.00	40.00	43.10	30.00
900722	32.00	35.00	43.10	28.00
900729	30.00	35.00	42.60	25.00
900805	35.00	35.00	43.10	28.00
900812	30.00	40.00	43.10	30.00
900819	30.00	40.00	38.00	25.00
900826	30.00	35.00	37.50	20.00
900902	25.00	35.00	42.60	25.00
900909	30.00	40.00	42.60	25.00
900916	35.00	40.00	42.60	25.00
900923	30.00	40.00	37.50	25.00
900930	30.00	40.00	38.00	25.00
901007	30.00	40.00	42.60	25.00
901014	30.00	35.00	39.15	25.00
901021	30.00	35.00	39.15	24.00
901028	30.00	35.00	49.00	25.00
901104	30.00	40.00	39.15	24.00
901111	30.00	35.00	39.20	20.00
901118	30.00	40.00	39.20	23.00
901125	28.00	35.00	39.20	23.00
901202	25.00	35.00	20.00	20.00
901209	25.00	35.00	39.20	20.00
901216	30.00	25.00	39.20	20.00
901223		30.00	39.80	20.00
910106	35.00	40.00	32.35	25.00
910113	25.00	30.00	39.15	22.00
910120	25.00	30.00	40.00	25.00
910127	30.00	30.00	42.60	22.00

YUCA ¢ kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
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910203	25.00	35.00	32.35	20.00
910210	25.00	35.00	37.00	20.00
910217	25.00	35.00	35.75	20.00
910224	30.00	35.00	35.75	20.00
910303				
910310	25.00	30.00	32.35	20.00
910317	25.00	30.00	34.50	20.00
910324	25.00	35.00	34.00	20.00
910407	25.00	30.00	34.05	20.00
910414	25.00	35.00	45.00	20.00
910421	25.00	35.00	34.05	20.00
910428	25.00	30.00	34.05	20.00
910505	25.00	35.00	45.00	18.00
910512	25.00	35.00	45.00	20.00
910519	25.00	35.00	34.05	18.00
910526	25.00	30.00	34.05	18.00
910602	30.00	35.00	34.05	18.00
910609	25.00	35.00	34.05	18.00
910616	25.00	30.00	34.00	18.00
910623	25.00	30.00	34.05	22.00
910630	25.00	30.00	34.05	18.00
910708	25.00	30.00	36.00	18.00
910715	25.00	30.00	34.05	18.00
910722	25.00	30.00	41.00	18.00
910729	20.00	30.00	32.50	15.00
910804	25.00	30.00	32.50	17.00
910811	20.00	30.00	32.35	15.00
910818	25.00	30.00	36.00	15.00
910825	22.00	30.00	36.00	16.00
910901	25.00	25.00		
910908	20.00	30.00	32.35	15.00

## YUCA ¢ kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
910915	-----	-----	-----	-----
910922	25.00	30.00	30.00	18.00
910929	20.00	30.00	32.35	15.00
911006	20.00	30.00	36.00	16.00
911013	20.00	25.00	36.00	16.00
911020	22.00	25.00	30.00	18.00
911027	20.00	25.00	32.35	15.00
911103	20.00	30.00	32.35	15.00
911110	25.00	25.00	32.35	18.00
911117	20.00	30.00	32.35	15.00
911124	20.00	30.00	32.35	15.00
911201	20.00	30.00	32.50	15.00
911208	25.00	30.00	32.50	15.00
911215	20.00	25.00	32.25	15.00
911222	22.00	25.00	32.50	15.00
920105	22.00	25.00	36.00	16.00
920112	25.00	30.00	32.35	16.00
920119	20.00	30.00	32.25	15.00
920126	25.00	30.00	32.85	70.00
920202	20.00	25.00	32.35	15.00
920209	20.00	25.00	32.85	15.00
920216	20.00	30.00	36.00	15.00
920223	20.00	25.00	32.35	16.00
920301	20.00	25.00	36.00	15.00
920308	25.00	30.00	36.00	18.00
920315	20.00	30.00	32.35	16.00
920322	25.00	30.00	32.00	18.00
920329	20.00	30.00	36.00	15.00
920405	20.00	30.00	-----	15.00
920412	25.00	25.00	-----	18.00
920419	-----	-----	-----	-----

YUCA ¢ kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
920426	20.00	25.00	32.00	16.00
920503	20.00	25.00	33.00	
920510	20.00	25.00	33.00	15.00
920517	20.00	30.00	30.00	15.00
920524	25.00	30.00	33.00	15.00
920531	20.00	30.00	32.00	15.00
920607	20.00	25.00	33.00	15.00
920614	25.00	30.00	33.00	16.00
920621	20.00	25.00	33.00	16.00
920628	20.00	30.00	36.00	16.00
920705	25.00	30.00	35.00	15.00
920712	20.00	30.00	33.00	15.00
920719	20.00	30.00	36.00	15.00
920726	20.00	30.00	35.00	15.00
920802	20.00	30.00	33.00	15.00
920809	20.00	30.00	33.00	15.00
920816	20.00	30.00	36.00	16.00

MINISTERIO DE AGRICULTURA Y GANADERIA, DIRECCION MERCADEO AGROPECUARIO  
 DEPARTAMENTO FERIAS DEL AGRICULTOR.

BOLETIN INFORMATIVO y LISTA COMPARATIVA DE PRECIOS EN LOS MERCADOS  
 DE PRODUCTOS HORTIFRUTICOLAS AL CONSUMIDOR Y AL POR MAYOR (MAG, 1990,  
 1991 and 1992).

NAMPI in kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por mayor
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900107	35.00	40.00	51.70	25.00
900114	30.00	40.00	51.70	25.00
900121	30.00	40.00	49.90	30.00
900128	35.00	40.00	51.50	30.00
900203	30.00	40.00	51.70	25.00
900210	30.00	40.00	51.70	28.00
900217	30.00	40.00	51.70	25.00
900224	30.00	40.00	51.70	28.00
900304	30.00	40.00	51.70	25.00
900311	25.00	40.00	51.70	28.00
900318	30.00	40.00	51.70	25.00
900325	30.00	40.00	48.05	30.00
900401	30.00	40.00	48.05	28.00
900408	30.00	35.00	48.00	28.00
900422	30.00	40.00	48.05	30.00
900429	30.00	40.00	48.05	28.00
900506	35.00	40.00	48.05	30.00
900513	35.00	40.00	48.05	35.00
900520	30.00	40.00	48.05	22.00
900527	30.00	40.00	51.50	25.00
900603	-----	40.00	51.50	25.00
900610	30.00	40.00	40.25	35.00
900617	-----	40.00	40.25	30.00
900624	-----	40.00	60.05	40.00
900701	40.00	40.00	45.00	35.00
900708	-----	50.00	60.05	50.00
900715	-----	40.00	60.05	50.00

NAMPI in kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por amyor
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900722	-----	50.00	64.50	35.00
900729	40.00	40.00	77.20	43.00
900805	50.00	50.00	77.20	40.00
900812	40.00	45.00	77.20	45.00
900819	-----	50.00	67.20	40.00
900826	40.00	50.00	65.00	45.00
900902	50.00	50.00	68.65	40.00
900909	35.00	60.00	68.65	40.00
900916	45.00	50.00	68.65	40.00
900923	-----	50.00	68.65	35.00
900930	40.00	50.00	68.20	40.00
901007	40.00	50.00	68.20	35.00
901014	50.00	45.00	86.25	40.00
901021	40.00	50.00	68.65	40.00
901028	40.00	50.00	50.00	35.00
901104	50.00	50.00	68.65	45.00
901111	40.00	50.00	68.50	30.00
901118	40.00	50.00	68.65	30.00
901125	30.00	40.00	50.50	30.00
901202	30.00	40.00	57.50	25.00
901209	40.00	50.00	68.25	40.00
901216	40.00	45.00	50.00	35.00
901223	-----	50.00	68.75	30.00
910106	35.00	40.00	51.70	25.00
910113	30.00	40.00	51.70	25.00
910120	30.00	40.00	49.90	30.00
910127	35.00	40.00	51.50	30.00
910203	40.00	45.00	60.05	25.00
910210	40.00	50.00	60.05	20.00
910217	40.00	50.00	60.05	30.00
910224	40.00	40.00	60.50	35.00
910303	-----	-----	-----	-----



NAMPI in kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por amyor
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910310	40.00	50.00	60.05	30.00
910317	40.00	50.00	60.50	35.00
910324	30.00	45.00	40.00	25.00
910407	50.00	50.00	45.00	20.00
910414	35.00	50.00	40.00	30.00
910421	40.00	50.00	40.00	35.00
910428	45.00	50.00	51.50	30.00
910505	40.00	50.00	51.50	35.00
910512	40.00	30.00	40.00	35.00
910519	40.00	40.00	40.00	35.00
910526	40.00	50.00	38.75	25.00
910602	40.00	45.00	38.85	30.00
910609	-----	60.00	57.50	45.00
910616	45.00	50.00	60.00	42.00
910623	40.00	50.00	38.75	30.00
910630	40.00	50.00	38.75	35.00
910708	40.00	45.00	54.00	40.00
910715	40.00	50.00	54.00	25.00
910722	40.00	50.00	77.20	35.00
910729	40.00	60.00	48.00	60.00
910804	60.00	60.00	85.50	50.00
910811	50.00	55.00	85.80	45.00
910818	55.00	50.00	85.50	50.00
910825	60.00	70.00	79.00	50.00
910901	55.00	60.00	-----	-----
910908	50.00	60.00	79.00	50.00
910915	-----	-----	-----	-----
910922	60.00	70.00	79.00	50.00
910929	50.00	50.00	86.50	60.00
911006	45.00	50.00	79.00	50.00
911013	50.00	60.00	86.00	50.00
911020	50.00	60.00	75.00	60.00

NAMPI in kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por amyor
911027	50.00	70.00	62.50	45.00
911103	45.00	50.00	79.00	40.00
911110	50.00	60.00	90.00	30.00
911117	50.00	60.00	79.00	40.00
911124	50.00	60.00	79.00	45.00
911201	45.00	60.00	79.00	40.00
911208	50.00	60.00	79.00	45.00
911215	45.00	60.00	49.00	40.00
911222	55.00	60.00	59.00	40.00
920105	50.00	60.00	70.00	40.00
920112	50.00	50.00	61.35	40.00
920119	50.00	60.00	51.35	50.00
920126	45.00	60.00	79.00	40.00
920202	50.00	60.00	51.35	40.00
920209	50.00	60.00	51.35	40.00
920216	50.00	70.00	50.00	40.00
920223	50.00	60.00	78.00	40.00
920301	50.00	60.00	50.00	40.00
920308	50.00	60.00	51.35	40.00
920315	50.00	60.00	57.00	40.00
920322	50.00	60.00	78.00	45.00
920329	50.00	60.00	58.00	40.00
920405	50.00	60.00	-----	45.00
920412	50.00	60.00	-----	50.00
920419	-----	-----	-----	-----
920426	50.00	50.00	78.00	45.00
920503	50.00	60.00	78.00	-----
920510	65.00	60.00	87.00	60.00
920517	50.00	60.00	60.00	45.00
920524	60.00	60.00	78.00	55.00
920531	50.00	60.00	61.40	55.00
920607	50.00	60.00	38.00	50.00

NAMPI in kg

FECHA	FERIAS	MERCADO TRADICIONAL	SUPER MERCADO	CENADA al por amyor
920614	60.00	70.00	56.00	45.00
920621	60.00	60.00	58.00	60.00
920628	50.00	70.00	100.00	50.00
920705	60.00	70.00	122.80	60.00
920712	50.00	80.00	150.90	60.00
920719	60.00	60.00	100.00	70.00
920726	75.00	60.00	100.00	60.00
920802	60.00	70.00	65.00	50.00
920809	60.00	60.00	146.50	60.00
920816	80.00	-----	146.50	70.00

Volumes and prices in colones and US dollars at the wholesale market, CENADA, from 1981 until 1991 collected by the PIMA.

PAPAYA

año	m e s	n u m e r o	tipo de cambio	volumen CENADA kgs	precio CENADA C./kg	precio CENADA \$/kg
1981	1	1	21.18			
1981	2	2	21.18			
1981	3	3	21.18			
1981	4	4	21.18			
1981	5	5	21.18			
1981	6	6	21.18			
1981	7	7	21.18			
1981	8	8	21.18			
1981	9	9	21.18			
1981	10	10	21.18			
1981	11	11	21.18			
1981	12	12	21.18			
1982	1	13	39.77	34500	10.00	0.25
1982	2	14	39.77	78890	10.00	0.25
1982	3	15	39.77	133170	10.00	0.25
1982	4	16	39.77	101338	12.13	0.31
1982	5	17	39.77	153916	7.00	0.18
1982	6	18	39.77	145866	10.00	0.25
1982	7	19	39.77	109250	14.00	0.35
1982	8	20	39.77	63342	15.00	0.38
1982	9	21	39.77	87492	15.00	0.38
1982	10	22	39.77	150834	12.00	0.30
1982	11	23	39.77	266202	10.00	0.25
1982	12	24	39.77	209438	8.00	0.20
1983	1	25	41.56	49680	8.00	0.19
1983	2	26	41.56	42734	8.00	0.19
1983	3	27	41.56	124982	7.00	0.17
1983	4	28	41.56	115920	6.00	0.14
1983	5	29	41.56	133584	9.00	0.22
1983	6	30	41.56	121808	10.00	0.24
1983	7	31	41.56	122866	10.00	0.24
1983	8	32	41.56	112930	10.00	0.24
1983	9	33	41.56	91264	8.00	0.19
1983	10	34	41.56	121325	10.00	0.24
1983	11	35	41.56	163714	8.00	0.19
1983	12	36	41.56	156170	8.00	0.19

## PAPAYA

año	m e s	n u m	tipo de cambio	volumen CENADA kgs	precio CENADA C./kg	precio CENADA \$/kg
1984	1	37	44.40	144244	8.00	0.18
1984	2	38	44.40	156878	8.00	0.18
1984	3	39	44.40	193176	7.00	0.16
1984	4	40	44.40	151812	8.00	0.18
1984	5	41	44.40	155622	7.00	0.16
1984	6	42	44.40	133298	9.00	0.20
1984	7	43	44.40	112536	10.00	0.23
1984	8	44	44.40	143250	12.00	0.27
1984	9	45	44.40	124965	15.00	0.34
1984	10	46	44.40	99730	18.00	0.41
1984	11	47	44.40	114700	10.00	0.23
1984	12	48	44.40	132820	15.00	0.34
1985	1	49	50.45	87732	17.00	0.34
1985	2	50	50.45	109020	20.00	0.40
1985	3	51	50.45	149415	20.00	0.40
1985	4	52	50.45	126366	20.00	0.40
1985	5	53	50.45	124628	20.00	0.40
1985	6	54	50.45	74600	25.00	0.50
1985	7	55	50.45	72630	25.00	0.50
1985	8	56	50.45	65488	20.00	0.40
1985	9	57	50.45	57060	30.00	0.59
1985	10	58	50.45	87040	20.00	0.40
1985	11	59	50.45	116980	10.00	0.20
1985	12	60	50.45	127242	10.00	0.20
1986	1	61	53.45	98210	12.00	0.22
1986	2	62	53.73	117604	12.00	0.22
1986	3	63	54.20	126550	10.00	0.18
1986	4	64	54.50	202040	10.00	0.18
1986	5	65	54.93	220260	10.00	0.18
1986	6	66	55.58	145106	10.00	0.18
1986	7	67	56.00	132161	15.00	0.27
1986	8	68	56.30	149480	20.00	0.36
1986	9	69	56.78	152618	20.00	0.35
1986	10	70	57.20	210783	18.00	0.31
1986	11	71	57.73	255260	12.00	0.21
1986	12	72	58.33	183200	12.00	0.21
1987	1	73	58.80	146210	22.00	0.37
1987	2	74	59.23	194035	15.00	0.25
1987	3	75	59.75	223280	12.00	0.20
1987	4	76	60.33	120000	13.00	0.22

## PAPAYA

año	m e s	n u m	tipo de cambio	volumen CENADA kgs	precio CENADA C./kg	precio CENADA \$/kg
1987	5	77	61.13	148800	13.00	0.21
1987	6	78	61.88	191030	12.00	0.19
1987	7	79	62.43	196750	10.00	0.16
1987	8	80	63.18	151250	10.00	0.16
1987	9	81	64.10	239890	20.00	0.31
1987	10	82	65.55	339620	15.00	0.23
1987	11	83	66.50	246650	12.00	0.18
1987	12	84	68.00	185890	12.00	0.18
1988	1	85	72.95	168180	12.00	0.16
1988	2	86	73.20	158640	12.00	0.16
1988	3	87	73.50	267550	12.00	0.16
1988	4	88	73.90	233845	12.00	0.16
1988	5	89	74.58	290600	15.00	0.20
1988	6	90	75.28	199950	10.00	0.13
1988	7	91	75.95	296250	20.00	0.26
1988	8	92	76.45	222128	20.00	0.26
1988	9	93	77.08	209450	30.00	0.39
1988	10	94	77.85	245186	25.00	0.32
1988	11	95	78.50	232360	25.00	0.32
1988	12	96	79.00	183750	30.00	0.38
1989	1	97	79.15	185140	40.00	0.51
1989	2	98	79.38	166960	40.00	0.50
1989	3	99	79.68	196300	40.00	0.50
1989	4	100	79.98	280860	28.00	0.35
1989	5	101	80.28	452080	20.00	0.25
1989	6	102	80.58	428100	15.00	0.19
1989	7	103	80.88	359050	15.00	0.19
1989	8	104	81.25	312087	25.00	0.31
1989	9	105	81.70	376230	25.00	0.31
1989	10	106	82.50	403100	20.00	0.24
1989	11	107	83.03	322280	15.00	0.18
1989	12	108	83.55	227350	15.00	0.18
1990	1	109	84.15	287600	15.00	0.18
1990	2	110	84.75	316206	15.00	0.18
1990	3	111	85.48	315750	12.00	0.14
1990	4	112	86.40	294445	15.00	0.17
1990	5	113	87.53	257445	15.00	0.17
1990	6	114	89.10	323320	20.00	0.22
1990	7	115	90.45	297400	20.00	0.22
1990	8	116	92.25	243470	30.00	0.33

## PAPAYA

año	m	n	tipo	volumen	precio	precio
	e	u	de	CENADA	CENADA	CENADA
	s	m	cambio	kgs	C./kg	\$/kg
1990	9	117	94.28	254955	35.00	0.37
1990	10	118	96.32	245551	30.00	0.31
1990	11	119	98.95	336670	25.00	0.25
1990	12	120	101.50	247630	30.00	0.30
1991	1	121	105.13	261353	45.00	0.43
1991	2	122	107.27	434535	35.00	0.33
1991	3	123	112.78	338700	40.00	0.35
1991	4	124	116.20	337930	30.00	0.26
1991	5	125	119.05	409760	30.00	0.25
1991	6	126	121.57	323320	40.00	0.33
1991	7	127		401500	25.00	
1991	8	128		358600	25.00	
1991	9	129		325600	45.00	
1991	10	130		466100	40.00	
1991	11	131		391500	25.00	
1991	12	132		273500	25.00	

Volumes and prices in colones and US dollars at the wholesale market, CENADA, from 1981 until 1991 collected by the PIMA.

PINEAPPLE (Piña I)

año	m e s	n u m e r o	tipo de cambio	volumen CENADA kgs	precio CENADA C./kg	precio CENADA \$/kg
1981	1	1	21.18			0.00
1981	2	2	21.18			0.00
1981	3	3	21.18			0.00
1981	4	4	21.18			0.00
1981	5	5	21.18			0.00
1981	6	6	21.18			0.00
1981	7	7	21.18			0.00
1981	8	8	21.18			0.00
1981	9	9	21.18			0.00
1981	10	10	21.18			0.00
1981	11	11	21.18			0.00
1981	12	12	21.18			0.00
1982	1	13	39.77	78732	4.12	0.10
1982	2	14	39.77	73872	4.12	0.10
1982	3	15	39.77	103761	4.94	0.12
1982	4	16	39.77	67311	4.94	0.12
1982	5	17	39.77	138753	4.12	0.10
1982	6	18	39.77	118584	2.47	0.06
1982	7	19	39.77	77274	6.17	0.16
1982	8	20	39.77	60993	8.23	0.21
1982	9	21	39.77	66825	8.23	0.21
1982	10	22	39.77	84807	7.41	0.19
1982	11	23	39.77	46656	10.29	0.26
1982	12	24	39.77	48114	4.94	0.12
1983	1	25	41.56	68526	8.23	0.20
1983	2	26	41.56	265599	6.17	0.15
1983	3	27	41.56	124902	6.17	0.15
1983	4	28	41.56	114696	8.23	0.20
1983	5	29	41.56	121743	8.23	0.20
1983	6	30	41.56	126360	10.29	0.25
1983	7	31	41.56	105705	12.35	0.30
1983	8	32	41.56	102546	10.29	0.25
1983	9	33	41.56	100116	10.29	0.25
1983	10	34	41.56	229878	10.29	0.25
1983	11	35	41.56	227448	10.29	0.25
1983	12	36	41.56	219672	12.35	0.30
1984	1	37	44.40	286254	11.52	0.26



## PINEAPPLE (Piña I)

año	m	n	tipo	volumen	precio	precio
e	u	de		CENADA	CENADA	CENADA
s	m	cambio		kgs	C./kg	\$/kg
1984	2	38	44.40	307395	11.52	0.26
1984	3	39	44.40	324162	10.29	0.23
1984	4	40	44.40	328293	9.88	0.22
1984	5	41	44.40	380538	11.52	0.26
1984	6	42	44.40	422820	10.29	0.23
1984	7	43	44.40	372762	10.29	0.23
1984	8	44	44.40	435456	10.29	0.23
1984	9	45	44.40	328779	10.29	0.23
1984	10	46	44.40	357939	10.29	0.23
1984	11	47	44.40	332424	10.29	0.23
1984	12	48	44.40	354294	10.29	0.23
1985	1	49	50.45	295124	10.29	0.20
1985	2	50	50.45	331331	8.23	0.16
1985	3	51	50.45	378983	10.29	0.20
1985	4	52	50.45	337284	11.52	0.23
1985	5	53	50.45	364245	11.52	0.23
1985	6	54	50.45	368194	10.29	0.20
1985	7	55	50.45	272719	10.29	0.20
1985	8	56	50.45	246645	10.29	0.20
1985	9	57	50.45	181011	102.88	2.04
1985	10	58	50.45	262024	12.35	0.24
1985	11	59	50.45	304576	12.35	0.24
1985	12	60	50.45	253619	12.35	0.24
1986	1	61	53.45	251323	12.35	0.23
1986	2	62	53.73	280094	11.52	0.21
1986	3	63	54.20	264141	11.52	0.21
1986	4	64	54.50	272039	12.35	0.23
1986	5	65	54.93	200963	12.35	0.22
1986	6	66	55.58	283703	12.35	0.22
1986	7	67	56.00	331999	10.29	0.18
1986	8	68	56.30	229319	12.35	0.22
1986	9	69	56.78	264143	12.35	0.22
1986	10	70	57.20	301089	12.35	0.22
1986	11	71	57.73	328487	12.35	0.21
1986	12	72	58.33	263048	12.35	0.21
1987	1	73	58.80	341901	10.29	0.17
1987	2	74	59.23	409965	10.29	0.17
1987	3	75	59.75	469719	10.29	0.17
1987	4	76	60.33	269244	10.29	0.17
1987	5	77	61.13	380781	10.29	0.17

## PINEAPPLE (Piña I)

año	m	n	tipo	volumen	precio	precio	
	e	u	de	CENADA	CENADA	CENADA	
	s	m	cambio	kgs	C./kg	\$/kg	
1987	6	78		61.88	350892	10.29	0.17
1987	7	79		62.43	216513	12.35	0.20
1987	8	80		63.18	197802	12.35	0.20
1987	9	81		64.10	241785	12.35	0.19
1987	10	82		65.55	205578	10.29	0.16
1987	11	83		66.50	351864	10.29	0.15
1987	12	84		68.00	372519	11.52	0.17
1988	1	85		72.95	286376	10.29	0.14
1988	2	86		73.20	371183	8.23	0.11
1988	3	87		73.50	379931	10.29	0.14
1988	4	88		73.90	438008	10.29	0.14
1988	5	89		74.58	454592	12.35	0.17
1988	6	90		75.28	407268	10.29	0.14
1988	7	91		75.95	494505	10.29	0.14
1988	8	92		76.45	283423	12.35	0.16
1988	9	93		77.08	352970	14.40	0.19
1988	10	94		77.85	233414	12.35	0.16
1988	11	95		78.50	358182	12.35	0.16
1988	12	96		79.00	285719	16.46	0.21
1989	1	97		79.15	398617	11.72	0.15
1989	2	98		79.38	352025	9.77	0.12
1989	3	99		79.68	335616	13.67	0.17
1989	4	100		79.98	382515	13.67	0.17
1989	5	101		80.28	468070	11.72	0.15
1989	6	102		80.58	329561	11.72	0.15
1989	7	103		80.88	275072	11.72	0.14
1989	8	104		81.25	231808	15.63	0.19
1989	9	105		81.70	231987	19.53	0.24
1989	10	106		82.50	281728	19.53	0.24
1989	11	107		83.03	198272	15.63	0.19
1989	12	108		83.55	230272	19.53	0.23
1990	1	109		84.15	225024	19.53	0.23
1990	2	110		84.75	237184	19.53	0.23
1990	3	111		85.48	269184	19.53	0.23
1990	4	112		86.40	216320	19.53	0.23
1990	5	113		87.53	220032	19.53	0.22
1990	6	114		89.10	223360	15.63	0.18
1990	7	115		90.45	143104	31.25	0.35
1990	8	116		92.25	522828	23.44	0.25
1990	9	117		94.28	208179	25.39	0.27

PINEAPPLE (Piña I)

año	m	n	tipo	volumen	precio	precio
	e	u	de	CENADA	CENADA	CENADA
	s	m	cambio	kgs	C./kg	\$/kg
1990	10	118	96.32	186265	25.39	0.26
1990	11	119	98.95	257715	23.44	0.24
1990	12	120	101.50	182323	23.44	0.23
1991	1	121	105.13	258816	23.44	0.22
1991	2	122	107.27	276195	23.44	0.22
1991	3	123	112.78	1046195	23.44	0.21
1991	4	124	116.20	243174	23.44	0.20
1991	5	125	119.05	228928	23.44	0.20
1991	6	126	121.57	193664	23.44	0.19
1991	7	127		166800	35.16	
1991	8	128		212200	27.35	
1991	9	129		166500	27.35	
1991	10	130		292700	23.44	
1991	11	131		254400	27.35	
1991	12	132		206400	31.25	

cientos=243 kilo (82-88)  
 cientos=256.00 kg (89-91)  
 desde 1989 en kilos

Volumes and prices in colones and US dollars at the wholesale market, CENADA, from 1981 until 1991 collected by the PIMA.

PLANTAIN (Plátano maduro)

año	m	n	tipo	volumen	precio	precio
	e	u	de	CENADA	CENADA	CENADA
	s	m	cambio	kgs	C./kg	\$/kg
1981	1	1	21.18			0.00
1981	2	2	21.18			0.00
1981	3	3	21.18			0.00
1981	4	4	21.18			0.00
1981	5	5	21.18			0.00
1981	6	6	21.18			0.00
1981	7	7	21.18			0.00
1981	8	8	21.18			0.00
1981	9	9	21.18	160440	2.38	0.11
1981	10	10	21.18	126210	2.38	0.11
1981	11	11	21.18	90090	2.38	0.11
1981	12	12	21.18	89040	2.38	0.11
1982	1	13	39.77	51450	2.86	0.07
1982	2	14	39.77	70560	2.86	0.07
1982	3	15	39.77	111930	3.10	0.08
1982	4	16	39.77	78456	4.76	0.12
1982	5	17	39.77	82866	4.05	0.10
1982	6	18	39.77	87696	4.29	0.11
1982	7	19	39.77	105630	4.76	0.12
1982	8	20	39.77	80052	5.95	0.15
1982	9	21	39.77	103740	5.95	0.15
1982	10	22	39.77	79002	5.95	0.15
1982	11	23	39.77	64764	5.95	0.15
1982	12	24	39.77	81606	5.95	0.15
1983	1	25	41.56	64722	5.95	0.14
1983	2	26	41.56	6300	6.19	0.15
1983	3	27	41.56	63210	6.19	0.15
1983	4	28	41.56	58590	7.14	0.17
1983	5	29	41.56	110628	7.14	0.17
1983	6	30	41.56	99414	5.95	0.14
1983	7	31	41.56	63714	7.14	0.17
1983	8	32	41.56	82530	7.14	0.17
1983	9	33	41.56	78330	7.14	0.17
1983	10	34	41.56	116802	7.14	0.17
1983	11	35	41.56	74676	5.95	0.14
1983	12	36	41.56	42798	6.67	0.16
1984	1	37	44.40	32928	5.95	0.13

PLANTAIN (Plátano maduro)

año	m e s	n u m	tipo de cambio	volumen CENADA kgs	precio CENADA C./kg	precio CENADA \$/kg
1984	2	38	44.40	37968	5.95	0.13
1984	3	39	44.40	62580	5.95	0.13
1984	4	40	44.40	98490	5.36	0.12
1984	5	41	44.40	83790	5.36	0.12
1984	6	42	44.40	64680	5.36	0.12
1984	7	43	44.40	50946	5.36	0.12
1984	8	44	44.40	42420	5.36	0.12
1984	9	45	44.40	52500	5.36	0.12
1984	10	46	44.40	47040	5.95	0.13
1984	11	47	44.40	45360	5.95	0.13
1984	12	48	44.40	43974	6.55	0.15
1985	1	49	50.45	38640	6.55	0.13
1985	2	50	50.45	22176	7.14	0.14
1985	3	51	50.45	36960	8.33	0.17
1985	4	52	50.45	29274	8.93	0.18
1985	5	53	50.45	55230	8.33	0.17
1985	6	54	50.45	41496	8.33	0.17
1985	7	55	50.45	26040	8.33	0.17
1985	8	56	50.45	23772	9.52	0.19
1985	9	57	50.45	14028	10.71	0.21
1985	10	58	50.45	19110	9.52	0.19
1985	11	59	50.45	23730	11.31	0.22
1985	12	60	50.45	26418	11.90	0.24
1986	1	61	53.45	33264	10.71	0.20
1986	2	62	53.73	16506	11.90	0.22
1986	3	63	54.20	34860	13.10	0.24
1986	4	64	54.50	30408	13.10	0.24
1986	5	65	54.93	34818	11.90	0.22
1986	6	66	55.58	23016	11.90	0.21
1986	7	67	56.00	36120	10.71	0.19
1986	8	68	56.30	32256	7.14	0.13
1986	9	69	56.78	23478	9.52	0.17
1986	10	70	57.20	31542	10.71	0.19
1986	11	71	57.73	44646	9.52	0.16
1986	12	72	58.33	55230	10.71	0.18
1987	1	73	58.80	50820	11.31	0.19
1987	2	74	59.23	53466	11.31	0.19
1987	3	75	59.75	51534	11.31	0.19
1987	4	76	60.33	54348	10.71	0.18
1987	5	77	61.13	58128	9.52	0.16

PLANTAIN (Plátano maduro)

año	m	n	tipo	volumen	precio	precio
	e	u	de	CENADA	CENADA	CENADA
	s	m	cambio	kgs	C./kg	\$/kg
1987	6	78	61.88	74760	8.33	0.13
1987	7	79	62.43	49854	7.14	0.11
1987	8	80	63.18	31248	8.33	0.13
1987	9	81	64.10	41370	8.33	0.13
1987	10	82	65.55	32592	9.52	0.15
1987	11	83	66.50	60942	9.52	0.14
1987	12	84	68.00	26796	9.52	0.14
1988	1	85	72.95	30870	8.33	0.11
1988	2	86	73.20	17220	9.52	0.13
1988	3	87	73.50	38010	10.71	0.15
1988	4	88	73.90	45150	10.71	0.14
1988	5	89	74.58	76188	9.52	0.13
1988	6	90	75.28	56910	9.52	0.13
1988	7	91	75.95	37716	10.71	0.14
1988	8	92	76.45	43176	10.71	0.14
1988	9	93	77.08	42210	10.71	0.14
1988	10	94	77.85	35490	11.90	0.15
1988	11	95	78.50	53592	11.90	0.15
1988	12	96	79.00	46830	14.29	0.18
1989	1	97	79.15	37102	11.90	0.15
1989	2	98	79.38	57715	11.90	0.15
1989	3	99	79.68	32385	13.10	0.16
1989	4	100	79.98	48832	13.10	0.16
1989	5	101	80.28	73312	11.90	0.15
1989	6	102	80.58	89590	11.90	0.15
1989	7	103	80.88	52827	10.71	0.13
1989	8	104	81.25	36550	14.29	0.18
1989	9	105	81.70	132387	14.29	0.17
1989	10	106	82.50	36873	14.29	0.17
1989	11	107	83.03	35997	14.29	0.17
1989	12	108	83.55	89887	13.10	0.16
1990	1	109	84.15	40545	13.10	0.16
1990	2	110	84.75	15810	14.29	0.17
1990	3	111	85.48	22865	15.48	0.18
1990	4	112	86.40	21802	15.48	0.18
1990	5	113	87.53	26052	14.29	0.16
1990	6	114	89.10	41862	13.10	0.15
1990	7	115	90.45	25011	14.29	0.16
1990	8	116	92.25	43350	15.48	0.17
1990	9	117	94.28	52870	16.67	0.18

PLANTAIN (Plátano maduro)

año	m	n	tipo	volumen	precio	precio
	e	u	de	CENADA	CENADA	CENADA
	s	m	cambio	kgs	C./kg	\$/kg
1990	10	118	96.32	53890	15.48	0.16
1990	11	119	98.95	54060	14.29	0.14
1990	12	120	101.50	42415	14.29	0.14
1991	1	121	105.13	46367	14.29	0.14
1991	2	122	107.27	35530	14.29	0.13
1991	3	123	112.78	41862	14.29	0.13
1991	4	124	116.20	46962	14.29	0.12
1991	5	125	119.05	45815	23.81	0.20
1991	6	126	121.57	46537	19.05	0.16

Volumes and prices in colones and US dollars at the wholesale market, CENADA, from 1981 until 1991 collected by the PIMA.

CASSAVA (Yuca)

año	m e s	n u m e r o	tipo de cambio	volumen CENADA kgs	precio CENADA C./kg	precio CENADA \$/kg
1981	1	1	21.18	&	&	ERR
1981	2	2	21.18	&	&	ERR
1981	3	3	21.18	&	&	ERR
1981	4	4	21.18	&	&	ERR
1981	5	5	21.18	256542	1.10	0.05
1981	6	6	21.18	215188	1.10	0.05
1981	7	7	21.18	248676	1.10	0.05
1981	8	8	21.18	264730	1.10	0.05
1981	9	9	21.18	321678	1.30	0.06
1981	10	10	21.18	265098	1.30	0.06
1981	11	11	21.18	225492	1.70	0.08
1981	12	12	21.18	232760	3.30	0.16
1982	1	13	39.77	224572	3.05	0.08
1982	2	14	39.77	199962	3.30	0.08
1982	3	15	39.77	231104	4.35	0.11
1982	4	16	39.77	162058	4.35	0.11
1982	5	17	39.77	177974	5.45	0.14
1982	6	18	39.77	161736	6.50	0.16
1982	7	19	39.77	172408	8.70	0.22
1982	8	20	39.77	131606	8.70	0.22
1982	9	21	39.77	162748	8.70	0.22
1982	10	22	39.77	168774	8.70	0.22
1982	11	23	39.77	139932	8.70	0.22
1982	12	24	39.77	133308	8.70	0.22
1983	1	25	41.56	146326	7.60	0.18
1983	2	26	41.56	25622	7.60	0.18
1983	3	27	41.56	91310	7.60	0.18
1983	4	28	41.56	75210	7.60	0.18
1983	5	29	41.56	77832	6.50	0.16
1983	6	30	41.56	133262	6.50	0.16
1983	7	31	41.56	125718	5.45	0.13
1983	8	32	41.56	142508	5.45	0.13
1983	9	33	41.56	120474	5.45	0.13
1983	10	34	41.56	104374	4.35	0.10
1983	11	35	41.56	130916	4.35	0.10
1983	12	36	41.56	90390	4.35	0.10
1984	1	37	44.40	94530	4.35	0.10



## CASSAVA (Yuca)

año	m e s	n u m	tipo de cambio	volumen CENADA kgs	precio CENADA C./kg	precio CENADA \$/kg
1984	2	38	44.40	130422	4.35	0.10
1984	3	39	44.40	129964	5.00	0.11
1984	4	40	44.40	112286	4.35	0.10
1984	5	41	44.40	201250	5.45	0.12
1984	6	42	44.40	250654	4.35	0.10
1984	7	43	44.40	193706	5.00	0.11
1984	8	44	44.40	192142	5.00	0.11
1984	9	45	44.40	235198	5.00	0.11
1984	10	46	44.40	243156	6.00	0.14
1984	11	47	44.40	156160	5.45	0.12
1984	12	48	44.40	164803	5.00	0.11
1985	1	49	50.45	138506	5.00	0.10
1985	2	50	50.45	155716	5.00	0.10
1985	3	51	50.45	130315	5.00	0.10
1985	4	52	50.45	111593	6.00	0.12
1985	5	53	50.45	169544	7.00	0.14
1985	6	54	50.45	185150	8.00	0.16
1985	7	55	50.45	162069	7.50	0.15
1985	8	56	50.45	155572	7.60	0.15
1985	9	57	50.45	155250	7.60	0.15
1985	10	58	50.45	147872	7.60	0.15
1985	11	59	50.45	163542	7.60	0.15
1985	12	60	50.45	123878	8.70	0.17
1986	1	61	53.45	139994	8.70	0.16
1986	2	62	53.73	107548	11.00	0.20
1986	3	63	54.20	100280	11.00	0.20
1986	4	64	54.50	168870	12.00	0.22
1986	5	65	54.93	143992	12.00	0.22
1986	6	66	55.58	134688	12.00	0.22
1986	7	67	56.00	164358	13.00	0.23
1986	8	68	56.30	156078	13.00	0.23
1986	9	69	56.78	130776	13.00	0.23
1986	10	70	57.20	161138	12.00	0.21
1986	11	71	57.73	186760	12.00	0.21
1986	12	72	58.33	123694	12.00	0.21
1987	1	73	58.80	137664	11.00	0.19
1987	2	74	59.23	146612	11.00	0.19
1987	3	75	59.75	165744	10.00	0.17
1987	4	76	60.33	114448	10.00	0.17
1987	5	77	61.13	187588	10.00	0.16

CASSAVA (Yuca)

año	m	n	tipo	volumen	precio	precio
	e	u	de	CENADA	CENADA	CENADA
	s	m	cambio	kgs	C./kg	\$/kg
1987	6	78	61.88	159206	9.00	0.15
1987	7	79	62.43	171614	9.00	0.14
1987	8	80	63.18	174198	9.00	0.14
1987	9	81	64.10	161654	9.00	0.14
1987	10	82	65.55	153548	8.00	0.12
1987	11	83	66.50	179820	8.00	0.12
1987	12	84	68.00	136942	8.00	0.12
1988	1	85	72.95	144992	8.00	0.11
1988	2	86	73.20	188232	8.00	0.11
1988	3	87	73.50	214124	7.00	0.10
1988	4	88	73.90	228572	7.00	0.09
1988	5	89	74.58	206632	7.00	0.09
1988	6	90	75.28	239108	7.00	0.09
1988	7	91	75.95	280968	7.00	0.09
1988	8	92	76.45	258640	7.00	0.09
1988	9	93	77.08	242037	8.00	0.10
1988	10	94	77.85	165876	8.00	0.10
1988	11	95	78.50	202282	8.00	0.10
1988	12	96	79.00	203630	8.00	0.10
1989	1	97	79.15	188428	8.00	0.10
1989	2	98	79.38	176042	8.00	0.10
1989	3	99	79.68	180688	8.00	0.10
1989	4	100	79.98	178618	8.00	0.10
1989	5	101	80.28	210174	12.00	0.15
1989	6	102	80.58	166750	14.00	0.17
1989	7	103	80.88	183034	14.50	0.18
1989	8	104	81.25	144699	17.00	0.21
1989	9	105	81.70	143511	20.00	0.24
1989	10	106	82.50	154349	20.00	0.24
1989	11	107	83.03	146294	20.00	0.24
1989	12	108	83.55	104440	20.00	0.24
1990	1	109	84.15	163400	25.00	0.30
1990	2	110	84.75	149012	25.00	0.29
1990	3	111	85.48	148408	25.00	0.29
1990	4	112	86.40	138655	25.00	0.29
1990	5	113	87.53	156220	25.00	0.29
1990	6	114	89.10	194604	25.00	0.28
1990	7	115	90.45	185300	28.00	0.31
1990	8	116	92.25	178478	25.00	0.27
1990	9	117	94.28	180090	25.00	0.27

CASSAVA (Yuca)

año	m	n	tipo	volumen	precio	precio
	e	u	de	CENADA	CENADA	CENADA
	s	m	cambio	kgs	C./kg	\$/kg
1990	10	118	96.32	197868	25.00	0.26
1990	11	119	98.95	198278	20.00	0.20
1990	12	120	101.50	195060	20.00	0.20
1991	1	121	105.13	208412	20.00	0.19
1991	2	122	107.27	218046	20.00	0.19
1991	3	123	112.78	215333	20.00	0.18
1991	4	124	116.20	178730	20.00	0.17
1991	5	125	119.05	213878	18.00	0.15
1991	6	126	121.57	183253	18.00	0.15
1991	7	127		202200	18.00	
1991	8	128		218400	15.00	
1991	9	129		226400	15.00	
1991	10	130		230100	15.00	
1991	11	131		234400	15.00	
1991	12	132		147000	15.00	

Annual movement of life cattle at plaza Montecillos  
 number of heads, peso medio kg, precio medio kg

PERIOD 1981-1990

	VACAS			NOVILLOS		
	number	peso medio kg	precio medio kg	number	peso medio kg	precio medio kg
1981	70.97	335.13	10.93	2163	362.10	12.70
1982	52.48	341.47	25.20	2978	399.02	28.20
1983	45.81	354.98	32.36	6276	406.78	36.72
1984	54.59	356.56	31.96	6148	409.02	35.62
1985	78.15	341.46	29.28	6490	384.77	34.32
1986	89.30	325.69	32.76	5539	384.53	37.30
1987	69.19	344.67	46.61	6565	395.16	54.10
1988	56.10	348.81	61.21	5768	407.77	68.55
1989	47.98	348.66	71.01	7348	407.15	79.86
1990	45.91	348.43	78.33	6376	409.77	87.81

Annual movement of life cattle plaza Montecillos  
 number of heads, peso medio, precio medio kg

PERIOD 1981-1990

	TOROS			BUEYES		
	number	peso medio kg	precio medio kg	number	peso medio kg	precio medio kg
1981	8.64	427.45	12.67	817.00	528.78	12.82
1982	9.02	429.83	29.63	634.00	532.43	27.86
1983	20.39	446.43	36.07	628.00	528.30	35.25
1984	16.27	450.40	36.33	678.00	546.76	35.77
1985	15.25	427.47	34.97	947.00	512.05	34.01
1986	11.65	431.36	38.15	1135.00	530.36	38.07
1987	9.47	438.96	53.89	843.00	553.48	52.48
1988	10.97	441.96	68.24	734.00	567.70	67.07
1989	10.99	447.41	79.52	566.00	558.16	77.05
1990	9.27	444.88	89.70	438.00	570.58	86.43

Annual movement of life cattle plaza Montecillos  
 number of heads, peso medio, precio medio kg

PERIOD 1981-1990

	TOTAL		
	number	peso medio kg	precio medio kg
1981	3060	1329	2201
1982	3674	1386	3064
1983	6970	1414	6384
1984	6897	1438	6256
1985	7531	1354	6593
1986	6775	1379	5653
1987	7487	1434	6725
1988	6569	1479	5972
1989	7973	1484	7584
1990	6869	1504	6640

prices paid to the members of Coopemontecillos colonnes per kilo en canal for local consumption in Alajuela, January until August 1992.

month	week	machos	hembras
January	1	220	198
	2	218	196
	3	220	198
	4	221	199
February	1	222	201
	2	225	202
	3	228	205
	4	233	213
March	1	233	215
	2	240	222
	3	244	226
	4	249	231
April	1	249	231
	2	252	234
	3	252	234
	4	254	239
May	1	256	241
	2	260	245
	3	263	248
	4	263	248
June	1	212	194
	2	213	194
	3	211	192
	4	213	194
July	1	213	194
	2	213	194
	3	213	192
	4	213	192
August	1	215	192
	2	215	192
	3	215	192
	4	215	192

GRUPO COSTARICIENSE DE GANADEROS S.A.  
 LIQUIDACION DE LA SUBASTA GANADERA GUAPILES  
 TOTALES POR ANIMAL PRECIOS Y NUMEROS  
 January until August 1992.

LECHERA					
month	week	number	min price	max price	mod price
January	1	6	50.00	89.5	67.92
	2	7	35.00	84.5	67.14
	3	3	50	64.50	57.83
	4	4	48.00	78.00	59.25
February	1	8	57.00	94.00	71.75
	2	14	62.00	112.00	75.79
	3	17	44.00	91.00	65.03
	4	17	49.00	77.00	64.09
March	1	14	35.00	82.00	70.25
	2	13	35.00	84.00	61.42
	3	2	65.00	76.00	70.50
	4	13	35.00	90.50	66.35
April	1	12	49.00	85.50	67.50
	2	7	60.00	101.00	84.71
	3	3	88.00	105.00	96.67
	4	8	65.00	102.50	78.88
May	1	10	66.00	95.00	82.40
	2	10	37.00	94.50	75.05
	3	11	42.00	99.50	74.55
	4	9	50.00	103.00	81.83
June	1	12	58.50	102.00	77.71
	2				
	3				
	4	8	55.00	135.50	82.44
July	1	5	60.00	100.00	81.40
	2	12	75.00	111.00	92.92
	3	12	58.00	117.00	100.92
	4				
August	1				
	2				
	3	12	70.00	178.50	94.25
	4	12	60.00	118.50	87.25

GRUPO COSTARRICENSE DE GANADEROS S.A  
LIQUIDACION DE LA SUBASTA DE 21-8-'92

LECHERA peso en kolos			VACA		
peso min	peso max	promedio	peso min	peso max	precio c/ promedio
500	9999	*****	500	9999	136.33
450	499	86.50	450	499	122.73
400	449	104.25	400	449	124.46
350	399	88.75	350	399	129.30
300	349	83.13	300	349	127.80
250	299	64.50	250	299	129.10
			200	249	135.17
			150	199	120.00

TERNERA			precio c/ promedio
peso min	peso max		
250	9999		156.00
235	249		134.75
220	234		145.00
205	219		123.00
175	189		156.50
160	174		160.00
145	159		130.00
115	129		166.80
100	114		167.00

VAQUILLA			precio/c promedio
peso min	peso max		
500	9999		***
350	399		112.50
300	349		130.63
250	299		128.30
200	249		128.61
150	199		149.33

macho criollo repasto				novillo			
number	min price	max price	mod price	number	min price	max price	
4	50.00	78.50	65.25	14	90.50	117.50	108.50
6	77.00	92.00	84.25	54	90.00	120.50	108.97
15	56.50	110.00	88.73	67	84.50	120.50	106.20
19	45.00	107.00	80.26	61	90.00	120.00	111.74
12	56.50	109.50	89.67	32	100.00	129.00	118.94
20	30.88	114.50	90.34	32	101.00	130.50	112.64
9	64.00	119.00	82.17	33	91.00	128.50	116.15
32	55.00	130.00	97.95	43	99.00	145.00	117.88
16	20.00	139.00	97.63	18	102.50	135.00	117.81
6	63.00	105.00	80.17	52	68.50	138.00	116.68
16	64.00	114.00	90.78	56	90.00	139.00	125.98
25	40.00	138.00	88.40	37	85.00	141.00	116.78
20	84.00	153.00	112.47	75	90.00	147.50	123.87
18	80.00	141.00	105.03	30	108.50	140.50	127.25
13	92.00	142.00	121.58	10	115.00	145.00	128.75
25	68.00	127.00	107.06	65	95.00	151.50	132.04
20	45.45	128.00	94.40	77	101.50	154.00	128.00
8	76.60	126.00	108.25	74	114.50	166.00	137.09
36	62.00	148.00	106.42	42	95.00	141.00	129.12
21	70.00	133.00	102.79	35	92.00	166.00	135.19
6	125.00	161.00	139.33	40	126.00	173.00	143.74



peso en kilo

MACHO CRIOLLO REPASTO

peso min	peso max	precio c/ promedio
500	9999	*****
350	364	122.00
305	319	128.33
290	304	142.50
275	289	130.00
260	274	115.67
245	259	129.00
215	229	109.50
200	214	135.50
170	184	125.00
155	169	144.50
140	154	163.00
125	139	147.00
110	124	197.27
95	109	140.75
20	34	66.66

NOVILLO

peso min	peso max	precio/c promedio
500	9999	***
400	449	148.36
350	399	148.07
300	349	148.55
250	299	166.05
200	249	145.00

REPASTO

peso min	peso max	precio/c promedi
500	9999	****
400	449	157.50
350	349	177.20
250	299	182.12
150	199	192.68
100	149	202.58

TERNERO

peso min	peso max	en kilos	precio c/ promedio
275	9999		148.75
215	229		154.00
185	199		175.67
170	184		184.80
155	148		

MACHOS

peso min	peso max	en kilos	precio c/ promedio
450	499		149.50
400	449		146.25

Cattle population, 1988:

población de ganado bovino por propósito y sexo en la Zona Atlántica.  
Número de cabezas

ganado bovino	carne	leche	doble propósito	total
hembras	118265	30276	38004	186545
machos	60327	3518	13099	76944
sementales	4414	933	1903	7250
vaquillas	2383			2833
total	185389	34727	53006	273121

fuente: Sepsa, Información Básica del Sector Agropecuario, 1989

lechera= milking cow

novillo= castrated bull

ternera= female calf

ternero= male calf

repasto= calf to be fattened

toro= bull

vaca= cow

vaquilla= young cow ready for breeding 1.5-2 years old