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AGRICULTURAL MARKETING IN THE ATLANTIC ZONE OF COSTA RICA

A PRODUCTION, CONSUMPTION AND TRADE STUDY OF AGRICULTURAL COMMODITIES PRODUCED BY SMALL AND MEDIUM-SCALE FARMERS

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Preface

This report was made within the framework of the Research Program on Sustainability in Agriculture (REPOSA, formerly the Atlantic Zone Program), a cooperation between Wageningen Agricultural University (WAU, The Netherlands), the Center for Research and Education in Tropical Agriculture (*Centro Agronómico Tropical de Investigación y Enseñanza* or CATIE, Costa Rica), and the Costa Rican Ministry of Agriculture and Livestock (*Ministerio de Agricultura y Ganadería* or MAG).

The report draws on a wide variety of both quantitative and qualitative information from numerous sources, including field reports prepared by M.Sc level students of the WAU; data (both published and unpublished) supplied by a large number of public and private agencies; and extensive field work among farmers, traders and institutions. The authors gratefully acknowledge all individuals and organizations who generously supplied us with the information required.

The content of the report is the result of a team effort. Hans G.P. Jansen, coordinator of the WAU field team, was responsible for most of the final text and the editing and production of the report. Aad van Tilburg, associate professor of marketing and market research at WAU, took the lead in the methodological design of the study and carries main responsibility for the last two chapters of the report. Besides writing most of chapter II and initiating chapters III, IV and V, John Belt carried out significant field work. Susan Hoekstra carried out field work as well and initiated chapter VII.

We acknowledge the comments of the two other members of the WAU field team (Donatus M. Jansen and Jetse J. Stoorvogel), helpful suggestions of André Niewenhuyse, assistance in data collection of Carlos Aragón, as well as the input of two anonymous referees. We are grateful for the support of the editorial board of CATIE.

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CHAPTER I

INTRODUCTION

1.1 Background of the study

This study was conducted under the auspices of the Research Program on Sustainability in Agriculture (REPOSA)[1], an interdisciplinary research program initiated in 1987 and carried out by Wageningen Agricultural University (WAU, the Netherlands), the Center for Research and Education (*Centro Agronómico Tropical de Investigación y Enseñanza* or CATIE, Costa Rica), and the Costa Rican Ministry of Agriculture and Livestock (*Ministerio de Agricultura y Ganadería* or MAG). Since 1991 the main thrust of REPOSA is the development of an interdisciplinary methodology for the analysis and evaluation of ecologically and economically sustainable land use (AZP, 1992). The methodology, which was developed with data for the northern Atlantic Zone (NAZ), consisting of the province of *Limón* and the eastern part of the province of *Heredia* of Costa Rica, involves generation and testing of alternative scenarios for agricultural and livestock activities (Stoorvogel *et al.*, 1995). The main disciplines present in REPOSA are agronomy, soil science, and economics.

Changing marketing incentives and interventions are potentially important determinants of land use in terms of both cropping patterns and technologies used. Since earlier studies (e.g., Oñoro, 1990; Waaijenberg, 1990; Wielemaker, 1990) concluded that (the lack of) marketing incentives form a principal constraint in the agricultural development of the NAZ, REPOSA decided to embark on a series of marketing studies, each of them investigating a specific marketing issue. The main common aim of these studies was to gather information required for an assessment of market performance. Subsequently, an in-depth marketing research project was committed to draw together the results of the various individual marketing studies in order to provide a comprehensive overview of marketing in the NAZ, as well as to further build on the information generated by the individual marketing studies.

The results of the marketing research project, culminating in the present report, are expected to lead towards a better understanding of the role of marketing within the agricultural development of the NAZ; an increased insight into farmers' behavior towards market constraints and opportunities; and recommendations towards (non-)governmental organizations (some of them partners in REPOSA) regarding the improvement of agricultural marketing within the NAZ. In addition, the results may contribute towards the development and quantitative evaluation of land use scenarios proposing an improved marketing environment for farmers.

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[1]REPOSA is a continuation of the former Atlantic Zone Program (AZP).

1.2 Objective and research questions

The main objective of the marketing research project is to analyze the organization and performance of agricultural markets and marketing channels in the NAZ of Costa Rica, focusing on the main agricultural and livestock commodities produced by small and medium-scale farmers.[2] The principal research questions are formulated as follows:

A. How are the marketing channels for the different agricultural commodities organized? Important aspects include the number of marketing levels the products have to pass from producer to consumer; the presence and functioning of physical markets; the number and type of actors involved in the trading process; and the diversity in final markets and end usage.
B. How strong or weak is the position of farmers within the different marketing channels? This is reflected in the number of available market outlets; issues related to market access; relation between farmers and collecting traders; and relative margins gained in the channel.
C. How efficiently are the existing markets and marketing channels organized? This mainly relates to what extent marketing forms a major constraint in the agricultural development of the NAZ. A related issue is whether there are any significant differences in marketing opportunities between small and medium-size versus large-scale farmers.

The theoretical framework of the project is concentrated around the concepts originating from industrial organization (IO) theory, including structure, conduct and performance (SCP) analysis. Since IO theory focuses primarily on the study of the operation of markets, it forms a relevant starting point for a study which main objective is the investigation of the organization and performance of agricultural markets and marketing channels.

1.3 Organization of the research

The individual marketing studies in the overall research project can be divided into four broad groups. The first group of studies analyzes marketing aspects at the level of the farm,

[2] Classifying farms in a certain region into large, middle and small-scale farms is difficult form both a theoretical and practical point of view. Within the NAZ, an 'average' farm size in one area can be considered a small or large farm in another area. For example, in the *Neguev* area average farm size is about 14 hectares (ha) whereas in the *Río Jiménez* area it is almost 50 ha (Portier, 1994). In this study a pragmatic approach is followed: in the NAZ some commodities are predominantly produced by plantation agriculture, whereas others are typically produced by individual farmers. While the former is considered here as large-scale agriculture, the latter comprise small and medium-size agriculture. Large-scale agriculture is largely synonymous with banana, ornamental plants and, partially, palm heart. Small- and medium-scale farms mainly produce root and tuber crops, plantain, palm heart, fruits and cattle. This study focuses on marketing processes of commodities produced by small and medium-scale farmers.

addressing topics such as the availability and accessibility of market outlets; the realization of market transactions involving the interaction between individual farmers and traders; farmers' perceptions of marketing problems; and farmers' perceptions regarding ways to improve their marketing environment. The main study addressing these topics (particularly for the *Neguev* and *Rio Jiménez* areas) is Portier (1994). In addition, Belt conducted unpublished research in the *Cocorí* area and investigated the presence and functioning of farmers' organizations.

The trade level is addressed mainly by Logtestijn (1993). Most of the research focused on the way in which agricultural commodities produced in the NAZ reach domestic consumers; which type of actors are involved in this process; and under which conditions transactions are conducted (including the functioning of physical markets).

Exports of agricultural commodities produced in the NAZ are studied by Hoekstra (1993). Besides the organization of production, processing and trade, attention is given to supply and demand developments in world markets.

Two studies (Geurts, 1994; Kreijns, 1993) address food consumption at the national level. The principal source of information is formed by data from an extended survey organized by the Costa Rican government in 1987-88 (DGEC, 1987).

The principal research methods applied in the these individual studies include literature review; analysis of relevant secondary data obtained from both published and unpublished reports; consultation of key informants; and collection of field data. Key informants include farmers, traders, exporters and officials active in governmental and non-governmental institutions. Primary data regarding the farmer, trader and export level are collected through surveys, through either open-ended interviews or structured questionnaires.

1.4 Structure of the report

In accordance with the individual studies which form the basis for this report, the latter is structured around production, consumption, national trade, and export.

The report consists of nine chapters. Chapter two discusses some theoretical concepts regarding the operation of markets and marketing channels, including an application of these concepts in the marketing research project.

The third chapter provides some background information on Costa Rica and the NAZ, including a brief description of the research area and pilot study areas of REPOSA.

Chapter four discusses the first stage in the marketing process, i.e., the production or farm level. For both crop cultivation and cattle farming some national production statistics are presented with explicit emphasis on the commodities selected for this marketing project. This is followed by a discussion of a number of marketing aspects at the farm level, including market behavior of farmers, market outlets available to farmers, and the negotiation process between farmers and traders.

The fifth chapter deals with national trade. The different trade levels, and their corresponding actors, are introduced. Physical markets, such as the nation's main wholesale

market *CENADA* and the *Subasta* cattle auctions, are described. Some price and supply statistics of commodities important for this study are presented.

Chapter six focuses on consumption aspects at the national level. Data are presented on per capita consumption levels, and demand elasticities are given for selected food products.

The seventh chapter discusses the export level. The international markets for some of the commodities under study are described. Production, consumption and price data regarding these markets are introduced. Organizational aspects of the export business receive explicit attention while some successes as well as some of the pitfalls of the sector are addressed.

Chapter eight brings together the production, national trade, consumption and export level. At first, market performance at different levels is assessed, together with an analysis of the functioning of the relevant markets at each level. This is followed by an analysis of the performance of the four typical marketing channels operative in the NAZ, i.e., the domestic food marketing channel, the food export marketing channel, the integrated transnational production and marketing organization, and the cattle marketing channel.

The final chapter, besides summarizing the previous chapters, draws the main conclusions of the marketing research project. In addition, some recommendations are given for (non-) governmental organizations on possible ways to improve the operation of agricultural markets and marketing channels, in order to facilitate agricultural development in the NAZ of Costa Rica.

CHAPTER II

ANALYTICAL CONCEPTS IN MARKETING RESEARCH

2.1 Introduction

In this chapter some theoretical considerations related to the functioning of markets and marketing channels are addressed. First, some introductory remarks are made regarding the domain of the marketing discipline (section 2.2). Subsequently, approaches to study the operation of markets are discussed (section 2.3). The IO theory is introduced and the concepts of market structure, conduct and performance are explained. Section 2.4 addresses the organizational and performance aspects of marketing channels. The final section discusses the application of the described theoretical concepts within this study. Thus, this chapter constitutes the theoretical base for analyzing agricultural markets in the subsequent chapters.

2.2 Concepts of marketing, markets and marketing channels

Marketing can be defined as a social process by which individuals and groups obtain what they need and want through creating and exchanging products and values with others (Kotler, 1988; Meulenberg, 1986). Central focus of the marketing discipline is the exchange of goods and services (Houston and Gassenheimer, 1987). Marketing includes those activities which are directed to promote, facilitate and stimulate these exchange processes (Koster, 1992). Often, these activities are divided into four components or marketing mix elements, i.e., product, place, price and promotion. Marketing management, referring to decision making on these marketing mix elements, is defined as the analysis, planning, implementation and control of ways to create, build and maintain beneficial exchanges and relationships with target markets for the purpose of organizational objectives (Kotler, 1988).

A market can be regarded as a physical or imaginary place were one or more buyers meet one or more sellers with the ultimate purpose to exchange goods or services. Often, the exchange process takes place in a sequence of transactions; for example, an agricultural commodity is produced by a farmer, sold to a rural trader, handled by wholesalers, transferred to retailers and consumed by urban consumers. This flow of produce from the production to the consumption level is generally referred to as a marketing channel. The marketing channel overcomes the critical time, place and possession gaps between the producers and final consumers of products and services. Hence, a marketing channel can be seen as a vertical chain in which goods flow from the producer to the consumer (Tilburg, 1992).

2.3 Analyzing the operation of markets

Traditionally, the operation of markets has primarily been studied from an economic perspective, i.e., the use (or allocation) of scarce resources. Within the economic discipline, welfare economists specialize in studying the relation between the outcomes of markets and societal objectives (or social desirability). Theoretically, an optimal welfare situation is achieved when markets are perfectly competitive. This result follows directly from the fact that under perfect competition firms produce at the lowest average cost level which assures that allocative resource efficiency is accomplished (Atkinson and Stiglitz, 1980; Boadway and Bruce, 1984; Henderson and Quandt, 1980). Markets of perfect (or pure) competition are characterized by production of one homogeneous good; a large number of buyers and sellers, rendering individual transactions small in relation to the total transaction volume; all actors possessing perfect information about the functioning and outcomes of the market (i.e., market transparency); and free (i.e., costless) entry and exit from the market (Henderson and Quandt, 1980).[3]

Since perfect competitive markets generate optimal welfare, it logically follows that society should aim at preventing situations in which imperfect competition prevails.[4] In practice, however, it turns out that the conditions of pure competition can never be fully met, with as a direct result that in the real world imperfect rather than perfect markets prevail. For example, the condition of perfect information for all actors is hardly ever met in reality. Moreover, markets usually offer differentiated products; typically barriers to entry exist for potential entrants; and the number of buyers and/or sellers is usually limited.

Alternative approaches to the perfect competition model were developed to study to what extent imperfect markets actually frustrate optimal social welfare. In this way it was attempted to draw realistic criteria to assess market performance. Most of these approaches are linked to the IO theory, which broad objective is the analysis of the organization and performance of markets and industries (Marion and Mueller, 1988).

A useful starting point for the analysis imperfect markets is to distinguish structure, conduct and performance (SCP) elements of a market. Market structure includes the organizational characteristics of a market which strategically influence the nature of

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[3] From a marketing perspective a situation of pure competition implies that there is neither room nor a need to perform a marketing management strategy related to product, place, price and promotion variables. A producer operating in a perfectly competitive market offers a homogeneous product, has no alternative outlets, is a price taker, and has no advantages conducting a promotion policy. The absence of product differentiation and the limited market power of the producer make that it is not rational to develop a marketing management strategy. Such a situation is commonly referred to as 'limited-marketing'. On the other hand, the 'complete marketer' situation refers to a differentiated product market where one or more buyers or sellers possess significant market power. In that case there are ample possibilities to formulate a marketing strategy related to product, place, price and promotion (Meulenberg, 1986).

[4] However, perfectly discriminating monopoly and bilateral monopoly constitute exceptions. Whereas in pure competition both seller and buyer absorb welfare gains, in a perfectly discriminating monopolistic situation all gains are absorbed by the (single) seller. Even though the distribution of welfare is unequal, total welfare gain remains the same and therefore there is no difference with the situation of pure competition. The same holds true for a bilateral monopoly where welfare gains may be distributed differently between the monopolist (the only seller) and the monopsonist (the only buyer), though total welfare is not affected. Such situations can be repeated in other imperfect competitive markets where sellers and buyers jointly maximize profit (Tilburg 1992, quoting Henderson and Quandt, 1980).

competition and pricing within the market (Bain, 1968). The principal market structure dimensions include the degree of seller and buyer concentration; the degree of vertical integration; the degree of product differentiation; and the conditions of access to the market (Hill and Ingersent, 1982).

Market conduct describes the patterns of behavior which enterprises follow in adapting or adjusting to the markets in which they buy or sell (Bain, 1968). Elements of market conduct include the methods employed by a market actor or group of actors in determining prices and production; policies related to the design and quality of products (research and development incentives); sales promotion policies; coordination or adaptation of price, product and sales promotion policies between competitors; take-over and merger strategies; and predatory or exclusionary tactics against either established rivals or potential entrants (Hill and Ingersent, 1982).

Finally, market performance describes the economic results realized by the actors operative in the market (Clodius and Mueller, 1961). Market performance incorporates the following aspects: production efficiency (minimum unit cost level); technological progress (related to opportunities for innovations); product suitability (consumer satisfaction related to existing product qualities); rate of profit (as related to risk); level of production (in relation to prices); exchange efficiency (transaction costs, costs of price formation); costs of sales promotion; and pricing efficiency (i.e., reactions on change in demand and supply conditions) (Hill and Ingersent, 1982).

The fundamental causality in SCP runs from market structure, through interference of market conduct, to market performance. For example, when a market has a severely limited number of sellers (market structure), sellers may cooperate (conduct) to hinder potential competitors to enter the market in order to sustain high profits (performance). Empirical SCP studies (e.g., Marion *et al.*, 1979; Mueller and Hamm, 1974; Weiss, 1974) generally focus on the existence of positive relations between price or profit level (performance elements) and seller concentration (a market structure element).[5] The underlying concept is that prices and profits are expected to be higher in less competitive situations which are reflected in a relatively small number of buyers or sellers in a market (Colman and Young, 1989). The majority of the empirical SCP studies point towards a significant positive relationship between seller concentration and profit level (Weiss, 1974).[6]

IO theorists introduced the term 'workable competition' to characterize markets which seem to diverge not 'too far' from the theoretical conditions required for perfect competition. A situation of 'workable competition' is defined as a market situation in which the numbers of buyers and sellers are large enough to provide exchange alternatives; none of the market actors possesses sufficient power to be able to coerce effectively towards rivals; actors are responsive

[5] For an overview of empirical SCP research see Hill and Ingersent (1982); Marion and Sporleder (1976); Marion and Mueller (1988); and Scherer (1980).

[6] The positive relationship between seller concentration and profit level may either be the result of higher prices or of lower costs (Marion *et al.*, 1979). Obviously, the welfare implications of both situations differ considerably.

to incentives of profits and losses; no agreement exists on commercial policy among rivals; there exists free market entry; and no substantial preferential treatment of any particular actor exists (Kohls and Uhl, 1985). Thus, 'workable competition' is defined in a rather ambiguous way, rendering it a highly subjective standard. The fact that subjective principles enter the analysis upon leaving the theoretical model of pure competition is a problem in most marketing research. As a result, most of the criticism on IO-related studies focuses especially on the subjective and ambiguous nature of the concepts used to analyze imperfect markets (e.g., Bateman, 1976; Harriss, 1982; Maunder, 1970). On the other hand, viable alternatives to the IO theory for studying imperfect markets have not (yet) been developed.

The notion of market contestability was introduced to stress the importance of entry and exit conditions for the functioning of markets. A perfectly contestable market is defined as a market where entry is completely free and costless; and where entrants and incumbents compete on completely symmetric terms (Baumol *et al.*, 1988). The mere threat of entry by potential competitors is supposed to be sufficient to prevent existing suppliers from offering products under extremely imperfect competitive situations which might have led to raising prices and profits above 'normal' levels. Entry barriers may include first arrivals advantages, sunk costs (i.e., investments which no longer have a value after leaving the market), technological advantages, and brand loyalty (Tilburg, 1992).

IO studies generally not only assess the operation of a market but also address the question of how poor market performance can be improved. Such improvements can be by actors inside the market (i.e., buyers and sellers) or outside the market (i.e., policy makers). Examples of government intervention aimed at improving market performance include the introduction of policies aimed at removing entry barriers; prohibiting collusion; restricting firm size; and stimulating cooperation. Alternatively, the government may intervene directly by acting as a buyer and seller in a market.

2.4 Analyzing the operation of marketing channels

Besides the functioning of a single market, the performance of a sequence of related markets (called a marketing channel) is of importance. The central question in marketing channel research is whether the 'customers' of a marketing channel are served properly at a fair price. 'Customers' can either be producers offering a commodity; middlemen operating as intermediaries between supply and demand; or final consumers.

The services that a marketing channel should provide to its customers can be classified as exchange, physical and facilitating functions (Kohls and Uhl, 1985). The exchange function consists of the realization of the buying and selling process leading to a transaction. As such, it includes the negotiation process on the terms of trade (i.e., price). Physical functions include storage, transportation and processing of the products involved. Facilitating functions include standardization, financing, risk-bearing, market intelligence (i.e., collection and dissemination of market information), and promotion (Kohls and Downey, 1972; Kohls and

Uhl, 1985). Actors operating in the marketing channel perform one or more of these functions. For example, a middleman might transport an agricultural commodity from rural to urban areas, store the product (physical functions), divide the lot over different quality classes (facilitating function), and sell the product in a consumer market (exchange function). Actors may specialize in one or more of these functions realized in the marketing channel.

The organization of a marketing channel depends mainly on the characteristics of the product handled (including perishability, bulkiness, and processing requirements); location of production and consumption areas; differences in consumers' preferences and buying power (i.e., market segmentation); and activities performed by the channel members, i.e., specialization of members in certain functions (Stern and El-Ansary, 1988). A leading organization in the channel may coordinate some aspects of the marketing process within the channel; examples include enforcement of standardization of the product offered; joint promotion efforts; or a common selling price for different final markets (Stern and El-Ansary, 1988). On the other hand, an individual market operating at a certain level within the channel might be eliminated and replaced by an intra-organizational transaction. An example of the latter is an agro-industry deciding to surpass intermediaries and wholesale markets, instead starting to buy food commodities directly from farmers. This process is commonly referred to as vertical integration (Williamson, 1975).

The analysis of the organization and performance of marketing channels is similar to the study of the functioning of individual markets. Generally, the performance of a marketing channel is analyzed by looking at the channel's effectiveness, productivity, equity and profitability (Stern and El-Ansary, 1988). Effectiveness reflects the extent to which the channel is realizing the customers' demand for service outputs. A service output is defined as an adequate way of acquiring a desired commodity, e.g., by minimizing waiting and delivery time; offering a variety in product qualities; or offering diversity in package sizes. The level of service output of a channel is directly related to the costs attached to realizing that service level. The productivity measure judges whether the resources utilized in the channel are indeed used in an efficient way. The equity variable measures the extent to which problem-ridden market segments are served. Examples of such segments may include consumers with relatively low incomes, farmers in remote areas, and small-scale processors. Finally, the profitability measure reflects the profit levels realized by the different actors operating at various levels of the channel (Stern and El-Ansary, 1988).

Whereas SCP analysis links profit levels to organizational aspects (i.e., structure and conduct) of individual markets, a good starting point to study the performance of marketing channels would be to assess whether or not excessive net profits are realized at certain levels in the channel. Excessive net profits are realized when gross margins (measured by assessing price levels at the various stages in the channel) significantly exceed transaction costs, the latter including transportation and storage charges, taxes, risk compensation, etc. Excessive net profits can be regarded as an indication of strong market power and limited competition, in this case at a specific level in the channel. For this study, however, the quantitative data necessary for an accurate assessment of net profits by stage for each marketing channel was not

available. As a consequence, a more qualitative approach was used which is discussed in the next section.

2.5 Application of theoretical concepts in this study

The main focus of this marketing research project is the analysis of the organization and performance of agricultural markets and marketing channels that are relevant for the smallholder sector in the NAZ of Costa Rica. For each of the levels of production, consumption, domestic trade, and export, a SCP analysis is conducted for the different markets identified. The concepts of workable competition and market contestability are explicitly included in the analysis.

Since information on several of the required variables is often difficult, or even impossible, to acquire, conducting a full-fledged SCP analysis was not always feasible. For example, for many of the variables related to market conduct no clear indicators were available which could guide the collection of field data. Moreover, several variables needed for a full SCP analysis require information which is often regarded confidential and therefore not easily obtained. For example, traders are usually are not eager to provide reliable information on profits, pricing strategies, coordination policies, or strategies aimed at exclusion of potential competitors.

Besides the performance of the different markets in operation at each of the levels of production, consumption, domestic trade and export, the performance of complete marketing channels is analyzed. For this purpose, a number of 'typical' marketing channels in the NAZ are identified. The performance of each of these marketing channel types is assessed in terms of their effectiveness, efficiency (i.e., productivity), equity and profitability.

CHAPTER III

COSTA RICA AND ITS ATLANTIC ZONE

3.1 Introduction

This chapter presents some background information on Costa Rica and its NAZ. Some basic economic indicators of the country are discussed and a number of agricultural policy issues are addressed (section 3.2). In addition, the main characteristics of the NAZ area are summarized (3.3). The research area and the selected pilot study areas of REPOSA are introduced briefly (3.4).

3.2 Some national economic indicators and policy issues

Classified as a middle-income country by the World Bank (1994) on the basis of its average annual per capita income of 1,960 US dollars (US $) in 1992, Costa Rica scores favorably on such indicators (1993 data) as literacy rate (93 percent); life expectance at birth (76 years); population growth (2.2 percent per year); and unemployment rate (4.1 percent) (INICEM-Market Data, 1994).[7] In addition, Costa Rica has a long democratic history and no armed forces.

In 1992, Costa Rica's Gross Domestic Product (GDP) reached 6.7 billion US $, 15 percent of which was realized in the agricultural sector. In the same year, total export revenues amounted to about 1.8 billion US $. Forty-three percent of the exports went to the United States of America (USA), whereas 27 percent went to the European Community (EC) and 13 percent was traded within Central America. Exports mainly consist of agricultural commodities; in recent years the banana fruit became the main export crop (29 percent of total export revenues in 1992), a role historically played by coffee (12 percent in 1992). Other relevant agricultural export commodities include pineapple, meat, ornamental plants, sugar and fish (all contributing less than 5 percent to the 1992 export revenues). In 1993, imports amounted to 2.8 billion US $; of this more than 40 percent came from the USA. Most important import commodities included raw materials for industry (33 percent); consumer goods (28 percent); capital goods (19 percent); fuel (6 percent); transport goods (6 percent); raw materials for agriculture (4 percent); and construction material (3 percent) (INICEM-Market Data, 1994).

As a result of continuing trade balance deficits and increases in international lending, Costa Rica's foreign debt problem became increasingly serious. However, debt restructuring realized in recent years with the main creditors made a start for some improvements in the

[7] For additional basic statistics of Costa Rica, see Appendix I.

country's debt position, resulting in a decrease in public foreign debt from nearly 4 billion US $ (of which about 75 percent is public debt) in the second half of the 1980's, to 3.25 billion dollars in 1994. For 1995, it is forecasted that some 540 million US $ will be needed to service the foreign public debt, equivalent to nearly 20 percent of projected export revenues (unpublished data from the Central Bank of Costa Rica).

During the last decade, the agricultural sector of Costa Rica faced significant changes, mainly as a result of the implementation of the Structural Adjustment Program (SAP) (Lizano, 1990; Lundahl and Pelupessy, 1989; Palmieri, 1990; Ruben and van Oord, 1991; Soto, 1989; Vermeer, 1990). The SAP follows the traditional recipe of the International Monetary Fund (IMF): restructuring debts, limiting public sector expenditures, and promoting market liberalization. In Costa Rica, the SAP resulted in the abolishment of governmental interference with the prices of some basic food commodities; a drop in public expenditures including subsidies and public works; and an alleviation of import restrictions.

For the farming sector, the most dramatic consequence of the SAP was the abolishment of the price support for maize, beans and rice in 1987. Gradually, the national grain marketing board (*Consejo Nacional de Producción* or CNP) decreased its buying activities by lowering prices (see also Chapter V). A significant part of the national production of maize was substituted by low-priced imports, principally from the USA. Particularly the abolishment of the price intervention for maize meant a serious drawback for small-scale farmers (see also Chapter IV). Maize production in Costa Rica decreased from 119,000 metric tons (t) in 1985 to 40,000 t in 1992 (FLACSO, 1995). On the other hand, a commonly heard complaint of farmers is that they lack the required production skills and technologies to produce non-traditional commodities.

The abolishment of price support for food commodities was embedded in a national policy for restructuring Costa Rica's agricultural sector known as Changing Agriculture (*Agricultura de Cambio*; FLACSO, 1992; Lundahl and Pelupessy, 1989; Soto, 1989). Besides the liberalization of markets for crops traditionally cultivated in the country (like maize, rice, coffee etc.), production of non-traditional export crops such as palm heart, roots and tubers, macadamia, and pineapple, was promoted through credit programs, fiscal benefits, and export subsidies. The idea was to off-set the increasing import bill for maize and rice by increasing exports of non-traditional crops, meanwhile alleviating the country's dependence on relatively few traditionally exported commodities. In addition, alternatives had to be generated for farmers who were facing significant decreases in income following the policy changes.

Even though Costa Rica has been much more successful in raising its export revenues than most other Central American countries (export revenues increased from US $ 1 to 1.5 billion between 1980 and 1991; see Appendix II), the balance of payments worsened since market liberalization measures made imports increase even faster (Kaimowitz, 1994). At the same time, the decrease of international coffee prices (from about US$ 2.60/kg in 1988 to less than US$ 1.50/kg in 1992) had a dramatic effect on export revenues (and on the incomes of coffee growers). Between 1988 and 1992, revenues from coffee exports decreased some 50

percent, from US$ 316 million to US$ 160 million (FAO, 1993). However, coffee prices bounced back during 1994.

3.3 The northern Atlantic Zone of Costa Rica

The NAZ of Costa Rica has a humid tropical climate, without dry months and consequently no marked growing seasons . Most agriculturally important areas have an average annual rainfall of between 3,000 and 5,000 mm (Stoorvogel and Eppink, 1995). Average daily temperature is about 25 C (minimum 19.5 C, maximum 30.5 C) with an average relative air humidity of 87 percent (Herrera and Gómez, 1993). Soils in the area are mostly of volcanic origin with relatively high fertility and varying drainage characteristics (AZP, 1992; Soil Survey Staff, 1992).

Administratively, the NAZ is equal to *Limón* province plus the eastern part of *Heredia* province, as well as the planning zone *Huetar Atlántica*, with a total area of some 545,000 hectares (ha) (Fig. 3.1). *Limón* province is divided into six counties, i.e., *Talamanca*, *Limón*, *Matina*, *Siquirres*, *Guácimo* and *Pococí*.[8] The main highway in the region runs from *Guápiles* (coming from the capital *San José*) to the city of *Limón*. *Limón* is Costa Rica's main harbor, handling approximately 70 percent of the nations' imports and exports (MIDEPLAN, 1991). The railway, which once connected *San José* with the harbor, was destroyed during an earthquake in April 1991. Although the region has an ample network of roads, some are in poor condition and badly accessible, especially after periods of heavy rainfall. This is especially true for relatively recently colonized areas that are situated relatively far away from the Zone's main towns. Unpublished data used in Stoorvogel and Eppink (1995) reveal that only 10 percent of the Zone's road network is paved, whereas 15 percent can classified as improved road and 75 percent as unpaved road. Although there are many rivers in the area, most are unfit for transportation purposes. Only in some coastal areas and in the extreme northern part of the Zone part of transportation takes place on rivers and other waterways.

In 1990 total population in the NAZ amounted to about 225 thousand. Population density in the area was 28 inhabitants per square kilometre, compared to the country's average of 63 (INICEM-Market Data, 1994). About 70 percent of the Zone's inhabitants live in rural areas, whereas more than 50 percent of the working force is employed in the farming sector. The unemployment rate for the Zone was estimated to be 5.7 percent in 1990 (MIDEPLAN, 1991).

On the basis of 1984 census data MIDEPLAN (1991) classifies the total rural area of 285 thousand hectares (ha) into the following categories: pasture 37 percent, forest 21 percent, crop cultivation 17 percent, fallow land 14 percent; leaving 11 percent unclassified.

[8] For a listing of districts belonging to these counties, see Appendix III.

Figure 3.1 The northern Atlantic Zone of Costa Rica

Forty-three percent of the farms in the NAZ is smaller than 10 ha while together these farms occupy only 6 percent of the available land. Forty-four percent of the farms consists of 10 to 50 ha, covering 27 percent of the available land. Corresponding figures for farms between 50 and 200 ha are 10 and 27 percent, respectively. Finally, three percent of the farms is larger than 200 ha, covering about 40 percent of the available area. In other words, the majority of the farms (84 percent) are smaller than 50 ha, whereas farms larger than 50 ha (16 percent) possess two-thirds of the available land (MIDEPLAN, 1991).

The NAZ is the major banana production area in the country and responsible for about 97 percent of Costa Rica's banana exports (Barrientos and Páez, 1994). The banana industry is dominated by a few multinational companies (MNCs) which leave some space for national initiatives, yet at the production level only. The banana marketing process (transport, storage, selling at US and EC markets) is largely dominated by the MNCs. The recent quota on Latin American banana imports imposed by the European Community (EC) are likely to have a substantial negative impact on Costa Rica's banana sector and, therefore, on the NAZ. Appendix IV provides some additional information regarding the banana sector.

The NAZ is one of the most recently colonized areas of Costa Rica. Part of the colonization was organized and managed by the Institute for Agricultural Development (*Instituto de Desarrollo Agrario* or *IDA*), the governmental land reform agency. Until recently, the main activity of the *IDA* consisted of redistribution of purchased land to previously selected farmers (or to farmers who *de facto* were already occupying the land), while at the same time providing some technical assistance, credits, and securing infrastructural projects. In this way several settlement schemes were realized in the NAZ. Recently, *IDA*'s activities have been restructured and are now almost completely limited to the regulation of land titling.

The ongoing colonization process during the past decade coincides with the clearing of forest areas, either by individual farmers or by large scale logging operations. To prevent further deforestation, several protected areas were established in the NAZ (e.g., the *Tortuguero* National Park and the Wildlife and Forest Refuge *Barra del Colorado*). These areas are mainly administered and controlled by the National Park Service, a governmental organization.

3.4 The research and pilot study areas of REPOSA

Until 1994 REPOSA worked largely in the NAZ, concentrating its research activities in three pilot areas: *Neguev*, *Río Jiménez* and *Cocorí*. The *Neguev* area constitutes an *IDA* settlement scheme of about 5,000 ha. At this former cattle ranch (*hacienda*) about 300 settlers possess farms each covering between 6 and 18 ha (Oñoro *et al.*, 1990). *Río Jiménez* is an area which was colonized spontaneously by individual farmers, without any interference of the *IDA*. Generally farms in *Río Jiménez* are larger than in the *Neguev*, with relatively more emphasis on cattle holding (Waaijenberg *et al.*, 1990). *Cocorí* is a relatively remote area with poor

access to the main population centres. It is the most recently colonized area. Extraction of wood as well as cattle holding are important economic activities in this area (Wielemaker, 1990) whereas many farmers keep cattle to secure their claim of the land.

From 1994 onwards REPOSA extended its research activities to the province of *Guanacaste* where it is engaged in a validation and application of its land use evaluation methodology which was originally developed for the NAZ.

CHAPTER IV

THE PRODUCTION LEVEL

4.1 Introduction

This chapter addresses marketing at the production or farm level. First, the main crops cultivated by small- and medium-scale farmers in the NAZ of Costa Rica are briefly introduced (section 4.2). Second, some background information is given on the cattle sector in the NAZ (section 4.3). Section 4.4 discusses marketing aspects at the farm level including factors influencing farmers' market behavior; the available market outlets for NAZ farmers; and the importance of each of these outlets for the different commodities under study. The last section is reserved for conclusions.

4.2 Land use and crop production

4.2.1 *Crops included in the study*

Crop cultivation accounts for about 20 percent of agricultural land use in the NAZ (Stoorvogel and Eppink, 1995). This figure includes both plantation agriculture and cultivation by individual farmers. Generally, crops produced by plantations are different from those cultivated by individual farmers. Typical plantation crops include banana (*Musa* cvs), ornamental plants and macadamia (*Macadamia integrifolia*). Since this study focuses on the analysis of the marketing process of the principal commodities produced by small- and medium-scale farmers, crops predominantly produced by plantations are not included in the analysis.

Until 1994, the AZP concentrated its research on the northern area of the NAZ, mainly entailing the counties of *Pococí*, *Guácimo* and *Siquirres*. The principal crops grown by farmers in these counties in 1991 included palm heart (*palmito*, *Bactris gasipaes*), maize (*Zea mays* L.), cassava (*yuca*, *Manihot esculenta*) and winged yam (*ñame*, *Dioscoria alata* L.), each accounting for about 20 percent of total cultivated area (Table 4.1). However, remarkable differences were found between the three counties. Within *Guácimo* county, maize was the main crop followed by cassava. In *Pococí* county the main crops, in decreasing order of importance, included palm heart, winged yam, cassava and maize. In *Siquirres*, on the other hand, maize was the most important crop, followed by palm heart, soursop (*guanábana*, *Annona muricata* L.), cassava and plantain (*plátano*, *Musa pardisiaca* L.).

A marketing survey executed in 1992 in the AZP pilot areas *Neguev* and *Río Jiménez* generated a similar ranking of the crops cultivated (Portier, 1994). Of the total of 59 farmers surveyed 14 farmers, or nearly 25 percent, were cultivating palm heart. Nearly 20

Table 4.1

Land use (ha) in the counties Guácimo, Pococí and Siquirres, 1991.

	County							
Crop	Guácimo	% of total	Pococí	% of total	Siquirres	% of total	Total	% of total
palm heart	81	6	1020	31	124	21	1225	23
pineapple	n.a.	n.a.	n.a.	n.a.	42	7	n.a.	n.a.
maize	501	37	411	12	183	31	1100	21
cassava	386	28	552	17	63	11	1001	19
winged yam	63	5	810	24	8	1	881	17
plantain	85	6	238	7	57	10	380	7
papaya	120	9	97	3	5	1	222	4
soursop	35	3	54	2	73	12	162	3
cush-cush yam	20	1	77	2	5	1	102	2
eddoe	48	3	44	1	20	4	112	2
tannia	33	2	33	1	6	1	72	1
total	1372	100	3336	100	586	100	5294	100

Source: CNP (1992)

percent (11 farmers) were cultivating cassava. Another 20 percent (or 12) of the interviewed farmers was growing maize. However, some areas in the NAZ have a different cultivation pattern. For example, in the coastal areas of the NAZ coconut (*Cocos nucifera* L.) production is an important farming activity, whereas *Talamanca* county is the nation's main plantain growing area.[9]

Other relevant crops in the *Pococí*, *Guácimo* or *Siquirres* areas included papaya (*Carica papaya* L.) and the group of roots and tubers other than cassava, i.e., winged yam, eddoe (*ñampí* or *chamol*, *Colocasia esculenta* var. *antiquorum*), cush-cush yam (*yampi*, *Dioscorea trifada* L.) and tannia (*tiquisque*, *Xanthosoma sagittifolium*). Only limited attention will be given to the marketing of soursop since this fruit is mainly produced by a few large-scale farmers situated in *Siquirres* county for juice processing industries located in the Central

[9]This is confirmed by supply data from the national wholesale market *CENADA* (see Chapter V).

Valley. In the next sub-sections, some important production aspects of each of the different crops under study are addressed.

4.2.2 *Maize*

Dramatic changes occurred in Costa Rica's maize sector after the reorientation of the nation's agricultural policy, induced by the SAP. One of the measures taken to foster market liberalization was a reduction in the maize prices offered by CNP. Farmers reacted by decreasing their maize production. During the 1986-89 period national maize production decreased with 28 percent in volume and 22 percent in area, i.e., cultivation became less intensive as well. For the NAZ the decrease was even more profound. For example, in *Pococí* production volume decreased with 47 percent whereas maize area reduced with 51 percent (Palmieri, 1990). The decline in total maize area in Costa Rica continued after 1989, from 49,300 ha in 1990 to less than 18,000 ha in 1994 (SEPSA, 1995).

For many years maize generated a major and secure source of income for a large number of small-scale farmers. Palmieri (1990) remarks that, in 1989, 67 percent of the Costa Rican maize producers could be classified as small-scale farmers.[10] The main reason for farmers to grow maize was the presence of a secure market outlet offering remunerative prices (Brink, 1988; Palmieri, 1990; Zúniga, 1991).

Although it is still possible to sell to CNP, farmers generally regard the prices offered as too low. Additionally, some farmers state that CNP currently requires too strict quality norms which makes it almost impossible to sell their maize harvest to this institute. Incidentally, some farmers produce maize for the fresh consumption market, instead of selling the dry, mature maize to the CNP.[11] Especially the cantons of *Pococí* and *Guácimo* are important suppliers at the *CENADA* wholesale market (see Chapter V).

Reporting figures for 1991, Table 4.1 ranks maize among the most important crops in the *Pococí*, *Guácimo* and *Siquirres* counties. However, observations in the field show that maize production has decreased rapidly since. The 1992 *Neguev* and *Río Jiménez* survey indicated that 20 percent of the interviewed farmers is cultivating maize. However, this does not give insight in the cultivated area; it is likely that this percentage represents only a relatively marginal production area. In addition, it appears that currently most of the maize is

[10] Fifty-five percent of these small-scale farmers cultivated maize exclusively for home consumption, whereas 45 percent produced either completely or partly for the market (Palmieri, 1990). Brink (1988) found for the *Neguev* area that 9 percent of the maize growers produce only for home consumption, 30 percent for the market and 61 percent both for selling and home consumption. For the *Rio Jiménez* area these percentages were 0, 3 and 90 percent and for the *Cocorí* area 64, 7 and 29 percent, respectively. All figures refer to the time that the *CNP* was still supporting prices.

[11] This considers only the white maize variety. Since the yellow maize variety could be imported cheaply (mainly from the USA), *CNP* required farmers to produce the white maize variety. Some farmers mentioned that it is almost impossible to obtain seeds of the yellow variety.

produced exclusively for home consumption (human or animal consumption) rather than for the market.

4.2.3 *Pineapple*

The total area under pineapple in Costa Rica has increased from 4,700 ha in 1989 to 7,000 ha in 1993, with yields of around 20 t/ha of exportable produce (SEPSA, 1993). Even though no official statistics at the county or district level exist for the NAZ, it is estimated that total pineapple area in the NAZ does not exceed 100 ha (pers. com. with Ing. Marcos Rojas of MAG in *Siquirres*).

4.2.4 *Papaya*

The NAZ of Costa Rica is a climatologically suitable area for papaya cultivation since the crop prefers a hot climate with sufficient rainfall. About eight to ten months after planting, papaya starts to produce fruits. Although it can be productive 15 to 20 years, farmers seldom maintain the plants for more than three years since both quantity and quality of the harvest tend to decrease rapidly and diseases tend to build up.

In 1991, nearly 25,000 t of papaya was produced in Costa Rica, on an area of about 700 ha which has been expanding since (MAG, 1992 b; SEPSA, 1993; SEPSA, 1995). Production in *Limón* province, accounting for some 10 percent of national production, is concentrated in *Guácimo* county.

4.2.5 *Plantain*

In Costa Rica, plantain is mainly produced by small-scale farmers. The *black sigatoka* disease is the major reason behind the sharp decrease in production area during the second half of the 1980's (Flores, 1991; table 4.2).

The NAZ plays an important role in the Costa Rica's plantain sector; probably at least half of the total national plantain area is located in the province of *Limón* (Flores, 1991). Unfortunately, no figures on the regional division of plantain production are available to substantiate this. Instead, as an approximation of production, available figures of market supply at the *CENADA* wholesale market in *Heredia* were used. In 1991, about half of the mature plantain, and nearly 80 percent of the green plantain offered at *CENADA* originated from the NAZ (see table 5.1 in the next chapter).

Table 4.2

Plantain area and production in Costa Rica, 1980-1993

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Area ('000 ha)	10.7	11.9	11.5	10.2	9.1	11.9	n.a.	5.7	n.a.	3.5	4.2	6.8	5.8	8.3
Prod. ('000 t)	n.a.	94.0	90.0	92.8	80.8	78.4	79.8	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	n.a

Source: Flores (1991); SEPSA (1993); SEPSA (1995)

Table 4.3

Cassava area and production in Costa Rica, 1980-93

Year	Area (ha)	Production ('000 t)
1980	1,308	18.1
1981	1,381	19.1
1982	1,586	21.9
1983	2,500	34.5
1984	1,800	24.8
1985	1,050	14.5
1986	1,137	15.7
1987	1,609	22.5
1988	1,778	26.7
1989	2,000	30.0
1990	5,700	85.5
1991	4,804	55.8
1992	3,676	56.5
1993	4,900	73.5

Source: Carmona (1992); CONAYUCA (1990); Hoekstra (1993); SEPSA (1993); SEPSA (1995)

4.2.6 *Roots and tubers*

The main roots and tubers crops cultivated in Costa Rica include cassava, winged yam, tannia, cush-cush yam, and eddoe. Total area under these crops amounted to some 6,500 ha in 1993 (SEPSA, 1993). The *Huetar Norte* region and the NAZ are the main production areas of cassava in the country (Anon., 1991; Carmona, 1992; Lopez *et al.*, 1992). Cassava production shows considerable yearly variation (Table 4.3) while also the regional distribution might change (compare contributions of *Pococí* and *Guácimo* counties in tables 4.4, 4.5 and 4.6). Winged yam is almost exclusively produced in the *Pococí* area. In terms of production area and volume, tannia, cush-cush yam and eddoe are much less important in *Pococí* and *Guácimo* than cassava and yam.

Lopez *et al.* (1992) made an estimation of the area cultivated with roots and tubers in *Pococí* county for 1992. For cassava they estimated a cultivated area of 550 ha (33 percent of the total of 1,660 ha cultivated with roots and tubers), 900 ha for winged yam (54 percent), 75 ha for tannia (5 percent), 35 ha for cush-cush yam (2 percent), and 100 ha for eddoes (6 percent). These figures are remarkably different from those presented in tables 4.4 and 4.5.

Sharp fluctuations in production are a rather common phenomenon in the NAZ for all root and tuber crops. Farmers often mention a cobweb-type process (referring to a 'monkey see, monkey do' mentality): when the price of a particular root or tuber crop is high, people start to cultivate it immediately. This results in a considerable increase in supply and in a drop in prices at harvest time. Since revenues become unsatisfactory, farmers stop cultivating the crop while searching for alternatives. This, in turn, decreases supply and increases prices.

4.2.7 *Palm heart*

Palm heart was relatively recently introduced in Costa Rica; although the adult palm is traditionally grown for its fruit (the *pejibaye*), the harvesting of only the meristem started in the early seventies. Palm heart is a permanent crop; the first harvest is obtained 9 to 12 months after planting. From that time onwards new shoots can be harvested every four months, for an indefinite period of time.

In Costa Rica palm heart production mainly takes place in the *Huetar Norte* region and the NAZ (Haan, 1988; Urpí *et al.*, 1991; Zamora, 1990). Table 4.6 demonstrates that for 1989 both regions had an about equal area of palm heart. Recently, the NAZ has developed as the most important palm heart region with production having more than doubled between 1989 and 1994 (Cardenas, 1995). Within the NAZ, the *Pococí* and *Guácimo* counties are the main production areas. Production area in *Guácimo* increased dramatically between 1986 and 1989. *Siquirres* county possesses only 3 percent of the production area but 16 percent of all palm heart farmers.

In 1994, the four largest producers occupied some 80% of the total palm heart area in the NAZ (Table 4.7). These plantations are usually vertically integrated with the processing industry. The majority of producers (85 percent) cultivates less than five ha.

Palm heart is an interesting crop for small-scale farmers mainly because of its relatively high price. An area of some 5-6 ha can provide a living for one family. As a result, many farmers have planted palm heart, with some of them able to take advantage of credits on favorable terms made available by the government to stimulate the production of non-traditional commodities. However, the increased supply, both from small-farmers and plantations, resulted in decreasing prices. In addition, interest rates of many of the special credits have been adjusted to commercial levels, rendering the relatively high initial investment costs of palm heart a problem for small-scale farmers. However, recently palm heart prices have stabilized again due to growing national and international demand.

Table 4.4

Cassava production in Huetar Norte and the Atlantic Zone, 1990

	area (ha)	%
Huetar Norte		
Grecia	158	3
Guatuso	185	3
Los Chiles	410	7
San Ramón	560	10
Sarapiquí	190	3
San Carlos	2,838	50
Upala	38	1
Sub-Total	4,381	77
Atlantic Zone		
Guácimo	369	6
Limón	52	1
Pococí	771	14
Siquirres	128	2
Sub-Total	1,319	23
Total	5,700	100

Source: CONAYUCA (1990)

Table 4.5

Area and production of roots and tubers in Pococí and Guácimo, 1991

	Pococí	Guácimo	Total
cassava			
area (ha)	299	387	686
production (t)	3,750	4,410	8,160
no. of farmers	235	193	428
winged yam			
area (ha)	548	17	565
production (t)	19,960	340	21,300
no. of farmers	243	8	251
tannia			
area (ha)	29	3	32
production (t)	290	30	320
cush-cush yam			
area (ha)	24	8	32
production (t)	240	80	320
eddoe			
area (ha)	15	15	30
production (t)	120	120	240

Source: CNP (1991)

Table 4.6

Palm heart area in Huetar Norte and Atlantic Zone, 1986, 1989 and 1994

	1986	1989			1994		
	ha	ha	% area CR	no. of prod.	ha	% area CR	no. of prod.
Huetar Norte	347	1012	50	83	2205	57	597
Grecia	25	57	3	13			
San Carlos	0	151	7	7			
Upala	0	186	9	1			
Sarapiqui	322	618	31	62			
Atlantic Zone	247	1007	50	64	1721	43	201
Pococí	234	562	28	30			
Guápiles	210	409	20	7			
Jiménez	2	6	0	3			
La Rita	5	36	2	6			
Cariari	17	21	1	13			
Roxana	0	90	5	1			
Guácimo	1	386	19	9			
Río Jiménez	0	383	19	7			
Pocora	1	3	0	2			
Siquirres	10	57	3	24			
Germania	8	53	3	23			
Bataan	2	4	0	1			
Matina	2	2	0	0			
Carrandi	2	2	0	0			
total Costa Rica	594	2019	100	147	3926		798

Source: Hoekstra (1993, referring to PNP, 1991); Cardenas (1995)

Table 4.7

Palm heart production by parcel size, northern Atlantic Zone, 1994

parcel size	total area (ha)	total area (%)	producers (no)	producers (%)
	357	16	171	85.0
> 5 - 20	193	9	23	11.5
> 20 - 50	111	5	3	1.5
> 50 - 200	360	16	3	1.5
> 200	1200	54	1	0.5
		100	201	100

Source: Cardenas (1995)

Table 4.8

Cattle farms and herd composition in Costa Rica by province, 1991

Province	farms (no)	%	cows (no)	bulls (no)	oxen (no)	total no. of animals	%
San José	10,069	17	110,926	47,151	4,219	162,296	8
Alajuela	13,594	24	346,972	170,752	4,425	522,149	26
Cartago	3,875	7	58,484	9,282	1,900	69,666	4
Heredia	2,064	4	48,657	24,307	470	73,434	3
Guanacaste	7,274	13	316,208	180,938	3,693	500,839	25
Puntarenas	10,306	18	236,366	123,722	3,103	363,191	18
Limón	4,563	8	97,955	44,980	606	143,541	7
Limón	368	< 1	7,522	2,662	77	10,261	< 1
Pococí	1,663	3	38,050	20,095	234	58,379	3
Siquirres	1,087	2	17,711	7,747	126	25,584	1
Talamanca	257	< 1	4,230	1,898	33	6,161	< 1
Matina	402	< 1	5,845	2,335	28	8,208	< 1
Guácimo	786	1	24,597	10,243	108	34,948	2
Total	56,308	100	1,313,523	646,112	19,022	1,978,657	100

Source: MAG (1993)

4.3 Cattle farming

Cattle farms can be classified into three categories according to the type of end products they produce: specialized milk production (dairy farming), specialized meat production, and double purpose (combining milk and meat production). Cattle holding for meat production can be further divided into three stages, i.e., breeding, early growth and fattening. In Costa Rica, specialization in one of the stages is a common phenomenon (Aragón, 1992).

Table 4.8 presents the provincial distribution of Costa Rica's cattle farms and corresponding herd composition. *Alajuela*, *Guanacaste*, *Puntarenas* and *San José* are the country's most important provinces for cattle. *Limón* province possesses less than 10 percent of the national herd size. Likewise, less than 10 percent of the nations' cattle farms are located in the *Limón* province. *Pococí* county is the most important cattle production area within the NAZ, both in terms of herd size and number of farms.

About 40 percent of all the rural areas within the NAZ is covered with pasture. The 1992 *Neguev* and *Río Jiménez* survey revealed that some 65 percent of the interviewed farmers are involved in cattle farming (Portier, 1994).

Table 4.9 segregates the cattle present in *Limón* province towards production purposes. Meat production is the most important cattle activity in the province (about 65 percent of the total animals), followed by double purpose (nearly 20 percent) and milk production (11 percent).

It can be concluded that dairy farming has limited importance in the NAZ. Including double purpose herds, dairy farming in the NAZ is dominated by relatively large-scale farmers who operate at a relatively high level of technology (i.e. mechanized milking; intensive use of animal feed; and regular veterinary controls). Most small-scale farmers in the NAZ sell only limited quantities of milk products; generally these products are marketed locally. In line with its focus on the marketing of the main commodities produced by small- and medium- scale farmers, this study pays only limited attention to the marketing of milk products.

At the national level, the relative importance of cattle farming has somewhat decreased. Meat exports decreased considerably during the past few years, mainly due to a decrease in national herd size (Table 4.10) and stable national consumption. In 1992, with revenues of US $ 41.3 million, meat constituted Costa Rica's fourth most important export commodity (after banana, coffee and pineapple; see INICEM-Market Data, 1994), down from a third place until 1991 (Appendix II).

Table 4.9

Division of the Limón herd by production purpose, 1991 (no. of animals)

	meat	milk	double purpose	calf	oxen	total	%
Limón							
Central	5,244	1,109	3,599	232	77	10,261	7
Pococí	40,617	4,837	11,133	1,558	234	58,379	41
Siquirres	14,459	4,015	6,291	693	126	25,584	18
Talamanca	4,214	601	1,108	205	33	6,161	4
Matina	4,880	1,218	1,820	262	28	8,208	6
Guácimo	24,720	4,567	4,850	703	103	34,948	24
Total	94,134	16,347	26,801	3,653	606	143,541	100
%	66	11	19	3	0	100	
Costa Rica	1,161,794	262,809	350,945	41,152	18,416	835,116	
%	63	14	19	2	1	100	

Source: MAG (1993)

Table 4.10

Herd size, slaughter, domestic consumption and exports, Costa Rica, 1981-1992 (no. of animals)

Year	Herd size	Slaughter	Exports	Domestic consumption
1981	2,013.000	419,627	186,152	233,475
1982	1,959,000	324,926	119,282	205,644
1983	1,998.000	280,728	75,585	205,143
1984	2,079,000	351,039	109,893	241,146
1985	2,079.000	466,303	161,314	304,989
1986	1,962,000	562,138	206,544	355,594
1987	2,141,636	488,556	156,698	331,858
1988	2,190,189	421,082	137,268	283,814
1989	2,055,538	388,250	117,561	270,689
1990	1,962,106	413,049	112,487	300,562
1991	1,868,642	465,324	137,021	328,303
1992	1,660,922	402,633	83,477	319,156

Source: CNP (1993)

4.4 Marketing aspects at the farm level

4.4.1 *Marketing survey conducted in REPOSA pilot study areas*

In order to acquire information on marketing aspects at the level of the individual farm, a survey was conducted among 59 farmers in the AZP pilot study areas *Neguev* and *Rio Jiménez* (Portier, 1994). Additional inquiries were made in the *Cocorí* area, where about 20 farmers were interviewed. A third survey was executed in 1995 in different districts within the *Pococí* and *Guácimo* cantons. All three surveys included questions on a wide range of marketing-related topics including crop choice, prices, market outlets, and influence of market changes. At the same time, respondents were given ample opportunity to bring forward additional marketing aspects not taken into account *a-priori* by researchers. In summarizing the main results of these surveys, first some specific information is given on market behavior of farmers in relation to land use changes, a highly relevant topic for the AZP (section 4.4.2). This is followed by a discussion regarding the available market outlets for farmers (4.4.3) and the importance of each of them for the commodities under study (4.4.4).

4.4.2 *Farmers' market behavior and land use dynamics*

One of the salient characteristics of the survey data relates to the strong dynamism in cultivation patterns in the researched areas; apparently farmers (are willing to) adapt quickly to changing circumstances. For example, in the *Neguev* and *Río Jiménez* areas, more than 80 percent of the total of 59 farmers interviewed changed their production portfolio partially or completely during the last decade. Nearly 40 percent decreased their amount of arable land, either shifting to cattle farming or leaving the land fallow.

Following the remarks made by the sample farmers, a list (not necessarily in order of importance) was made of factors which affect farmers' land use decisions:

A. labor requirements
B. operational or managerial aspects (i.e., complexity of production processes)
C. earlier experience, tradition or personal preference
D. capital requirements (i.e., size of investment, pay-back period)
E. access to credit
F. physical infrastructure (i.e., soil qualities, drainage, accessibility)
G. access to market outlets (i.e., availability of transport, contacts with traders)
H. flexibility in selling (i.e., number of outlets, storability)
I. yield variation (physical returns)
J. variation in output prices (financial returns)
K. on-farm consumption
L. expected profitability

Generally, land use changes occurring in the surveyed area are related to one or more of the above factors. The majority of these influences are marketing-related, i.e., referring to either input (A, D, E) or output markets (G, H, J, L).

Besides the fact that land use decisions are likely to be influenced by several of the above factors simultaneously, there exist interactions between some of the factors. Examples of inter-related factors include capital requirement and accessibility to credit; labor input, management aspects and experience; and expected profitability and price variation.

In the following, each of the factors influential in land use decisions at the farm(ers') level are discussed briefly.

Labor

Labor requirements play a decisive role in agricultural decision making in the NAZ since labor is relatively scarce and therefore expensive. Farmers will only invest in a labor-intensive crop when there is sufficient labor available at their farms, and when expected financial returns are sufficiently high to justify the high labor input. For example, even though pineapple seems a relatively profitable option for farmers in the NAZ, the fact that it requires a high amount of labor input makes that many farmers prefer some other, less labor demanding activity (e.g., cattle farming). Most farmers who are engaged in off-farm activities are working alone on the farm or have limited opportunities to acquire additional labor (e.g., family members or contract workers), operating their farms in a relatively extensive manner. Indeed, about one third of the 59 farmers surveyed by Portier (1994) had a source of income outside their own farm. The 1995 farm survey shows that more than half of all sample farmers have off-farm income sources. Working off-farm seems to be correlated with the geographical distance to alternative labor possibilities (e.g., banana plantations) and with the relative importance of agriculture in the area.

Management

Some production processes are more complicated than others, and this may influence farmers' land use decisions. For example, the rapid adoption of palm heart in the NAZ was fostered by relatively easy production practices. On the other hand, several farmers stressed that they do not have sufficient knowledge about pineapple cultivation, with particular reference to the strict requirements regarding fertilizer and hormone applications.

Experience

Farmers often refer to earlier experiences (successes or failures regarding a certain commodity) when discussing land use decisions. Personal preferences may play a significant role as well; some farmers dislike to work with palm heart because of its large and sharp spikes. Well-known is the strong preference for cattle farming among immigrants from the *Guanacaste* province where cattle is an integral part of the culture. The relatively recent colonization of the NAZ can be regarded as one of the factors that explains why farmers lack sufficient experience to cultivate certain crops.

Capital

Crops differ in their investment and working capital requirements, as well as in the time span needed before revenues are earned. Farmers need capital to be able to plant a crop. Palm heart seedlings have become increasingly expensive in the NAZ, which increases both the amount of capital needed as well as the pay-back period of investments. In addition, opting for palm heart cultivation limits farmers' possibilities to change crop portfolios. Whereas most root and tuber crops require high investments in labor and chemicals, returns are realized within a year. On the other hand, investments in fruit trees and (though not always) cattle can be regarded as a longer-term commitment.

Credit

Capital constraints can be alleviated by credit. Yet, credit is not always obtained easily, and when available, farmers often judge interest rates as being too high. In the NAZ, both commercial and special (i.e., subsidized) credit is difficult to obtain. Especially for the former, interest rates are high, with real rates (i.e., adjusted for inflation) exceeding 10 percent per annum (Aragón, 1992). In some cases farmers complain about the short duration of special credit facilities. Conversion of the latter into credit on commercial terms can lead to premature, forced sales of, e.g., cattle. The 1995 farm survey indicated that less than 10% of sample farmers use credit.

Infrastructure

Physical infrastructure of the farm concerns such aspects as quality of the soil, drainage, and accessibility of the farm, all of which potentially influence farmers' land use decisions. Some of these constraints may be overcome by the farmer, yet generally only after certain investments (drainage, soil preparation, road improvements etc.) have been made.

Market access

Access to markets regards availability and cost of transport; distance to markets; contacts with buyers; and membership of an organization responsible for selling the crop. Referring to the latter, even though there exist a number of farmer associations which could organize the sales of the harvest to the processing industry, they do not currently play a significant role. Farmers with access to transport are able to market their harvest themselves, whereas other farmers have to wait for a trader to pass by their farm. The latter is more serious a problem in case of a perishable crop such as papaya than for cattle. Farmer who have good, long-lasting contacts with buyers are more assured of a market outlet than those without such contacts.

Referring to the distance to markets, the choice to cultivate an export crop (such as winged yam) depends heavily on the closeness to an exporter. Exporters of roots and tubers are concentrated in the areas around *La Rita* and *Guácimo*. Especially in these areas farmers have relatively easy access to market outlets and are in general better informed on current prices.

Selling flexibility

Selling flexibility depends largely on the perishability of a crop as well as on the number of market outlets. Referring to the former, some crops deteriorate quickly after maturation, leaving little time for the farmer to sell his harvest. For example, fruits and leafy vegetables have to be marketed relatively quickly, whereas most roots and tubers can be stored (either in farmers' fields or in stores). Most farmers mentioned this as an important characteristic of a crop. Many had experience with loosing a harvest following difficulties in finding a buyer at the right moment. Selling flexibility may be an important consideration for farmers to shift from crop cultivation to cattle farming; a cattle farmer has the advantage of not having to sell at a particular point in time.

The number of market outlets reflects the alternatives farmers have in selling their product, thus influencing their market position. For example, cattle can either be sold to rural cattle traders, on the *Subasta*, the *Plaza Montecillos*, or to representatives of meat exporters. On the contrary, the only market outlet of winged yam in the NAZ is formed by the export or *Empacadores* business. For cassava, on the other hand, marketing alternatives include not only *Empacadores* but also the (fresh) national market, creating a greater selling flexibility for farmers.

Yield variation

Yields may vary according to the occurrence of pest and diseases, weeds, changing weather conditions, and levels and quality of inputs. Some crops are more susceptible to diseases and pests or to adverse weather conditions than others. In some cases, risk might be so high that farmers simply refrain from cultivating a particular crop. This occurred in the NAZ with cacao which became susceptible to diseases to such an extent that farmers stopped cultivating it altogether (Nederend, 1990). Currently, it appears that palm heart is in a relative favorable position in that no major pests or disease attack the crop thus far. Farmers' attitude towards the likelihood that certain production risks might occur affects cropping patterns and input decisions.

Price variation

Market prices vary in time, because of changes in supply or demand, seasonal influences, and speculation. Price variability varies across crops. As with production risk, farmers have a certain perception or expectation regarding their market risk (i.e., the output price prevailing at harvest time). Again, farmers may differ in their attitude towards market risk. Some may prefer crops with stable prices leading to modest profits, whereas others are willing to take more risk and opt for crops which have strongly fluctuating, but on the average higher, prices. During the time when the price support system for maize was still in operation, many farmers in the NAZ chose to cultivate this crop because of the existence of a secure, if not particularly profitable, market outlet.

On-farm consumption
Farmers may decide that some consumption needs of the farm household (including both human and animal consumption) can be satisfied from their own production. Thus, even though maize prices are low, some farmers maintain a piece of their land allocated to maize to feed their own family. However, relatively few farmers mentioned the needs of the farm household as a decisive factor in crop choice.

Profitability
Expected profits are a crucial driving force of land use decisions, and changes in expected profitability lead to changes in land use. For example, during recent years farmers have noticed that palm heart prices were such that the crop became highly profitable. Consequently, many started to plant palm heart on fields previously cultivated with fruits or roots or tubers.

4.4.3 *Market outlets available to farmers*

In the NAZ, the following market outlets are available to farmers:

A. rural traders
B. *Feria del Agricultor*
C. farmers' organization
D. CNP (*Consejo Nacional de Producción*)
E. export companies (*Empacadores*)
F. *Subasta* cattle auction
G. *Montecillos* cattle market
H. final consumers

In the next chapter, the trading sector will receive attention and each of the intermediate levels between production and consumption will be discussed. Consequently, each of the above-mentioned markets will be treated separately. In this section, the attention is focused on the perception of farmers regarding the functioning of these markets.

Rural traders
Of all market outlets mentioned above, selling to rural traders is the most important for most farmers in the NAZ. Normally, farmers wait for traders to pass by their farm during harvest time. Only rarely do farmers actively seek contact with a trader in advance. A farmer does not necessarily sell to the same buyer(s) every time; apparently there are no strong, long-lasting relations between producers and traders. In fact, farmers are seldom assured of finding a buyer who is willing to pay a satisfactory price for their products.

Many cases were mentioned referring to traders who promised to buy a quantity of goods for a certain price, but in reality failed to show up at the agreed time and place. In such situations farmers are forced to rapidly identify an alternative buyer, to avoid serious deterioration of the crop. Quite regularly farmers do not succeed since other traders lost interest in the crop as well (reflected in a strong price decline of the product), and the harvest is lost completely.

In other cases, farmers were able to find a trader, agreed on sales price and had their products collected from their fields, but encountered difficulties with receiving (part of) the payment. Since many traders come from outside the NAZ and some change addresses and company names regularly, it is hard to track down unfair traders. One consequence is that farmers hesitate to sell to an unknown trader on credit terms, first seeking additional information from other farmers regarding the trader's reliability.

All survey farmers mentioned that (written) contracts are never used because they are considered rather useless. The reason behind this is that in practice a contract has no legal backing and therefore the agreements laid down in a contract can never be enforced.

Considering the situation sketched above, it is no wonder that farmers expressed serious concerns regarding sales to rural traders. Many stressed that farmers are in a weak position when dealing with a trader, mainly because they are never sure to find another buyer (who might offer a better price). The seriousness of the situation seems directly proportional to the perishability of the product involved.

In conclusion, it appears that in the NAZ farmers need to invest considerable efforts in realizing transactions between farmers and traders.

Feria del Agricultor

Periodic farmers' markets (*Ferias del Agricultor*) were created by MAG to enable farmers to sell directly to consumers in major consumer centers. Nowadays five *Ferias* operate in the NAZ. Through this market outlet farmers are likely to obtain higher prices for their crops compared to the other outlets. However, some pitfalls occur, including the limited number of *Ferias* operative in the Zone; the dominant position of large-scale traders of agricultural products produced in the highlands (potatoes, tomatoes, sweet pepper etc.) that typically fetch higher prices than products from the NAZ; the high (opportunity) costs associated with travelling to and from the *Ferias* which may or may not be sufficiently compensated by higher prices at the *Ferias*; the fact that only staple crops can be sold; and the low quantities and limited product diversity offered by an individual farmer. Nevertheless, the *Feria* forms an interesting alternative market outlet for a number of farmers in the NAZ and their functioning is perceived positively by consumers, due to relatively low prices and good product selection (Portier, 1994).

Farmers' organizations

The level of organization of farmers in the NAZ is generally low. There are only four officially registered small-scale farmer cooperatives operative in the NAZ: one focuses

primarily on plantain, one operates in wood processing and plantain, one in medical plants, and one in palm heart. Although their operation is fairly successful, their actual impact is quite small, compared to other regions in Costa Rica. Cattle farmers are relatively best organized in the *Coope-Montecillos* cooperative which works on a national scale. This cooperative has offices in most regions of the country, serving about 2,000 members. Members sell directly to the cooperative. The cooperative has its own slaughterhouses, one of which is especially orientated towards exportation. Especially the direct access to export slaughtering, which generally gives higher returns for the farmer, is an important advantage of being a member of *Montecillos*. Some of the most frequently mentioned factors responsible for the limited success of other farmer's organizations include bad experiences in the past; the desire of farmers to operate independently (farmers refer to 'taking their fate into their own hands'); and lack of adequate knowledge on how to successfully start and manage a farmer's organization. Sometimes buyers (mainly processing industries) accept only large quantities and in this way force farmers to cooperate. Examples include plantain where the BANDECO company only buys from farmers' associations; and palm heart where the processing industry requires farmers to assemble their harvests jointly. On the other hand, some of these organizations are developing fairly successfully and contacts between the different farmers' organizations are improving. For example, in the palm heart sector, a national network (coordinated by MAG) has been set up which includes several small-scale associations. The network's objective is to stimulate cooperation in palm heart production and marketing and, in the long run, to establish their own processing plant.

CNP

As explained before (sections 3.2 and 4.2.2), the CNP once was an important marketing outlet for farmers in the NAZ. Since the abolishment of the support system, the majority of the farmers stopped selling to CNP which almost completely lost its importance as a marketing body.

Empacadores

The local agricultural export business is known as *Empacadores* (literally: packers). In general, their main activity is the export of root and tuber crops. Similar problems as mentioned for the sale to rural traders seem to exist for this marketing outlet as well. Many farmers referred to cases where *Empacadores* did not fulfill their promises; failed to pay partly or completely for the delivered commodities; or suddenly disappeared, leaving farmers behind who were never paid. Even some of the well-known, larger exporters have a bad reputation among farmers regarding their price negotiation and payment strategies. A typical case consists of a farmer who negotiates a certain price with an *Empacador*, arrives with the harvested crop and hears he has to accept a lower price following changes in international markets. Farmers, who generally do not possess a mode of transport, can do little else than accept the revised conditions. Transport is costly, and there no time to find an alternative buyer who offers a

better deal. Only in times of shortages do the *Empacadores* enter the production areas to collect the harvested produce at the farm.

Another remarkable aspect of the export business is that farmers have to wait until the export transaction is completed (often three months or more) before receiving their money. In this way *Empacadores* operate with working capital which they obtained from farmers, credits over which they do not pay any interest. This situation constitutes a clear indicator that the *Empacadores* have considerably more market power than farmers.

Subasta

In Costa Rica several cattle auctions (*Subastas*) are in operation. Everybody is allowed to sell or buy cattle at these auctions. In general, an auction offers farmers a competitive market place where many (potential) buyers can be found. Although some farmers complain about collusion between the major cattle traders, most farmers agree that the *Subasta* is functioning quite well. Moreover, it is an easily accessible outlet, which serves as a viable alternative to selling at the farm-gate to cattle traders. Many farmers expressed that they prefer to sell directly at the cattle auction and not to a trader since they expect to receive higher prices at the *Subasta* (which more than justify transport costs). Only when the number of cattle a farmer has to sell is small do transport costs to the *Subasta* outweigh the higher prices received.

Some market participants at the *Guápiles* auction commented that their cattle suffers considerably while waiting an entire day in the corral without any protection, feeding or water. Adding to this the transportation to the *Subasta*, animals may loose up to ten percent of their weight before the actual auction takes place. The result is a lower yield for the sellers, especially when their cattle is traded at the end of the day. On the other hand, prices per kg are often higher at the end of the day than in the morning.

Plaza Montecillos

Although it has the same name as the cooperative and is located next to its processing plant, the *Plaza Montecillos* (Montecillos market place) has practically nothing to do with the cooperative. The market does not operate as an auction system; rather, buyers and sellers engage in individual negotiations. Since the *Plaza Montecillos* is situated relatively far away from the NAZ, relatively few of the Zone's cattle farmers sell directly in this market. Most of them expect no higher prices at the *Plaza Montecillos* than at the *Subasta*, whereas transportation costs for the latter are much lower.

Final consumers

Final consumption refers to either on-farm consumption or sales to local consumers or retailers. When looking at the importance of the region as a whole, it can be concluded that direct sales to consumers are not very common. Most farmers in the NAZ orientate their production to the national or international market.

4.4.4 *Market outlets by commodity*

The importance of the various market outlets differs between commodity. The following sub-sections discuss, for each of the commodities under study, the most important market outlets for farmers in the NAZ.

Maize
A large part of the maize produced in the NAZ serves subsistence purposes. The relatively small production share which is marketed used to be sold mainly through CNP, with some interference of small-scale rural traders. However, nowadays, the incidental production of maize cobs for fresh consumption is mostly marketed through rural traders. Maize growers included in the *Neguev* and *Río Jiménez* survey indicated rural traders as their only market outlet (Portier, 1994).

Papaya
Normally, papaya is sold to rural traders who pass by the farm. Some of the production is sold on a nearby *Feria de Agricultor*. Only rarely are (small) quantities sold to *Empacadores* for exportation of the fresh fruit (MAG, 1990). In their study of the national papaya sector, MAG (1992 b) concluded that about 40 percent of the papaya farmers sells to intermediaries; 30 percent sells on the *Feria del Agricultor*; and the remaining 30 percent sells directly on the *CENADA*, traditional markets, to agro-industries, or to local consumers. Survey results and field observations indicate that the latter category is of relatively little importance for papaya farmers in the NAZ. Papaya growers in the *Neguev* and *Río Jiménez* survey mentioned that rural traders constitute their only market outlet (Portier, 1994).

Plantain
Plantain is mainly sold to rural traders, some of them coming from Nicaragua with their small lorries to buy plantain for the Managua market. Some farmers supply plantain to BANDECO through a farmers' association. A small number of farmers sells to a nearby *Feria*. Oñoro (1987) mentions that of the 89 sample farmers who grew plantain, 80 percent sold to rural traders, 16 percent sold to BANDECO and to rural traders, while only 4 percent sold at the *Feria*. The marketing survey in *Neguev* and *Río Jiménez* led to a similar result: 86 percent of the plantain growers sold to rural traders and 14 percent to BANDECO (Portier, 1994).

Roots and tubers
Roots and tubers are generally sold to *Empacadores* for export. In addition to these direct sales, most rural traders buy for one or more *Empacadores* as well, i.e., they do not normally trade independently. In tight markets, the *Empacadores* send out people to search for root or tuber crops in farmers' fields. Normally, farmers arrange and pay for the transportation to deliver the crop to the *Empacador*. Little is sold in the national market which is dominated by the cassava growers of the northern part of Costa Rica. Of the cassava growers present in the

Neguev and *Río Jiménez* survey, 40 percent sold directly to an *Empacador* and 60 percent to rural traders (Portier, 1994).

Palm heart

Palm heart is sold either directly to the processing industry, to a rural trader or to *Coopropalmito*, the palm heart cooperative. Both rural traders and *Coopropalmito* sell to the processing industry. *Coopropalmito* arranges joint assembling and transport of harvested palm heart. Furthermore, it establishes contacts with processing industries. Palm heart processors form a crucial step in the export channel. Some individual farmers sell some fresh palm heart at a *Feria*; however, the national market for both fresh and processed palm heart products is limited. Of the palm heart growers interviewed in *Neguev* and *Río Jiménez*, 50 percent sold directly to the processing industry; 29 percent to rural traders; 14 percent to farmers' organizations; and 7 percent in some other way (including *Ferias* and directly to local consumers) (Portier, 1994).

Cattle

Cattle is either sold at the farm gate to a trader, at the *Subasta* cattle auction, or directly to the processing industry (including *Coope-Montecillos*). Some farmers argued that nowadays less cattle is sold to rural traders since many farmers prefer to go to the *Subasta* themselves. However, others still prefer to sell to rural traders arguing that it is a quick way of selling cattle which saves transport costs and offers farmers the opportunity to engage in price negotiations themselves. The *Plaza Montecillos* market is not often used by cattle farmers from the NAZ, since most do not expect transportation costs to be compensated by higher prices. Portier (1994) found that, of cattle farmers present in the *Neguev* and *Río Jiménez* survey, 64 percent sold to rural traders; 16 percent to *Coope-Montecillos*; 11 percent at the *Subasta* auction; and 5 percent sold their cattle in some other way (including directly to meat exporters or to local butchers).

4.5 Summary and conclusions

This chapter discussed marketing aspects at the farm level. In accordance with their importance for small-scale farmers in the NAZ, the following commodities were selected: maize, plantain, papaya, roots and tubers, palm heart and cattle. For each of these commodities, national and regional production data were presented.

In the NAZ, the importance of maize decreased substantially during recent years, mainly because of the abolishment of the price support system. Regarding papaya, the NAZ produces about 30 percent of the national production. About 50 and 25 percent of the national areas of plantain and cassava, respectively, are located in the NAZ. Other important roots and tuber crops include winged yam, tannia, cush-cush yam and eddoe. Palm heart is a relatively new crop in Costa Rica; at least half of the national production area can be found in the NAZ.

Cattle farming is the predominant agricultural activity in the NAZ, though only 10% of the national herd can be found in the NAZ. Most animals are held for meat production or for double purpose. Seen from a regional perspective, dairy farming is a much less important activity.

Factors that affect farmers' land use decisions are many and include labor and other input requirements; experience and preference; capital requirements; access to credit; physical infrastructure; access to market outlets; flexibility in selling; yield variation; price variation; on-farm consumption; and, last but not least, expected profitability. Many of these factors are related to markets for inputs and/or outputs. Land use patterns in the NAZ change quickly; apparently farmers adapt their activities quickly to changing conditions. Hence, the dynamics of land use constitute a salient feature of agriculture in the NAZ.

The main market outlets for farmers include rural traders; the *Feria del Agricultor*; farmers' organizations; the CNP; *Empacadores*; *Subasta* cattle auctions; and the *Montecillos* cattle market. For agricultural crops, rural traders and *Empacadores* constitute the most important market outlets. For cattle, the *Subasta* and rural traders are the main market outlets.

Farmers face several serious problems in marketing their commodities. Many farmers mentioned that it is sometimes difficult to find a buyer who offers a reasonable price; that traders sometimes fail to appear at the agreed time to collect the harvest; that traders and *Empacadores* do not always pay for the commodities delivered; that *Empacadores* sometimes lower price levels unexpectedly; and that farmers have to provide working capital for the *Empacadores*. Although the *Feria* offers a better alternative, it is not always accessible for a farmer given constraints related to time, place and assortment. In general, farmers' organizations seem to operate rather poorly. However, some initiatives in palm heart and plantain have developed rather successfully, not in the last place because of pressures from the buyer (i.e., processing industries or large-scale exporters).

Cattle farmers tend to suffer less from marketing problems typical for crops. In this sense, an important factor is greater sales flexibility; a cattle farmer is not forced to sell at a given moment in time. Papaya pineapple farmers, on the other hand, have to sell their crops within a short time span after harvest, to prevent a complete loss. An additional advantage of cattle marketing is that cattle can be sold at an auction, which constitutes a relatively competitive market outlet.

Application of the elements of SCP to the various types of markets considered gives an indication of their performance. Particularly the farm-gate and *Empacadores* markets are evaluated rather negatively. The problems of finding a trading partner, realizing a transaction and getting paid afterwards, are the most striking shortcomings of these outlets. Compared to these markets, the other outlets seem to function relatively well.

The remaining of this report will discuss the other marketing levels. It is likely that markets at these levels influence the markets existing at the production level and therefore exert some influence on the farmers' marketing problems discussed in this chapter.

CHAPTER V

THE NATIONAL TRADE LEVEL

5.1 Introduction

This chapter discusses aspects of trade at the national level. For the commodities under study, the main suppliers are identified and developments in traded volumes and prices are addressed. In section 5.2. collecting trade by rural traders receives attention. Subsequently, the *Feria del Agricultor* (section 5.3), the CNP (section 5.4), the *Subasta* cattle auction (section 5.5) and the *Plaza Montecillos* (section 5.6) are discussed. The intermediate and consumer markets *Avenida-10* and *Borbón* market are analyzed in section 5.7. The operation of the national wholesale market *CENADA* is described in section 5.8. Information is given on agro-industries (section 5.9) and retailing (section 5.10). The final section presents the main conclusions of this chapter.

5.2 Collecting trade

Traders who buy commodities at the farm gate are generally referred to as rural traders or collecting traders. Besides the clear distinction between cattle and crops, these middlemen do not normally specialize in specific commodities (or group of commodities), nor are their operations limited to a specific area. They normally do not live in the production areas, except for some cattle traders. Most traders do not have an established network of regular suppliers (Logtestijn, 1993).

Rural traders often hesitate to buy a commodity during situations of abundance. Apparently, they dislike to trade in commodities when prices are low, probably expecting that prices will continue to decrease. Instead, in such situations traders who have their own mode of transport tend to concentrate on providing transport services to farmers, thus avoiding price risks. However, when markets are tight, middlemen become very active in searching the scarce commodity, occasionally even offering the farmer assistance with harvesting. Those who are normally only involved in renting out transport may start to trade as well.

Written contracts are hardly used by farmers or traders since it appears to be impossible to enforce the conditions included in the contract. Normally, prices are negotiated at the time the product is available, with payments following immediately after the transaction. However, as discussed earlier, in some cases traders do not show up to collect the harvest, whereas in other cases they fail to pay for it. Since most traders do not live in the production area, farmers find it difficult to trace them.

Rural traders active in the NAZ can be grouped based on a number of different characteristics. For example, some use only their own working capital; some work also for others (e.g., for wholesalers, slaughtering houses, or supermarkets); the scale of activity

(volumes traded) differs; some sell at a consumer market; and some even have their own stores. Many large traders diversify their business towards other activities such as farming, trade in non-agricultural commodities, export-import trading etc. Most individual farmers' perception is that they heavily depend on traders to sell their harvest, whereas middlemen have ample opportunities to obtain the required products from other farmers. Moreover, many traders are not completely dependent on agricultural trade, being engaged in other activities as well. In other words, traders generally have more alternatives than farmers, and therefore are more flexible in changing their product or activity portfolio.

Trade in agricultural commodities in the NAZ can be regarded as a relatively closed sector. People entering the business normally have previous experience within the sector. In addition to often strong family ties, traders generally have a well established network of contacts with other traders, exchanging market information on a regular basis. This makes it difficult for researchers to develop contacts with traders and to discuss the functioning of agricultural trade. Indeed, it turned out to be practically impossible to obtain reliable insider information on the organization of trade, particularly on margins earned. Generally, rural traders tend to respond that gross margins vary between 10 and 20 percent (Logtestijn, 1993), probably a rather conservative estimate of the true margins.

5.3 Feria del Agricultor

To generate possibilities for farmers to sell directly to consumers, MAG created, in the early 1980's, the *Feria del Agricultor*. A *Feria* is a periodic market were only farmers are allowed to sell their products directly to consumers. The underlying idea behind this initiative was the belief that middlemen had too strong a market position *vis-a-vis* farmers, leading to excessive profits. By creating an alternative market outlet, farmers would be able to obtain higher prices by surpassing the intermediate level.

The *Ferias* are administered by local offices of MAG. They regulate the access to the *Feria*, control the sanitation of the market, and often publish the maximum price of the different crops at the entrance of the market place. To sell at a *Feria*, a farmer needs to possess a *carnet*, i.e., an identity card which mentions the crops and quantities that the farmer is allowed to sell. The farmer can obtain this card at the local MAG office at a price equivalent to about three US dollars. A MAG official visits the farm to check whether the crops mentioned by the farmer are indeed present at the farm. During the market day, MAG checks whether farmers selling at the *Feria* have a valid carnet. Farmers present at the market pay a small fee to the administration.[12]

Normally farmers participating in a *Feria* discuss price levels before the beginning of the market. Each week prices realized at the *Feria* are published in newspapers and

[12] The fee depends on the place where the farmer sells his products; e.g., those selling near the entrance pay a higher fee.

broadcasted by radio and television. When supply appears to exceed demand, prices tend to go down drastically at the end of the market day. In such cases the administrators of the *Feria* often organize the collection of the unsold products to be donated to local public institutions.

A *Feria* is organized once a week, normally on a Friday or Saturday. Currently there are about 35 *Ferias* active in the country. In the NAZ there are only five *Ferias* operative, i.e., in *Limón*, in *Siquirres* and recently in *Guápiles*, *Cariari* and *Batán*. About 40 farmers obtained a carnet for the *Siquirres Feria* whereas about 140 farmers have a carnet which allows them to sell at the *Limón Feria* (Logtestijn, 1993).

One fundamental comment regarding the principles of the *Feria del Agricultor* refers to the philosophy to eliminate the role of intermediaries in agricultural marketing. Yet, collecting traders have an important function to perform in the distribution of food from rural to urban areas. The principle that even though one can eliminate traders, one cannot eliminate their functions (Kotler, 1988) is clearly verified in relation with the *Feria* initiative; farmers are not able to perform all (mainly physical) functions normally performed by middlemen. Farmers need to have transport, time and a proper assortment of commodities. However, most farmers do not have their own mode of transport, and hired transport services are relatively expensive. The second constraint refers to farmers' opportunity cost of time. Travelling to and selling at the *Feria* has to compete with activities on or off the farm. Finally, it is only worthwhile to invest time and money to sell at the *Feria* when a minimum quantity of products can be sold. A diversified mix of products is to be preferred above selling one product since consumers prefer to buy several food items at one place.

Considering the above, it is no wonder that besides farmers, professional intermediaries have entered the *Ferias*. Despite the *carnet* system, entry of people who are not strictly farmers appears to be relatively easy. For example, when applying for a *carnet*, traders can pretend to have a farm or, when they indeed have one, they may overestimate the quantities produced. For example, with the cooperation of a neighboring farmer it seems possible to convince the official that certain plots belong to the farm or are rented from a neighboring farmer. Apparently, about 60 percent of those selling at the *Cartago Feria* in the Central Valley (*Valle Central*) are farmers, whereas at the *Limón Feria* this is only 30 percent (Logtestijn, 1993).

How should the presence of traders at the *Ferias* be judged? Creating an alternative outlet for farmers is one part of improving farmers' market power, yet farmers should be able to have access to this outlet. Intermediaries overcome the place (transport), time and assortment constraints of the farmer. As such, they are an inevitable and useful component of the marketing process. Pragmatically, the *Feria* should be an instrument to improve the position of farmers *vis-a-vis* intermediaries rather than to exclude the latter.

An additional aspect regards the relatively strong orientation of the farming sector in the NAZ towards export crops. In general, these crops do not have a strong domestic demand. For example, with the possible exception of cassava, most roots and tubers as well as palm heart are not well-known and are consumed in only limited quantities. This is illustrated by the experience of an association of palm heart growers which wanted to create an alternative

market outlet for their product and started to sell at *Ferias*. This effort turned into a failure since consumers were not familiar with the product.

Given an appropriate selection of products, NAZ farmers may not only sell at *Ferias* in the NAZ but also at other *Ferias* in other parts of the country. Particularly the *Ferias* operating in the Central Valley are quite successful, with many consumers visiting them. Farmers have to make a decision whether to save on transport costs and sell at a *Feria* nearest to their farm, or to opt for the generally higher prices at one of the *Ferias* in the Central Valley. On the other hand, the success of the *Ferias* located in the NAZ depends heavily on the product assortment offered and, therefore, on farmers from other regions of the country who sell crops that, though not produced, are consumed in the NAZ, including potatoes, beans, rice, vegetables, etc.

To conclude, the *Feria* seems a welcome supplement to the existing marketing structure. It provides, either with or without interference of intermediaries, an additional domestic market outlet for farmers. It stimulates the decentralization of the country's marketing process by linking local production and consumption, thereby diminishing transport costs. However, some problems continue to exist, including difficulties for many farmers to get their products to the market; the need to have a well-balanced assortment of products; and the rather ineffective bureaucracy designed to prevent traders to participate at the *Feria*.

5.4 Consejo Nacional de Producción (CNP)

Maize is the only commodity of importance that is produced in the NAZ and for which the government actively interfered in the market. Before 1988, the marketing board CNP which historically had been in charge of setting producer prices for basic grains as well as granting import and export permits, dominated the maize market by buying maize (both yellow maize for livestock feed and white maize for human consumption) at subsidized prices (Lizano, 1994). For 1986, it is estimated that CNP bought nearly 85 percent of all the maize sold by farmers in the NAZ (Brink, 1988). There were many CNP buying centres in the country to which farmers (or middlemen) could sell their maize.

Due to the market liberalization process embedded in the SAP, the government decided that maize prices could no longer be supported. From 1987 onwards, the CNP gradually lowered its guaranteed price and limited the number of opening days of its buying centres. Additionally, it demanded higher quality maize meanwhile intensifying quality control.

Nowadays, CNP still offers farmers an outlet to sell their maize, yet at low prices, requiring high quality maize and only of the white variety, offering services at a limited number of places, and buying only in short time periods. Most CNP's buying centres are now merely used as storage facilities. However, many centres were sold or completely abandoned. As a consequence of the low volumes of maize produced, the trading sector lost its interest in the crop. Although there still exists some trade in maize cobs for fresh consumption, this is

rather marginal compared to other crops and to the maize volumes traded before the introduction of SAP.

5.5 The Subasta cattle auctions

In Costa Rica there exist about 15 operational cattle auctions. One of these *Subastas* is located in *Guápiles* in the NAZ. The *Guápiles* auction is owned by a few large cattle traders and exists since 1987. In other parts of the country, mainly in the traditional cattle areas of Pacific Zone, *Subastas* have a much longer tradition. Animal trade takes place through a bidding process, chaired by a representative of the auction. Normally, one animal is traded at a time. Cattle auctions take place once or twice per week.

Cattle of different age and breed are traded at the *Subastas*. Consequently, the character of the transaction differs; animals are either bought by slaughtering houses to be processed for national consumption or exportation, or by cattle traders who sell to farmers who start breeding or fattening the acquired animals. The negociated price is measured per kg liveweight. Immediately after the price has been determined, the animal is weighed and the total value of the animal is calculated. Both buyer and seller are assigned an individual number through which the transaction is administered. Those wanting to sell at the auction need to inform (at least one day in advance) the administration of the *Subasta* how many and which type of cattle they intend to offer for sale. Rather than a fixed rate per animal, sellers contribute four percent of the transaction price to the administration of the *Subasta*.

Even though the number of actors present at the auction varies, sellers usually outnumber buyers. Some farmers complain about strong ties between large cattle traders. However, even though there do seem to exist certain relations between the well-established cattle traders, the number of buyers usually seems sufficiently large to prevent effective collusion among sellers. Much depends also on the organization of the *Subasta*, especially on the person leading the bidding. By all means, the *Subastas* offer cattle farmers (particularly small ones) a much more competitive environment for selling their animals compared to selling at the farm gate.

In conclusion, the *Subasta* can be considered to be a fairly efficient market place which plays an important role in the marketing process of cattle.

5.6 The Plaza Montecillos

Next to the *Subastas* there exists another market outlet for cattle, i.e., the so-called *Plaza Montecillos* which is located next to the meat processing plant of the *Coope Montecillos* cooperative in *Alajuela*, about 20 kilometres from *San José*. Originally, the *Plaza Montecillos* market started as a market outlet for cattle which did not meet the quality requirements for exportation and therefore could not be sold to *Coope Montecillos*. However, over the years *Plaza Montecillos* has grown into an important market outlet for cattle, horses, poultry, swine

etc. The market, which functions once per week on Monday morning, is not an auction; rather, transactions take place through direct negotiations between seller and buyer. Many traders comment that the *Plaza* sets the standard for prices that prevail during the rest of the week at *Subastas* and slaughterhouses.

The administration requires a fixed entrance fee after which one is free to trade. *Plaza Montecillos* is an open air market; only the (small) part where the trade of swine occurs is covered. The cattle from the NAZ which is traded at the *Plaza Montecillos* is generally offered by cattle traders rather than by individual farmers.

5.7 Avenida-10 and Borbón markets

The *Avenida-10* market is located in downtown *San José*. The market lost most of its importance after the establishment of the *CENADA* market in Heredia (see section 5.8). The character of the market changed from being a pure wholesale market in which rural traders were selling to urban wholesalers, to a more consumer-oriented market. Next to trade in the covered market place, a considerable amount of trading takes place in the street around the market hall.

The *Avenida-10* market is in operation two times a week. Traders pay a fee for the right to trade. No special requirements exist regarding access to the market. The management is limited to purely administrative matters, i.e., there are no activities performed related to the collection of market information. Most traders active at the market have been present for many years and developed strong relations with other sellers as well as with buyers (Logtestijn, 1993).

The *Borbón* market, established about 50 years ago, is a covered market place situated in the centre of *San José*. It is a wholesale as well as a consumer market since both rural traders, wholesalers, retailers and consumers are operating at the market place. It is a permanent market which is in operation every day, even Sundays. Next to the 400-some sales outlets inside, some street retailing is taking place in front of the market hall. The *Borbón* market is privately owned. Market information is not collected in a systematic way. The *Borbón* market is well-known for its wide assortment of products offered. Consequently, it has developed a firm loyalty under a vast group of consumers.

Some rural traders operating in the NAZ use the *Avenida-10* and *Borbón* markets as an outlet for their products. However, the *CENADA* market appears to be far more important in this respect.

5.8 The CENADA wholesale market

5.8.1 *Description of the CENADA*

The *CENADA* (*Centro Nacional de Abastecimiento y Distribución de Alimentos* or National Centre for Storage and Distribution of Food Stuffs) market is located near *Heredia*, about 15 kilometres from the capital *San José*. It is a typical wholesale market which brings together the supply of mainly fruit and vegetables from rural areas and the urban demand of these products. Demand originates mainly from the Central Valley area around the capital *San José*. It is estimated that *CENADA* handles about 60 to 80 percent of all fruits and vegetables consumed in Costa Rica (PIMA, 1992). Commodities traded at *CENADA* are predominantly for the fresh consumption market at the national level. Exporters and processing industries play a minor role of importance at *CENADA*.

The *CENADA* market started to operate in the 1970's. The main reason for its creation was the chaotic situation at the *Avenida-10* market in the centre of *San José*. Quantities traded at this wholesale market were growing faster than the market infrastructure could handle, hindering other activities taking place in the city centre (PIMA, 1990). *CENADA*'s infrastructure is well developed; located in a large area, it includes different market halls which are well accessible, and where wholesalers have their own stores. There are fixed selling areas for the different (types of) products.

At *CENADA*, wholesalers buy from rural traders and sell to retailers. Buyers and sellers pass by in search of the best trading partner. Some rural traders sell outside the market hall, directly from their truck to retailers who pass by.[13] The market is in operation two days a week (either in the early morning or afternoon). Well over one-hundred wholesalers operate at the market while during a given market day there usually appear around 4,000 buyers and sellers; on an average trading day more than one-thousand trucks enter the market place (Logtestijn, 1993).

Market information is gathered, analyzed and published by a special unit within the *CENADA* administration, the so-called *PIMA* (*Programa Integral de Mercadeo Agropecuario*, or Integrated Agricultural Marketing Program). At the entrance to the market, product types, source and quantities are registered. Minimum, maximum and average prices of the last trading day are presented on a billboard near the entrance. In addition to publishing these prices in a monthly bulletin, *PIMA* regularly publishes reports on trends in supply and prices of specific commodities.

Referring to the operation of this market, a first observation regards its accessibility for new entrants (see also section 2.3). *CENADA* officials, traders, farmers and other key informants within the country's marketing sector mentioned that networks between traders are well established at *CENADA*. Often, long lasting relationships exist between a trader

[13] Traders at CENADA pay per hour spent at the market place. The fee is collected while leaving the market place. The price per hour to be paid depends on the capacity of the mode of transport used.

collecting products in rural areas and a wholesaler. Wholesalers tend to be working with a relatively large group of suppliers. Likewise retailers, especially those buying large quantities, tend to buy their products from the same wholesaler(s). These practices constitute a potential barrier for new entrants. Cases in which farmers went to the *CENADA* and failed in selling their products often refer to abundant supply at the market when it is essential to have an established network of potential trading partners. Clearly, for those who are relatively unfamiliar with the market's operation, this is a critical aspect and possibly a problem for traders from the NAZ since the NAZ is a relative newcomer in the market for some fruits (e.g., pineapple, papaya). Consequently, it can be expected that most traders operating in the traditional production regions have been in business relatively long and established firm contacts with buyers in the *CENADA* market. Indeed, several informants mentioned that traders from the traditional agricultural zones dominate the *CENADA* market. Hence, it might be quite difficult for new entrants from the NAZ (either traders or farmers) to compete with these established networks.

Besides the lack of a well established network of buyers purchasing its products, another disadvantage the NAZ faces is the relatively long distance to the *CENADA* as compared to some other traditional production areas such as the provinces of *Alajuela*, *Cartago* and *Heredia*. Consequently, producers from the NAZ have to cope with relatively higher transport costs.

A final observation concerns the key position of *CENADA* in the national distribution of fruits and vegetables. In some cases, this results in the moving around of agricultural commodities in a rather inefficient way. For example, a product collected by rural traders in a certain production area is brought to *CENADA*, sold to a wholesaler and resold to rural retailers. These rural retailers might be operating in the very area were the product originated. This situation has, of course, to do with specialization: rural traders are specialized in collecting large quantities of a certain type of commodity in rural areas, whereas retailers focus on acquiring a heterogenous mix of products to sell to their customers. Since, in Costa Rica, there are no rural agricultural markets where transactions between rural traders and rural retailers can be realized, it is more efficient for both the rural trader and the rural retailer to go directly to the *CENADA* market. Depending on the type and volume of the commodities which can be offered, and the expected savings on transport costs, a decentralized wholesale market might be an interesting option for an agricultural production area such as the NAZ.

In the following, for some of the products included in this study, information on prices and supply, collected at the *CENADA* market, is presented. Table 5.1 presents an overview of the products traded at the *CENADA* market as well as of the relative importance of *Limón* province (i.e., roughly the NAZ) in total supplies in *CENADA*.

5.8.2 *Pineapple*[14]

At *CENADA* three different pineapple qualities are distinguished. The first quality weighs at least 2.43 kilograms whereas the second and third quality weigh between 1.89 and 2.43, and between 1.5 and 1.89 kilograms, respectively (PIMA, 1992). Table 5.2 presents the origin of the pineapple supply to the *CENADA* market for each of the three pineapple classes. *Limón* province plays only a marginal role as supplier of pineapple to the *CENADA* market. This supply is dominated by *Alajuela* province, which provides nearly 90 percent of the total traded volume. Within the NAZ, *Pococí* county appears to be the main production area, responsible of some 65 percent of the total pineapple supply which originates from the NAZ. When analyzing the formation of prices, it can be assumed that the supply from the NAZ to *CENADA* is too marginal to influence price levels. In the following, the presented price and supply data consider only the first quality pineapple since the second and third quality closely follow the market developments of the premium quality. Data obtained from *PIMA* (not included in this report) for the period 1982-92 indicate that there exists a considerable inter-year variation in both supply and prices of pineapple, even though price variation appears to be less profound than variation in supply.

To obtain an idea about the variability of prices within the years reported, the average price per month was calculated. It appears that, for the period investigated, pineapple prices are remarkably higher in the last six months of the year as compared to the first half of the year. Some farmers and government officials link this to the tendency that farmers tend to market the second pineapple harvest during the latter part of the year (Daas, 1993). Since the second growth cycle of pineapple generally has lower yields, production tends to decrease, resulting in corresponding price increases. Others mention the lower harvest volumes of plantations in the second half of the year, and the influence of the Christmas season which have some effect on national markets.

From the above it can be concluded that farmers who harvest pineapple at the end rather than at the beginning of the year may be able to obtain a higher price. This constitutes a valuable piece of information for pineapple farmers in the NAZ. Climatological conditions in the NAZ are such that no strict growing season exists; farmers may therefore be able to adapt the planting date of the fruit, thus obtaining a comparative advantage to farmers in other parts of the country. Next to the planting date, farmers may be able to manipulate other agronomic practices to influence the harvest time, e.g., via appropriate timing of hormone applications.

[14] Perishable crops such as pineapple put high pressure on the trading sector since the crop has to be transported from production to consumption areas as fast as possible, meanwhile being handled with care to prevent high losses. At the production level, farmers have to be sure a trader will actually collect the crop at the agreed time since the crop can not be stored for a long period after harvest.

Table 5.1

Origin of supply at CENADA wholesale market for selected commodities, 1991

commodity	total supply	supply Limón province	
	tons	tons	%
banana	1,972	1,972	100
cassava	2,491	50.0	2
coconut	62	46	74
soursop	51	37	72
papaya	4,353	1,346	31
pineapple I	2,766	44	2
pineapple II	1,665	25	1
pineapple III	809	8	1
plantain (mature)	588	264	45
plantain (green)	3,229	2,508	78
tannia	489	22	5
cush-cush yam	190	3	1
chili	10,828	500	5
passion fruit	248,893	8,950	4
palm heart	717,990	74,900	10
pumpkin (green)	595,630	89,780	15
sweet pepper	1,112,747	5,533	1

Source: PIMA (1992)

Table 5.2

Origin of pineapple supply at CENADA wholesale market, 1991

Province	First Quality		Second Quality		Third Quality	
	tons	%	tons	%	tons	%
San José	24	1	18.	1	3	<1
Alajuela	2,403	87	1,444	87	708	87
Heredia	263	10	171	10	90	11
Puntarenas	33	1	7	0	<1	<1
Limón	44	2	25	1	8	1
Total	2,766	100	1,665	100	809	100

Source: PIMA (1992)

5.8.3 *Papaya*

In 1991 more than 4,350 t of papaya (equivalent to about 20 percent of the national papaya production) were offered at the *CENADA* market. About 30 percent of the total 1991 *CENADA* supply originated from the NAZ (table 5.3), with *Pococí* county as the most important supplier to *CENADA*.

Again from *PIMA* data not included in this study it can be concluded that both papaya supply and prices at *CENADA* vary considerably from year to year. Considering average monthly prices for the 1982-1992 period, it appears that papaya prices are remarkably higher for the month September than for the other months of the year. Similar to pineapple, papaya farmers in the NAZ might adapt their production strategy in an effort to obtain a possible price premium in September.

5.8.4 *Plantain*

Table 5.4 presents the origin of the supply of mature and green plantain to the *CENADA* market. In terms of volume traded, green plantain is far more important than the mature fruit. *Limón* province is the most important supplier of green fruit. It is remarkable that *Alajuela* province plays a marginal role in the green market whereas it provides half of the mature market. Within the NAZ, the predominant production area is *Talamanca*.

Inter-year variation in traded volumes of plantain is considerable, with relatively less price variation. It is remarkable that after 1990 prices increased dramatically, possibly related

to the destruction of infrastructure by the April 1991 earthquake. The average monthly prices reflect a rising price during the year with a price drop in June.

5.8.5 *Roots and tubers*

In terms of quantities traded, cassava is the main root and tuber crop at the *CENADA* market, even though it does not qualify as one of the major crops traded; CENADA handles less than 5 percent of the national cassava production.

Alajuela province dominates the supply of cassava, cush-cush yam and tannia (Table 5.5). The NAZ plays only a marginal role in the supply of these crops.

In general, therefore, the NAZ plays a marginal role in the price formation of roots and tubers at the *CENADA* market. Data not included here indicate a considerable year-to-year fluctuation in supply of roots and tubers to *CENADA*. Referring to prices, periods of price increases are followed by periods of prices decreases which can be considered indicative of a cob-web cycle. Similarly, supply of cush-cush yam appears to fluctuate considerably between years. During the period 1982-1992 there were two major supply increases, i.e., at the beginning of 1985 and at the end of 1990. Prices show a increasing trend since 1990. Prices of cush-cush yam appear relatively higher during the end of the year.

Also supplies of tannia fluctuate considerably between years (data not included). Regarding prices, some indications for the existence of cycles can be found, yet less profound and shorter than for cassava. Prices of tannia are relatively higher during the end of the year.

5.9 Agro-industry

Parts of the harvests of some of the crops studied here, including papaya, pineapple and palm heart, are processed within Costa Rica. Except for a few small-scale, artesanial-type plants, almost all agro-industries are located in the Central Valley, around the capital *San José*. For example, the larger part of the palm heart production is supplied to processing industries in the Valley. These plants produce conserved palm heart, mainly in cans or glass, for both national and international markets (see Chapter VII). Some papaya and pineapple processing occurs as well. Also for meat there exist several processing industries, specialized in supplying either the national or the export market. There are eight large meat processing plants in Costa Rica, four of which concentrate on export markets and four on the national market. Two important slaughter houses (one for export in *Barrance* and one for the national market in *Alajuela*) are owned by the *Coope Montecillos* cooperative. The latter supplies about 50 percent of national beef and 30 percent of national pork consumption (Logtestijn, 1993).

Table 5.3

Origin of papaya supply at CENADA wholesale market, 1991

Province	Quantity	
	tons	%
San José	85	2
Alajuela	1,227	28
Heredia	15	< 1
Guanacaste	86	22
Puntarenas	1,596	37
Limón	1,346	31
Total	4,353	100

Source: PIMA (1992)

Table 5.4

Origin of plantain supply at CENADA wholesale market, 1991

	Mature		Green	
	tons	%	tons	%
San José	2	< 1	36	1
Alajuela	303	52	569	18
Cartago	1	< 1	10	< 1
Heredia	9	2	58	2
Puntarenas	9	1	48	1
Limón	264	45	2,508	78
Total	588	100	3,229	100

Source: PIMA (1992)

Table 5.5

Origin of roots and tubers supply at CENADA wholesale market, 1991

Province	cassava		cush-cush yam		tannia	
	tons	%	tons	%	tons	%
San José	30	1	2	1	8	2
Alajuela	2,375	95	180	95	444	91
Cartago	5	<1	1	<1	3	1
Heredia	25	1	4	2	4	1
Guanacaste	1	<1	1	<1	5	1
Puntarenas	6	<1	-	-	3	1
Limón	50	2	3	1	22	5
Total	2,491	100	190	100	489	100

Source: PIMA (1992)

Agro-industries buy their commodities either from traders or directly via their own representatives. Except to *Coope Montecillos*, NAZ farmers do not normally sell directly to agro-industries.

5.10 Retailing

Retail activities involve the last step in the trading process, i.e., sales to final consumers. There exists a variety of ways in which food is offered to consumers. Besides some big, nationally operating supermarket chains, there exists a variety of independent, local supermarkets, groceries, and small shops (*pulperias*). Especially in the rural areas these small shops are important suppliers of food items. Most of them offer credit to their local clientele. Supermarkets are becoming increasingly important in the urban centers. There exists a tendency among supermarket chains to extend their activities towards lower levels in the marketing chain; some of them are buying their products directly at the farm level, surpassing the stages of intermediate trade.

Many (both rural and urban) retailers obtain their fruit and vegetables through the *CENADA* market. Rural retailers sometimes buy small quantities from farmers or traders who offer their goods directly to them. Occasionally rural retailers buy goods at the *CENADA*

market from farmers who live in the same region; in such a case inefficiencies seem to exist in the supply system.

Most larger and middle-sized towns have a covered market place situated in the centre of town where each retailer has a small shop. Their functioning is similar to the *Borbón* market (section 5.7), except that buyers are normally only consumers (not traders) and that they often offer more than just food items.

The next chapter (section 6.3) provides additional information regarding the importance of the various outlets, seen from the perspective of the consumer.

5.11 Summary and conclusions

This chapter addressed the domestic trade sector. First, the role and operation of rural traders buying agricultural commodities at the farm gate were discussed. These traders generally neither have an established network of suppliers nor are they specialized in specific commodities (apart from either cattle or crops). Compared to farmers, rural traders have considerably larger flexibility in their activities which translates into more market power.

The CNP lost much of its importance after the liberalization of the maize market. This resulted in middlemen losing most of their interest in the crop.

The *Ferias del Agricultor* are a welcome alternative for farmers to sell their products, yet they cannot handle all the functions performed by traders. Despite of the control measures taken, middlemen are active at the *Ferias* even though officially they are forbidden to do so.

The *Subasta* cattle auction offers cattle farmers and traders a relatively efficient way of selling and buying cattle. A more competitive environment exists as compared to transactions which take place at the farm gate. The *Plaza Montecillos* offers an additional alternative for the marketing of cattle.

The *Avenida-10* and *Borbón* markets are relatively old market places located in the centre of *San José*. Their share in the distribution of food stuffs to the Central Valley area has diminished considerably since the establishment of the *CENADA* market in *Heredia*. The *CENADA* market currently handles between 60 and 80 percent of the fruits and vegetables produced in Costa Rica. It appears rather difficult for new entrants to start trading at *CENADA*. Suppliers from the NAZ have to compete with well-established networks of traders from traditional production areas. Additionally, the relatively larger distance of the NAZ to the *CENADA* market compared with some of the traditional production areas, negatively affects the competitiveness of products coming from the NAZ. Occasionally, products are supplied and traded at *CENADA* which return to the areas where they were originally produced. This has to do with the specialization of both rural traders and rural retailers as well as with the fact that there are no rural wholesale markets in Costa Rica.

The NAZ plays a relatively marginal role in *CENADA*'s pineapple trade. Both prices and traded volumes of pineapple were fluctuating considerably during the period from 1982 to

1992. An analysis (not reported) of average monthly prices for this period revealed that the highest prices are obtained during the latter part of the year.

About one third of the papaya traded at *CENADA* originates from the NAZ. Again for the period 1982-1992, both quantities traded and price varied considerably between years. Prices tend to be highest during the month of September.

The NAZ is a major supplier of plantain to the *CENADA* market, providing about half of the mature market and about 80 percent of the green plantain market. Prices of plantain vary considerably from year to year, mainly due to variations in market supplies.

The supply of roots and tubers from the NAZ is rather marginal when compared to other supply areas. A clear cob-web cycle could be observed from the cassava price data. A similar, though less profound, cycle was identified for tannia but not for cush-cush yam.

The last stage in the trading process mainly involves agro-industry and retailing. Most agro-industries are located in the Central Valley. The larger part of the palm heart production is processed whereas papaya and pineapple are processed on a much more limited scale. Meat processing factories play an important role in the cattle trade. They supply both national and international markets.

CHAPTER VI

THE NATIONAL CONSUMPTION LEVEL

6.1 Introduction

This chapter provides a discussion on national consumption of some major food products produced in the NAZ of Costa Rica. Average annual consumption per capita as well as price and income elasticities are described for selected food commodities (section 6.2). A differentiation is made between national and regional data, the latter referring to the NAZ. Some information is given where consumers buy their food (6.3). A summary and the main conclusions of this chapter are presented in section 6.4.

6.2 Consumption aspects of some selected food commodities

With a total area of 51.1 thousand km^2 Costa Rica is a relatively small country with a 1994 population of 3.2 million inhabitants which means that the domestic demand for food is limited. Thus, it is not surprising that the agricultural sector is searching for clients in export markets.

Within the country, the population, and therefore the demand for food commodities, are highly concentrated in the Central Valley area which includes the capital *San José*. In 1991 more than 60 percent of the country's inhabitants lived in this area (MAG, 1992 a). Adding to this, incomes in the Central Valley tend to be considerably higher than in other parts of the country (Geurts, 1994).

6.2.1 *The MAG 1991 survey*

Table 6.1 gives data on consumption levels of the main food commodities within the Costa Rican diet. A distinction is made between the national level and the NAZ. The information was obtained from a food budget survey conducted by MAG in 1991 (MAG, 1992 a) for which more than 10,000 people were interviewed.

Per capita consumption levels of most products cultivated in the NAZ are higher in the NAZ compared to national figures. The differences are substantial, particularly for pineapple and green plantain. Remarkably, also per capita consumption levels of sugar and rice (both not products of the NAZ) significantly exceed the corresponding average national consumption levels.

Table 6.1

Annual food consumption in Costa Rica and the NAZ, 1991

	Costa Rica		NAZ	
Commodity	per capita (kg)	total (t)	per capita (kg)	total (t)
A. fruits				
papaya	5.3	16,353	5.8	1,297
pineapple	9.5	29,210	14.4	3,201
orange	12.4	38,029	11.9	2,639
banana	8.7	26,779	11.3	2,514
plantain mature	17.9	54,735	20.2	4,499
plantain green	6.1	18,727	14.9	3,306
B. vegetables				
onion	5.9	18,182	7.5	1,666
sweet pepper	1.8	5,627	3.0	668
cauliflower	2.2	6,747	2.4	524
cabbage	5.1	15,666	8.3	1,849
tomato	9.6	29,304	11.2	2,486
carrot	5.0	15,175	5.7	1,260
C. roots and tubers				
sweet potato	1.6	4,948	1.2	273
potato	17.1	52,453	14.3	3,190
tannia	1.0	3,085	1.1	255
cassava	5.8	17,801	8.0	1,783
D. other food commodities				
rice	44.0	134,860	60.6	13,492
sugar	31.0	94,861	38.9	8,648
coffee	8.2	25,122	8.7	1,939
beans	19.4	59,415	23.4	5,218
eggs	9.0	27,560	8.7	1,934
milk	56.3	172,450	47.9	10,659
bread				

Source: MAG (1992 a)

6.2.2 *The DGEC 1987-88 survey*

Additional information on consumption was obtained from a survey organized by the Costa Rican government during 12 months in 1987-1988. The survey was conducted by the governmental General Directorate of Statistics and Census (*DGEC, Dirección General de Estadística y Censos*). A total of 3,910 households was interviewed on various aspects regarding consumption, income, education, health, etc. Information was obtained through direct interviews and from diaries. On the average, interviewers visited the households four times within a period of eight days. Substantial efforts were made to record also income in kind, home-produced goods, and goods received free of charge that were consumed in the household (Geurts, 1994).

Following this survey, while about 64 percent of all the households in Costa Rica lived in the Central Valley area, only 9 percent of them lived in the NAZ. Fifty-one percent of the households lived in urban and 49 percent in rural areas. Fifty three percent of the households that were interviewed consisted of one to four members; 30 percent consisted of 5 or 6 members, whereas 15 percent had more than 6 members. The lowest income strata had a higher representation in the rural areas (mainly in the *Brunca, Chorotega* and *Pacífico* provinces), whereas the highest income strata were more represented in the urban areas in the Central Valley. The middle range income strata were relatively well represented in the NAZ. In general, the proportion of total household income spent on food was higher in rural areas than in urban areas. As expected, the highest income stratum spent a much lower proportion of their income on food (about 20 percent) than the lowest income stratum (about 60 percent). No significant differences between the price levels of the various commodities were found between the urban and rural areas. Comparing price levels between the different regions, significant differences were only found for pineapple and cassava which were relatively lower priced in the *Huetar Norte* region (Kreijns, 1993; Geurts, 1994).

The following estimates were obtained for annual per capita consumption: 3.4 kilo papaya; 2.6 pineapples (measured in units); 27.3 green plantain (units); 0.4 kilo tannia; 4.3 kilo cassava and 0.3 kilo eddoe. Given that, on the average, one pineapple weighs 1.5 kilo and one green plantain 0.25 kilo, average annual per capita consumption of pineapple and plantain is 3.9 and 6.8 kg, respectively (Kreijns, 1993). Comparing these figures with those presented in table 6.1 gives some remarkable differences. Compared to the MAG survey, the per capita estimates based on *DGEC* data are 36 percent lower for papaya, 59 percent lower for pineapple, 11 percent higher for plantain, 60 percent higher for tannia and 26 percent lower for cassava. The reason of these differences could not be traced. Consequently, no preference for one data source above the other can be expressed here.

The *DGEC* survey covered household expenses during eight days. During these eight days, plantain was purchased by 35 percent of the interviewed households; papaya was consumed by 17 percent of the households; pineapple by 13 percent of the households; eddoe by 2 percent, tannia by 4 percent and cassava by 26 percent of the households (Kreijns, 1993).

Generally, quantity of a food product consumed rose with income of the interviewed households. Correlation coefficients between income and quantity consumed were positive for all commodities but one, ranging between 0.05 (tannia) and 0.31 (papaya). Only for eddoe was the relationship not statistically significant at the 10 percent level (Kreijns, 1993).

Price variation in a cross-section analysis is limited to variation between regions and seasons within one year. Price differences as a result of variation in quality were not measured in the *DGEC* survey.

In consumption studies often a double logarithmic function is used to measure relationships between price (P) and quantity consumed (Q). The advantage of this type of functions is that price elasticities are directly estimated. Compared to other functional forms including linear, semi-logarithmic and log-inverse, the double logarithmic function performed relatively well (Kreijns, 1993). The results of the regression analysis are presented in table 6.2; all estimated coefficients were significant at the 1 percent level.

Table 6.2

Results of logarithmic regression analysis and estimated price elasticities

product	number of observations	intercept	price elasticity	R^2
plantain	1363	5.45	-0.89	0.33
papaya	633	5.04	-0.75	0.30
pineapple	527	5.01	-0.79	0.28
eddoe	95	5.12	-0.95	0.41
tannia	144	5.08	-0.95	0.42
cassava	144	0.83	-0.83	0.36

Source: Kreijns (1993)

For the different commodities included here, demand appears to react considerably to seasonal price variation. Table 6.2 indicates that all price elasticities are between -0.75 and -0.95 implying that demand is rather sensitive to price. Apparently, the market or the farm offers sufficient possibilities to substitute food items. Note that the number of price data available is small relative to the total number of households in the survey.

Geurts (1994) estimated expenditure elasticities assuming weak separability of the utility function, implying that a multi-stage budget allocation process can be assumed in which total expenditure is first allocated over broad commodity classes, followed by an allocation of the budget for a particular product class over its individual items.

It can be shown that the income elasticity for food item q is

$E(q,I) = E(q,I_f) * E(I_f,I)$

where

E = elasticity
q = quantity of a food item purchased
I = total income or total expenditure
I_f = total expenditure on food

It is well-known that $E(I_f,I) < 1.0$. Geurts (1994) distinguished eight income classes with a food expenditure share of 0.6 for the lowest income stratum and 0.2 for the highest stratum, or 0.4 as average for all income strata (Kreijns, 1993). Assume that $E(I_f,I)$ for an income class can be approximated by its food expenditure share. To estimate total expenditure elasticities for particular food products, all food expenditure elasticities $E(q,I_f)$ estimated by Geurts (1994) should be multiplied by a factor representing the food expenditure share.

As an example, take the expenditure elasticities as estimated by Geurts (1994) for the rich (income above average) and the poor (income below average). The $E(I_f,I)$ is approximated by the food expenditure share. This is 0.3 for the rich part and 0.5 for the poor part of the population. Then, Geurts' food expenditure elasticities can be "translated" into total expenditure elasticities as follows in Table 6.3. From this table it can be concluded that for the rich segment of the Costa Rican society only meat is a luxury product. For the poor segment of society processed fruits and vegetables and roots and tubers, especially cassava, are luxury products.

6.3 Buying places of selected food commodities

In the MAG survey, respondents were also asked where they obtained the different food products they consumed. Table 6.4 gives the percentage distribution of buying places for the main food commodities. A distinction is made between the national level and the NAZ.

At the national level, about 30 percent of the fruit, vegetable and root and tuber commodities, is obtained through the *Feria del Agricultor*. Another 25 to 30 percent is bought at the groceries. The traditional (covered) market places are third in importance with supplying about 15 to 20 percent of the national consumption. However, differences are found between the individual commodities. For example, 37 percent of pineapple consumption is acquired through the *Feria* whereas only 19 percent of the banana consumption is bought there. Auto-consumption is particularly high for some fruits like orange, banana and green plantain, as well as for some roots and tubers, especially tannia and cassava.

Table 6.3

Estimated expenditure elasticities for selected food items

	Food expenditure elasticity		Total expenditure elasticity	
	Rich	Poor	Rich	Poor
Food item				
Maize	1.48	1.51	0.44	0.76
Meat	4.42	-	1.33	-
Dairy				
* not processed	0.80	1.00	0.24	0.50
* processed	1.38	1.87	0.41	0.94
fruits and vegetables				
* not processed	1.13	1.20	0.34	0.60
* processed	2.32	4.51	0.70	2.26
Beans	1.57	1.17	0.47	0.59
Roots and tubers	2.32	3.22	0.70	1.61
* cassava	2.48	3.54	0.74	1.77

Source: adapted from Geurts (1994)

In 1992, with two *Ferias* in the NAZ (*Limón* and *Siquirres*), the importance of the *Feria* in the NAZ was lower than at the national level. Especially for vegetables and roots and tubers, groceries are the main buying place. It is not surprising that, compared to the national level, auto-consumption is higher for those commodities that are commonly produced in the NAZ, such as plantain, papaya, tannia and cassava. In 1993, three additional Ferias were opened in the NAZ, in *Batán*, *Guápiles* and *Cariari*.

Table 6.4

Relative importance of buying places of selected food commodities, national and northern Atlantic Zone

I. National level	buying places[1]						
	feria	trad.	super.	groc.	auto.	other	no ans.
A. fruits							
papaya	36.3	19.9	6.5	22.2	5.6	8.4	1.1
pineapple	37.0	17.9	5.9	22.6	4.5	10.6	1.5
orange	23.9	13.2	5.2	22.0	23.1	11.6	1.0
banana	18.6	12.8	6.0	29.6	16.9	15.1	1.0
plantain mature	26.2	16.5	5.7	30.6	9.6	10.2	1.2
plantain green	24.7	14.9	4.6	25.5	16.4	11.7	2.2
mean	27.8	15.9	5.7	25.4	12.7	11.3	1.3
B. vegetables							
onion	22.8	18.0	9.7	42.2	1.6	4.8	0.9
sweet pepper	28.5	19.2	7.6	31.5	5.2	6.7	1.3
cauliflower	38.4	21.8	11.1	22.1	1.0	5.0	0.6
cabbage	29.3	21.8	7.5	33.1	1.7	5.0	1.6
tomato	26.8	21.2	7.6	36.0	1.8	5.4	1.2
carrot	33.0	22.0	8.3	29.3	1.4	5.3	0.7
mean	29.8	20.7	8.6	32.4	2.1	5.4	1.1
C. roots and tubers							
tannia	27.7	18.8	7.4	25.2	10.7	9.6	0.6
cassava	27.9	17.8	4.4	23.5	13.5	11.2	1.7
sweet potato	31.5	23.8	7.6	28.2	3.3	5.3	0.3
potato	24.9	19.6	8.6	39.2	1.9	4.7	1.1
mean	28.0	20.0	7.0	29.0	7.4	7.7	0.9
rice	0.0	1.3	42.9	50.7	2.4	2.2	0.5

Table 6.4 (contd')

D. other food stuffs

	feria	trad.	super.	groc.	auto.	other	no ans.
sugar	0.0	1.1	43.0	52.3	1.2	1.4	1.0
coffee	0.0	2.0	38.5	54.0	2.1	2.4	1.0
beans	0.3	1.6	38.5	46.5	7.9	4.1	1.1
eggs	9.6	5.4	12.8	49.3	15.4	6.6	0.9
milk	0.0	0.4	23.8	40.0	9.9	23.9	2.0
II. northern Atlantic Zone							
A. fruits							
papaya	34.5	5.0	3.5	36.1	10.4	7.0	3.5
pineapple	32.5	5.2	1.8	41.3	7.0	8.5	3.7
orange	26.9	4.8	2.7	28.3	26.4	9.3	1.6
banana	9.5	2.9	2.9	21.4	26.7	34.1	2.5
plantain mature	17.8	3.7	2.9	37.9	21.0	13.2	3.5
plantain green	19.5	3.9	1.9	27.6	25.9	16.4	4.8
mean	23.5	4.3	2.6	32.1	19.6	14.8	3.3
B. vegetables							
onion	19.0	5.0	6.3	63.5	1.3	2.3	2.6
sweet pepper	26.3	5.3	5.5	52.0	4.1	3.3	3.5
cauliflower	37.2	9.1	9.0	42.7	1.0	1.0	0.0
cabbage	22.9	6.3	3.7	58.9	1.3	2.9	4.0
tomato	23.2	5.5	3.5	59.9	1.4	2.8	3.7
carrot	29.3	4.5	4.8	56.8	1.1	2.3	1.2
mean	26.3	6.0	5.5	55.6	1.7	2.4	2.5
C. roots and tubers							
tannia	21.5	9.0	1.0	45.4	13.1	6.0	4.0
cassava	19.0	5.0	1.4	35.1	23.6	12.0	3.9

Table 6.4 (contd')

	feria	trad.	super.	groc.	auto.	other	no ans.
sweet potato	26.3	9.7	6.5	50.2	3.3	3.3	0.7
potato	20.5	5.2	5.0	61.7	1.3	2.3	4.0
mean	21.8	7.2	3.5	48.1	10.3	5.9	3.2
D. other foodstuffs							
rice	0.0	0.4	21.1	73.5	1.4	3.4	0.2
sugar	0.0	0.2	18.9	73.8	1.4	2.5	3.2
coffee	0.0	0.4	16.8	75.8	1.5	3.2	2.3
beans	0.4	1.0	17.1	71.1	3.7	4.1	2.6
eggs	10.0	2.1	5.8	59.5	15.6	4.4	2.6
milk	0.0	0.4	14.0	52.3	12.4	17.7	3.2

[1] feria = feria del agricultor; trad. = traditional market; super. = supermarket; groc. = grocery; auto. = auto consumption; no ans. = no answer.

Source: MAG (1992 a)

CHAPTER VII

EXPORT MARKETING OF ROOT AND TUBER CROPS, PLANTAIN AND PALM HEART

7.1 Introduction

This chapter describes the export marketing channels of root and tuber crops, plantain, and palm heart. The product class of root and tuber crops includes cassava, eddoe, winged yam, and tannia. However, most attention is given to cassava, because the export quantity and value of this product are highest within the product class.

7.2 The export marketing channel for root and tuber crops

7.2.1 *Producers of roots and tubers*

Like most other non-traditional export crops in Costa Rica, roots and tubers are produced by many different types of enterprises. These vary from highly capitalized, large-scale multinational firms with a considerable degree of vertical integration of production and marketing which use advanced technologies, to small-scale individual producers using traditional production technologies with high dependency on outside capital and marketing assistance, often leading to high production costs and/or low prices (Monge, 1994).

The main problem of small-scale producers of root and tuber crops is the lack of an adequate marketing structure. For example, farmers do not know *a-priori* whether or not their product will be exported. Export markets require products of high quality in terms of size, appearance and phytosanitary characteristics. However, not all the produce meets these requirements, despite the existence of improved production technology packages recommended by MAG; farmers often neither have the necessary information nor the financial means to implement these packages (Carmona, 1992; Kaimowitz, 1992; Monge, 1994). Another deficiency of the existing marketing structure is that it does not exploit the potentially significant economies of scale offered by cooperative-based marketing, technology transfer and credit supply systems. Even though government institutions are collecting information on areas cultivated, there exists insufficient information regarding prices paid to farmers, export prices, alternative marketing outlets and possibilities for trade financing (Carmona, 1992). In addition, small-scale producers are often not aware of any government incentive schemes (Monge, 1994).

7.2.2 *Exporters of roots and tubers*

During recent years production of root and tuber crops has increased, as have exported quantities and the number of exporters. Excluding cassava (for human consumption), exports of root and tuber crops increased from less than 1,200 t in 1985 to nearly 10,000 t in 1990 (valued at about US $ 5 million), with the largest growth occurring since 1988 (Monge, 1994). Costa Rica exports approximately 50 percent of its root and tuber production.

Hoekstra (1993) interviewed 19 exporters of root and tuber crops and found that contacts between export companies and farmers tend to be of a rather informal nature. As soon as an exporter has an order of an importer, company representatives visit production areas to select products and determine quantity and price. Even though farmers are aware of the reputation of unreliable exporters, they sell to them nonetheless if there is a lack of alternative buyers.

Exporters need a substantial amount of working capital. However, interviewees expressed that, since roots and tubers are perishable products, the banking sector considers financing the trade as risky.

Reliable contacts with importers is of paramount importance. The principal importing countries of roots and tubers are the USA and some European countries including the United Kingdom, The Netherlands and Germany. Puerto Rico, Canada and Colombia import Costa Rican roots and tubers (mainly cassava) as well. Root and tuber crops produced in Costa Rica tend to be of good quality. For example, tannia from Costa Rica is considered to be of superior quality compared to produce originating from the Dominican Republic or Florida. Similarly, there exists a growing demand for eddoe in the USA. Besides Costa Rica, currently there are no other countries which are able to offer a steady supply of relatively large quantities of good quality eddoe (CNP, 1992). In this respect, Costa Rica takes advantage of favorable growing conditions year-round, whereas supplies from the Dominican Republic, Colombia and Brazil are much more seasonal (SEPSA, 1991). On the other hand, not all exporters exert strict quality control, contributing to market instabilities including fluctuating prices.

Export prices paid in the USA market are usually based on CIF (Cost Insurance Freight) conditions, implying that the seller in Costa Rica receives payment after the buyer receives and accepts the product. In general, the fact that exporters get paid CIF prices causes a delay in payment to the farmer. In the European market, exports are paid FOB (Free on Board), i.e., the exporter receives payment at the moment the product is shipped, with the importer bearing the risk of transportation. In addition, some USA importers have a bad reputation concerning payment. Consequently, exporters prefer to sell to the European market. However, the European roots and tubers market is declining, because people that traditionally consumed roots and tubers increasingly adopt westernized food habits.

7.2.3 *Export markets for cassava*

Cassava is exported fresh, frozen or fried, with fresh cassava constituting the largest part. Between 1985 and 1992, cassava exports increased from some 7,000 to over 34,000 t, an average annual increase of some 25 percent (Monge, 1994). Fig. 7.1 presents an overview of the structure of the Costa Rican cassava export marketing channel, including margins earned in the different stages of the channel. The USA is the biggest importer of fresh cassava from Costa Rica. Annual demand of cassava (total of fresh, processed and meal) in the USA is approximately 72,000 t. Production in Florida accounts for 15% of total demand, while imports of fresh and processed cassava from Costa Rica covers 80% of the demand for fresh and processed cassava, with imports from Thailand accounting for most of the demand for cassava meal (Obando and Viquez, 1992). Prices paid in USA markets are generally lower than in Europe, mainly because competition is higher than in European markets. The Dominican Republic is Costa Rica's largest competitor of fresh cassava in the USA market. Table 7.1 presents volume, value and price of cassava exports, by destination country.

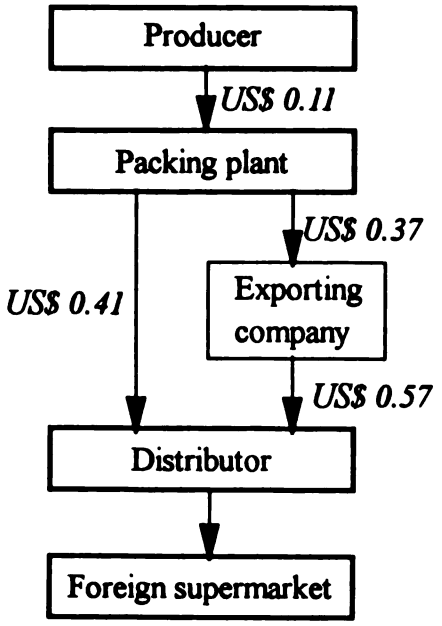

Fig. 7.1 Export marketing channel of cassava (1991 average prices per kg)

Table 7.1

Volume, value and unit price of Costa Rican cassava exports, by destination country (1992)

Country	volume (t)	value ('000 $)	price ($/kg)
United States	27,844	9,576.8	0.34
Puerto Rico	2,891	982.1	0.33
The Netherlands	1,362	611.9	0.44
United Kingdom	917	415.7	0.45
Colombia	496	182.3	0.37
Canada	434	192.2	0.44
Germany	178	77.4	0.43
France	104	49.7	0.44
Others	141	46.2	0.32
Total	34,358	12,134.2	0.35

Source: Unpublished data from MAG (department of price analysis and price information)

7.3 The export marketing channel for plantain

7.3.1 *Producers of plantain*

There are two types of plantain producers, i.e., private plantations and small farmers organized in cooperatives or associations. Both sell to packing plants which select, wash, and desinfect the produce. The plantain is packed in banana boxes with a minimum weight of 23 kg.

Exports of plantain are dominated by the *Bandeco* company which is part of the highly integrated banana sector. *Bandeco* assures its supplies of plantain from plantations or cooperatives on the basis of contracts which specify the area (with a minimum of 30 ha) to be planted with plantain. *Bandeco* guarantees the purchase of the total quantity produced at a fixed price which is revised each year, supposedly reflecting the national situation of supply in Costa Rica and other countries as well as demand in foreign markets, especially the USA.

7.3.2 *Export markets for plantain*

Fig. 7.2 presents an overview of the structure of the Costa Rican plantain export industry. Between 1986 and 1991, Costa Rican exports of plantain more than doubled, from less than 5,000 t in 1986 to more than 11,000 t in 1991 (DGEC, 1992; Monge, 1994). The main importer of plantain is the USA which imports amount to more than 100,000 t annually. The largest plantain exporter in the world, Colombia, is also the market leader in the USA (Table 7.2). Other important exporters of plantain include Ecuador and Venezuela. Costa Rican plantain does not enjoy particular comparative advantages *vis-a-vis* plantain from other exporting countries, even though the quality is generally considered as good.

Figures in Table 7.3 show that about 40 percent of the total Costa Rican export is shipped to the USA. In recent years, Nicaragua has become the most important buyer of Costa Rican plantain. However, the unit value of plantain exports to Nicaragua is relatively low.

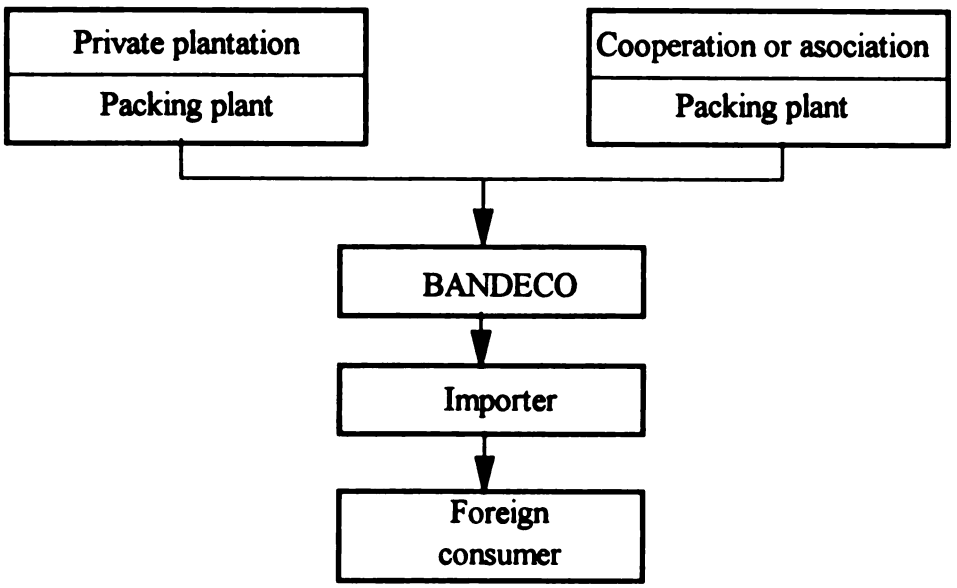

Fig. 7.2 Export marketing channel of plantain

Table 7.2

USA imports (t) of plantain from Latin American countries, 1988-90

	1988		1989		1990	
Country	quantity	%	quantity	%	quantity	%
Colombia	58,015	53.41	61,145	41.89	67,178	47.31
Costa Rica	2,676	2.46	4,762	3.26	2,903	2.05
Dominican Republic	997	0.91	4,082	2.80	952	0.67
Ecuador	29,756	27.40	54,114	37.07	47,537	33.47
Guatemala	1,496	1.87	3,447	2.36	1,360	0.95
Honduras	6,577	6.05	4,218	2.88	2,449	1.73
Panama	-	-	-	-	136	0.09
Venezuela	9,117	8.40	14,197	9.74	19,504	13.73
Total imports	108,637	100.00	145, 965	100.00	142,022	100.00

Source: Flores (1991)

Table 7.3

Destination of plantain exports from Costa Rica, 1991

country	volume (t)	value ('000 US$)	price (US$/kg)
Nicaragua	7,286	798.3	0.11
United States	2,659	825.7	0.31
Colombia	85	13.4	0.16
Germany	853	276.3	0.32
Others	238	96.2	0.40
Total	11,122	2,009.9	0.18

Source: DGEC (1993)

7.4 The export marketing channel for palm heart

7.4.1 *Producers of palm heart*

Palm heart is a product which is exported in processed form. Economies of scale prevail a need for relatively large-scale industries to keep processing costs per unit low. Consequently, most palm heart is processed by only four companies, each of which cultivates more than 60 ha of palm heart. These companies also process palm heart bought from small and medium-scale farmers whose palm heart production has been rapidly increasing during recent years. Processing companies buy either directly from farmers, or indirectly through negotiations with intermediaries or farmers' associations (Fig. 7.3). They sell in the national market, in the international market, or in both. The national market, even though growing, is relatively small (Aquilar *et al*, 1990; Ruiz, 1993). Many small-scale farmers sell their palm heart produce to *Coopropalmito*, a cooperative with 131 members. Ruiz (1993), in a survey among 49 farmers, investigated the relative importance of the different types of marketing outlets (Table 7.4).

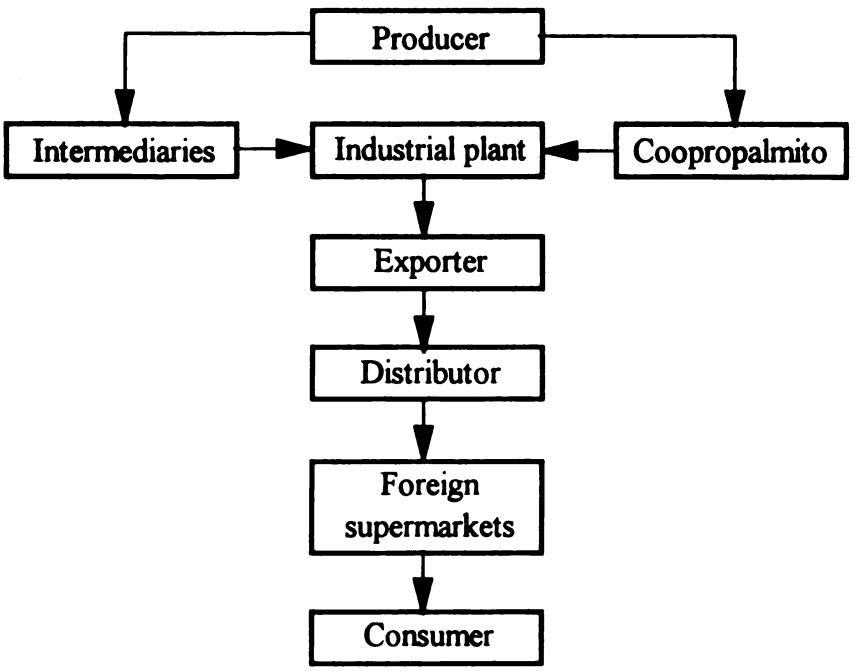

Fig. 7.3 Export marketing channel of palm heart

Table 7.4

Marketing outlets for palm heart producing farmers

Marketing outlet	proportion of farmers
Farmer association	24.5
Trader at farm gate	22.4
Industrial plant	16.3
Harvested by intermediate	10.2
Farmers' market	8.2
First harvest, not yet sold	18.4

Source: Ruiz (1993)

7.4.2 *Export markets for palm heart*

The world market for palm heart is estimated at approximately 20,000 t annually (Ruiz, 1993). Two varieties are offered in the export market, palm heart *de euterpe* and palm heart *de pejibaye*. In 1990, the former type covered approximately 85% of the international demand (Urpí *et al.*, 1991). While Costa Rica is the main producer of palm heart *de pejibaje* (recently Colombia and Venezuela started producing as well), Brazil, Venezuela, Paraguay, Peru, Colombia, the Philippines and Thailand all produce palm heart *de euterpe* (Ruiz, 1993). Palm heart *de pejibaye* has a soft texture, a relatively high calorie content, and does not turn brown quickly, contrary to palm heart *de euterpe* which contains a high percentage of polifenol, causing rapid oxidation (MEIC, 1981). Palm heart *de euterpe*, although it does not need much investment and attention, has several other disadvantages. The conditions in which palm heart *de euterpe* is cultivated, and the relatively large distances to urban centres, make for difficult - transportation to processing plants. As a result, small portable plants must be used which can be moved to places close to the harvest (Urpí *et al.*, 1991). Under these circumstances, both quantities and quality of the product become uncertain. In addition, the extraction of palm heart *de euterpe* from tropical forests may involve negative ecological effects.

Latin American countries account for the majority of world palm heart exports. Brazil is the biggest producer, consumer and exporter of palm heart in the world, on the average exporting about 10 percent of its production. Brazilian palm heart covers almost 80% of the world demand (Urpí *et al*, 1991). Besides Brazil, the main competitors of Costa Rica include Colombia and Venezuela. Costa Rica has several competitive advantages compared to other producing Latin American countries. These include relatively low transport costs due to the small distances between Costa Rican processing plants of palm heart and producing areas; geographical proximity to some major export markets (particularly the USA); superior quality

of palm heart *de pejibaye* compared to palm heart *de euterpe* of some major competitors; palm heart from Costa Rica has a good international prestige, thanks to the high quality standards set by the main processing and exporting industries; and production and processing of palm heart in Costa Rica take place at relatively advanced technological levels, mainly as a result of the considerable research efforts spent on the crop (Zamora, 1990). Palm heart from Costa Rica is exported mainly to France (Table 7.5).

Table 7.5

Destination of palm heart exports from Costa Rica (1992)

Country	volume (t)	value ('000 US $)	price (US $/kg)
France	2,467	4,289	1.74
United States	553	985	1.78
Spain	447	797	1.78
Canada	286	566	1.98
Belgium	231	453	1.96
Other countries	510	855	1.67
Total	4,492	7,943	1.76

Source: DGEC (1993)

France is the world's major importer of palm heart (about 9,000 t per year), followed by the USA (about 2,000 t per year). Other European countries, particularly Spain and Italy, also import considerable quantities (MEIC, 1981; ITC, 1992). Other markets where palm heart consumption is growing include the USA, Canada, Denmark, Israel, Japan and Greece (Zamora, 1990). Brazil's share in the French market declined because of the relatively low quality of Brazilian palm heart. As a result, Costa Rica and (particularly) Colombia increased their share in the French market; Colombia 's market share rose from 1 to 22 percent between 1988 and 1991, overtaking Costa Rica's (Table 7.6). These developments are partly due to the fact that, unlike Colombia and Venezuela, Costa Rica is not part of the Andino Pact which allows preferential access (through reduced customs duties) to the French and other European markets (Urpí *et al*, 1991).

Table 7.6

Quantity and market share developments in the French market for palm heart

Exporting country	1988		1991	
	quantity (t)	market share (%)	quantity (t)	market share (%)
Brazil	7,846	87.65	3,733	42.17
Costa Rica	697	7.79	1,269	14.23
Colombia	97	1.08	1,915	21.63
Venezuela	126	1.31	1,000	11.30
Other countries	185	2.07	936	10.57
Total	8,951	100.00	8,853	100.00

Source: ITC (1992), MAG/CNP (1993)

The main characteristics of the USA palm heart market are relatively high prices and stringent quality requirements. According to the UNCTAD/GATT International Trade Centre, the USA represent a growing market for palm heart (ITC, 1992). In view of its geographical proximity and the resulting transportation cost advantages, the USA market is likely to become the most important market for Costa Rican palm heart exports (Ruiz, 1993; Table 7.7).

Table 7.7

Market share developments in the USA market for palm heart (percentages)

	year		
Country	1988	1991	1994
Brazil	80.04	68.40	63.56
Costa Rica	16.05	18.79	23.76
Colombia	0.00	0.76	0.31
Venezuela	1.50	1.85	5.08
Thailand	0.75	6.40	3.32
Philippines	0.15	2.10	1.12
Other countries	1.51	1.70	2.85

Source: MAG/CNP (1993)

CHAPTER VIII

ANALYZING AGRICULTURAL MARKETING CHANNELS

8.1 Introduction

In this chapter, the performance of agricultural marketing channels in the NAZ is discussed. The performance of the various types of markets in the domestic marketing channel, linking farmers in the NAZ and ultimate consumers in Costa Rica, is analyzed applying the SCP methodology introduced in Chapter II. In section 8.2, the performance of domestic assembly markets where farmers (may) sell directly, is discussed. The same is done for the domestic wholesale markets in section 8.3. Section 8.4 analyzes the performance of three main types of marketing channels: the domestic food crop marketing channel, the export food crop marketing channel and the cattle marketing channel, using the criteria effectiveness, productivity, equity and profitability. In the last section (8.5), conclusions are drawn regarding the performance of the various agricultural marketing channels.

8.2 Analysis of domestic assembly markets

This section analyzes the operation of the various types of markets as they function in domestic marketing channels that originate in the NAZ. Table 8.1 provides a summary of the SCP analysis for the different types of markets in the domestic marketing channels.

8.2.1 *Market structure*

Is there too much concentration of power in the market?
The two variables "number of sellers" and "number of buyers" reflect the degree of concentration of power in the market. The farm-gate type of market can be characterized as an oligopsony (i.e., relatively few buyers confronting many sellers) or sometimes even as a monopsony (i.e., one single buyer). At the *Feria*, the number of competitors is rather high at both sides of the market. Where farmers' associations are functioning, farmers combine their supply in order to have more power in the market. This is essential when farmers sell to one or a few buyers as is usually the case with plantain. The *empacador* market is the first chain in the export marketing channel. This type of market can also be characterized as an oligopsony. At the *subasta* (cattle auction), a near optimal degree of competition is obtained when there is a sufficient number of suppliers and buyers. In the past, the CNP acted as a marketing board offering farmers a guaranteed price for maize, beans and rice. In general, access to a market outlet is problematic for many farmers, especially when their farm is not easily accessible by transport. The cattle auction (*subasta*) and the *Feria* are positive exceptions in this regard.

Table 8.1

Market performance of domestic assembly markets

Characteristics	Production level					
	Farm-gate	Feria	Farmer organ.	Empacador	Subasta	CNP
Market structure						
* number of sellers	many	many	few	fair	many	few
* number of buyers	few	many	one	few	many	one
* vertical integration	lim.	fair	fair	fair	lim.	fair
* product differentiation	lim.	fair	fair	fair	fair	fair
* market access	diff.	easy	diff.	diff.	easy	easy
Market conduct						
* price setting	buyers	sellers	buyers	buyers	buyers	buyers
* quality policy	lim.	fair	fair	fair	lim.	fair
* promotion policy	lim.	lim.	lim.	lim.	lim.	lim.
* coordination policies	fair	fair	fair	fair	fair	lim.
* exclusionary tactics	fair	lim.	fair	fair	lim.	fair
Market performance						
* technological progress	lim.	lim.	lim.	fair	lim.	lim.
* product suitability	fair	fair	fair	fair	fair	lim.
* profit rate	lim.	fair	fair	fair	fair	lim.
* exchange efficiency	low	high	high	low	high	high
* unethical practices	high	low	low	high	low	low
* price response	high	high	high	high	high	high
Degree of competition	imp.	work.	cont.	imp.	work.	cont.

Note: diff. = difficult; var. = varying.; lim. = limited; imp. = imperfect; cont. = contestable; work. = workable.
Scales: one - few - many; difficult - variable - easy; limited - fair; low - high; imperfect - contestable - workable

Is the market embedded in a vertical marketing system?
Vertical integration is a topic of particular interest in the discussion on the functioning of the marketing channel. Some farmers have lasting (either voluntary or contractual) contacts with buyers at the farm-gate, on the *Feria*, through farmers' organizations, with *empacadores*, or the CNP. This may imply that collecting traders are (or can be) bypassed. Nevertheless, collecting trade at the farm gate, rather than vertical marketing arrangements, is still the main outlet for most farmers.

Is there a possibility to differentiate products among suppliers to be able to communicate unique selling points and to differentiate prices?
The nature of unprocessed agricultural commodities generally does not offer many opportunities for product differentiation. A policy of product differentiation of homogeneous products might be developed by accentuating particular characteristics of the crops cultivated in the NAZ, such as uniqueness or quality through a particular packing design or by branding (e.g., "Product of the NAZ of Costa Rica"). However, such a policy has not (yet) been developed.

8.2.2 *Market conduct*

Which party takes the initiative in price setting and product promotion?
At most markets except for the *Feria* and (possibly) the *Subasta*, buyers have more power than sellers and, consequently, set prices. Price incentives to deliver products of high quality are quite limited, except in the cases of farmers' organizations and *empacadores* because exportation generally requires a high quality level of the produce offered. Promotion of agricultural products by suppliers is almost non-existent, largely because of a lack of product differentiation.

Is there any horizontal coordination in supply or demand?
Coordination policies between buyers are reported for the farm-gate and *empacadores* outlets. By definition, coordination is attained when farmers sell through a cooperative; at the *Feria*, price levels are normally discussed before the beginning of the market. Exclusionary tactics against farmers have been reported for the farm-gate and *empacadores* outlet types.

8.2.3 *Market performance*

Do farmers respond to price variation and offer products that are in demand at low costs?
Production efficiency is likely to vary between different farmers, depending on available technology (including inputs), management practices etc. No major technological innovations are implemented at this level of the marketing channel. Product suitability is related to

transport and preferences of the ultimate users of the commodity. Only at the *Feria* do consumers have direct contact with producers .

At the farm level, profitability is considered from the perspective of the farmer. Profits vary considerably at the farm level depending on sales opportunities and timing of sales. It is likely that traders have more opportunities to compensate low profits with high profits over the course of the seasons. Exchange efficiency can be regarded as low for the farm-gate and *empacadores* outlets. Farmers need to spend considerable efforts to find potential buyers and to assess their reliability, i.e., unethical practices do occur at both the farm-gate and *empacadores* markets.

Regarding pricing efficiency two remarks can be made. On the one hand, price responsiveness seems to be high at all markets taking into account the rather quick reactions of farmers to changing prices. On the other hand, these reactions are in some instances such that a relatively inefficient cob-web cycle results. The latter is mainly the case for crops sold through the farm-gate and *empacadores* outlets.

Imperfect, contestable or workable competition?
Finally, markets are judged to their degree of competitiveness through the criteria imperfect, contestable and workable competition. The farm-gate outlet and *empacadores* turn out to be the markets which score low on competitiveness. This is mainly because of the considerable difficulties many farmers face to conclude a transaction and to obtain their payments. Compared to these outlets, the *Feria*, farmers' organizations and cattle auction *(subasta)* score considerably better.

8.3 Analysis of domestic wholesale markets

This section analyzes domestic wholesale markets, i.e., markets where farmers usually do not sell directly. These markets include *CENADA*, *Avenida-10* and *Borbón* market, *Plaza Montecillos* and the agro-industry as buyer of agricultural products (Table 8.2).

8.3.1 *Market structure*

Is the market structure optimal in these markets?
Information regarding numbers of sellers and buyers reflects the distribution of power in these markets. Competition at domestic wholesale markets is fairly high apart from the agro-industry which buys as an oligopsonist. Apart from the agro-industry, the markets in Table 8.2 are not part of a vertically integrated system. Without processing, possibilities for product differentiation are rather small for agricultural commodities. To get access to buyers (markets), it is required to obtain reliable contacts, or to establish a trade relationship which may be difficult. The *Plaza Montecillos* is a large cattle auction where personal contacts between sellers and buyers are most probably less important.

Table 8.2

Market performance of domestic wholesale markets

Characteristics	Production level			
	CENADA	Av-10-Bourbon	Agro-industry	Montecillos
Market structure				
* number of sellers	many	many	many	many
* number of buyers	many	many	few	many
* vertical integration	lim.	lim.	fair	lim.
* product differentiation	lim.	lim.	lim.	fair
* market access	var.	var.	diff.	easy
Market conduct				
* price setting	both	both	buyers	both
* quality policy	fair	lim.	fair	lim.
* promotion policy	lim.	lim.	fair	lim.
* coordination policies	fair	lim.	fair	lim.
* exclusionary tactics	fair	lim.	lim.	lim.
Market performance				
* technological progress	lim.	lim.	fair	lim.
* product suitability	fair	fair	fair	fair
* profit rate	var.	var.	var.	var.
* exchange efficiency	high	high	fair	fair
* unethical practices	fair	lim.	fair	lim.
* price response	high	high	fair	fair
Degree of competition	work.	cont.	imp.	work.

Note: diff. = difficult; var. = varying.; lim. = limited; imp. = imperfect;
cont. = contestable; work. = workable.
Scales: one - few - many; difficult - variable - easy; limited - fair; low - high; imperfect - contestable - workable

8.3.2 *Market conduct*

In domestic wholesale markets, prices are arrived at through more or less freely interacting supply and demand forces, except in the case of the agro-industry. Price incentives to remunerate a supply of products of better quality are generally limited, even though they were mentioned for the *CENADA* market and agro-industries. Most of the latter have regular contacts with each other to exchange market information or to harmonize prices. Exclusionary tactics do not seem to prevail.

8.3.3 *Market performance*

Do wholesale markets offer products in demand at low costs?
Production efficiency is a relevant aspect for all markets, notably the agro-industry. Differences in efficiency can be observed between different processing plants, depending on technology, scale economies, management, etc. Use of technological innovations can mainly be observed in the agro-industry where profit rates are considerable. Exchange efficiency seems to be satisfactory for the *CENADA*, *Avenida-10* and *Borbón* markets. Some incidence of limiting entry is reported for the *CENADA* market and agro-industry. Pricing efficiency appears to be quite high, especially at the *CENADA*, *Avenida-10* and *Borbón* markets.

Workable, contestable or imperfect competition?
It can be concluded that the *CENADA*, *Avenida-10*, *Borbón*, and the *Plaza Montecillos* markets approach workable competition conditions. The agro-industry market tends to score lower on the imperfect - workable competition scale. The costs and investments needed to set up a processing plant are considerable and make for restricted possibilities to enter this market. Market competition is highest at *Plaza Montecillos* because entrance is easy compared to the other markets. Expected prices increase with the subsequent stages of the marketing channel (Table 8.3).

8.3.4 *Summary of the analysis of markets*

Assembly markets were judged on their degree of competition. The farm-gate outlet and *empacadores* turned out to be the markets which score low on this criterion. This is mainly because of the substantial difficulties farmers face in concluding a transaction and obtaining payment for their produce. Compared to these outlets, the *Feria*, farmers' organizations and the *Subasta* score considerably better.

Regarding wholesale markets, the *CENADA*, *Avenida-10*, *Borbón* and the *Plaza Montecillos* markets can be considered reasonably competitive, while entry into the agro-industry market tends to be rather difficult because of the costs and investments needed to set

Table 8.3

Average prices of selected commodities at different markets, January 1990 - August 1992

	average prices in Colones				price indices (CENADA = 100)			
	CEN. whol.	Feria retail	Trad. retail	Super. retail	CEN. whol.	Feria retail	Trad. retail	Super. retail
Commodity								
papaya	27.36	33.53	39.44	42.66	100.0	122.5	144.1	155.9
pineapple	66.95	69.96	74.73	97.54	100.0	104.5	111.6	145.7
plantain	8.98	9.50	11.67	13.77	100.0	105.8	129.9	153.3
fruits	-	-	-	-	100.0	109.4	121.8	149.9
cassava	20.53	25.59	31.93	36.22	100.0	124.6	155.5	176.4
eddoe	38.87	44.00	51.28	63.88	100.0	113.2	131.9	164.4
tannia	41.27	45.13	53.58	70.68	100.0	109.4	129.8	171.3
roots and tubers	-	-	-	-	100.0	114.0	135.9	169.7

Note: prices of pineapple and plantain are measured in Colones per unit; prices of other commodities in Colones per kg; CEN. = CENADA; Feria= Feria del Agricultor;
Trad. = traditional markets; Super. = supermarket

Source: PIMA (1993)

up a processing plant. Market competition in the agro-industry is therefore considered to be fairly low. On the other hand, competitiveness is high in the *Plaza Montecillos* market.

8.4 Performance of marketing channels

The classification of marketing channels is based on characteristics of the products handled (i.e., crops versus livestock products), the length of the channel, the type of end markets served (i.e., national versus export) and the degree of vertical integration (i.e., conventional marketing channels versus vertically integrated systems). For the NAZ four major types of marketing channels can be distinguished:

A. the domestic food marketing channel;
B. the food export marketing channel;
C. integrated transnational production and marketing organizations; and
D. the cattle and meat marketing channel.

The first channel (A) serves domestic consumption, whereas the second (B) serves foreign consumers. The third channel represents transnational production and marketing enterprises mainly for banana (see also Appendix IV). The fourth channel (D) serves consumers of meat in both national and foreign markets. In Table 8.4, the different channels and channel members are presented systematically. Next, the organization and performance of each channel type will be discussed in-depth.

Table 8.4

Schematic overview of four main types of marketing channels

Marketing channel	A	B	C	D
* name	domestic	export	transnational	cattle, meat
* product	food crops	roots & tubers, palm heart	banana, palm heart	livestock products
* length	long	long	short	long
* vertical integration	no	no	yes	no
Production	farmers, f.o.	farmers, f.o., plantations	plantations	farmers
Trade				
* assembly	middlemen	transporter	m.n.c.	middlemen
* wholesale	CENADA	exporters	m.n.c.	Subasta, Montecillos
* processing		exporters		slaughterhouses, dairy factories
* retail	ferias, groceries, supermarkets			butcher, supermarkets
Consumption	national	foreign	foreign	national, foreign

Note: f.o. = farmer's organization; m.n.c. = multi-national corporation

8.4.1 *Domestic food marketing channel (A)*

This marketing channel type is characterized by a relatively high number of stages. In general, products are handled by several actors in the marketing channel before reaching final

consumers. Periodic markets exist at both wholesale and consumer level. The national wholesale market *CENADA*, situated in *Heredia* near the capital of *San José*, is an important outlet for domestically consumed agricultural commodities. Food demand is relatively high in the densely populated Central Valley area. Food commodities produced in the NAZ are generally transported to the *CENADA* market for subsequent distribution in the Central Valley. Perishable commodities (e.g. papaya, pineapple) require fast handling, making transportation a critical factor. In the NAZ, there are only limited possibilities for farmers to sell their produce; middlemen visit the farms constitute the main marketing outlet. Nowadays, five periodic consumer markets (*ferias*) are operative in the NAZ. On a small scale, direct sales of farmers to consumers takes place as well. However, most consumers acquire their food commodities either in supermarkets, in permanent or periodic consumer markets, or in small grocery shops.

The domestic food marketing channel (Table 8.5) can be characterized as conventional or traditional, implying a lack of vertical coordination within the channel and relatively many stages between farmer and consumer. A problematic stage in this marketing channel, from the perspective of farmers in the NAZ, is the farm gate market, largely because of (informal) entry barriers (see section 8.2). Each stage takes a particular subset of the mix of exchange, physical and facilitating functions into account. Whether this type of channel organization is optimal depends on its effectiveness, productivity, equity, and profitability (see section 2.4). The overall evaluation is that from the perspective of the farmer in the NAZ, much can be improved upon. Generally, farmers do not combine their market supplies, implying that their countervailing power *vis-a-vis* traders is low. It also implies that it is much more difficult to interest traders to visit the production areas to collect and buy because of high assembly costs. Consequently, marketing productivity at the farm-gate level is low: farmers tend to wait for traders that pass by to sell their produce. This causes them to be in a relatively weak position, particularly when they have perishable products to offer. If possible, farmers should harvest in periods when products are relatively scarce and, consequently, have relatively high prices. In this respect, the cropping calendar publication from MAG (published by the *Departemento Economia de Mercados, Dirección Mercadeo Agropecuario* or Department of Marketing, Directorate of Agricultural Markets) may be useful. Risk is high in this channel which means that prices are highly variable. The distribution of profits among channel members seems not to be to the benefit of farmers.

The overall evaluation of this marketing channel is that farmers and their organizations can improve their position by augmenting their market power in the channel. This can be done by bringing supply and demand in the production area together at markets that are regulated in one way or another. This may also prevent that products produced in the NAZ flow through the *CENADA* wholesale market in *Heredia* (Central Valley) before they are being redistributed again in the NAZ.

Table 8.5

Performance measurement of the four marketing channels from the perspective of producers in the NAZ

Marketing channel	A	B	C	D
* name	domestic	export	transnational	cattle, meat
* product	food crops	roots & tubers, palm heart	banana, palm heart	livestock products
Performance criterion				
* efficiency	+	+	++	++
* productivity	-	-	+	+
* equity	-	+	+	+
* profitability				
- level (mean)	+	+	++	+
- risk (variation)	--	-	++	+
- distribution among channel members	-	-	+	+
Overall performance	-	+-	++	+

Note: -- = very unfavorable; - = unfavorable; +- = mediocre; + = favorable; ++ = very favorable

8.4.2 *Food export marketing channel* (B)

The second type of food marketing channel contains relatively few stages. End markets of roots and tubers or palm heart are situated abroad and, consequently, far away from the production areas. Generally, farmers sell directly to export firms, sometimes through the intervention of a trader or a transporter. After grading, processing and packing, exporters transport the crop to importers in Europe or the USA. Quality is a critical element in the business. For some crops, especially palm heart, exporters have their own production plots, in addition to the supply of small-scale farmers. For non-traditional export crops, competition in foreign markets seems to be increasing and prices tend to fluctuate considerably. There hardly exists a domestic market for several of these non-traditional crops, thereby seriously limiting the number of alternative sales opportunities.

The countervailing power of farmers in the food export marketing channel is low. They lack information about demand in the relevant foreign markets and, consequently, are forced to accept the conditions offered by the *empacador*. This also means that farmers do not generally know in advance whether or not there will be a market for their mature product.

Risks in this channel are high because exporters do not know whether their clients abroad will pay the agreed price on time. This uncertainty has a negative effect on the level and timeliness of payment to farmers. Consequently, indirectly farmers carry a considerable part of the risk burden in this marketing channel.

8.4.3 *Transnational production and marketing organization* (C)

This marketing channel is highly vertically integrated. There is a high degree of intra-organizational coordination dominated by relatively few multinational corporations. At the production stage, some national producers are active as well but for the distribution of their produce they depend on the distribution networks of the multinationals. These distribution networks require high capital investments to quickly handle large volumes of high quality. Integrated planning of production, transport and marketing activities is a critical factor. Principal sales markets are the USA and the European Community (EC). The demand of the latter for bananas from Costa Rica decreased following a policy change in the EC imposing quota on banana imports from Latin America.

The transnational marketing channel is (near) optimal from a managerial point of view. Knowledge about (foreign) markets is transformed into controlled production. Vertical coordination of all activities in the marketing channel is its strength as a market player. Research that investigates the extent to which small-scale farmers and their organizations can learn from this approach to improve the organization of production and marketing of products would potentially be very useful.

8.4.4 *Cattle and meat marketing channel* (D)

This channel consists of several marketing levels with end markets both nationally and abroad. Slaughter houses play a central role in the marketing channel, oriented either towards national or towards export markets. Periodic cattle auctions (*subastas*) are organized in different locations. Additionally, there is another important market place for cattle, i.e., the *Montecillos Plaza* near San José. Farmers have different alternatives in selling their cattle, including to middlemen visiting the farm, directly at the cattle auctions or in the *Montecillos* market place, or to agents of exporting companies (i.e., slaughter houses). At the farm level, flexibility in the timing of selling is an important advantage of cattle holding. This relates to alternatives with respect to product types (i.e., selling calves or fattened animals), time (with the exception of milk production, farmers can wait for appropriate market opportunities) and outlet (selling to middlemen, at auctions, or directly to slaughterhouses). Compared to the marketing organization for agricultural crops, cattle marketing is significantly better developed. In Costa Rica the dairy industry is dominated by two companies (*Dos Pinos* and *Borden*).

To conclude, cattle and meat marketing in Costa Rica is relatively well-established. Animals can be sold at markets with reasonable levels of competition. Farmers do not have to

wonder whether they might be able to sell their products. When they know the rules of the game at the cattle markets, farmers can be reasonably sure that they can get a competitive price. On the other hand, slaughter houses seem to have considerable market power in that they can dictate the sales conditions (particularly those relating to quality) to farmers.

8.5 Summary and conclusions

Marketing channels are dynamic in adapting their structure to changing circumstances. The products they handle might boom (i.e., as is the case with palm heart) or erode (maize) and new physical markets (e.g., *CENADA* and *Feria del Agricultor*) might be established whereas other market places lose part of their importance (*Avenida-10*, *Bórbon* markets). The main question raised in this chapter is whether farmers in the NAZ are sufficiently aware of the opportunities in domestic and foreign markets and whether they adapt their strategies in such a way as to optimally benefit from new market developments. The answer tends to be negative. A comparison of main marketing channels of agricultural products cultivated in the NAZ strongly suggests that farmers have to improve their countervailing power in the market. Willingness to cooperate with other farmers in the organization of such markets is a necessary condition to be able to arrive at positive results.

CHAPTER IX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

9.1 Introduction

Marketing channels for agricultural products need to adapt to changing circumstances since the products they handle might boom or erode and new physical markets may arise or established whereas other market places lose their importance. Are farmers in the NAZ aware of changing opportunities in domestic and foreign markets, and do they adapt their strategies to take new developments into account? Are farmers able to improve their countervailing power in markets and marketing channels?

The research questions to be dealt with were raised in Chapter I. These concern the following:

A. Organization of the marketing channel:

How are the marketing channels for the different agricultural commodities organized? Important aspects include the number of stages in the marketing channel that products have to pass from producer to consumer; presence and functioning of various types of physical markets; the numbers and type of actors involved in the trading process; and the diversity in final markets.

B. Position of farmers in the marketing channels:

How strong or weak is the position of farmers within the different marketing channels? This is reflected by the number of available market outlets; indicators related to market access; relationships between farmers and collecting traders; and distribution of relative margins gained in the channel.

C. Efficiency of current marketing channels:

How efficiently are current markets and marketing channels organized? This mainly relates to what extent marketing constitutes a principal constraint to agricultural development in the NAZ. A related issue is whether there are any significant differences in marketing opportunities between smallholders and other farmers. Satisfactory research results in this area may lead to valuable suggestions to improve the performance of markets and marketing channels in the NAZ.

Each of these research questions is further addressed in the subsequent sections of this chapter.

9.2 Organization of marketing channels

9.2.1 *Marketing channel of nationally consumed crops*

The organization of marketing channels of domestically consumed crops originating from the NAZ can be summarized as follows:

* Both national demand and the main wholesale market for food crops are concentrated in the Central Valley (distance *Limón - San José* is about 160 km).
* Domestic food marketing channels are characterized by assembly, wholesale and retail levels without much vertical integration.
* The NAZ is a main supplier at the *CENADA* wholesale market (located in *Heredia*) of plantain, banana, coconut, soursop and papaya. The NAZ's competitive position with respect to other parts of Costa Rica depends on differentiation in supply and, in case the same products or close substitute products are offered, on differences in both production and transport costs. The costs related to the distance between the NAZ and the *CENADA* wholesale market is a critical marketing factor. Costs of transport between the NAZ and *CENADA* tend to be substantial.
* It is relatively difficult for new entrants at the *CENADA* wholesale market to establish commercial relationships.
* In the NAZ, there exist "regulated" markets, i.e., *Ferias* for vegetables and fruits (but not for other crops), and auctions (*subastas*) for cattle.
* Farmers' access to *Ferias* seems to be constrained by transport costs, opportunity costs of time, and lack of a sufficiently diversified portfolio of products to compose an assortment that is attractive to consumers.
* At the *CENADA* wholesale market there exists considerable seasonal variation in supply, as well as corresponding varation in prices.

9.2.2 *Marketing channels of export crops*

Export crops, e.g., roots, tubers, plantain and palm heart, constitute a significant part of the cultivation pattern of small- and medium-scale farmers in the NAZ. Maize is mainly grown for household consumption, i.e., it lost its importance as a commercial crop after the liberalization of prices of maize, beans and rice by the CNP in 1987. The organization of the marketing channel of export crops originating from the NAZ can be summarized as follows:

* There are few outlets for farmers to sell export crops; the level of market power of farmers versus exporters (*empacadores*) is small.
* The risk when selling to unknown traders is considerable, i.e., unreliable exporters may not pay. It is difficult for farmers to enforce (oral) "contracts" that were concluded with traders.

* Exporters tend to pay farmers after they receive the value of the products from foreign importers (c.i.f. contract).
* Products from the NAZ exported to foreign markets tend to be directed to particular market segments; e.g., tubers and plantain to Hispanics in the USA, palm heart to the luxury market in France and the USA; demand for non-traditional products (such as palm heart, roots and tubers, plantain, fruits and vegetables) in foreign markets is increasing.

Roots and tubers:
* Are consumed by immigrants in the USA and Europe.
* Both supply and demand at farm level are not stable.
* It is difficult for farmers to conclude profitable transactions (low price, risk of no payment). In addition, it appears to be difficult for farmers to enforce (oral) contracts in case of default.

Plantain:
* Exports are mainly to markets in Europe and the USA, through *BANDECO* (first quality).
* In addition, there exists a considerable national and regional (Nicaragua) market (other quality classes).

Palm heart:
* Palm heart is a luxury product with increasing demand in export markets.
* Small- and medium-scale farmers have to compete with production of plantations.
* Processing industries manage their own plantations.

Banana (see also Appendix IV):
* Banana is the most important plantation crop in the NAZ, grown on some 52,000 ha in 1994 (SEPSA, 1995).
* Banana is marketed through a highly vertically coordinated channel implying coordination of production, transport and marketing.
* Banana production and marketing are dominated by a few MNC's, i.e., small- and medium-scale farmers do not have direct access to foreign markets.
* New, recently imposed import quota by the EC are likely to significantly restrict market access.

9.2.3 *Marketing channel of livestock products*

Livestock is a main form of (extensive) land use generating a considerable part of income in the NAZ. The organization of the marketing channel of livestock products originating from the NAZ can be summarized as follows:

* The livestock marketing system is relatively well developed; there is an auction system (*Subasta*) in the production areas as well as the *Montecillos* market in the Central Valley.
* There is an overcapacity in processing facilities in slaughter houses. Slaughter houses exporting meat have considerable market power.
* There is strong seasonal variation in supply and, consequently, prices at both the *subasta* and slaughter house levels.

9.3 Position of farmers in the marketing channels

The countervailing power of farmers in some assembly markets, notably the farm-gate and export (*empacadores*) outlets, is relatively low. This is mainly due to the considerable difficulties that farmers face in concluding a transaction and in obtaining their payments. Compared to these outlets, the countervailing power of farmers in the *Feria*, farmers' organizations and cattle auction (*subasta*) is considerably better.

Competition at the wholesale markets, i.e., *CENADA*, *Avenida-10*, *Borbón* and the *Plaza Montecillos* is acceptable, whereas the agro-industry outlet tends to score lower on the imperfect - workable competition scale, especially because of difficulties to set up a processing plant.

9.3.1 *Lack of market power*

Farmers have problems in marketing their products at remunerative prices, because of several types of constraints. These are related to the following factors:

Place/distribution:

* relatively few alternative sales outlets, i.e., hardly any physical markets exist except for cattle and the *Feria* for vegetables and fruits; limited market power of farmers, despite some exceptions, (e.g., there do exist farmers with well established relations with buyers);
* transport is scarce and, consequently, costly.

Price:

* low prices because of insufficient countervailing power (especially in times of abundant supply);
* market entry by traders in cases of shortages, i.e., transporters start to trade;
* insufficient price incentives to supply high quality products;
* opportunity for farmers in the NAZ to generate markey supplies in periods of relative scarcity.

Product:

* insufficient product differentiation according to quality and region of origin.

Promotion:

* hardly relevant as long as supply is not differentiated with respect to quality and region of origin.

9.3.2 *Contract partners of farmers*

Do traders carry out functions such as exchange and transport, that are needed in the market at reasonable costs? Or do they exhibit exploitative behavior in a sector whose conduct should be altered? Substitution of traders by buying organizations, i.e., farmer cooperatives, will enlarge the countervailing power of farmers, but may create other inefficiencies such as bureaucratic procedures.

Unfair practices regarding contracts and price arrangements are especially reported in the roots and tubers business. Too often farmers are paid unfairly low prices, are paid too late, or are not even paid at all.

Despite the existence of a formal standard contract designed by a governmental institute, enforcement of contractual arrangements is still difficult. Often, farmers are financing the trade, i.e., in general they receive their money only after the trader has been paid. Buyers who offer direct and secure payment will probably be able to attract many farmers as suppliers.

9.4 Efficiency of current marketing channels

For the NAZ four major types of marketing channels were distinguished:

A. domestic food marketing channel;
B. food export marketing channel;
C. integrated transnational production and marketing organizations
D. cattle and meat marketing channel.

Actors in each stage of a particular marketing channel carry out a particular subset of the exchange, physical and facilitating marketing functions. Whether this type of channel organization is optimal depends on its effectiveness, productivity, equity effects and profitability (see section 2.4).

The domestic food marketing channel can be characterized as conventional or traditional, implying a lack of vertical coordination within the channel and relatively many stages between farmer and final consumer. The weakest outlet from the perspective of the farmers in the NAZ is the farm-gate outlet because of (informal) entry barriers (section 8.2). The overall evaluation is that from the perspective of the farmer in the NAZ, the performance of the domestic food marketing channel can be improved upon considerably.

The countervailing power of farmers is generally low also in the food export marketing channel. Farmers lack adequate information regarding demand in the relevant foreign markets and, consequently, are forced to accept the conditions offered by the *empacador*. This means that farmers do not generally know whether there is a market for their products. Risks in this channel are high because exporters do not know whether their clients abroad will pay the agreed price in time. This uncertainty has a negative effect on the level and timeliness of payment to farmers. Consequently, indirectly it is the farmer who bears most of the risk involved in this marketing channel.

The transnational production and marketing organization is a type of marketing channel that is (near) optimal from a managerial point of view. Knowledge about (foreign) markets is transformed into controlled production. Vertical coordination of all activities in the marketing channel is the strength of this market player, begging the issue what farmers in the NAZ and their organizations can learn from this approach to organize production and marketing of products.

The cattle and meat marketing channel is well established, in the sense that animals can be sold at markets with reasonable levels of competition. Farmers do not have to wonder whether they might be able to sell their products. The farmers can be reasonably sure that they can get a competitive price when they know the rules of the game at the cattle markets. On the contrary, the market power of slaughter houses seems to be such that they can more or less dictate the sales conditions to the sellers.

9.5 Recommendations and discussion

The NAZ was colonized relatively recently (i.e., about half a century ago) implying that all technical, economic and societal systems in the Zone had to be developed. Settlers came from all over the country and social networks developed only slowly. In the beginning, production for home consumption was a major concern. When market-oriented production developed, a marketing infrastructure had to be established. As long as cattle was produced which could be relatively easily sold to traders or at the auction (*Subasta*) and maize and beans were cultivated that could be sold at a guaranteed price to the public marketing board *CNP*, no serious marketing problems arose. With the abolishment of the guaranteed price system for maize, beans and rice in 1987, farmers in the NAZ were facing an environment with a rather weakly

developed marketing system. Traders were passing by at irregular intervals and potential markets for their crops could only be found at relatively large distances in the Central Valley. Transport costs were high because of scarcity and inadequate infrastructure. Cooperation among farmers in the sales of their product was virtually non-existent mainly because of a lack of traditional social and organizational networks. Cattle raising represented an opportunity with relatively low risk and, consequently, many farmers increased their cattle raising activities.

With the extension of plantation agriculture in the NAZ, the demand for labor increased gradually and people in the Zone faced the opportunity to allocate their time partly to work at the (banana) plantations. This alternative, together with the relatively secure market outlet for cattle, decreased the need to search actively for new market outlets for food crops. New types of market outlets (e.g., *Ferias*) became only gradually available.

The analysis in this study shows that, to improve competition, there is a need to increase small- and medium-scale farmers' countervailing power in the markets for agricultural crops. This can be done in several ways. One option would involve the establishment of associations of farmers that offer crops to processing industries or (exporting) traders which are contacted well before harvest time. This practice is already well-known in the sales of plantain to exporters (see Chapter VII).

Another option would be to build on the wide experience gained with the cattle auctions (*Subastas*) in the area. Crops could potentially be sold in a similar way as is shown by auctions for tea, coffee, tobacco, vegetables and flowers elsewhere in the world. One may even consider using the infrastructure of cattle auctions to start the auctioning of crops; cattle auctions are typically used during only a few days per week.

A third option would involve to extend and improve the *Feria* system, including a larger number of locations. The number of *Ferias* in the Zone has already been increased from two to five, but there is probably room for more. The advantage of this system, apart from the concentration of supply and demand once a week, is that transport and handling costs for locally produced crops are minimized. Costly detours via the *CENADA* wholesale market in *Heredia* (Central Valley) could be avoided. While larger quantities can be better sold at the *CENADA* wholesale market, the *Feria* is well adapted to supply relatively small quantities.

A fourth option, proposed by the *Centro Agrícola Cantonal* in *Limón* (PIMA, 1995), may be to set up a purchase center (*centro de acopio*) with as main objectives the collection of (mainly vegetable and fruit) crops that can be sold at the *CENADA* wholesale market; arranging transport for the collected produce; and initiate searches for alternative outlets such as supermarkets and processing industries. It is claimed that this operation should be profitable when considering the considerable gross margin between farm gate prices in the NAZ and wholesale prices paid at *CENADA*. The question that is not (yet) answered is whether the *centro de acopio* will succeed in efficiently organizing handling and transport procedures, and what the effect will be on prices in the *CENADA* market.

Finally, a fifth option which may be worth considering is to arrange collective transport for farmers in the NAZ to the main *Ferias* in the Central Valley, where the daily turnover is much higher than at *Ferias* in the NAZ. There exists a clear need to study whether or not the

(high) transport costs would be outweighed by higher prices for products that might be sold at these *Ferias*.

How could one or more of these options be implemented? It is suggested that the various alternatives are discussed with organizations representing small- and medium-scale farmers, the cattle *Subastas*, traders, and government authorities with a special interest in facilitating the marketing of agricultural products. The government may consider to finance part of the costs of some experiments that are needed in this respect.

These considerations give rise to some recommendations that are particularly relevant for farmers:

* Improve the countervailing power in the market through coordination of supply, e.g., through cooperative sales organizations or auctions for crops.
* Consider whether farmers or their sales organization(s) can develop direct contacts with domestic and foreign buyers.
* Consider whether farmer organizations, directly or indirectly, have a role in financing production and marketing of agricultural products.

Some recommendations that seem particularly relevant for public authorities relate to improvements in:

* legal backing to farmers to enforce (export) contracts;
* countervailing power of farmers by stimulating and facilitating the establishment of new agricultural markets or institutions; and
* transportation and communication infrastructure within the NAZ.

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Appendix I

Basic statistics of Costa Rica

Table A1.1

Basic indicators[1]

Number of inhabitants (10^6)	3.2
Population growth (% per year)	2.2
Total area (km^2)	51,100
Population density (inhabitants/km^2)	59
Population in urban areas (%)	55.7
Literacy rate (%)	93
Life expectancy at birth (years)	76
Infant mortality rate (%)	1.39
Natality per 1,000 inhabitants	25.52
Mortality per 1,000 inhabitants	4.02
Gross Domestic Product (10^6 US $)	6,700
Growth rate GDP (average 1980-92, %)	3.3
Inflation rate (average 1980-92, %)	22.5
GDP per capita (US $)	1,960
Total labor force (10^6)	1.14
Unemployment rate	4.1

[1] Data refer to 1992, unless indicated otherwise

Table A1.2

Distribution of GNP (1993, %)

commerce	21.3
industry	19.4
agriculture, forestry, fishery	15.3
public sector	13.8
finance	8.3
other services	7.1
transport, communications	5.3
real estate	3.0
electricity, water	3.9
construction	2.5
exports (10^6 US $)	1,816
imports (10^6 US $)	2,440
Trade deficit (10^6 US $)	624

Table A1.3

Destination of exports (% of total value), 1992

	traditional	non-traditional
United States	49.2	37.0
European Community	39.5	13.3
Central America	1.4	26.2
Panamá	-	6.4
Puerto Rico	1.9	3.1
Canada	0.9	2.4
Finland	1.0	-
Japan	0.9	0.7
Mexico	0.5	1.5
Dominican Republic	-	1.2
Switzerland	0.8	0.3
Sweden	0.8	0.1
Venezuela	-	0.8
Mexico	0.5	1.5

Table A1.4

Major export products (10^6 US $), 1992

bananas	492
coffee	202
pineapple	45
meat	41
fresh/frozen fish	39
sugar	28
ornamental plants	29

Table A1.5

Origin of imports (% of total value), 1992	
United States	44
Japan	7.5
Venezuela	5
Central America	7
Germany	3.5
Mexico	4
Brazil	4
Colombia	2.5
China/Taiwan	2.5
South Korea	2
Italy	2

Table A1.6

Major import products (10^6 US $)	
raw materials to industry	941
capital goods to industry	511
non-durable consumer goods	493
durable consumer goods	329
transport goods	194
fuel, oils	174
raw material to agriculture	117
construction material	93
capital goods to agriculture	16
Foreign debt (10^6 US $)	3,963

Source: BID (1992); INICEM-Market Data (1994); MIDEPLAN (1992); World Bank (1994)

Appendix II

Development of Costa Rica's foreign trade

Table A2.1

Export and import values, 1980-93

year	total export value (US $ 10^6)	% traditional	% non-traditional	total import value (US $ 10^6)	export minus import (US $ 10^6)
1980	1,001.7	62	38	1,523.8	-522.1
1981	1,008.1	63	38	1,208.5	-200.4
1982	870.4	66	34	893.2	-22.8
1983	872.6	64	36	987.8	-115.2
1984	1,006.4	67	33	1,093.7	-87.5
1985	976.0	66	34	1,098.2	-122.2
1986	1,120.6	67	33	1,147.5	-26.9
1987	1,158.3	63	37	1,380.2	-221.9
1988	1,245.7	59	41	1,409.8	-164.1
1989	1,414.8	54	46	1,704.4	-289.6
1990	1,448.2	54	46	2,025.8	-577.6
1991	1,590.1	54	46	1,852.8	-262.7
1992	1,816.4	44	56	2,439.9	-623.5
1993	2,061.0	40	60	2,882.9	-821.9

Note: 1993 figures are preliminary
Source: INICEM-Market Data (1994); MIDEPLAN (1992)

Table A2.2

Development in Costa Rica's export commodities, 1988-1991 ('000 US $)

	1987	1988	1989	1990	1991
total export	1,121,478	1,184,095	1,361,783	1,369,440	1,495,594
A. traditional goods	678,436	671,492	707,319	666,522	766,038
banana	242,149	255,739	307,173	316,958	402,872
coffee	334,460	316,361	286,208	245,419	263,624
meat	59,591	51,371	48,571	46,247	58,797
sugar	11,853	10,005	17,962	33,528	21,372
cacao	1,380	1,664	882	917	423
others	29,003	36,352	46,523	23,453	18,950
B. non-tradional goods	443,042	512,603	654,464	702,918	729,556
B1. agriculture	78,221	110,020	131,511	153,389	167,527
pineapple	21,539	31,156	39,706	38,438	38,943
ornamentals	17,764	20,203	21,702	27,242	25,037
foliage	6,464	8,961	11,217	19,235	20,582
melon	503	1,478	5,470	8,679	13,880
flowers	7,439	8,558	10,332	11,865	12,973
cassava	4,510	5,647	7,974	9,410	11,539
other roots/tubers	1,419	2,823	4,379	5,310	5,923
chayote	2,825	3,068	5,173	4,185	6,539
petunia seed	2,926	2,687	2,632	3,660	3,519
papaya	902	1,476	1,534	1,804	2,256
plantain	1,763	1,375	2,013	1,808	2,010
macadamia	779	980	1,251	1,863	1,726
raicilla	944	6,942	4,162	3,458	1,574
strawberry	701	1,232	1,523	795	559
other	7,725	13,434	12,443	15,637	20,467

Table A2.2 (contd')

B2. agro-industry	33,477	45,588	56,808	52,260	52,865
fish	16,351	20,270	39,373	38,909	26,691
shrimp	13,032	17,724	12,020	5,900	9,365
other	4,094	7,594	5,415	7,451	16,809
B3. other industry	331,344	356,995	466,145	497,269	509,164

Note: due to different data sources total export values in tables A2.1 and A2.2 may not exactly match.
Source: CNAA (1992); DGEC (1993); Hoekstra (1993)

Appendix III

Regional division of Costa Rica

Costa Rica is administratively divided into seven provinces: *San José*, *Alajuela*, *Cartago*, *Heredia*, *Guanacaste*, *Puntarenas*, and *Limón*.

Limón province consists of six counties: *Limón*, *Pococí*, *Siquirres*, *Talamanca*, *Matina*, and *Guácimo*. Each of these counties is divided into several districts, as follows:

Table A3.1

Administrative division of Limón province

County	Districts
Limón	Limón
Pococí	Guápiles, Jiménez, La Rita, Roxana, Cariari, Colorado
Siquirres	Siquirres, Pacuarito, Florida, Germania, Cairo
Talamanca	Bratsi, Sixaola, Cahuita
Matina	Matina, Batán, Carrandí
Guácimo	Guácimo, Mercedes, Pocora, Río Jiménez, Duacari

Appendix IV

Statistical overview of the banana sector

Table A4.1

World banana exports, 1970, 1975, 1980, 1984-1990 (vol. in 1000 boxes of 18.14 kg)

	1970		1975		1980		1984		1985	
	vol	%	vol	%	vol.	%	vol.	%	vol.	%
Colombia	14,438	4.37	19,239	5.45	40,094	10.63	50,259	13.26	42,780	11.18
Costa Rica	41,975	12.70	54,414	15.41	48,925	12.97	51,683	13.64	44,301	11.58
Guatemala	10,338	3.13	13,053	3.70	21,595	5.73	14,771	3.90	17,890	4.68
Honduras	40,630	12.29	20,084	5.69	47,450	12.58	41,250	10.89	46,540	12.16
Nicaragua	276	0.08	6,082	1.72	6,000	1.59	4,242	1.12	4,388	1.15
Panama	33,097	10.01	27,321	7.74	27,865	7.39	36,080	9.52	37,756	9.87
Dominican Rep.	276	0.08	1,312	0.37	529	0.14	50	0.01	61	0.02
Venezuela	138	0.04	143	0.04	298	0.08	165	0.04	165	0.04
Ecuador	75,197	22.75	75,102	21.26	72,670	19.27	53,571	14.14	66,654	17.42
Mexico	276	0.08	276	0.08	954	0.25	1,979	0.52	2,315	0.61
Other Lat-Am	13,098	3.96	10,237	2.90	6,411	1.70	8,197	2.16	8,396	2.19
ACP-countries	48,942	14.81	43,341	12.27	25,066	6.65	34,300	9.05	35,204	9.20
Philippines	3,308	1.00	45,353	12.84	50,865	13.49	44,085	11.63	43,512	11.37
others	48,517	14.68	36,520	10.34	28,378	7.53	38,283	10.10	32,682	8.54
Total	330,506	100.00	353,197	100.00	377,100	100.00	378,915	100.00	382,644	100.00

Table A4.1 (contd')

	1986		1987		1988		1989		1990	
	vol	%	vol	%	vol.	%	vol.	%	vol.	%
Colombia	47,234	11.73	50,456	11.64	50,697	11.65	48,251	10.70	54,476	10.99
Costa Rica	48,637	12.08	51,958	11.99	56,596	13.01	67,519	14.97	74,138	14.96
Guatemala	17,120	4.25	18,078	4.17	17,245	3.96	19,255	4.27	19,846	4.01
Honduras	42,547	10.57	48,761	11.25	46,858	10.77	45,023	9.98	42,862	8.65
Nicaragua	4,322	1.07	3,986	0.92	3,694	0.85	4,049	0.90	5,409	1.09
Panama	32,291	8.02	37,382	8.62	36,837	8.47	37,500	8.31	40,730	8.22
Dominican Rep.	28	0.01	39	0.01	50	0.01	83	0.02	551	0.11
Venezuela	165	0.04	165	0.04	165	0.04	165	0.04	165	0.03
Ecuador	75,297	18.70	76,138	17.57	84,610	19.44	90,897	20.15	120,645	24.35
Mexico	3,699	0.92	5,171	1.19	4,890	1.12	4,961	1.10	4,961	1.00
Other Lat-Am	8,286	2.06	7,365	1.70	7,635	1.75	7,701	1.71	7,993	1.61
ACP-countries	40,562	10.07	39,818	9.19	44,118	10.14	44,361	9.84	47,304	9.55
Philippines	47,172	11.71	42,723	9.86	47,784	10.98	46,913	10.40	46,858	9.46
others	35,341	8.78	51,412	11.86	33,952	7.80	34,341	7.61	29,544	5.96
Total	402,701	100.00	433,452	100.00	435,131	100.00	451,019	100.00	495,482	100.00

Source: unpublished data from Corbana (*Corporación Bananera Nacional*)

Table A4.2

Costa Rican banana exports by company, 1970, 1975, 1980, 1984-1991 (vol. in 1000 boxes of 18.14 kg)

	1970		1975		1980		1984		1985		1986	
	vol.	%	vol.	%	vol.	%	vol.	%	vol.	%	vol.	%
STANDARD	14,943	36	21,751	40	17,431	36	17,940	35	15,490	35	18268	38
BANDECO	6,044	14	14,481	27	14,623	30	19,858	38	17,780	40	19982	41
COBAL	3,610	9	4,254	8	4,019	8	5,491	11	5,969	13	6389	13
C.B.C.R.	17,378	41	13,928	26	11,881	24	5,040	10	841	2	839	2
CHIRIQUE	-	-	-	-	971	2	2,538	5	2,843	6	3,026	6
BACORI	-	-	-	-	-	-	-	-	-	-	-	-
UNIBAN	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	816	2	1,379	3	-	-
Total	41,975	100	54,414	100	48,925	100	51,683	100	44,301	100	48,637	100

	1987		1988		1989		1990		1991	
	vol.	%	vol.	%	vol.	%	vol.	%	vol.	%
STANDARD	21,107	41	21,839	39	24,387	36	26,671	36	26,368	33
BANDECO	20,858	40	22,713	40	25,458	38	24,493	33	25,722	32
COBAL	5,840	11	6,701	12	7,095	11	9,530	13	10,479	13
C.B.C.R.	792	2	969	2	879	1	-	-	-	-
CHIRIQUE	3,122	6	2,497	4	2,750	4	3,134	4	2,409	3
BACORI	-	-	1,000	2	6,173	9	8,805	12	10,892	13
UNIBAN	-	-	694	1	764	1	1,206	2	3,339	4
Others	239	<1	183	<1	12	<1	300	<1	1,645	2
Total	51,958	100	56,596	100	67,519	100	74,138	100	80,854	100

Source: unpublished data from Corbana (*Corporación Bananera Nacional*)

Table A4.3

Destination of Costa Rican banana exports, 1970, 1975, 1980, 1984-1991
(vol. in 1000 boxes of 18.14 kg)

	1970		1975		1980		1984		1985		1986	
	vol.	%	vol.	%	vol.	%	vol.	%	vol.	%	vol.	%
US	26,235	63	33,873	62	25,346	52	31,117	60	27,358	62	28,257	59
Germany	4,510	11	13,684	25	12,339	25	15,203	29	14,062	32	14,500	30
Italy	3,321	8	3,166	6	5,614	11	3,826	7	1,275	3	3,834	8
Belgium	-	-	1,381	3	3,140	6	1,114	2	1,016	2	1,024	2
Others	7,909	19	2,310	4	2,486	5	423	1	588	1	422	1
Total	41,975	100	54,414	100	48,925	100	51,683	100	44,301	100	48,637	100

	1987		1988		1989		1990		1991	
	vol.	%	vol.	%	vol.	%	vol.	%	vol.	%
US	29,533	57	32,717	58	35,158	52	31,774	43	41,081	51
Germany	17,545	34	15,892	28	18,371	27	20,587	28	18,536	23
Italy	2,628	5	6,816	12	8,340	12	6,711	9	8,563	11
Belgium	1,230	2	607	1	4,722	7	13,506	18	11,734	15
Others	951	2	565	1	927	1	1,560	2	940	1
Total	51,958	100	56,596	100	67,519	100	74,138	100	80,854	100

Source: unpublished data from Corbana (*Corporación Bananera Nacional*)

Table A4.4

Selected statistics related to production, export and tax revenues of Costa Rica's banana sector

	area (ha)	exports (1000 boxes)	productivity (boxes/ha)	MNC production (%)	associates production (%)	value of production (FOB '000 $)	value per box ($, FOB)	tax (1000 $)	tax as % of FOB prod. value
1970	22,100	41,975	1,899.34	58	42	66,771	1.59	-	-
1971	24,270	46,751	1,926.31	57	43	63,983	1.37	-	-
1972	25,985	52,931	2,037.00	59	41	82,830	1.56	-	-
1973	26,920	57,763	2,145.72	58	42	90,682	1.57	-	-
1974	26,883	53,175	1,978.03	56	44	98,353	1.85	15,074	0.15
1975	25,103	54,414	2,167.61	57	43	144,061	2.65	26,675	0.19
1976	27,323	53,664	1,964.07	59	41	148,659	2.77	26,313	0.18
1977	25,196	52,794	2,095.32	60	40	140,554	2.66	25,946	0.18
1978	25,213	52,655	2,088.40	63	37	169,870	3.23	26,157	0.15
1979	25,291	53,215	2,104.12	61	39	190,511	3.58	26,653	0.14
1980	25,822	48,925	1,894.70	60	40	183,081	3.74	41,755	0.23
1981	26,727	51,343	1,921.02	68	32	220,448	4.29	51,806	0.24
1982	27,398	50,663	1,849.15	52	48	171,167	3.38	59,326	0.35
1983	26,494	52,199	1,970.22	50	50	175,282	3.36	60,922	0.35
1984	24,061	51,683	2,147.98	45	55	176,168	3.41	38,771	0.22
1985	20,535	44,301	2,157.33	41	59	149,616	3.38	31,427	0.21
1986	20,287	48,637	2,397.45	41	59	184,166	3.79	15,724	0.09
1987	20,987	51,958	2,475.73	43	57	199,000	3.83	14,239	0.07
1988	22,022	56,596	2,569.98	45	55	219,593	3.88	13,256	0.06
1989	24,722	67,519	2,731.11	60	40	278,177	4.12	13,929	0.05
1990	28,296	74,138	2,620.10	61	39	315,820	4.26	26,759	0.08
1991	33,400	80,854	2,420.78	59	41	400,492	4.95	45,750	0.11

Source: unpublished data from Corbana (*Corporación Bananera Nacional*)

Table A4.5

Regional division of banana production in Costa Rica, 1977, 1980, 1984-1991
(in 1000 boxes of 18.14 kg)

	1977		1980		1984		1985		1986		1987	
Production area	vol.	%	vol.	%	vol.	%	vol.	%	vol.	%	vol.	%
Atlantic Zone	37,712	71	37,043	76	46,644	90	43,460	98	47,798	98	51,166	98
Pococí	14,391	27	14,067	29	16,511	32	13,085	30	16,761	34	16,943	33
Siquirres	5,925	11	5,930	12	9,151	18	9,775	22	9,074	19	10,080	19
Matina	2,284	4	2,497	5	4,004	8	4,095	9	4,069	8	4,753	9
Limón	6,686	13	5,010	10	6,782	13	6,716	15	7,270	15	8,313	16
Guácimo	3,532	7	3,890	8	4,079	8	3,736	8	3,938	8	3,862	7
Sarapiquí	4,894	9	4,678	10	3,579	7	3,209	7	3,628	7	4,029	8
Talamanca	-	-	971	2	2,538	5	2,843	6	3,059	6	3,186	6
Pacific Zone	15,081	29	11,881	24	5,040	10	841	2	839	2	792	2
Corredores	6,261	12	3,936	8	465	1	603	1	680	1	625	1
Golfito	349	1	2,187	4	234	0	237	1	160	<1	167	<1
Osa	8,471	16	5,759	12	4,341	8	-	-	-	-	-	-
others	-	-	-	-	-	-	-	-	-	-	-	-
total	52,794	100	48,925	100	51,683	100	44,301	100	48,637	100	51,958	100

Table A4.5 (contd')

	1988		1989		1990		1991	
	vol.	%	vol.	%	vol.	%	vol.	%
Atlantic Zone	55,628	98	66,639	9	72,973	98	79,656	99
Pococí	18,545	33	20,539	30	19,943	27	21,405	26
Siquirres	10,409	18	14,488	21	16,449	22	18,759	23
Matina	6,696	12	9,233	14	12,164	16	15,120	19
Limón	8,188	14	8,533	13	8,819	12	8,574	11
Guácimo	4,534	8	5,854	9	7,025	9	8,204	10
Sarapiquí	4,451	8	4,646	7	4,408	6	4,393	5
Talamanca	2,804	5	3,346	5	4,166	6	3,202	4
Pacific Zone	969	2	879	1	1,166	2	1,125	1
Corredores	696	1	627	1	868	1	849	1
Golfito	273	<1	251	<1	297	<1	276	<1
Osa	-	-	-	-	-	-	-	-
others	-	-	-	-	-	-	73	<1
total	56,596	1.00	67,519	1.00	74,138	1.00	80,854	100

Source: unpublished data from Corbana (*Corporación Bananera Nacional*)

Appendix V

Statistical overview of the cattle sector

Table A5.1

Size distribution of cattle farms in Costa Rica and Limón Province, 1991

Farm size (ha)	Limón province		Costa Rica	
	no. of farms	no. of animals	no. of farms	no. of animals
no land	85	419	1,532	8,732
< 1	55	196	2,456	8,634
1 < 2	122	558	2,742	11,026
2 < 3	147	873	3,053	14,713
3 < 4	123	771	2,012	11,705
4 < 5	139	934	2,263	14,486
5 < 10	682	6,418	7,342	62,341
10 < 20	1,218	18,246	8,767	123,768
20 < 50	1,189	32,479	10,773	286,659
50 < 100	450	22,014	5,521	288,715
100 < 200	204	17,349	2,845	270,595
200 < 500	112	19,518	1,828	368,117
500 < 1,000	22	6,964	419	171,726
> 1,000	15	16,802	192	193,899
Total	4,563	143,541	51,745	1,835,116

Source: MAG (1993)

Table A5.2

Distribution of herd size in Costa Rica and Limón Province (number of farms), 1991

herd size	Costa Rica	Limón province	Counties					
			Limón	Pococí	Siquirres	Talamanca	Matina	Guácimo
1 < 5	18,076	1,270	111	361	378	97	135	188
5 < 10	8,572	808	69	248	205	58	87	141
10 < 20	8,244	943	76	344	218	52	76	177
20 < 50	8,952	980	69	441	201	35	67	167
50 < 100	4,183	319	23	154	50	8	24	60
100 < 200	2,175	157	15	79	24	2	10	27
200 < 500	1,206	67	3	32	8	1	3	20
500 < 1000	237	11	1	3	1	4	0	2
> 1000	100	8	1	1	2	0	0	4
Total	51,745	4,563	368	1,663	1,087	257	402	786

Source: MAG (1993)