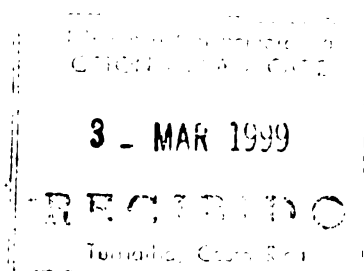


ATLANTIC ZONE PROGRAMME

**Report No. 70
Field Report No. 116**



VALUATION OF SMALL FARMS

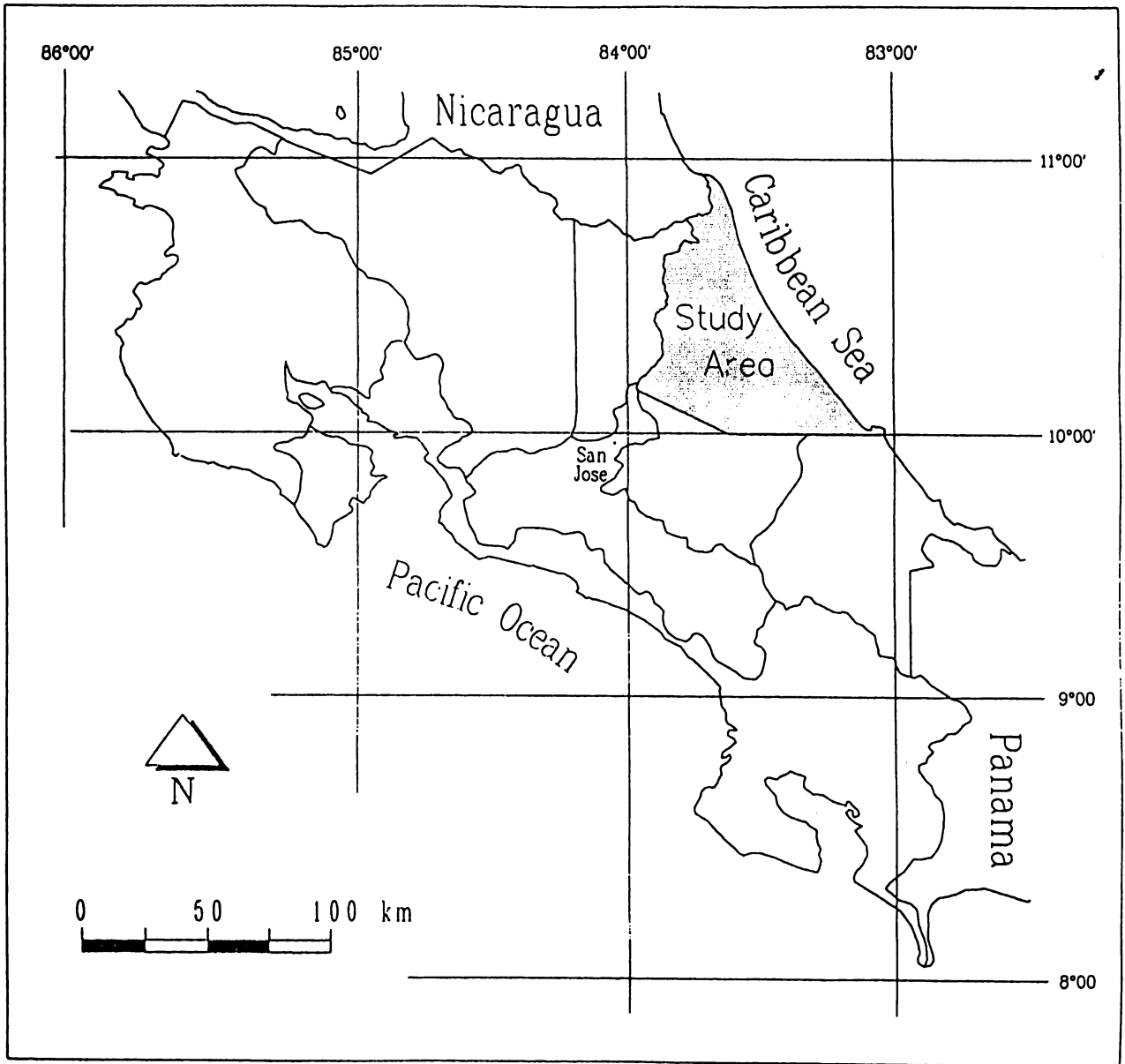
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**Bouma, M.B.
Linker, P.J.**

October 1993

**CENTRO AGRONOMOICO TROPICAL DE
INVESTIGACION Y ENSEÑANZA - CATIE**

**UNIVERSIDAD AGRICOLA DE
WAGENINGEN - UAW**

**MINISTERIO DE AGRICULTURA Y
GANADERIA DE COSTA RICA - MAG**



PREFACE

General description of the research programme on sustainable Landuse.

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

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

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

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

Combinations of crops and soils

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

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

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

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

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SUMMARY

In this report we have designed a standard method to estimate the value of a small farm. We distinguish two parts of this value: An objective 'technical' value and a subjective value, like the urge to sell or the emotional value. To determine the objective 'technical' value, we have classified four main factors; the basic value of land, the improvements, the perennials and the roads. They all have about the same weights in the total value, but a increase in value is a result of more improvements or perennials. This objective 'technical' value could be calculated very specific. The subjective value we estimated with a fixed percentage of 60-75 above the objective 'technical' value. This is rather speculative percentage, but it is an average percentage used by the IDA. It requires more, maybe sociologic, investigation to unravel this subjective part as well. But in our point of view it will remain difficult to quantify most of the factors of this part.

The initial idea was to trace down the Farm-Value-Determining-Factors and to investigate their weights by linear regression. We did not need the multiple linear regression, because we got detailed information from an IDA-official. We should be happy for that for we think that, because of the problems to obtain reliable prices of land, it would not have been possible to say something with significance about the weights of the Farm-Value-Determining Factors. Solving the puzzle of the unstructured information from the IDA, we composed the framework we wanted. With this framework it is possible to estimate the values of small farms in a consequent way. Although there is a lot of room for discussions about some calculations, it is a method that approaches the market prices.

By reading the report the willing reader will be shared in the complexity of valuating farms. Except for the standard calculation, we presented some perceptions of the farmers as well as our own in this report.

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PREFACE

The basic idea of this study descended originally from our tutor R. Ruben in the time he was working for the Free University of Amsterdam. Because he now is working for the Agricultural University of Wageningen, this report can be considered as the result of both Universities. We are students from the FUA. We have done the investigation in the Atlantic Zone of Costa Rica, which is the research area of the AUW.

We thank therefore the AUW for the possibility to operate under the umbrella of their project in Guapiles. We are grateful for being able to use the facilities of the project. In particular, we thank our tutors R. Ruben and R. Alfaro Monge for their stimulating contributions and of course our field-assistant Pípi. From the FUA we thank our tutors J. de Groot and C. Wattél. We also thank señor Calderón of the IDA in Cariari.

But of all we are grateful for the information of Marlon, an IDA-official from the Neguev office. Though it took some time and headache to drag this precious knowledge out of his head, it turned out to be the basic of this study.

We hope that we have been able to do some good work on an issue that was rather new. It was new for us as well as for our tutors. We hope to have written an interesting report and we wish you joy in reading it.

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INTRODUCTION

There are many forces that keep the pressure on the prices of land. In the Atlantic zone of Costa Rica, land is used by large Multinationals like Dole and United Fruits as well as by small farming households. The prices of land have been rising very fast for the last decades. It would be very interesting to investigate the relative importances of the different groups which keep the pressure on the prices of land. We have chosen to limit our investigation to the prices of small farms, or farms, in two areas within the Atlantic Zone, namely: The settlement Neguev and the older area Rio Jimenez. We have limited the investigation to small, that is 10-20 hectares, farming households to make it workable.

In the DLV research report no. 3 (Kruseman, Ruben & Hengsdijk, 1992) is mentioned that the relative weight of factors like soil type and cropping potential, localization and access to infrastructure, and land improvements are important factors valuating land. It states that this value of agricultural land depends more on location than on soil quality.

The main goal of this investigation is to determine the factors that influence the prices of land and their relative weights. In this way we hope to support the statements of the DLV report. Next to this quantitative information we hope to be able to serve some qualitative information about the functioning of the land market and the occurrences in the area. We will take the problems faced by the small farmers and their opinions as well, into account. We will not avoid to name some of our own visions as well.

If we put it all together the main goal of this report is:

TO DETERMINE THE RELATIVE WEIGHTS OF THE FACTORS THAT INFLUENCE THE PRICES OF SMALL FARMS IN THE ATLANTIC ZONE

With this information we want to compose a general framework of how to estimate the value of a small farm. We want to make a clear distinction between this estimated market value and the economic value of a farm. By calculating an economic value as well one could compare it with the market value to examine whether it is profitable to practice the profession of farmer or not. In our point of view it is too complicated, one has to make too much assumptions, to calculate such an economic value.

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Therefore, it could be better to include the opportunity costs of the farm into a cost-benefit analysis of a farm to determine the income and thus, whether it interesting to be a farmer with a small farm in this area. The opportunity costs would then be the amount of interest of the market value of the farm. The discount rate would then be the loaning-out discount rate.

Other objectives of this investigation are:

- To investigate the functioning of the land market
- To describe recent occurrences, which are important to the investigation
- To describe the different points of view, including our own
- To make global speculations about the future about the possibilities for small farmers
- To give some suggestions about what can be done with the acquired information and about further investigation

The structure of this report is the following. In chapter 1 we will describe the Atlantic Zone in general as well as the three research areas as well. In chapter we will explain the used methods. The quick reader could not be interested in this part, while this method turned out to be only partial helpful to this investigation. Our initially obtained Farm-Value-Determining-Factors did not equally match those of our estimator of the farms, the IDA-official. So in chapter 3, called the results, we describe and compare the two classifications. We will present a standard calculation to valuate small farms in the Atlantic Zone of Costa Rica and we will end with some data as a result of these calculations. Chapter 4 will be dedicated to the weaknesses and strengths of the investigations, but at the same time we will make some suggestions for further investigation. We will end this report with conclusions and the endless list of literature.

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CHAPTER 1: THE RESEARCH AREA

1.1 The Atlantic Zone of Costa Rica

The Atlantic Zone of Costa Rica is located east of the Central Valley, the traditional heartland of Costa Rica. It is separated from the Central Valley by a mountain range. The recently build road through the Braulio is the main connection. The main port is the Caribbean port of Limon. The Atlantic Zone is a region with significant rates of immigration during the last decades. The total population of the zone exist of 220.000 people, representing 7.3% of the total Costarican population. Its territory is about 18% of the total national surface.

The climate of the Atlantic Zone is characterized by steady temperatures around 26 °C and a lot of rain during the entire year. The average annual rainfall is 3.666 mm. The months February, March and April are usually drier than the other months.

The land-use in the Zone is dominated by protected forests, banana plantations, palmheart plantation, horticultural plantations, cattle ranches and IDA (Instituto de Desarrollo Agrario) settlements. IDA has acquired 163.000 ha land in Limon province and settled at least 12.000 families in different settlement schemes.

Although during the 1970's the government settlement policy has been responsible for a sharp increase of small-sized peasant farms, the distribution of land is still quite uneven. Sixty-three per cent of the farms are between five and fifty hectare while fifty-three per cent of the total zone is used by farms larger than hundred hectare and twenty per cent by farms larger than five-hundred hectare, representing only 2.8 per cent of the total number of farms.

The commercial interests of the timber industry and banana companies are often mentioned as the cause of the problem of forest cleaning. Because of the liberalization of the prices of the basic grains, the difficulties of obtaining credit, the opportunities of off-farm employment and the subsidies to the livestock sector the following items occur. Small farmers are leaving the agriculture, because there is little market for there products. The land is often converted into pasture. The small farmers are seeking an additional income in off-farm employment, like the banana companies. Because of the quota problems of bananas this kind of employment is decreasing.

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Because of the rising prices of land, which do not reflect opportunity costs, and the problems the small farmers are facing, the little farms are often sold to investors for speculation purposes. The peasants leave with a certain amount of money for the cities. Because of the lack of growth of the industrial and services sectors they join the rising group of the very poor. As the main research area we took the IDA settlement Neguev. To make better comparisons we did a global study in Rio Jimenez. Although the area of Cocorí was also a part of the initial plan, due to a lack of time, we had only an interview with an IDA-official from the office in Cariari.

We have to be careful making generalizations, but it is often said that the farmers in the IDA settlements are less capable than the independent farmers in for example Rio Jimenez. We think it will be interesting to see the differences in land-use, management and the resulting interaction with the turbulent environment.

1.2 The Neguev settlement

The settlement Neguev was the largest hacienda east of Guapiles. The main occupation took place in 1978. Since the occupation the majority of the remaining forest at the hacienda has been cleared and transformed into pasture and cropping fields. The settlement is divided in five sectors: La Lucha, Milano, Bella Vista, El Silencio and El Peje. The total area is 5.340 hectare. The farming area is 4.133 hectare divided in 310 parcels of a magnitude between 10 and 17 hectare each. This size of the plot should guarantee full family labour absorption in agricultural production.

Every sector has its own communal centre with a school, sports green, some small shops and a small public centre. The office of IDA, the official authority responsible for the management of the Neguev, is situated in the centre of Milano.

In this investigation we distinguish three types of soil.

Soil 1: Young Holocene soil deposits with good drainage properties

Soil 2: Young Holocene soil deposits with poor drainage properties

Soil 3: Old Pleistocene soil deposits with reduced fertility

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Although all kinds are present in the Neguev there are differences in the amount of each soil type. Of soil 1 there is 1123 ha (27%) available, of soil 2 146 ha (4%) and of soil 3 2864 ha (69%). The fertile soil 1 is totally found west of Santa Rosa near the Parismina river. Farms with only Soil 3 are concentrated around Bella Vista.

Table 1.2.1 shows the combinations of crops and crops and soils.

	Maiz	Yuca	Platano	Piña	Palmito	Pasto
Soil I	X	X	X		X	X
Soil II						X
Soil III	X			X	X	X

Table 1.2.1 : Combinations of crops and soils

In reality every soil type is mainly been used for pasture. The relative fertile and flat parcels of soil 1 should be very suitable for agriculture, but because of a lack of markets for these products this seldom is the case. The less fertile parcels of soil 3 are next to the main use of pasture only used for palmito and pineapple. Sometimes there is a little bit of bananas and coconuts as well.

Concluding it can be said that the soils of the Neguev are not of a very good quality, except the Northern part near the river Parismina, while the use of the land is mainly extensive livestock production.

1.3 Rio Jimenez

The region Rio Jimenez is situated next to the Neguev settlement. The surface area is 11300 hectares and the topography is flat. The region contains 800 farms with 4102 occupants, over an area of 11300 hectares. Most people are living in small population centres, but also scattered over the area (P.F.Paap, 1993). The farms differ much in size.

The western half of Rio Jimenez district has a relatively long settlement history, estimated on ca. 60 years. This part is better developed and is more accessible due to the good road connection between Rio Jimenez and Guacimo. The eastern part is less developed and has poor access. Before world war II there were many banana plantations in the area. They disappeared because of the Panama disease. In 1967 the banana plantations were established for the second time, which attracted a lot of people to settle for work.

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The railway does not work anymore and the only access is by road. There is a daily busservice to all parts of Rio Jimenez. The area is known for a strong orientation on the market (P.F. Paap, 1993). The farms are overall fully developed. Due to the fertile soil, the better accessibility and the stronger market-orientation, there are more crops in this area than in the Neguev. There is a tendency towards specialization. Though the pasture area is still the largest (53%), the crop area is also present (30%). Other land use types are forest (9%), shrubland (4%) and others (4%).

Problems like lack of markets by which farmers are forced to abandon the farm are far less than in the Neguev. The farmers here show more ability to adapt. In most cases they have been farming for all their lives, often on their present parcel as well. They, overall know what they are doing. In some cases they practice additional activities, like a store, being a middleman or selling plots. They are far more enterprising than the average farmer in the Neguev.

1.4. Cocorí

The Lomas of Cocorí and surroundings, 50 kilometres north of Guapiles, covers about 120000 hectares. It is the youngest area of the three. About 15 years ago, the first pioneers entered this area and ever since many have followed. At the same time, and caused by it, a rapid deforestation was occurring. The land is deforested by precaristas, bought by urban landlords and subsequently used as grazing land for beef cattle. The infrastructure has strongly been improved for the past years (P.F. Paap, 1993). The construction of the paved road from Guapiles to Cariari some years ago has been an important step forward. The population has been estimated at 1500 persons in 1990. The population was formerly dispersed, but nowadays is living along the roads. From a study of Waayenberg (1990) about 50 farms, could be concluded that the land use in this area was: annuals 3%, perennials 1%, pasture 36%, shrubland 8%, forest 52% and others <1%. Pasture is an important form of landuse. Next to that, several crops are cultivated. Cocorí consist of many landscapes. The relief varies between a mountainous part in the centre of the area and large lowland areas. Large parts of the forest is protected, but it is very difficult to control it well. The IDA has 6 settlements in the area: Caño Seco, La Suerte, Tournon, Amburgo Norte, La Victoria, El Indio, Balastre and La Promesa. These settlements are differing in age, soil type, accessibility and seize. Though, according to a study of Wielemaker in 1990, half of the people had no title, in the IDA settlements this nowadays is about 5%. We can only suspect that the number of titleless free-market parcels, also has decreased.

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CHAPTER 2: METHODS

The first idea was to calculate, within a linear regression comparison, the value of each individual farm-value-determining factor. The sum of these amounts would then have been, together with an error-amount, the value of land. But the linear regression analyses could be used to obtain these individual values of the Farm-Value-Determining-Factors (from now on we will speak of FVD-Factors). So we changed the approach by investigating the relative weights and significance of each FVD-Factor, determining the price of land in a linear regression comparison. Either you calculate the individual values of the FVD-Factors, or you use a linear regression. We choose for the last option.

2.1 Obtaining the Farm-Value-Determining-Factors

So the basic idea of this study is to formulate a multiple linear regression comparison which should value the individual farm-value-determining factors. The dependent variable is the value of the farm. The independent variables are the factors which should be relatively important. In order to obtain these FVD-factors we cruised the land of secondary data. We read some literature on this subject, we spoke with our tutors, we visited some official institutes, like the ministry of finance, the IDA-department in the Neguev and the University of Heredia. We spoke to several people who knew, or who were supposed to know, something about the factors which determine the value of a small farm. In this way we ended in a list of the following FVD-factors:

- 1) The quality of the soil
- 2) The topography of the parcel
- 3) The actual use of the land
- 4) The improvements on the farm
- 5) The distances to the public services
- 6) The distances to the markets
- 7) The presence of a title and a map

We will now explain these individual factors and describe the way in which they were made operational.

2.2 Explaining the FVD-factors

Once more, the idea was to put these, in our eyes complete, set of factors into the linear regression comparison. We therefore had to make these factors operational, or measurable. This set-up was made before and during the administration of the interviews.

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The quality of the soil

It is clear that a fertile soil with no drainage problems is more valuable than the opposite. The project which we were working at had made several classifications for soil-quality. We took the most rough one, because this one was more easy to process and its outcomes are clearer for interpretation.

If differences in valuation of land should appear, they are more distinct when using a rough estimation. The classification we mentioned before in paragraph 1.2 describing the Neguev settlement, is soil type 1,2 and 3.

There were detailed maps of these soil types in the Neguev settlement available. In this way we were able to make a selection of farms in advance. In Rio Jimenez we did not have such a map. By then we knew that the difference in color was the most important distinction. Soil 1 matched with the fertile black soil, while the red soil was similar to soil 3. In that perspective it was no problem to identify the soil types in Rio Jimenez as well.

The topography of the parcel

We mean with topography whether the parcel is flat, hilly or steepish. While we initially thought that a flat landscape would be more valuable for a farm than a steepish one, there appeared to be differences in opinion at that point. There was a group of farmers who pointed out that a hilly landscape contains more area than a flat one. Imagine pushing the hilly landscape flat. You would have more surface. Another point was that they thought that the flat landscapes face problems according to drainage. After heavy rainfall the flat landscape would turn into a swamp. But other farmers supported our first point of view that it is easier to cultivate a flat area. There are more possibilities for machinery and transportation. We think that a flat area is more suitable for agriculture when drainage is good. For pasture a hilly landscape could be an advantage because of the larger surface. But there are differences in preference and that is why it is difficult for this study to make strong statements about these outcomes. However, there is a correspondence between topography and quality of soil. The soils 1 and 2 are always flat, while parcels with soil 3 are mostly hilly and steepish. That is why we will take those two factors together. In this way we have four possibilities: Soil 1 flat, Soil 2 flat, Soil 3 hilly and Soil 3 steepish. Soil 2 was seldom found so we decided to skip that one as well. That leaves us; Soil 1 flat, Soil 3 hilly and Soil 3 steepish.

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The actual use of the land

A piece of swamp has less value than a piece of excellent pasture. That is obvious. But what about agriculture and forest? We distinguish those four possibilities of actual use, also: Swamp, forest, pasture and agriculture. Within those possibilities are also differences. For example; there are differences in quality of pasture, there are differences in the kind of wood in the forest, there are differences in cultivated land. If we should take these matters into account, the number of factors would exceed. This would influence the significance of the outcomes. Differences will be made on basis of qualitative information.

The improvements on the farm

This group contains improvements like barns, house, coral, fences, electricity, current water, wells and drainage systems. What is the value of, for instance, a barn or a coral? Is it the initial costs minus debits or the present value minus a reasonable amount of debits? Or less, because within the total value of a farm it values less? On this point we gathered more information. We asked for the initial costs as well for an estimation of the present value. Because of differences in years of purchase we could get an idea of the valuation of improvements over time. We made three ranges for their total value. Electricity and wells are dummy-variables.

Perennials

We mention cacao, palmito, coconut-trees, fruit-trees, bananas, but also commercial wood and ornamental plants. It was very difficult to measure these values well. We made ranges in which we tried to make clear distinction between farms by putting different weights on the different cultivations.

While we initially thought that the commercial trees would be of considerable value, it appeared to be otherwise. Trees on a parcel are property of the government. If one can show that he needs the land for cultivation, he can get a permission for cutting those trees. This, however costs a lot of time and efforts. Cutting the dispersed trees costs a lot of money, one has to find a buyer who is in a convenient situation. So they will not get much of a profit. For the farmers cutting trees is a burden. They only do it when they want to use that land or make the terrain more accessible. For that, dispersed trees, though commercial, do not value. It would be different when it is a tree cultivating farm. But in this report we do not include those ones. It appeared that the presence of palmito and cacao was very valuable. That is why we took these cultivations as two separate variables. Value in hectares.

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Distances to the public services

How long does it take to walk to the nearest grocery-shop, to the communal centre, school, telephone, the soccer-field, the hospital, the church and official instances like the IDA and the MAG. And when it is not possible to walk, how can you get there? By bus or car and how long does it take? The public services which could not be reached by foot in a reasonable time, are for all farmers rather equal. So we made the distinction in the public services which were accessible by foot, which appeared to be the nearest public centre, for they all have a grocery-shop, communal centre, school and soccer-field. We have made two ranges, to be used as a dummy-variable.

Distances to the markets

The distance to markets for selling the products and to buy inputs is normally very important. But during the investigation it appeared that this is a factor to ignore. The products, the little that is produced in the research area, were mostly collected by middle-man. The markets, mainly in San José, are about the same for all the investigated farms, namely one and a half hour. Distances for inputs neither differ significantly, because buying inputs is an activity which occurs three or four times in a year. So we will leave this factor aside.

The presence of a title and a map

While in the past worse, the registration of ownership of land is often lacking. Squatters taking non-cultivated land, buying and selling without official papers are some problems. In the last decade this has been improved. Squatting in these days hardly occurs. The IDA has been a contribution to this problem, selling land and dividing under to the landless farmers. Still there are farms without legal papers or in reality property of somebody else or of two owners. We will not concentrate on these complicated juridic problems. But it will be clear that a parcel with the right papers values more than one lacking these papers. Therefore is the presence of a title taken into account as a dummy-variable.

valuation of small farms

So far we described the basic idea and the FVD-factors. Table 2.2.1 will illustrate the independent variables assuming that one knows how a multiple regression comparison is builded up.

name of variable	type of variable	unit
basic value	normal	total
soil 1 flat	normal	hectares
soil 3 hilly	normal	hectares
soil 3 steepish	normal	hectares
forest	normal	hectares
swamp	normal	hectares
agriculture	normal	hectares
pasture	normal	hectares
cacao	normal	hectares
palmito	normal	hectares
perennials	normal	ranges
well	dummy	total
electricity	dummy	total
coral/barn/fences/house	normal	ranges
public services	dummy	minutes
title	dummy	total

Table 2.2.1 : Explanation of the independent variables

2.3 Valuating the farm: the dependent variable

We now had made the most important factors operational. That left us one big problem : the dependent variable, the values of the farms. We searched for a convenient method.

valuation of small farms

The idea arose to search for the prices of farms just been sold. This approach had three big problems. First, the official prices appeared to be 10-20 percent of the real price. This for tax-reasons. Second, we should track down the owner. This farm should be 10-20 hectares and in our area of investigation. This would have been too difficult. Third, these prices would contain a very big part of subjective reasons. For example, a farmer who had to sell his farm because his back was too bad to be able to work any longer. He would have got a lower price than normally. Or a doctor from San Jose, who wants to buy a farm. He asks for the price, which is far too much, and pays, because he has the money. With such different prices we could not have made a running comparison.

The second idea was to ask the farmers the value of their farms. This would be, of course a price too high. For that we asked them also about the value of the farms of their neighbors and their reasons for that particular valuation. This approach turned out to be a giant mistake as well. The valuation of the farmers varied enormously. High values for a farm which would damage the eyes of a person too long looking at it. Low values of their neighbour, while that farm was clearly far more precious. We could not use those data either. However, we noticed that the farmers needed a method to valuate their farm. In many cases, they did not have the slightest idea of the value of their farm.

The third approach was to hire a broker who was able to valuate the farms objectively. We found an IDA-official who was willing and able to do this. The problem with this approach however was that it would be an subjective objective valuation. In spite this, we had no choice and let the man do his work. These estimations of the farms he produced, although very muddled and inconsequent in the beginning, were so differentiated and of such an accuracy that the reason why we had chosen to use a regression comparison, namely to determine the weights and significances of the FVD-factors based on non-specified and nontransparent estimations, didn't exist anymore. His estimations proved that there already, although still unstructured in his head, existed an specific valuation of many, sometimes a bit different formulated, FVD-factors. That is when and why we decided to drop the linear regression method and to compose a general framework of how to valuate a small farm based on the data of the IDA-official.

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2.4 The subjective valuations of the FVD-Factors by the farmers

Next to the linear regression method we wanted to investigate the subjective opinions of the farmers about the importance of the FVD-factors. So this is what we did; at the end of the questionnaire we asked them to put the FVD-factors in order of importance. That is, which factor do they perceive as being the most important valuating factor for a farm? After that, what is the second most important factor? Etcetera, until we reached the factor least important. We suspected a preference for the factors that were more or better presented at their farm. For example, a farmer with a good soil is supposed to value more the factor 'quality of the soil' than the one who had been endowed with a piece of red earth. Therefore, next to the calculation for the entire group, we ran the averages and their standard-deviation, as well for these separate groups. Or more clearly, we ran the program for the group of farmers with good soils, a group with a lot of improvements, a group with good accessibility to the public services, and so on.

2.5 Setting up the questionnaire

The structure of the questionnaire, appendix I, approximately follows the list of FVD-factors. We started of course, with some questions about name, age, number of the parcel, area and how long the farmer had been cultivating this piece of land. After that, we asked all the important information about the FVD-factors. We let them make an estimation of the value of their farm, as well as one for their neighbors. In that way we hoped to get a more objective estimation. We ended, as been said in the paragraph before, with the subjective opinions of the farmers about the FVD-factors. The outcomes of the interviews are in appendix II.

2.6 The research areas and their weights

We took the Neguev as a start because there were detailed parcels-, soil- and topography-maps available. In this way we had useful secondary information as a start. The farmers though in the Neguev, as been said before a settlement of the IDA, are not representative for the entire Atlantic Zone. That is why we did a global study in Rio Jimenez and we conversated with the IDA people in Cariari as well. The farmers in Rio Jimenez were independent, more commercial farmers. In the area around Cariari, the IDA has many settlements, differing in soil quality, access and age.

valuation of small farms

The Neguev was our main research area. We did 40 questionnaires in this area. We made three subareas. The first northern of the Parismina river and west of La Lucha. This area was special because of it's fertile soil 1. The second area was as well situated northern of the river, but east of La Lucha. It contained soil type 3 and was hilly. The third area was the biggest area for it was the area most representative for the Neguev.

It was situated around the centres of Bella Vista, El Silencio and El Peje. It had soil type 3 and was mainly steepish.

Rio Jimenez was our second research area. We did 10 questionnaires in this area. A MAG-official in Guacimo was very helpful to supply us with the necessary addresses.

We also had, as mentioned before, an interview with the people from the IDA in Cariari to get to know the major differences in valuating land over there.

We could not do intensive research in all areas because of a lack of time.

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CHAPTER 3 : RESULTS

3.1 Introduction

In order to get objective prices we fortunately were helped by an IDA-official who offered to estimate the values of the individual farms. Though this would be a rather subjective 'objective' estimation, this was the only possible alternative after the values of the farmers turns out to be insufficient. To many differences in valuating as well as generalizing showed that the farmers, especially those in the Neguev, were not able to value their farms correctly. The IDA-official specified a lot of the factors. We asked him for his standards as well as for remarkable values. It took us a long time to share with him the necessarily information. At the end we learned a lot. As happy as a child with his new toy, we rushed to the computer to give us the weights of our factors. A big truck drove right over our new toy. It took us a lot of tissues to wipe our tears away. With eyes still red we sat down and thought: 'What went wrong?'

What went wrong was the difference in set-up. Our estimator used the factors in another form. Some were equal, some factors were to neglect in his point of view and others were additional. In the next paragraph we will explain the calculations of our estimator, the IDA-official. After that we will a comparison between these calculations and our initial factors.

3.2 The calculations of the IDA-official

3.2.1 The basic value of land

The IDA distinguishes four different prices per hectare of land in the Neguev:

- 1) The initial costs of the ground for the IDA: ₪ 85000-95000.
- 2) Price 1 plus an annual rate of 8 percent. This is the price against which the IDA sells the ground to the farmers.
- 3) The technical price of the ground used by the IDA:
₪ 125000-175000.
- 4) The 'market'-price. The IDA uses a price of ₪ 215000-275000.

Interesting is the third price. This price however, is an average price. It includes improvements like the presence of a house, a well, and all of these things as well as the minimal demands to a piece of land, namely: Access to a road and access within the parcel, no problems towards drainage, the ability to treat the terrain with machines and the texture or density of the ground.

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When these four minimal demands are existing, the ground has, for the IDA, a basic value of 30000 per hectare in case of the Neguev. In case of a fertile soil type 1, this value increases with 35%. This basic value is more in the area of Rio Jimenez. About 100000 or more per hectare over there. This difference in value has several reasons. First, it is very difficult selling a farm in the Neguev. The first years after acquisition it is not possible to sell at all. After that you have to go through a lot of paperwork. It is also prohibited to use the land for other than agricultural purposes. In Rio Jimenez for example, it is possible to divide your land in small plots and to sell them relatively expensive. In case of good access it is possible to raise the value of an hectare to about a million colones. However, this is prohibited in the Neguev. Furthermore, it is difficult to borrow money from the banks with a farm in the Neguev. Here also are the conditions and the official papers of the IDA restraining the ease of borrowing money. This is decreasing the value of land. Other differences with Rio Jimenez are less access, less abilities to treat the terrain with machines and less fertile soils. We determined the maximum basic value on basis of differences between independent-farms and IDA-farms, and the quality of the soil.

For example:

Farm no. 62 in the Neguev has 17 hectares of the most fertile soil. This parcel should have a basic value of $17 \cdot (30000 + 35\%) = 680000$. It only had a value of 200000 in the eyes of our estimator. When we asked him why it turned out to be parcel with severe drainage problems. This decreased the value with about 200000 colones. It also had bad access and it was difficult to treat the terrain. Except the bad access we never thought of these factors being that important.

Because these four factors turned out to be determining the basic value of land we tried to make a standard calculation of it. The initial value was ¢ 100000 per hectare. This is the maximum value in case all four factors are optimal. We decided to value all factors equal, which is of course a point of discussion. So the value of each factor is 0-25% of the total basic value. The maximum basic value in the Neguev, due to problems mentioned earlier, is according to our estimator about ¢ 30000. If the soil is a very good one it should be valued 35% more, thus ¢ 40000 per hectare.

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Let us put all this information in a table.

Factors	Weight	Rio Jimenez	Neguev s.1	Neguev s.3
Access	0-25%	0-25000	0-10000	0-7500
Drainage	0-25%	0-25000	0-10000	0-7500
Treatability	0-25%	0-25000	0-10000	0-7500
Texture	0-25%	0-25000	0-10000	0-7500
Total	0-100%	0-100000	0-40000	0-30000

Table 3.2.1.1 : Determining factors of the basic value of land

These are values per hectare. The maximum basic values of the land in Cocori are put down in table 3.2.1.2. The calculations for the specific basic prices are the same as described above. A decrease of each factor from 0-25 percent.

Caño Seco	¢ 20000 per hectare
La Suerte	¢ 60000 per hectare
Tournon	¢ 60000 per hectare
Amburgo Norte	¢ 60000 per hectare
La Victoria	¢ 30000 per hectare
El Indio	¢ 30000 per hectare
Balastre	¢ 20000 per hectare
La Promesa	¢ 50000 per hectare

Table 3.2.1.2 : Maximum basic prices in Cocori

'Access' is referring to problems like reaching all parts of the parcel and the distances to the road. Crossing rivers or creeks, rough topography and the shape of the parcel are important factors in this respect.

'Drainage' is referring to problems with flow away of water. These can be very severe problems. In that case land can be useless for cultivation. When drainage is not done in the natural way, one should build a drainage system, like digging channels. This can be very costly.

'Treatability' is referring to problems with treating the terrain. When there are a lot of dispersed trees, it is not possible to treat the terrain with machines. In order to prepare the terrain well, one should cut the trees and remove the stumps.

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These costs can go up to, and over 100000 per hectare. And other factor is the topography of the parcel. It is not easy to drive a tractor on a hill of 60 degrees. Besides trees and topography the presence of swamps is not beneficial for the treatability. Although a swamp is humidifying a part of the parcel, the ground is not sufficient for cultivation. It's presence also makes it difficult to mechanize the place.

'Texture' is referring to the density of the ground. The red soils in the Neguev, for example become like stone after a heavy rainfall. Besides the fertility it is hard to cultivate those soils.

For example:

Eladio Morales Gorrallo from Rio Jimenez has 10 hectares. The access within his parcel and to the road is good. He has drainage problems estimated on ¢ 10000 per hectare. He has a lot of dispersed trees on the parcel. So it is difficult to treat his parcels with machines. This treatability-problems are estimated at ¢ 10000 per hectare. The texture of the ground is good. So his basic value per hectare is estimated at ¢ 80000. For 10 hectares that is 800000. An other important factor determining the value of land turned out to be the presence of pasture. This was being valuated at 35000 per hectare for a normal pasture up to 50000 and more for the better types.

Futhermore, the presence of water is very important. When a parcel has no river it decreases in value. Our estimator calculated a decrease of ¢ 100000 for parcels smaller than 5 hectares, because it is possible, though with a lot of work, to use one or more wells in order to supply the animals and the ground with water. Above 5 hectares this will be too hard so the decrease in value will be ¢ 200000-300000. These decreases are for the farm as a whole. So a small farm decreases ¢ 100000 and a farm bigger than 5 hectares up to ¢ 300000 in value when there is no river available. One should know that the presence of a river can be a problem in respect to the accessibility within the parcel.

Our example of above had 10 hectares of normal pasture. Value: ¢ 350000. He had no river in the neighbourhood. Each day he had to bring his cattle to the only well at the other side of the parcel. The absence of a river decreased the value of his farm with 300000 colones, for he had more than 5 hectares.

valuation of small farms

3.2.2 Improvements

House:

There were standards available for determining the value of a house. We differ three types of houses. They all have there value per square metre.

- 1) Total cement: ¢ 6000 p/m²
- 2) A foundation of cement and the rest wood: ¢ 3000-4500 p/m²
- 3) Total wood: ¢ 1000-2500 p/m²

The differences in value are because of the quality of construction and the age of the building.

Above the technical value of a house, there is a value of presence of the house. The fact that there is a place to sleep values ¢ 100000. So if there is a house, the presence only values ¢ 100000. Apart of the technical value.

Fences:

Normal fences have a standard value of ¢ 100000 per kilometre. Depending the quality of the fences the real value varies. Fences with posts of cement have a value of ¢ 175000 per kilometre. This value does not vary very much.

Barn:

We differ two types of barns. Those made of cement and those made of wood. Constructions of both cement and wood are not common. The value of a barn of cement is, like houses, 6000 colones per square metre. A barn of wood values 1500-2000 colones per square metre, also depending the condition of the barn.

Coral:

A coral is always made of wood and values 600-700 colones per square metre in good condition.

Well:

The values of wells variate from ¢ 7500 to ¢ 15000. In general the value is ¢ 1000 per metre depth. We took a standard value of ¢ 10000 for a well.

Tab water:

The costs of construction are about ¢ 15000. Its presence though does not value as much as it would, for example, in Guanacaste. In the areas of Neguev and Río Jimenez, the water from the well is drinkable.

valuation of small farms

Electricity:

The value of electricity to a farm is a point of discussion. Our estimator argued that the initial costs should be determining the value. In our opinion only the presence of electricity counts. Our estimator though argued that the presence of electricity on a farm which had faced great difficulties constructing the line should value more than the presence of electricity on farm which had only connect the line to the road. Perhaps it is better to decrease the value of a farm without electricity by the amount of money, equal to the initial costs it would face in case of construction. Perhaps the costs of a battery is the alternative. There are many ways to valuate electricity. The costs of construction vary from ¢ 8500 to ¢ 50000. This was the value of our estimator. One could argue that the value of electricity for all farms is about ¢ 35000. This is a relative small part of the total value of the farm. So maybe it is not worth the discussion at all.

3.2.3 Perennials

We also consider these as a kind of improvement.

Cacao	: ¢ 200000-250000 per hectare, when it is producing well.
Palmito	: ¢ 300000-400000 per hectare
Platano	: ¢ 50000-330000 per hectare, depending on quality and reason of cultivation (commercial or for consumption)
Young Platano:	¢ 5000 per 100
Pipa	: ¢ 350-750 apiece, depending on quality and height of the tree. The higher the less value. When pipa is cultivated for commercial purposes its value is ¢ 390000-430000 per hectare.
Young Pipa	: ¢ 25 apiece
Fruit trees	: ¢ 150-250 apiece, when used for own consumption. In case of cultivation for the market they value ¢ 2500 apiece.
Pejibaye	: ¢ 3000 apiece commercial ¢ 200-300 apiece for consumption

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3.2.4 Roads

Generally speaking the roads in Rio Jimenez are of higher quality than the roads in the Neguev and Cariari. The farms in Rio Jimenez are also closer to the main highway to San José and Limón. Type and quality of the roads in the area and the time it takes to reach the main highway are the factors that determine the value of the roads according to our IDA-man.

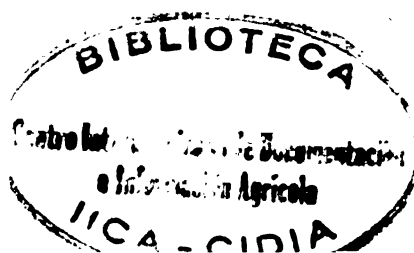
He distinguishes two types of roads, namely the ones you can use during the entire year and the ones who are not possible to cross during or after heavy rainfall like in the rainy seasons. Those two types can have three qualities: good, regular and bad. Each type of road has his own value, depending on the quality of this road. That leaves us six possibilities.

A good all-season road is an paved road with not too much wholes, on which it is possible to reach eighty kilometres without being lanced off the road.

A bad all-season road is an unpaved cobbled road and/or paved with stones. If you drive with your truck full of fresh reaped papaya's, more than thirty minutes, faster than 25 kilometres per hour, the cargo will be turned into papaya juice.

The roads only suitable to use in the dry seasons are unpaved and like mud baths during rainy-seasons.

As for the time it takes to reach the highway we made our own interpretations. The distance from Cariari to Guapiles is about thirty minutes on an paved road. The distance from the main entrance of the Neguev to Guapiles as from Rio Jimenez to Guapiles is also thirty minutes, assuming that is it possible to reach the same speed on the main highway as on the normal paved roads. Because of these similarities in the time it takes to reach Guapiles from our research areas on paved roads, we only had to take into account the time it takes to reach the nearest paved road. Like our estimator we use three ranges: within twenty minutes, more than twenty but within forty minutes and more than forty minutes. If a farm is within twenty to forty minutes removed from the paved road this will, irrespective of the type or quality of the road to reach the paved road, decrease his value with \$50.000. For a distance more than 40 minutes this will be \$150.000.



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The following table shows this values.

all-season roads		distance in minutes	
good	700.000	<20	
regular	600.000	20-40	-50.000
bad	400.000	>40	-150.000
dry-season roads		distance in minutes	
good	300.000	<20	
regular	200.000	20-40	-50.000
bad	100.000	>40	-150.000

Table 3.2.4.1 : Road values

Example 1)

Jose Angel Rodriguez his farm in Rio Jimenez lies more than forty minutes from the main highway. The road from his farm to the paved road is possible to use throughout the whole year and is of regular quality. So this road adds to the value of his farm $600.000 - 150.000 = \text{¢}450.000$.

Example 2)

The unpaved road of bad quality in front of the farm of Esteban Zamora Chavez (no. 45) brings him with a car within twenty and forty minutes to the nearest paved road. So this road adds to the value of his farm $400.000 - 50.000 = \text{¢}350.000$.

3.2.5 Other factors

The costs of a title in the Neguev are ¢ 5822 per hectare. In other areas in the neighbourhood it is about the same. However, all farmers, except two who were working on it, already had a title. It seems like problems of a lack of title are becoming very rare in the areas of Neguev and Rio Jimenez.

The value of drainage canals are about ¢ 40 per metre when there already was a natural start and ¢ 60-100 when one should dig all of it, depending the depth of the channel. Although drainage problems decrease the value of land, in case of a very good drainage system its value may increase.

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A very specific factor we found on a parcel near La Lucha. This farm could dig materials from the river which are used for making roads. Our estimator estimated this on a value of ¢ 400000. In one case a farmer cultivated ornamental plants as well. Though one can not generalize these values, the value for this one hectare of ornamental plants was estimated at ¢ 750000.

3.3 A comparison between the FVD-factors

In the very beginning we had, for the best we could, set up the factors most important to valuating farms. These factors were: Quality of soil, topography, actual use of land, improvements, title and distances to public services. We spoke to the estimator to get to know the fundamentals of his calculations. These are stated in the paragraph above.

3.3.1 What is in : The basic value of land

The estimator gave a basic value for the ground on basis of four factors: Accessibility within the farm, treatability of the terrain, problems according to drainage and the texture of the soil.

'Accessibility' is partly matching 'topography' and the 'actual use of land'. A steepish landscape and a piece of swamp are problems towards accessibility within the parcel. 'Accessibility' contains more. A river to cross, internal roads, etcetera. But also the shape of the parcel. If it is a long parcel with only a road to the front, it is difficult to transport your products from the back of the parcel.

'Treatability' is also partly matching 'topography' and 'actual use'. In order to mechanize, the trees have to be cut, a swamp is an obstacle, a steepish slope is hard to take, etcetera. But also: are there many stones in the earth?

'Drainage' is a factor we had not taken into account before.

'Texture of the soil' is heavily correlated with the quality of the soil. The red soils turn into a massive material after a rainfall. The black soils are more open. We did not count this factor, because there was already made a distinction between the qualities of soils.

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This distinction was made separate of these four factors. We made a basic maximum value for land for each research area. For Rio Jimenez this was ¢ 100000 per hectare, because this mainly was black soil and the other reasons as mentioned before. In the Neguev we made the distinction between red soils, ¢ 30000, and black soils, ¢ 40000. So the difference in soil quality was only ¢ 10000 per hectare. One should not forget that this is an overall estimation. For pasture the quality of the soil does not matter very much. For cultivating Papaya it does. The only use of land that values positive is pasture. Normal pasture values ¢ 35000 per hectare.

3.3.2 What is in : Improvements and perennials

These factors are less difficult to compare. Because we did not know the individual values of each improvement and perennial we made very rough ranges. We do not have to do that anymore. The estimator gave us the standard values of the improvements and perennials. Most of them are calculations of the banks. The underlying calculations were in most cases untraceable.

3.3.3 What is in : Roads

While we neglected the importance of distances to the markets, for our estimator it turned out to be an important factor. Our estimator though, neglected the distances to the public services. This was, according to him, a social factor and not an economical one. In our opinion the social factor has economic value as well. But we decided to regard this as a subjective factor, which should be calculated above the ultimate objective 'technical' value. However, the calculations on basis of quality of the road, and the distances to the highway, include of course the distances to certain public services as well. For example banks, hospitals and the MAG-offices. So the factor 'value of roads' overlaps partly our initial factors 'distances to markets' and 'distances to public services'. It appeared that we were wrong in the set up, to neglect the distances to markets.

3.3.4 What is in : Other factors

The costs of a title were rather easy to trace down. The problem of titling though, is not really relevant anymore. The ones that do not have a title, even in the area not more than 5 percent, are working on it and their ownership is in almost all cases no point of discussion. Therefore, we think that the value of a title does not exceed the costs very much.

The specific factors we met, like materials from the river, are not relevant for valuating a farm in general.

valuation of small farms

3.4 A standard calculation for valuating small farms in the Atlantic Zone of Costa Rica.

With all the information we collected we have made a standard calculation to determine the objective 'technical' value of small farms. In reality this is a calculation mainly based on the calculations of the IDA-official, our estimator. However, he was not always consequent in valuating the farms. The standard framework in his head suffered too many holes. We tried to fill those holes. We also specified the basic price of land in that way that is was able to make technocratic values. Although valuating a farm will be a subjective estimation of the estimator, he or she will have to specify his estimation thanks to this standard calculation. A layman will be able to ask the estimator about his reasons for a particular choice.

Also, by using many standard values, the chance at inconsequent calculations will be reduced. Let us put the standard calculation down:

1) Basic value of ground per hectare = a maximum value per area

- /- 0-25% for problems with drainage
- /- 0-25% for problems with treatability of the terrain
- /- 0-25% for problems with internal accessibility
- /- 0-25% for problems with texture

Specific basic value of ground per hectare
* number of hectares = total basic value of ground

2) Improvements:

- House : (Number of square metres * standard value of construction)+ ¢ 100000 presence
- Barn : Number of square metres * standard value of construction
- Coral : Number of square metres * standard value of construction
- Fences: Number of kilometres * ¢ 100000
- Well : Depth in metres * ¢ 1000
- Electricity: ¢ 35000

Total value of the improvements

valuation of small farms

3) Established cultivations (Improvements 2):

-Pasture	: ¢ 35000 per hectare, very good pasture ¢ 50000
-Cacao	: ¢ 200000-250000 per hectare
-Palmito	: ¢ 300000-400000 per hectare
-Platano	: ¢ 50000 -330000 per hectare (± 300 pieces)
-Coco	: ¢ 430000 per hectare (commercial) ¢ 350-750 (consumption)
-Fruit trees	: ¢ 2500 apiece (commercial) ¢ 150-250 apiece (consumption)
-Pejibaye	: ¢ 3000 apiece (commercial) ¢ 200-300 apiece (consumption)

Total value of the established cultivations =

4) Roads:

-allseason good	: ¢ 700000
regular	: ¢ 600000
bad	: ¢ 400000
-dryseason good	: ¢ 300000
regular	: ¢ 200000
bad	: ¢ 100000
-distance to nearest paved road 20-40min:	-/- ¢ 50000
>40min	: -/- ¢ 150000

5) Other:

- Absence of a river:
 - Less than 5 hectares of pasture -/- ¢ 100000
 - More than 5 hectares of pasture -/- ¢ 200000-300000
- Specific factors like materials from the river, ornamental plants, etcetera.

The objective 'technical' value is the sum of these four factors. In reality the market value of the farms is considerably higher. There are several subjective factors that determine the price of the farm as well. The security of a farm, for example. Or the urge to sell or buy. Remember the old man with the bad back who had to sell, or the doctor from San José who did not care about the money. Or the importance of the closeness of a school, a pulperia, a communal centre or a soccer field. Or someone may want to expand to his neighbour. In the last case one should think about the banana plantations. A farm near one values more, because of a possible high offer. Because of the quatum problems at the moment though, this extra value has decreased. The banana plantations are not expanding at the moment. We also include the value of the annual harvest in the subjective factors. But all these subjective reasons and individual conditions determine the ultimate market price as well.

valuation of small farms

For the difference between the objective and the market price we took an average percentage of 60 to 70 percent. This because of the difference between the third, the average technical, and the fourth, the average market price, price of the IDA. These are prices based on experience. But if we look at the estimations of the farmers themselves it is possible to trace down a similar percentage. We will have to look at the farmers in the Neguev. Their average surplus percentage, that is the percentage above the technical price, would be 120 percent. But if we head down the largest deviations to 100 percent, the outcome is 74 percent. So a surplus percentage of 60-70 seems reasonable. For Rio Jimenez a percentage of 75 seems more suitable. So, in order to obtain the market price, one has to raise the objective, technical value with 60-70 percent. The objective 'technical' values of the visited farms are put down in appendix III.

3.5 Processing the data

Now we have a standard method to estimate the values of little farms in the Atlantic Zone of Costa Rica. We used this method to valuate 50 farms in the area; 40 farms in the Neguev and 10 in the area of Rio Jimenez. We traced down 4 main FVD-factors; A basic value of land, the improvements, the perennials and the roads. Figure ... shows how the pie has been divided. All four factors are important, but it obvious that the improvements and perennials together, are responsible for about 60 percent of the objective 'technical' value of a small farm. We have made two kinds of variation on the overall average. First we want to distinct the areas of Neguev and Rio Jimenez. Second, we divided the farms on basis of value. The results of these variations have been put down in appendix IV. The weights for the Neguev are the same as the overall average. In Rio Jimenez, the basic value of land counts heavier. This of course, because of the fertile soils and the less problems with regard to sell or buy the land. In the second variation, we have made three groups of farms. One that contains farms with an objective 'technical' value until 1500000 colones, one from 150000 until 2000000, and a third with values above 2000000 colones.

At the 'low-value farms' all four factors are about the same weight. But when a farm rises in value, it is because of the improvements. The improvements and perennials determine the value of a farm. The roads and the basic value of land are less important.

valuation of small farms

The average objective 'technical' value per hectare is ¢ 156791 in the Neguev and ¢ 282318 in Rio Jimenez. If we raise these values with 60 respectively 75 percent we will end in an average market price of about ¢ 250000 for an hectare in the Neguev and ¢ 500000 for one in Rio Jimenez. Twice as much, but the reasons for that must be clear to you by now. But one has to be aware. We did 40 farms in the neguev and only 10 in Rio Jimenez. This fact, together with the knowledge that the management of the farms in the Neguev are more alike than in Rio Jimenez, makes it clear that the data and statements about the Neguev are more reliable. The overall average objective value of an hectare from our investigation is ¢ 181897, but that is no number to use, while the standard deviation is enormous; 101195.

3.6 The results of the subjective valuations of the FVD-Factors by the farmers

We asked the farmers to put the FVD-factors in order of importance. That is, which factor do they perceive as being the most important factor (ranked with a 1) when they would like to buy a farm, what is the second most important factor (ranked with a 2), etcetera. For we suspected a preference for the factors that were more or better present at their farm. We ran, next to the calculations of the entire group, also the averages and standard-deviations for the group of farms with good soils (soiltype 1), bad soils (type 3), flat parcels, hilly parcels, much improvements, little improvements, close to public services and more remote from public services.

From the calculations of the entire group we can not conclude very much. Apart from the fact that in the Neguev the presence of a title (possibly because it has not been that long ago that many people didn't have a title for which they had to pay a lot of money and go through a lot of paperwork) had the highest score, and in Rio Jimenez a good soil (almost all of them have a good soil), these figures are not very explicit.

Let us now look at the most remarkable outcomes of the calculations made for the differentiated groups.

-In the Neguev the farmers with soiltype 1 gave an average 1.6 (std 0.7) to soiltype and the farmers with soiltype 3 4.2 (std 0.7). For the fact that in our research-area soiltype is highly correlated with topography (soiltype 1 is always flat and soiltype 3 hilly or steepish) we suspected that these outcomes would almost be the same for the group of farms selected on basis of the topography of their farm.

valuation of small farms

This is also what turned out of the calculations; farmers with flat parcels gave an average 1.7 (std 0.6) and those with steepish parcels gave an average 5.4 (std 1.4). In Rio Jimenez the appreciations had the same tendency; farmers with a flat parcel of good quality gave a higher esteem to soiltype and topography than the farmers which had a farm that was less blessed with these two factors.

So we can conclude that farmers with a flat parcel of good soiltype value the factors soiltype and topography considerably higher than the farmers with a hilly or steepish parcel of bad soil quality.

-Although in Rio Jimenez the farmers in general have more improvements than the farmers in the Neguev they valued this factor considerably lower. The farms with many improvements in Rio Jimenez gave an average 5.0 (std 0.8) against an 3.5 (std 1.5), for the farmers in general in the Neguev. This doesn't subscribe our conjectures stated above. We are sure that particularly the farmers in Rio Jimenez, are acquainted with the replacement costs of improvements, so why do they value this factor that low? Maybe it is because of the fact that if they want to buy a farm they prefer to buy one without very much improvements for they will have to pay for them. And maybe they prefer to construct them themselves. In this way it is possible to do it according to their wishes. For this reasons one could also reason that these farmers might not be that interested in the actual use of a piece of land when they want to buy it. Maybe they prefer to cultivate their land themselves instead of having to pay for the improvements an other made. This is what came out of the calculations as well. In general they gave an average 5.1 (std 1.5) to the factor actual use of land.

So we can conclude that the farmers in Rio Jimenez do not find it very important that a farm has many improvements or what type of actual use there is when they want to buy it.

The other outcomes of the differentiated calculations were not interpretable for they were too inexplicit. Of course we have to keep in mind that this way of gathering subjective information might not be optimal. Sometimes we noticed that the farmer named that factor that was last named by us. This maybe because they did not always understand completely what we meant and because of the fact that some were bored at the and of the interview.

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CHAPTER 4 : WEAKNESSES AND STRENGTHS OF THE INVESTIGATION, SUGGESTIONS FOR FURTHER INVESTIGATION

Though the standard calculation seems a detailed one, it still is only a rough estimation. Especially the 60-70 percentage above the objective 'technical' value is very rough. A part of it can be explained by calculating the value of the annual cultivations. This value though, changes every year. That is why we did not include this value. Thus, the objective 'technical' value is a value without the profits of the annual cultivations. Also, the components of the calculations are often very rough. Estimating the basic value of land, we assume a relatively low maximum value. In this way it is of course a self-fulfilling prophecy that the weight of the basic value of land as a part of the total value of a farm, remains low. Though we think it is a rather good estimation, there are big differences between farms and persons. For example, for a papaya-cultivator the quality of the soil is very important, while for cattle-farmer it is not important. Grass grows on all soils in the area. However, in our point of view this is a subjective factor, but one should bare this subjective factor in mind, estimating the value of an specific farm.

But of course, it is possible to put some more question marks at the calculations. For example, are costs similar to values? A buyer did not choose for the presence of a barn. But then again, these are objective 'technical' calculations. One could however argue, that improvements value less, or perhaps more, than the technical value. The beauty of standards lies within the possibility to construct a framework. The big 'but' however, is the lack of variation. Thus, an estimator of farms should not be afraid of leaving the standard values when it is obvious that another value is more suitable. However, by using standard values it has become possible to make consequent estimations. Using such a method makes comparisons between the values of farms more significant. But above all, estimating will remain a matter of putting subjective accents.

In spite of the limitations of the calculations, this method is better than no method. The way in which the value of farms is estimated nowadays, is far more weaker. The IDA, for example, calculates an average technical price per hectare of ¢ 125000-175000, while it is obvious that the presence of improvements is decisive. A farm, for example, with just forest and swamps, without improvements, just is not worth 125000 colones per hectare. The other way around, a high-cultivated farm, in all respects, values more than 175000 colones per hectare. The standard-method of this research brings in more differentiation.

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It now is possible to see the value of each item. This value may be a point of discussion, but at least there is a fundamental start to unravel the complexity of the market value of a farm.

In our point of view, further investigation could be a contribution to the subject. Our most important suggestion for further investigation is to take the opportunity costs of the market value of the farm into account when making cost-benefit calculations for farm-households, like we have said in our introduction. Or investigate whether it possible to run a farm if you have to borrow the money from the bank to buy a farm. Image a farmer buying a farm of ₡ 4000000. He will have to earn each year at least ₡ 1000000, just to be able to pay his interest, which nowadays is about 25 percent annual. Or should the increase in value of the farm be taken into account as well? Very interesting to investigate. Who wants to buy such an expensive farm? A young determining farmer or the doctor from San José? Furthermore, one could do an investigation to fathom the height and structure of the basic price of land. Or social studies to quantify some of the subjective factors. It is also possible to test the standard calculation on bigger farms as well. It could be possible that a bigger farm values more because it is one big piece of land. One could try to fathom the motives of investors and examine how lucrative it is or has been for them. But, bear in mind that whatever research may follow, one always should question why he or she is willing to suffer to unbearable dangers and pains of the paradise Costa Rica. What is to gain, answering questions that arose and more important, for whom there is something to gain? For be fair, don't you feel the urge to be able to give back some structural information that could be helpful for the farmers, who were always willing to answer our questions?

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CONCLUSIONS

If we look back to the main objective of this investigation we find in the introduction;

TO DETERMINE THE RELATIVE WEIGHTS OF THE FACTORS THAT INFLUENCE THE PRICES OF SMALL FARMS IN THE ATLANTIC ZONE OF COSTA RICA

This, in order to compose a general framework of how to value a small farm.

The main conclusion of this report is that the value of a small farm is determined by four main factors; the basic value of land, the improvements, the perennials and the quality of and distances by roads. While all four factors are about as important, an increase in value of a small farm is always as a result of the improvements and the perennials.

Though it may seem only these four factors are important, they are a collection of several factors. Valuating a farm is very complex. The largest difficulty is valuating the subjective factors.

With our method, mainly based on data of the IDA and the banks, it is possible to estimate consequently, a value of a small farm. There will be, and of course there should be, discussions about the calculations, but it is a start. We concluded that there is no standard method available to estimate the values of farms. The average technical value, used by the IDA, is a good average, but can not be used valuating a specific farm. The variation in values is simply too much. One can not fool around with an average. We also concluded that farmers have little knowledge in estimating the value of their farms. The variation is enormous. Especially, the farmers of Rio Jimenez are deviating a lot with our estimations. One could argue that they are exploiting the soil very well and that is why they don not feel the urge to sell. They are often making enough money, so the land values a lot as well for them. On the other hand our sample was very small. After 10 interviews we can not pretend to be carrying eternal wisdom.

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Other conclusions are:

- Prices of land are in reality often determined by subjective factors. Especially, the urge to buy or sell.
- Distance is not as much of a problem nowadays than it used to be. In the field there are often bad roads, but once reached the highway the markets in the central valley is very near.
- Problems with respect to titling and squatting are hardly current anymore.
- In the Neguev, the farmers think of a title as being very important and in Rio Jimenez they perceive the factor soil type as the most important one. Farmers with good soils and flat parcels, value the factors soil type and topography higher than farmers with bad soils and steepish parcels. Farmers in Rio Jimenez, although they have a lot of improvements, value the factor improvements very low.
- The small farmer, especially the ones in the Neguev and Cocori, are facing great difficulties keeping the business going. A lack of markets for these farmers is, in our point of view, a result of bad vertical organization. The middle-men are skimming the profits, while the small farmer does not have the ability, nor the mentality, to change this situation. Maybe organization through cooperation is an option, but also these are difficult to maintain. But then again, in the end the fittest will survive. When they can get a good price for their land, many people are willing to leave the agriculture. Especially in the Neguev.
- The landmarket, though considerably better than the other countries in Latin-America, is not functioning very well. We are certainly no experts in landmarkets. For that, we were too busy on the micro-level, but can say something. There are still many imperfections. The farmers do not know the value of their farms. Another point is the difference in borrowing possibilities and the different discount rates. One should be lucky to get a loan at 26%. Especially for the farmers in the IDA-settlements it is difficult to borrow. The obligated paperwork and restraints are no debit at this point. As been said, at least the problems with unlegal landownership seems to be going to the past tense. They are setting up a new system for registration of ownership.

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LITERATURE

- P.F. Paap, Farmers or Foresters, AZP Field Report, CATIE/MAG/UAW, Turrialba, Costa Rica, may 1993.
- G. Kruseman, R. Ruben & H. Hengsdijk, Agrarian structure and regional development in the Atlantic Zone of Costa Rica, DLV Research Report No.3, Wageningen, The Netherlands, june 1992.
- Oñoro, M.T. de, El Asentimiento Neguev, "Interaction de campesinos y estado en el aprovechamiento de los recursos naturales", CATIE/MAG/UAW, Turrialba, 1990.
- Renkow, M, Land Prices, Land Rents, and Technological Change: Evidence from Pakistan, World Development Vol.21, No.5, pp.791-803, Great Britain, 1993.
- Oldenburg, P, Land Consolidation as Land Reform, World Development Vol.19, No 7, pp.183-195, Great Britain, ?.
- Much of the literature could not be written down because we did not have their data at the moment we wrote this report.

CUESTIONARIO PARA EL VALOR DE LA TIERRA

Numero:

Distrito:

Sector:

Fecha de visita:

Nombre del productor:

Edad:

1) Cuánto años hace que compró esta finca?

2) Cuánto pago usted por su finca?

3) Area (Ha):

4) Cualidad de la tierra (Ha): 4a) type 1:

4b) type 2:

4c) type 3:

5) Topografía (inclinación) (Ha): 5a) plano (incl. $\leq 3\%$):

5b) ondulado:

5c) quebrado:

6) Cuánto cree usted que vale su finca?

7) Uso actual de la tierra (Ha):

7a) bosque:

7b) suampo:

7c) pasto:

7d) agricultura:

cultivos estables: -cacao _____
 -palmito _____
 -platano no. _____
 -matas ornamentales no. _____
 -coco no. _____
 -arboles frutales no. _____
 -arboles comerciales no. _____
 (maderables)

Si No

8) Mejoras:

8a) electricidad _____
 8b) acueducto _____
 8c) pozo _____

Valoración coste de adquisición y cuántos años tiene los siguientes:

año de construcción costo

8d) bodega _____

8e) corrales _____

8f) cercas _____

9) servicios públicos (distancia en minutos caminando):

- 9a) pulperia _____
- 9b) escuela _____
- 9c) campo deportivo _____
- 9d) teléfono _____
- 9e) centro communal _____
- 9f) hospital _____
- 9g) bancos _____
- 9h) IDA _____
- 9i) MAG _____
- 9j) Puesto de salud _____

10) Tiene usted un título de propiedad: Si No

11) Tiene usted un plano de catastrado: Si No

12) Valoración:

12a) Si usted quisiera vender su finca, cuánto perdería por ella? Porqué le pone ese precio?

12b) Si usted pudiera comprar la finca de su vecino, cuánto pagaría por ella? Porqué?

-finca no.: _____

-finca no.: _____

numero de finca:

PLANO DE SU FINCA:

numero de finca:

Algunas personas nos han dicho que factores como la calidad de la tierra, o las mejoras, o la distancia a los pueblos, o la calidad de los caminos son importantes para darle valor a una finca. Colocar en orden, de mayor a menor importancia cada uno de los factores que le voy a mostrar.

- Calidad de la tierra _____
- Topografía (si plana o quebrada) _____
- Si tiene titulo de propiedad
y plano catastrado _____
- Distancia de los servicios publicos _____
- Mejoras _____
- Tipo de agricultura (cultivas,
pasto, bosque y suampo) _____

Drenaje:

Tiene o tuvo usted problemas con drenaje?

Si si, hace cuanto tiempo y en cual manera solvió esos problemas?

Y cuanto costó?

Y cuanto vale en este momento?

Mercado:

Donde compra su materiales y fertilizantes para cultivar su productos?

Cuanto tiempo dura para llegar allá?

En cual manera vende su productos? Por comerciantes o trae usted su cosecha al mercado?

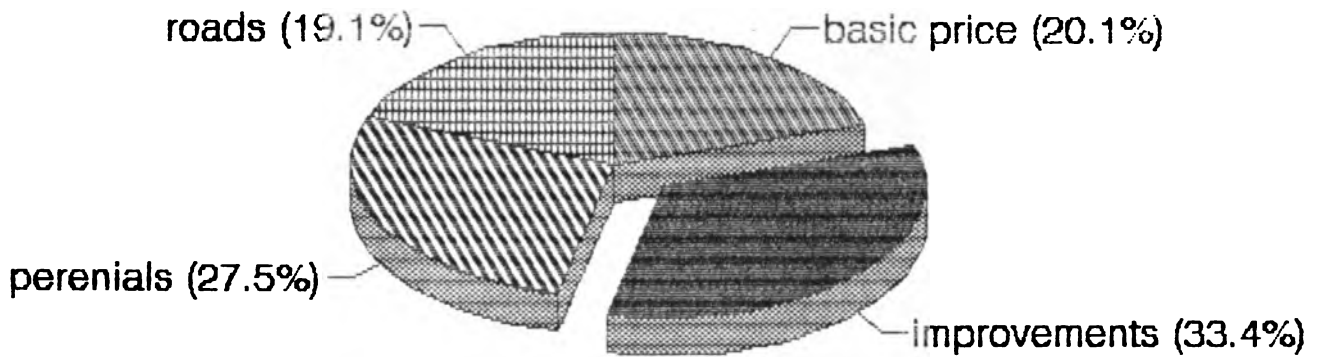
Si al mercado, donde esta este mercado?

Cuanto tiempo dura para llegar allá?

Si por comerciantes, cuanto cuesta?

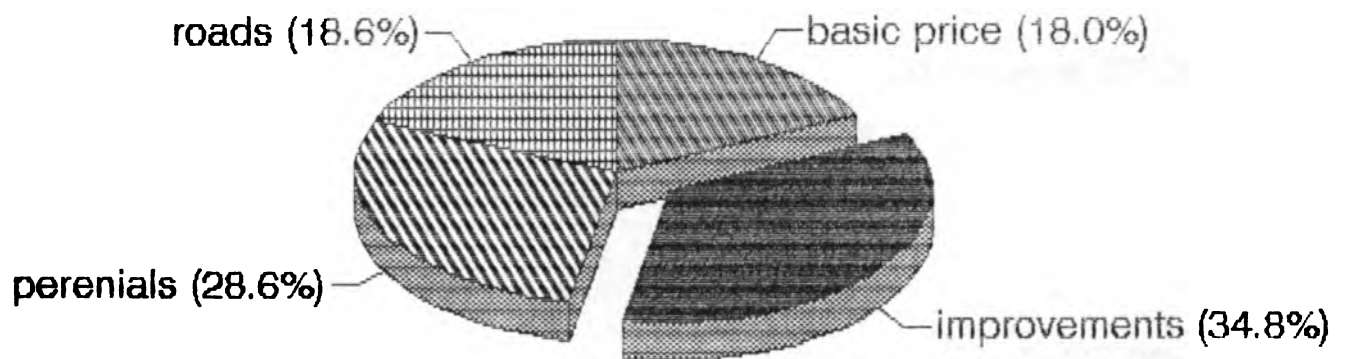
Weights of the FVD-Factors

Overall averages



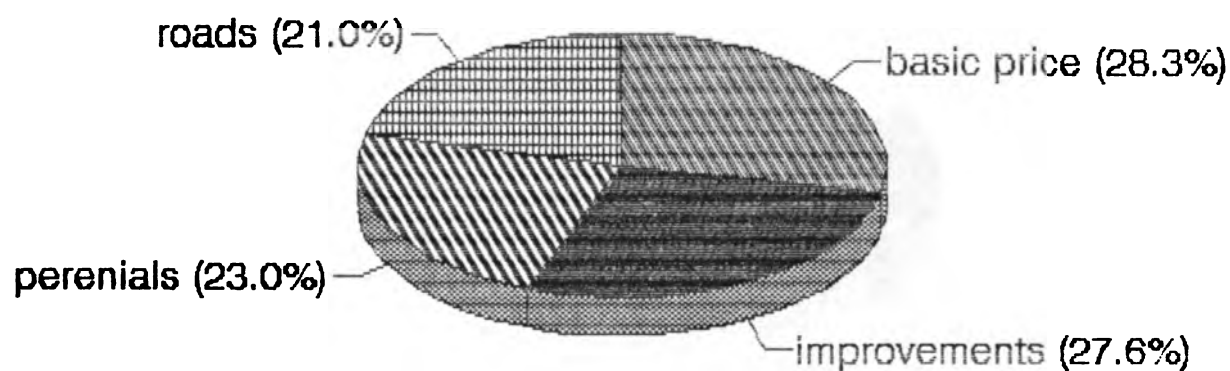
Weights of the FVD-Factors

Averages of the Neguev



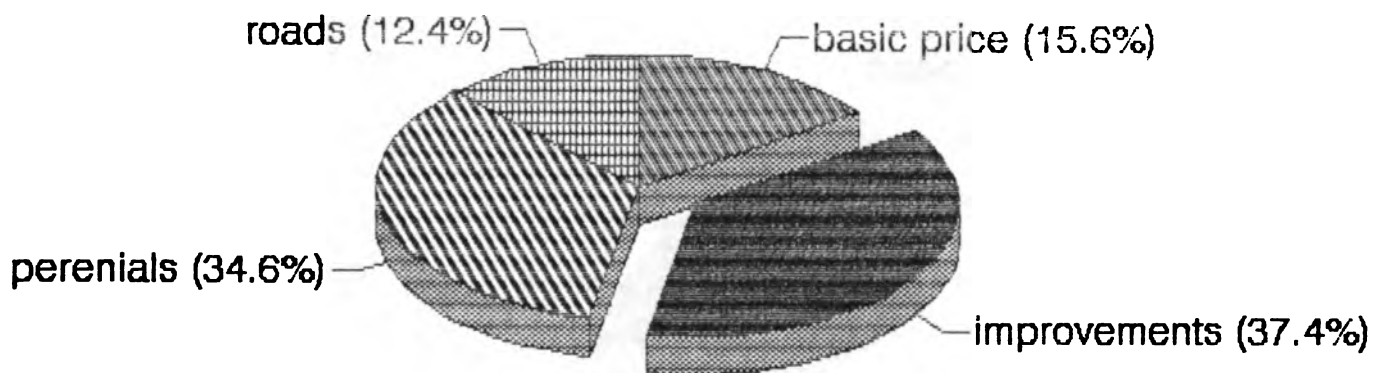
Weights of the FVD-Factors

Averages of Rio Jimenez



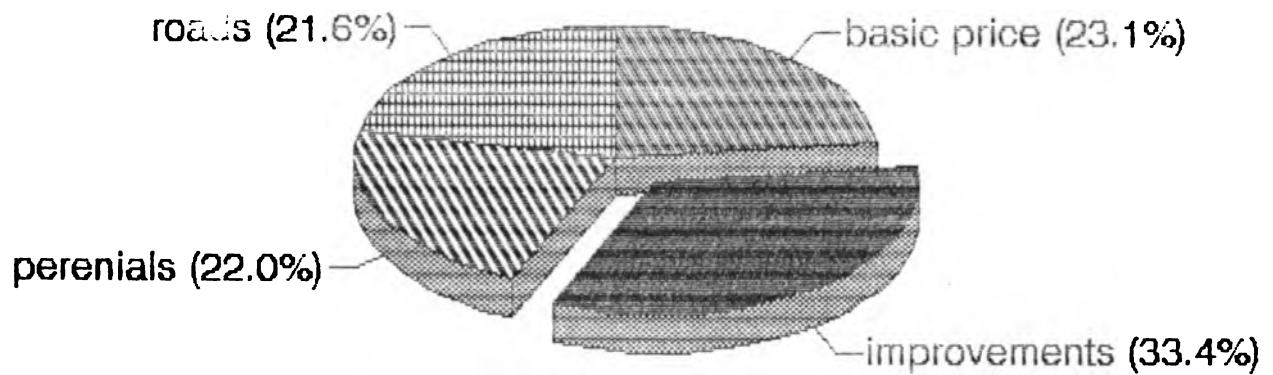
Weights of the FVD-Factors

Averages of High-Value Farms



Weights of the FVD-Factors

Averages of Medium-Value Farms



Weights of the FVD-Factors

Averages of Low-Value Farms

