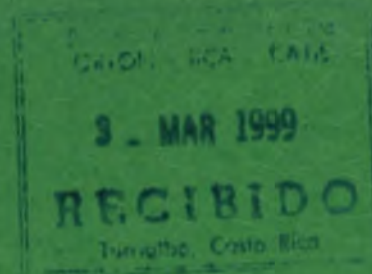


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Atlantic

Zone

Programme

Field Reports No. 4

EXPLORATORY SURVEY IN THE ATLANTIC ZONE OF COSTA RICA
Development economics: some agricultural aspects

R.A. Schipper

September, 1988



MAG

Costa Rica



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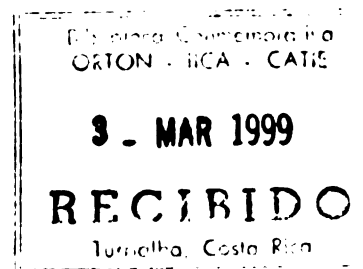
The Atlantic Zone Programme (CATIE-AUW-MAG) is the result of an agreement for technical cooperation between the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), the Agricultural University Wageningen (AUW), The Netherlands and the Ministerio de Agricultura y Ganadería (MAG) of Costa Rica. The Programme, that was started in April 1986, has as 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.

El Programa Zona Atlántica (CATIE-UAW-MAG) es el resultado de un convenio de cooperación técnica entre el CATIE, la Universidad Agrícola Wageningen (UAW) Holanda y el Ministerio de Agricultura y Ganadería (MAG) de Costa Rica. El Programa, cuya ejecución se inició en abril de 1986, tiene, como objetivo a largo plazo la investigación multidisciplinaria dirigida a un uso racional de los recursos naturales, con énfasis en el productor pequeño de la Zona Atlántica de Costa Rica.

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ATLANTIC ZONE PROGRAMME



Field Reports No. 4

EXPLORATORY SURVEY IN THE ATLANTIC ZONE OF COSTA RICA

Development economics: some agricultural aspects

✓
R.A. Schipper

Turrialba, September 1988

CENTRO AGRONÓMICO TROPICAL DE
INVESTIGACION Y ENSEÑANZA - CATIE

AGRICULTURAL UNIVERSITY
WAGENINGEN - AUW

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1. INTRODUCTION

In March 1984 the Tropical Agricultural Research and Training Center (CATIE) in Turrialba, Costa Rica, and the Agricultural University Wageningen (AUW), the Netherlands, signed a letter of intent as a first step towards long-term cooperation in the field of joint multidisciplinary research aimed at sustained land use and at preservation of the natural resources. Preference was given to areas of study that would involve the small land owner of the Atlantic Zone of Costa Rica.

In April 1985 parties signed a letter of understanding and proposed the development of a joint multidisciplinary research project. It was decided to first carry out a diagnostic study of the Atlantic Zone starting with an exploratory survey which would be followed by some baseline studies in smaller sample areas. The objective of the exploratory survey was a rapid identification of (1) the most important land use systems, (2) the physiographic land units, and (3) the agricultural problems of the Atlantic Zone so as to be able to select sample areas for the baseline studies.

For the purpose of the exploratory survey the Atlantic Zone was defined as the planning region Huetar Atlántica which consists of the province of Limón plus the district Horquetas of the province of Heredia (Figure 1).

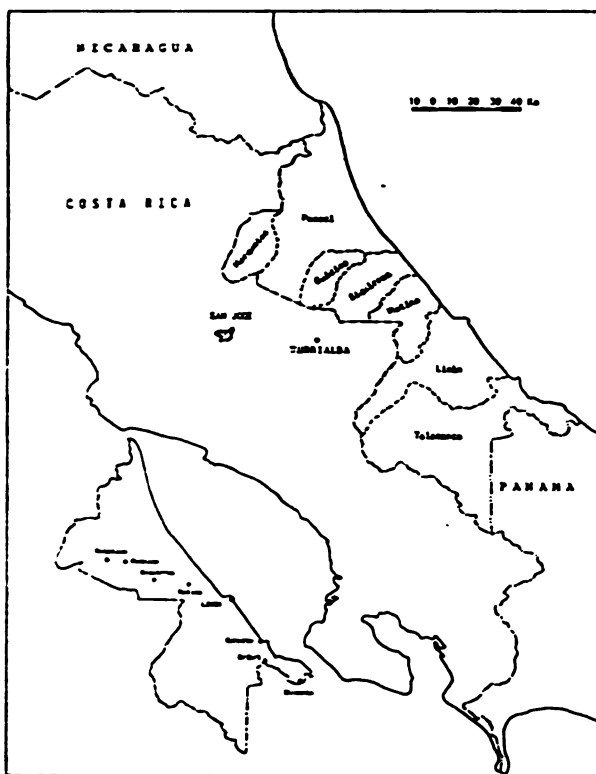
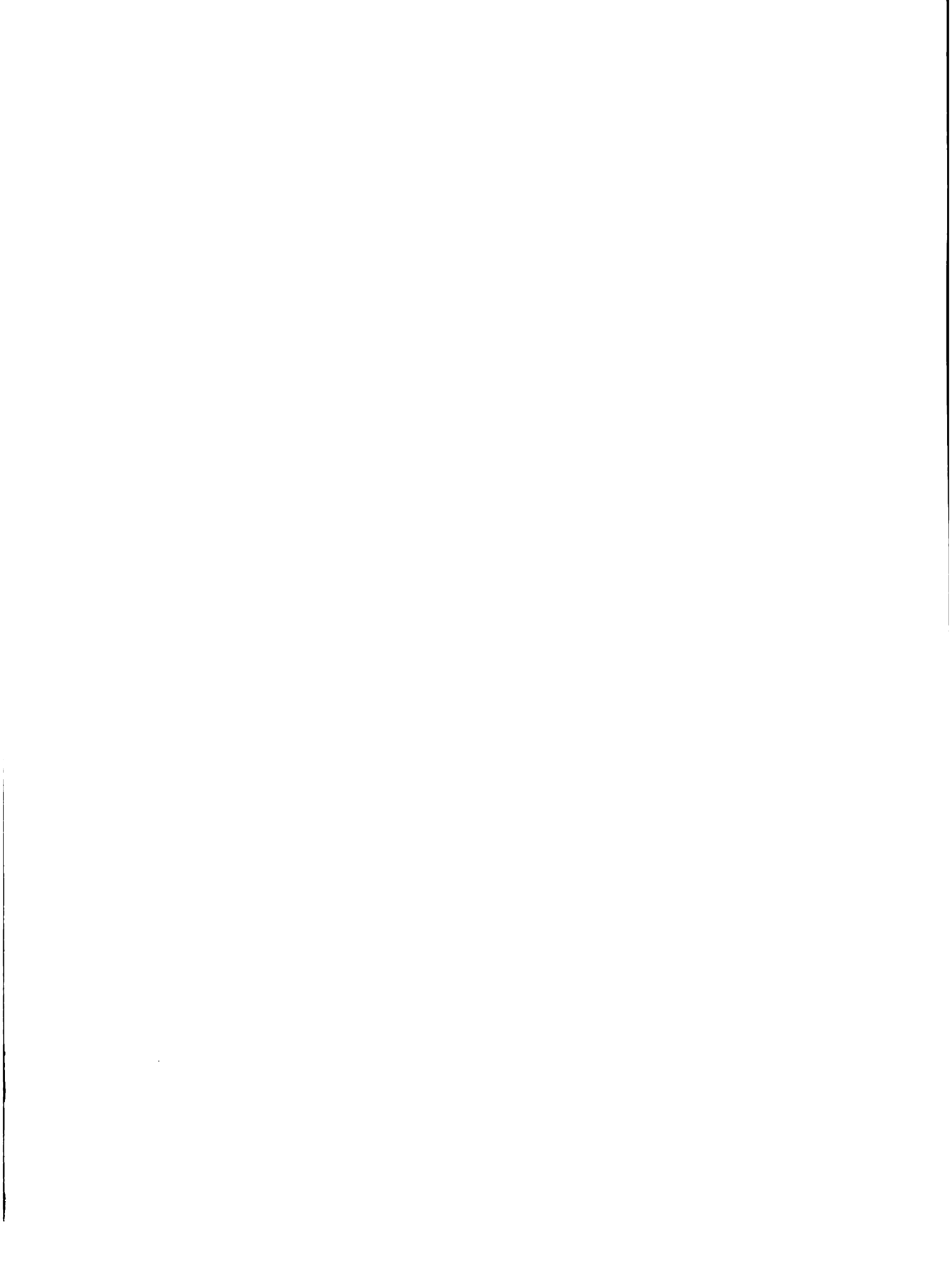


Figure 1. Administrative subdivision of Huetar Atlántica, Costa Rica (NUHN, 1978).



The exploratory survey team consisted of specialists in soil science (Wielemaaker), vegetation science (Slijkhuis), landscape architecture (Kloosterman), forest husbandry (Veiman), forest technology (Staudt), social forestry (Romijn), sociology (de Vries), farm economics (Schipper), animal husbandry (van der Weide), and agronomy (Waijzenberg). For the first four the emphasis was on the mapping of soil and vegetation, 'land'. The others concentrated on 'farming systems and institutions'. Towards the end of the survey the team was enforced by van Sluys (sociology) and Zemelink (animal husbandry).

The exploratory survey was carried out in the period April-July 1986 and consisted of the following steps:

- March to May 1986: preparation in the Netherlands. This involved compilation of a bibliography, design of tentative checklists, construction of soil and vegetation maps based on aerial photograph interpretation, preliminary discussions.
- 19th May to 14th June 1986: visits to institutions, discussions with officials, and literature study in San José, Turrialba and in the Atlantic Zone (Guápiles, Siquirres, Limón).
- 2nd to 14th June 1986: fieldwork throughout the Atlantic Zone. For the 'land' group this consisted of extensive checking of the maps based on aerial photographs. The 'farming systems and institutions' group followed the 'sondeo' approach: observations of land use and informal interviews with farmers, labourers, etc. by teams of 2 or 3 persons. The composition of the teams was changed daily to enhance interdisciplinary discussion and exchange of viewpoints. The checklists served as guidelines, but were not followed strictly. Field checks, observations and interviews were discussed and reported daily. The daily reports are kept in Guápiles and at the department of Development Economics in Wageningen.
- 16th to 20th June 1986: compilation of a preliminary report (ANON., 1986) and its presentation to representatives amongst others of CATIE, MAG, IGM, MIDEPLAN, JAPDEVA, ASBANA.
- 20th June to August 1986: additional fieldwork, literature study and reporting. It was decided that each discipline would write a separate report. These reports would form the basis for the exploratory survey report.

The present report deals with economic aspects with regard to the present - between 1982 and 1986 - situation of the agricultural sector in the Atlantic Zone. Discussed are the role of agriculture in the national economy and its composition, and with respect to the Atlantic Zone, the population, the land use, and the farming systems of this region.

2. ROLE OF AGRICULTURE IN THE NATIONAL ECONOMY

Agriculture is an important sector of the economy of Costa Rica. In the seventies about 23% of the GDP was created through agricultural activities, while in 1984 this percentage had diminished to 20. Of the working population in 1984 27% worked in the agricultural sector,

while in 1973 this percentage was 38. Of the value of exports around 65% originates in agriculture, mostly through exports of coffee and bananas.

The GDP showed a healthy growth in the seventies of 5 to 6% per year, but declined in the beginning of the eighties (1980-1982: -4.8%; 1982-1984: 4.5%). The world economic crisis was clearly felt in Costa Rica. One can identify 3 main factors: a) decline of prices of export products, b) contraction of demand in the EC and c) the large national debt. In general the growth of agriculture has been less than that of the GDP, except in the period from 1980 to 1984. The following growth percentages have been observed for the GDP and for the agricultural sector:

	GDP	Agriculture
1970-75	6.0%	3.4%
1975-80	5.2%	1.8%
1980-82	-4.8%	0.1%
1982-84	4.5%	5.9%

It is important to observe that after the crisis years of 1980 to 1982 the economy showed a recovery from 1982 to 1984 both in general as well as in the agricultural sector.

3. STRUCTURE OF THE AGRICULTURAL SECTOR

The main sub-sectors in the agricultural sector can be understood from Table 1.

As one can observe from Table 1, at the national level, in terms of area, rice, maize, beans, coffee, banana, sugarcane and cacao are the most important crops. However in terms of the value of production coffee and bananas alone are responsible for 51 %, while with regard to the value of the agricultural exports, those two crops provide 80 % of the export earnings.

With regard to livestock, beef and milk are the most important products, together they make up for 15 % of the value of production of the agricultural sector. Milk is exported in small increasing quantities, but not noticeable in 1982. Beef exports were responsible for 9 % of the value of the exports in 1982. However, due to domestic problems, beef exports fell down in later years. Costa Rica is no longer able to export sufficient beef to fill up its export quota to the U.S.A.

TABLE 1. Composition of the agricultural sector in Costa Rica in terms of areas, yields, quantities, value of production and value of exports.

	Area (average 1980/81 to 1983/84)		Quantity	Value of production 1982		Value of exports 1982	
	ha*10 ³	Tm/ha	Tm*10 ³	¢*10 ⁶	%	¢*10 ⁶	%
I AGRICULTURE				22284	70.5	19009	88.8
Rice	80.6	2.7	218.8	1050	3.3	184	0.9
Maize	53.6	1.7	89.4	646	2.0	21	0.1
Beans	34.8	0.5	16.0	296	1.0	-	-
Sorghum	18.4	1.9	34.6	664	0.5	-	-
Coffee	83.8	7.5	630.5(1)	7201	22.7	8639	40.3
Banana	25.9	35.6	921.3	8907	28.1	8423	39.3
Sugar	32.9	67.6	2223.6	1248	3.9	463	2.2
Cacao	25.0	0.2	4.0	179	0.6	211	1.0
Cotton	1.4	0.6	0.8	35	0.1	-	-
Potatoes	2.6			296	0.9	0.1	0.0
Cassava				39	0.1	-	-
Tabacco	1.3	1.3	1.7	109	0.3	-	-
Plantain				499	1.6	173	0.8
Onions	0.4	8.8	3.5	47	0.1	-	-
Other crops				1566	4.9	895	4.2
II LIVESTOCK				7344	23.2	2136	10.0
Beef			70.8	3060	9.7	1992	9.3
Pork			45.7	758	2.4	-	-
Chicken			16.4	160	0.5	62	0.3
Eggs			253.1(2)	1157	3.6	13	0.1
Milk			325.7(3)	2209	7.0	-	-
Other				-		69	0.3
III FISHERY				499	1.6	251	1.2
IV FORESTRY				894	2.8	18	0.1
V IMPROVEMENTS				671	2.1	-	-
TOTAL				31692	100	21414	100

(1) Coffee: berries

(2) Eggs: number *10³

(3) Milk: litres *10³

Source: SEPSA, 1983.

4. POPULATION

According to the census of 1984 the planning region Huetar Atlántica had about 178000 inhabitants. Huetar Atlántica is a fast growing region in this respect as Table 2.1 shows.

TABLE 2. Population and population growth Huetar Atlántica

Year	No. of inhabitants	Growth rates per year (%)	
		per decade	per period
1963	71090		
1973	122379	63-73: 5.6	
1981	143004		73-81: 2.0
1982	151777		81-82: 6.1
1983	165809		82-83: 9.2
1984	178427	73-84: 3.5	83-84: 7.8

Source: MIDEPLAN, 1984 and DGEC, 1987b.

One has to conclude that after a period of fast growth during 1963 to 1973, population growth slowed down till 1982 after which it increased very fast. In general, population growth in the Huetar Atlántica has been faster than in Costa Rica as a whole (1963-1973): 3.3%, 1973-1984: 2.3%) caused by the migration to the Atlantic Zone.

The population is not evenly spread over the Atlantic Zone as can be observed from Table 3. Main population centres are Limón, Siquirres and Guápiles. On a district basis, population density varies from 52 persons per km² in Cariari to 1 and 3 persons per km² in Colorado in the North and Bratsi in the South of the Atlantic Zone respectively. Also growth rates have been rather different for the different cantons in the region. From 1963 to 1973 population growth has been much more than the average of 5.6% for the Zone, in Horquetas (10.3%), Pococí (9.9%), and Guácimo (7.3%), all in the North; while from 1973 to 1984 growth has been more than average (3.5%) in Pococí (4.0%), Siquirres (4.4%) and Talamanca (6.6%). Pococí (Guápiles) still is an important growth point, but in general growth shifted more to the Center (Siquirres: settlements) and to the South (Talamanca: new banana plantations).

TABLE 3. Population, population density and population growth between 1963 and 1984 in the Atlantic Zone, per canton.

	Area (km ²)	Popula- tion 1963 (per- sons)	Popula- tion 1973 (per- sons)	Popula- tion growth '63-'73 (% per year)	Popula- tion 1984 (per- sons)	Popula- tion growth '73-'84 (% per year)	Popula- tion density 1984 (per- sons/ km ²)
Horquetas	566	2713	7236	10,3	10351	2,7	17
Pococí	2404	11196	20688	9,9	44187	4,0	18
Guácimo	577	5731	11572	7,3	16472	3,2	28
Siquirres	860	11317	18133	4,8	29079	4,4	34
Matina	773	7561	10489	3,3	14723	3,1	19
Limón	1766	29039	40830	3,5	52602	2,3	30
Talamanca	2810	3541	5431	4,4	11013	6,6	4

Zona Atlántica	9756	71098	122374	5,6	178427	3,5	18

Source: DGEC, 1987b.

5. LAND USE

Land use in the Atlantic Zone in the years 1963, 1973 and 1984, as distinguished in broad categories is presented in Table 4.

As one can observe, between 1963 and 1973 the land use changed in such a way that pastures became more important as it increased from 4% of the total area to 7%, with an annual growth rate of about 6%, mostly at the expense of the area of arable land, which diminished from 4% of the total area to 2%.

After 1973 the amount of arable land increases rapidly with 6% per year from 2% of the total land area to 4%, while the area of perennial crops also increases, but not as pronounced. Pastures continue to increase at a rate of nearly 4% per year. The data from the census 1984 contradicts earlier information from the Encuesta Nacional de Ganado Bovina, 1982 (SOLERA & WEISS, 1983, see also IDA/RUTA, 1984). From this survey, based on a sample, it was estimated that in 1982 in the Atlantic Zone there would be 20,469 farms with a total farm area of 652,200 ha, of which 232,900 ha would be pasture. A total area of

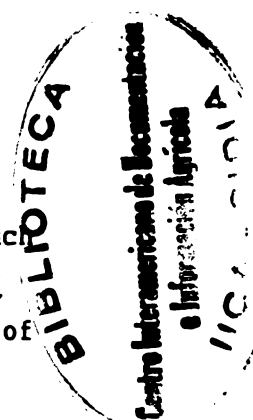




TABLE 4. Land use in the Atlantic Zone, 1963, 1973 and 1984.

	(1) 1963			(2) 1973			(3) 1984		
	Limón province			Zona Atlántica			Zona Atlántica		
	ha	%	%	ha	%	%	ha	%	%
Arable land	36900	18	4	21300	8	2	42100	13	4
- main annual crops	7300	4	1	6700	2	1	17800	6	2
Perennial crops	38300	19	4	43200	16	4	51400	16	5
Other	800	0	0	500	0	0	5000	2	1
Pastures	40000	20	4	71700	26	7	108100	34	11
Forest/shrub, etc.	118600	58	12	156100	56	16	90200	28	9
Total farm area	205200	100	21	278200	100	28	321900	100	32
Non-farm area	767400		79	726500		72	682800		68
Total area	972600		100	1004700		100	1004700		100
Number of farms (all)	5281			5462			10250		
Average farm size	39			51			31		

Sources:

(1) DGEC, 1965.

(2) DGEC, 1974 & 1975.

(3) DGEC, 1987a.

pasture of 232,900 ha would imply an annual growth rate of 14% between 1973 and 1982, which seems rather high. The same source estimates the number of cattle in 1982 at 265,300, compared with 147,885 according to the census 1984. As there were 80,109 head of cattle in 1973 (DGEC, 1974 & 1975), the number of cattle increased with 5.7% per year according to the census, and with 14.2% per year according to the mentioned survey. Again, a herd size growth of 14.2% per year seems too high, certainly given the low fertility rates and high mortality rates, unless there has been a large inflow of cattle into the Zone from other areas of Costa Rica (WEIDE, 1986).

Observing the census data of 1973 and 1984 one sees an increase in the average stocking rate of cattle from 1.1 head of cattle per hectare of pasture in 1973 to 1.4 in 1984.

The number of farms nearly doubled between 1973 and 1984, with an annual growth rate of 6.2%, while the farm area only grew with 1.3% per year, resulting in, on the average, smaller farms: 51 ha in 1973

against 31 ha in 1984. In this the phenomena of migration, colonization and occupation, and the actions of the IDA with regard to these and the forming of settlements are reflected, see also the following section.

6. FARMING SYSTEMS

A common classification of farm types in Costa Rica is one based on farm size. It distinguishes four classes, minifundio (0-3.9 ha), finca campesina (4-19.9 ha), finca mediana (20-199 ha) and latifundio (more than 200 ha). See among others HALL, 1984. According to Hall the size of farms in terms of area is a good yardstick since it is related to the capital investment, hierarchical organization, importance of commercial production, productivity of the crops (Tm/ha) and the relation pastures and unused land to land with crops.

In general a minifundio is not large enough for a family, it has to be supplemented with off-farm work for which reason such a farmer can also be considered a labourer (peon), while a finca campesina would give sufficient revenues for a family to live from, without the necessity to do off-farm work and the necessity to hire labour for on-farm work. The finca mediana cannot be worked by family labour alone. The latifundios are of two types: 1) plantations with crops like bananas, cacao, coconut, oil palm, plantain, sugarcane and coffee and 2) haciendas with cattle. Of course farms form a continuous scale of farm types but the above classification forms a good first approximation, though limits between categories should not be seen as rigid. The above classes should be sub-divided to get a more precise idea of the different farm types in the Atlantic Zone. This will be elaborated later, but first the distribution of land over the farm types in 1973 will be presented in Table 5

TABLE 5. Farm size distribution in Limón province 1973.

Farm type	Farm size	Farms			Area		
		number	%	cum.%	ha	%	cum.%
Minifundio	0 - 4 (1)	1065	21	21	1956	1	1
Finca campesina	4 - 19	2168	42	63	20542	8	9
Finca mediana	20 - 200	1724	34	97	76643	31	40
Latifundio	>= 200	177	3	100	145391	60	100
TOTAL (farms <u>with</u> land only)		5134	100		244531	100	

(1) 0-4 means inclusive 0, exclusive 4.
Source: DGEC, 1974 & 1975.

As one can observe farm size distribution is very unequal although slightly less unequal than this distribution at the national level. On the basis of the above four classes the Gini coefficient is 0.75 for the Atlantic Zone and 0.77 for Costa Rica as a whole. Data of the 1984 census of Agriculture reveal a farm size distribution in Limón province in 1984 as in Table 6.

TABLE 6. Farm size distribution in Limón province, 1984.

Farm type	Farm size	Farms			Area		
		number	%	cum.%	ha	%	cum.%
Minifundio	0 - 4	1749	19	19	3200	1	1
Finca campesina	4 - 20	4448	49	69	43600	15	16
Finca mediana	20 - 200	2583	29	97	125500	44	60
Latifundio	>= 200	253	3	100	113600	40	100
TOTAL (Farms <u>with</u> land only)		9033	100		285300	100	

Source: DGEC, 1987a.

On the basis of the 1984 data presented here, the Gini coefficient is 0.65, which means that the farms distribution became less unequal in comparison with 1973. For Costa Rica as a whole, the Gini coefficient on the basis of the same four classes from 1984 is 0.75, very slightly less unequal than in 1973.

The four farm type classes can be subdivided into a number of farm types on the basis of qualitative criteria as the principal activity, and whether a farmer can be considered a "precarista" (occupying land which formerly juridically belonged to another farmer, with or without support of the IDA). Furthermore an extra category of shifting cultivation is added as the farm size is not a clear concept in this case. In Table 7 a list of the main farm types is presented together with a preliminary indication (with an 'X') in which canton of the Atlantic Zone a farm type mainly occurs. No data on the number of farms in each farm type is available. The location of farm types in cantons is based on impressions obtained during the exploratory survey as is indeed the whole classification.

During the exploratory survey 55 interviews were held with members of rural households. The number of interviews can be subdivided over the main farm type classes as follows:

1) Latifundio, plantation	:	3
2) Latifundio, hacienda	:	2
3) Finca mediana	:	16
4.1) Finca campesina (precarista)	:	15
4.2) Finca campesina (no precarista)	:	11
5) Minifundista/peón	:	7
6) Shifting cultivation	:	1
TOTAL		<hr/> 55

For more detailed information the reader is referred to Table 7 where the number of interviews(1) per farm type per canton is specified. Mostly the location of farm types in cantons as indicated with an 'X' concurs with the canton where a certain farm type was studied through an interview, but not always as can be seen from Table 7.

(1) A number of 1/2, means that the farm of the interviewee has been classified into two categories.

TABLE 7. Farm types in the Atlantic Zone plus an indication in which canton the farm types are present.

Farm Types	Cantón (1)									Total
	1	2	3	4	5	6	7	8	9	
	Pto.Viejo Horquetas Pococi Guácimo Siquirres Matina Limón Talamanca Turrialba									
1. Latifundio, plantation										
1.1 Banana,		x		x	x			x		
1.2 Banana, domestic			x							
1.3 Cacao					x	x				
1.4 Coconut			(1)							1
1.5 Macadamia				x						
1.6 Palms								x		
1.7 Oil palm			x					x		
1.8 Plantain										
1.9 Coffee										x(1/2,1/2) 1
1.10 Sugar cane										x(1/2,1/2) 1
2. Latifundio, hacienda										
2.1 Cattle, breeding (2)	x	x	x(1)	x	x			x		1
2.2 Cattle, fattening (2)	x	x	x(1)	x				x		1
3. Finca mediana		(1)		(1)						2
3.1 Crops										
3.2 Rice					x(1)	x(1/2,1/2)				2
3.3 Cacao				(1)	x	x(1/2,1/2)		(1/2)		2.5
3.4 Plantain						(1/2)		x(1/2)		1
3.5 Cattle, milk	(1)	x(1)	x						x	2
3.6 Cattle, breeding/milk	(2)	x	x(1)	(1/2)	x	(1/2)		(1)		5
3.7 Cattle, fattening				(1/2)				(1)		1.5
4. Finca campesina										
4.1 Precarista (3)	x(4)	x(1)	x(7)	x(1)	x(1)	x(1)	x	x		15
4.2 No-precarista								(3)		3
4.2.1 Coffee					x(1)				1	2
4.2.2 Cacao					x	x(1/2)	x	x(1)		1.5
4.2.3 Fruit trees			x		x					
4.2.4 Platano								x(1)		1
4.2.5 Cattle milk			x	(1)	x(1)					2
4.2.6 Cattle breeding/milk			x	(2)	x	(1/2)	x			1.5
5. Minifundistas/Peón	x	x(1)	x(1)	x(1)	x(1)	x	x	x(2)	x(1)	7
6. Shifting cultivation						(1)		x		1
TOTAL	7	4	12	7	5	6	10	4		55

Notes to Table 7.

- 1) Only the cantons 2 to 8 are part of the planning region Huetar Atlántica.
- 2) Important is to distinguish between cattle as an economic enterprise and cattle as a means to (under) utilize land, kept for speculation or just to avoid occupation by precaristas.
- 3) Precarista as such is not a proper farm type, though being a precarista does have its influence on the management of a farm. In view of the research programme precaristas should be distinguished with respect to three criteria, a) phase of institutional backing, b) the type of land use before the occupation, and c) the attitude of the former land possessor. Several classes can be separated:
 - a) Phase of institutional backing
 1. no backing at all
 2. before IDA involvement
 3. IDA involvement without title yet
 4. IDA involvement with title (precarista becomes in fact a no precarista)
 - b) Land use before occupation
 1. primary forest
 2. secondary forest
 3. banana/secondary forest
 4. pasture
 5. crops
 - c) Attitude of former land possessor
 1. agreed with occupation
 2. did not agree with occupation
 3. sold before occupation

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