

This is to certify that the

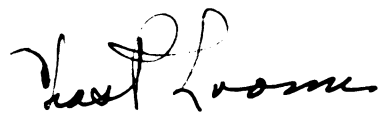
thesis entitled

RATIONAL INTRODUCTION OF TECHNOLOGY ON A
COSTA RICAN COFFEE HACIENDA: SOCIOLOGICAL
IMPLICATIONS
presented by

Antonio Manuel Arce

has been accepted towards fulfillment
of the requirements for

Ph.D degree in Sociology



Major professor

Date

June 11, 1959

Q-169



RATIONAL INTRODUCTION OF TECHNOLOGY ON A COSTA RICAN
COFFEE HACIENDA: SOCIOLOGICAL IMPLICATIONS

by

ANTONIO MANUEL ARCE

AN ABSTRACT

Submitted to the School for Advanced Graduate Studies of
Michigan State University of Agriculture and
Applied Science in partial fulfillment of
the requirements for the degree of

DOCTOR OF PHILOSOPHY

Department of Sociology and Anthropology

1959

Charles L. Loomis

Copyright by
Antonio Manuel Arce
1960

This is a sociological study of change, as it relates to some aspects of agriculture and rural life. Its central problem has been the study of some changes in an hacienda social system, brought about by the rational introduction of technology; conversely, the study of some of the influences of the existing social structure and culture of this coffee hacienda on the rational introduction of technology

The theoretical model of the social system guided the investigation from its beginnings. The basic assumption of the study was that a change in the ends or goals of an hacienda produces changes in other elements of the social system.

Some of the general findings of the study are: the hacienda changed its general orientation after 1953, year in which occurred a change in its ownership. The new goal made explicit by the new patron was to make the farm produce at its maximum. In order to fulfill this goal, the patron has rationally applied clearly defined means. The two more important of these means are: the elimination of the colono system and modifications in coffee technology.

The elimination of the colono system has had some consequences in the pattern of land tenure of the hacienda, since two thirds of the 520 manzanas planted in coffee before the change in ownership were cultivated by colonos . Now the totality of land planted in coffee are being cultivated by peons. The elimination of the colono system has not fundamentally

affected the size of the population but it did affect the population composition considerably, especially in terms of occupational categories. Spatial mobility has been relatively low for the hacienda as a whole and relatively high for the colono occupational category.

The structure of the hacienda agricultural system has been fundamentally modified by the application of means in the fulfillment of the new goal. This modification has affected, in part, the authority pattern of the hacienda.

The findings presented in relation to coffee technology show that of a list of 33 practices in coffee, 18 were being carried out in Aquiares. One third of these practices were new. Systematic study of two practices, one new and one modified revealed that the degree of acceptance of a practice is a function of values, beliefs, sentiments and customs. This means that when a practice conflicts strongly with basic values, beliefs, sentiments and customs of the probable adopter, the chances of its acceptance by him are minimum.

The findings presented show, in general, that the hacienda is now producing more coffee than before: 17.53 fanegas per manzana now, as compared with 12.0 fanegas per manzana before the change in ownership of the hacienda. This suggests that the hacienda is moving towards the attainment of the goal.

The assumption that a change in the ends or goals of an hacienda produces changes in other elements of the social system seems to be supported by the findings of this study.

RATIONAL INTRODUCTION OF TECHNOLOGY ON A COSTA RICAN
COFFEE HACIENDA: SOCIOLOGICAL IMPLICATIONS

by
ANTONIO MANUEL ARCE

A THESIS

Submitted to the School for Advanced Graduate Studies of
Michigan State University of Agriculture and
Applied Science in partial fulfillment of
the requirements for the degree of

DOCTOR OF PHILOSOPHY

Department of Sociology and Anthropology

1959

1211
1212
1213

ACKNOWLEDGMENTS

The author wishes to extend his appreciation to the following persons:

To Doctor Charles P. Loomis, Research Professor in the Department of Sociology and Anthropology, Michigan State University, who was the thesis advisor, for his moral support as well as for his suggestions and teaching.

To Doctor Manuel Alers-Montalvo, Head of the Department of Economics and Rural Life of the Inter-American Institute of Agricultural Sciences, for his valuable suggestions during different phases of the study, as well as to Doctor Julio O. Morales, ex-Head of the same department for his encouragement during the first steps of the study.

To Doctor Jorge León, Head of the Plant Industry Department, and Professor Juvenal Valerio, Rural Educator, of the Inter-American Institute of Agricultural Sciences, for their advice in relation to coffee culture, which helped the author to better understand some phases of the study.

To Guido Cabezas, Principal of the Aquiares school, for his valuable participation as field worker in some phases of the study.

Finally, the author wishes to give recognition to Miss Barbara Bryan for her valuable help in the correction of the English grammar in the manuscript.

TABLE OF CONTENTS

	PAGE
LIST OF TABLES	i
LIST OF FIGURES.	iii
CHAPTER	
I. INTRODUCTION	1
The Problem.	1
Objectives of the Study.	1
Importance of the Problem.	2
The Setting.	6
Presentation of the Study.	14
II. THEORETICAL ORIENTATION.	18
Introduction	18
Basic Assumption	18
A Theoretical Model: The Social System.	19
What a Social System Is	20
The Elements of Social Systems.	23
Social Processes.	30
Some General Ideas about Functionalism	35
III. METHODS OF PROCEDURE	38
Introduction	38
General Information about Aquiares	39
Agricultural and Demographic Census, 1948	39
A Schedule for Demographic Data, 1955	39
A Schedule for Demographic Data, 1958	40
Informal Interviews.	41
Intensive Interviews on Agricultural Practices	42
Interviewing of the Administrative Group.	44
Interviewing of the Peon Group.	47
Informal Techniques.	53
Use of Documents	54
Limitations of the Study	54

CHAPTER	PAGE
IV. AQUIARES BEFORE.	56
Introduction	56
Services and Facilities.	56
Land Use	62
Population	64
General Structure of the Hacienda.	66
The <u>Colono</u> System.	73
Production	77
Production of Coffee.	77
Coffee Technology	78
V. AQUIARES NOW	83
Introduction	83
Services and Facilities.	83
Land Use	87
Population	89
General Structure of the Hacienda.	90
Production	104
Production of Coffee.	104
Coffee Technology	105
VI. SOCIOLOGICAL ANALYSIS.	110
Introduction	110
Goals.	111
Means.	113
Elimination of Colonias	113
Modifications in Coffee Technology.	133
Application of Means and Coffee Production.	143
Factors Promoting or Hindering Production.	145
Total Pruning by Rows	147
Why Resistance Toward Total Pruning by	151
Rows.	151
Use of Chemical Fertilizers	167
Why No Resistance Toward Chemical Ferti-	
lizers.	169
Sociological Implications.	176
VII. SUMMARY AND CONCLUSIONS.	181
Introduction	181
Methods and Procedures	181

CHAPTER	PAGE
VII. SUMMARY AND CONCLUSIONS (Cont'd.)	
General Findings	183
Goals and Means	183
Effects of the Elimination of the <u>Colono</u>	
System	183
Modifications in Coffee Technology.	186
Production.	187
Cultural Factors in Relation to Technology. .	188
Introduction of Total Pruning by Rows. . .	138
Use of Chemical Fertilizers.	190
Sociological Implications.	191
General Conclusions.	192
SELECTED BIBLIOGRAPHY.	197
APPENDIX I. Glossary.	
APPENDIX II. Schedules	

LIST OF TABLES

TABLE		PAGE
1.	Age, Place of Birth and Average Years of Residence in Three Segments of the Aquiares Population. .	49
2.	Land Tenure in Aquiares Before and After the Change in Ownership of the Hacienda.	114
3.	Composition of the Aquiares Population by Occupations, Five Years Before and Five Years After the Change in Ownership	117
4.	Occupational Position of Aquiares Family Heads in 1948 and 1958 by Number and by Percentage of the Total.	119
5.	Percentage of the 1958 Population of Aquiares Living on the Hacienda in 1948.	121
6.	Place of Birth of Aquiares Family Heads in the Period 1948-49 and in 1958.	123
7.	Average Age of Family Heads in 1948 and 1958, According to Occupational Status.	124
8.	Number and Percentage of Peons Indicating Which of 33 Practices Were Being Carried Out in Aquiares in 1958.	136
9.	Number and Percentage of Peon Family Heads Who Have Worked with Six New Agricultural Practices in Coffee Introduced in Aquiares.	140
10.	Average Years Since Peons First Worked with Six New Agricultural Practices in Coffee Introduced in Aquiares	141
11.	Production of Coffee in Aquiares Before and After the Change in Ownership	144
12.	Percentage of Peons Who Have Worked with Four Pruning Practices and Average Years They Have Worked with Practices.	149

TABLE	PAGE
13. Aquiares Peons' Experience with Total Pruning by Rows in Relation to the Change in Ownership of the Hacienda.	152
14. Sources of Peons' Learning the Practice of Total Pruning by Rows in Aquiares	153
15. Peons' Opinions on the Best Type of Pruning for a Good Production of the Plant.	154
16. Comments of Peons Who Said There Is a Better Way to Prune Coffee than Total Pruning by Rows in Relation to Experience with that Practice.	155
17. Comparison of Opinions of Peons With and Without Experience in Total Pruning by Rows on Reasons Why Most Peons Do Not Like that Practice .	160
18. Comparison of Reasons Given by Peons Who Have Worked and Have Not Worked on Total Pruning by Rows As to Why They Would Not Apply That Practice on a Farm of Their Own	165
19. Periods In Which Peons Have Worked with Chemical Fertilizers, Taking the Change in Ownership as a Point of Comparison.	170
20. Sources of Learning Use of Chemical Fertilizers of Peons Who Had Worked with Practice Before the Change in Ownership	170
21. Peons' Opinions On Which Method of Fertilizing the Soil Is Best.	172
22. Number and Percentage of Peons Whose Reasons As to Why They Have Had Little Difficulty in Working with Chemical Fertilizers Fall in Five Different Categories	174

LIST OF FIGURES

FIGURE		PAGE
1.	Aquiaries, Turrialba, Costa Rica, 1951.	8
2.	Cartago Province and Turrialba Canton with Its Districts	10
3.	Costa Rica - Provinces and Principal Cities, 1952.	12
4.	Structure of the Agricultural System of Aquiaries, 1952.	67
5.	Structure of the Agricultural System of Aquiaries, 1958.	91
6.	Occupational Position of Heads of Families of Aquiaries in 1948 and 1958 by Percentage of the Total	118

CHAPTER I

INTRODUCTION

The Problem

This study attempts to throw light on some of the factors associated with technological changes in agriculture. More specifically, the central problem of this investigation has been to study some changes brought about in an hacienda social system by the rational introduction of technology; conversely, to study some of the influences of the existing social structure and culture of the hacienda on the rational introduction of technology.

Objectives of the Study

In an effort to delimit the already mentioned central problem of the study, some objectives were formulated. In other words, the research reported here was guided by the following objectives:

General

To determine how the change of goals of an hacienda, as a social system, has affected some of its other elements.

Specific

1. To find out what changes have been effected in goals.
2. To discover what means are being used to fulfill goals.

3. To discover some of the factors that have hindered or facilitated the attainment of goals.

4. To analyze significant changes in the hacienda social system in terms of their sociological implications.

Importance of the Problem

Latin America is a geographical area in which agriculture plays a major role in most human activities. The hacienda is a current type of land tenure in this portion of the Americas. Large land holdings are devoted to different purposes. Coffee planting is one of the most current ways of utilizing the land on large holdings in most Latin American countries.

Coffee production is one of the major activities in many Latin American countries. Coffee is, for some of them, the main economic resource. This may be one of the reasons behind the increasing interest in "technification" of coffee production throughout Latin America. In Costa Rica, for instance, technological changes related to coffee production have been occurring for some time, but it seems that these changes have been accelerated during the last few years.

The trend towards "technification" of agriculture is partly revealed in the diffusion and acceptance of some agricultural practices in coffee, which is one aspect of coffee production. In Costa Rica, for instance, the use of chemical fertilizers has

been reported by farmers as far back as 1915-1920, but actually the informants were referring to what their parents did. During the period 1939-1945, the use of commercial fertilizers was at a minimum, because of the war, but as early as 1945 its use increased considerably.¹ The introduction of hybrid coffee in Costa Rica occurred in 1934, but it was not until 1947 that it was accepted by some farmers.² Fungicides in coffee, on the other hand, were first introduced in Costa Rica in 1952.³

The use of weed-killers was a postwar event in Costa Rica.

The use of weed-killers was started in 1954 on an experimental basis. Experimentation continued during 1955 and 1956. The divulgation of the practice began once the experimental phase was over. Today there are 10,000 manzanas under weed-killer treatment.

The hacienda of Aquiares, the site of this study, is no exception in this matter of technification of agriculture. On the contrary, it is one of the most progressive farms in Costa Rica, according to some coffee specialists of the Inter-American Institute of Agricultural Sciences. This may be illustrated in part by the fact that Aquiares introduced the use of fungicides in coffee about six years ago. The use of weed-killers was first introduced on the hacienda at the beginning of 1957.

1. See Alvaro Chaparro, "Role Expectation and Adoption of New Farm Practices," (Unpublished Ph.D. dissertation, Pennsylvania State College, 1955), p. 92.

2. Ibid., p. 90

3. Ibid., p. 93

4. Víctor Ml. Pérez S., "Prácticas culturales del cafetal." (Mimeographed paper, Instituto Interamericano de Ciencias Agrícolas, n.d.) Translated from the Spanish by the author of this study.

Aquiáres is considered a pioneer in the introduction of some agricultural practices in coffee, such as bending over of new plants, use of weed-killers, planting of nurseries under full sun, removal of shade for coffee, and total pruning by rows.⁵ The last three practices have not been accepted by the majority of Costa Rican farmers, according to some coffee specialists.⁶

Some investigators have been interested in the study of technification of agriculture in Latin America. However, the emphasis in most of these studies has been on the economic rather than on the social factors. Sociological studies of the process of agricultural technification are scarce in Latin America. Aquíares has presented an opportunity to study some of the factors involved in that process. This investigator had been doing research in Aquíares since 1948. The farm was sold in 1953 and its new owners explicitly stated the interest in increasing production to its maximum by means of technological changes.

This is a sociological study of technological change as it relates to some aspects of agriculture and rural life. Technological change has recruited the interest of social scientists because, in part, it is a phenomenon whose nature must be known in order to predict or partially control its effects upon the

5. This practice is called "stumping" in some agricultural publications.

6. The statements made above reflect, in general, the opinion of Dr. Jorge León, Head of the Plant Industry Department, Inter-American Institute of Agricultural Sciences.

segments of the society in which it operates. Systematic and intensive studies of technological change in relation to agriculture and rural life in Latin America are beginning to appear.⁷ It is hoped that this study will be a new contribution in this respect.

Technological change emphasizes the material expression of culture. Factors making for technological change may be "change in techniques and knowledge, through inventions within the group, or the introduction of new techniques from without."⁸ This means that technological change is an aspect of cultural change, which is concerned with modifications in the common and shared ways of thinking, feeling and acting of people living in society.⁹ Since culture and society can be separated only for purposes of analysis, cultural change is intimately related to

7. See, for instance, some of the studies published in Human Organization. The book Human Problems in Technological Change, ed. Edward H. Spicer (New York: Russell Sage Foundation, 1952) has some cases of change in Latin America. The Inter-American Institute of Agricultural Sciences, in Turrialba, Costa Rica, with which this investigator has been associated for eleven years, has been interested in the problem of change since 1948. Some of its studies are: Charles P. Loomis et al, Turrialba: Social Systems and the Introduction of Change, (Glencoe, Illinois: The Free Press, 1953); Manuel Alers-Montalvo, "Cultural Change in a Costa Rican Village" (Unpublished Ph.D. dissertation, Michigan State College, 1953); Chaparro, op. cit.; Alers-Montalvo, "Pucará de Huancaayo" (In preparation).

8. Harry Pratt Fairchild, Dictionary of Sociology (New York: Philosophical Library, 1944).

9. For an illuminating discussion of the nature of culture, see Clyde Kuckhohn and William H. Kelly, "The Concept of Culture," in The Science of Man in the World Crises, ed. Ralph Linton (New York: Columbia University Press, 1945), pp. 78-106.

social change, which refers to modifications in the patterns of interaction of those persons who share common ways of thinking, feeling, and acting.

The importance of this study resides mainly in the contribution it may make to existing knowledge on cultural change and, specifically, on technological change in relation to agriculture and rural life. This study, it is expected, will add something positive to the knowledge of these socio-cultural phenomena. Any substantial contribution in this respect may benefit, in the long run, the efforts being made throughout Latin America for the technification of its agriculture.

It is also expected that this study may add something to the field of methodology, that is, to existing knowledge on the application of the sociological concept of social system to the study of change.

The Setting

Aquiaries

The study reported here was carried out in Aquiaries, a village of the Central District of Turrialba Canton.¹⁰ Because the village will be described in detail, especially in the chapters "Aquiaries Before" and "Aquiaries Now," only a few words will be said about it here.

10. A canton corresponds to a county in the United States.

Aquiares is a large coffee hacienda with an area of 1,372 manzanas,¹¹ of which 560 are planted in coffee. Figure 1 shows clearly the main coffee areas and the most important physical features of the hacienda.

In the village live 216 families, making a total of 1,342 persons.

The Central District, of which Aquiares is a part, is one of the four districts of Turrialba Canton. The thirty-square-mile Central District has been described in detail by several authors, particularly Morrison.¹² The area has a population of 19,493,¹³ mostly white, and is at an altitude of between 2,000 and 2,500 feet.

Turrialba Canton and Cartago Province

Turrialba is the largest of the eight cantons of Cartago Province. At this point it is necessary to mention that Costa Rica is divided into seven provinces. Each province is subdivided into cantons and each canton is in turn subdivided into districts.

Turrialba Canton has a population of 34,517 inhabitants,¹⁴ and is the second largest in population of the eight cantons in the province of Cartago.

11. One manzana equals 1.72 acres or 0.70 hectares.

12. Paul C. Morrison, "Population Pattern, Central District of Turrialba Canton, Costa Rica," Papers of the Michigan Academy of Science, Arts and Letters, XXXVII (1951), 219-225.

13. Dirección General de Estadística y Censos, Cálculo de la población de Costa Rica al 31 de diciembre de 1958 (San José, Costa Rica: 1959), p. 5.

14. Ibid.

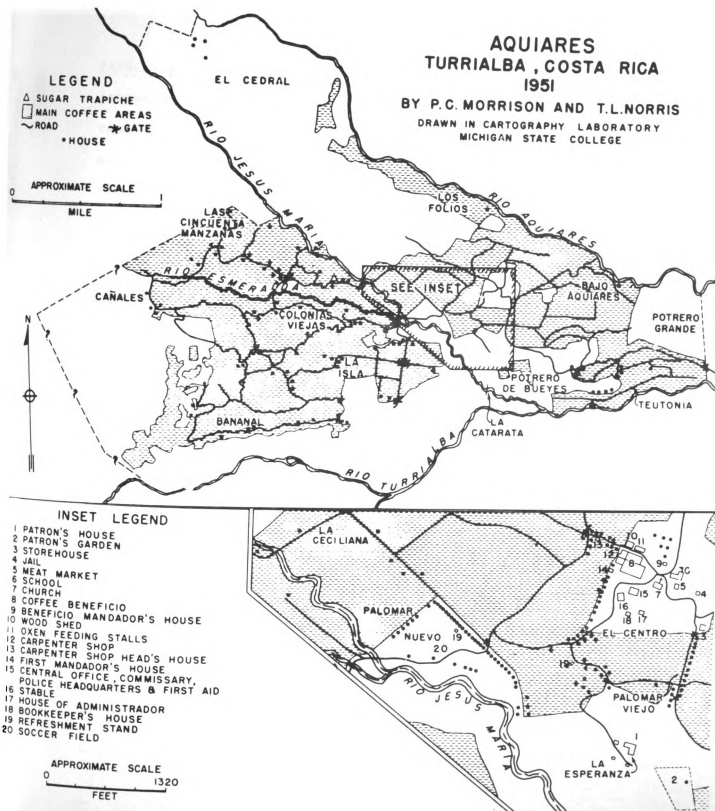


Figure 1

The province of Cartago, of which Turrialba Canton is a part, has a population of 137,310 inhabitants;¹⁵ it is the third largest in population of the seven provinces of Costa Rica. In connection with the province of Cartago, it seems pertinent to mention that its present capital was the first center of Spanish settlement in Costa Rica.

The relationships in terms of size and location between Cartago Province and Turrialba Canton and its districts are shown in Figure 2.

Costa Rica

The study reported here was carried out, as mentioned previously, in Aquiares, a village of the Central District of Turrialba Canton. This canton is part of Cartago, one of the seven provinces of Costa Rica.

Costa Rica, the country in which this study was carried out, is the southernmost of the five countries which constitute Central America. It lies between Nicaragua and Panama, between the 8th and 11th degrees north latitude. Parallel 10 North intersects at 84 degrees West longitude of the Greenwich meridian, approximately in the center of Costa Rica.¹⁶ The country is also bounded on the

15. Ibid.

16. J. Trejos, Geografía Ilustrada de Costa Rica (San José, Costa Rica: Trejos Hermanos, 1941), p. 5. Translated from the Spanish by the author of this study.

CARTAGO PROVINCE AND THE TURRIALBA CANTON WITH ITS DISTRICTS

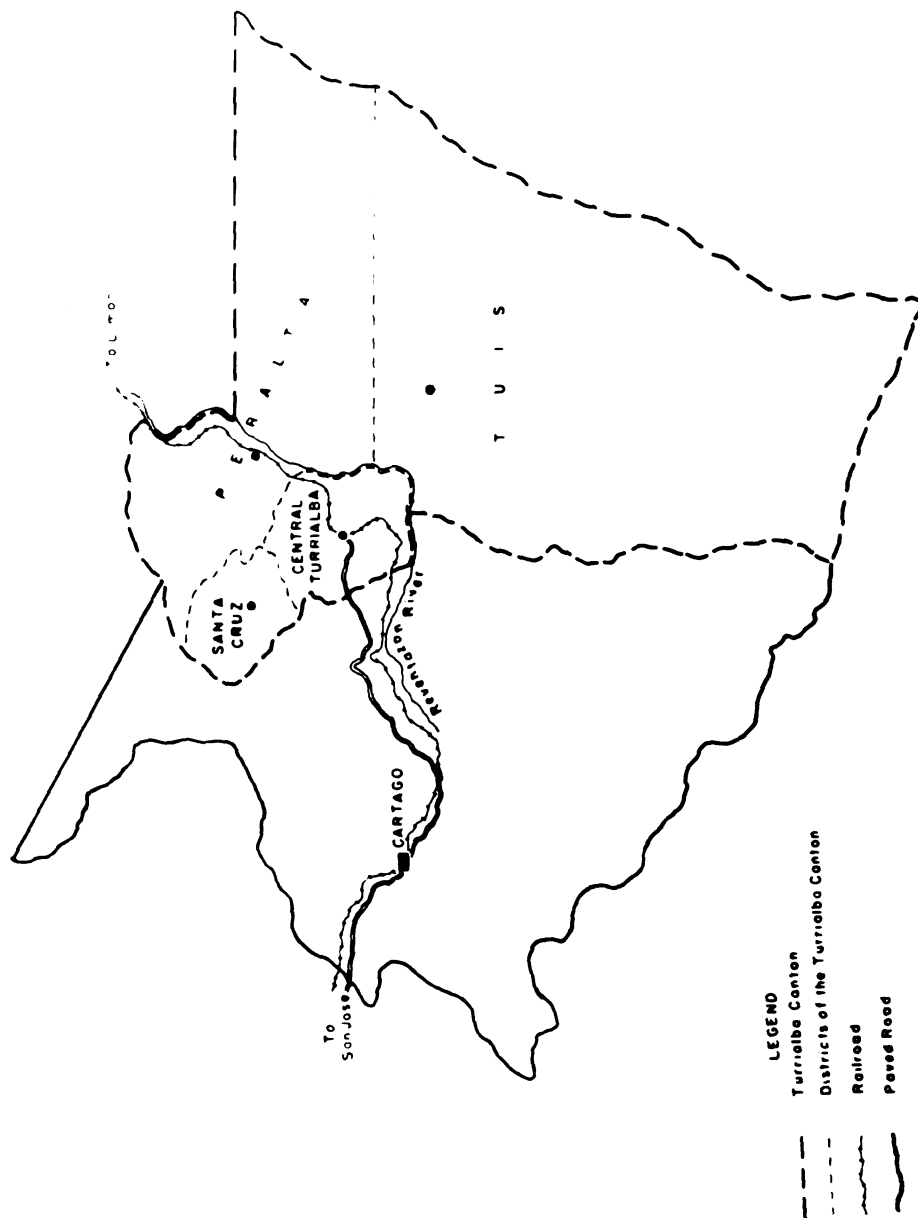


Figure 2.

east by the Caribbean Sea, and on the west by the Pacific Ocean. Figure 3 shows the geographical location of Costa Rica. The total land surface of Costa Rica is 51,011 square kilometers.¹⁷

According to the last estimate made by the Costa Rican census office, the country has 1,099,962 inhabitants.¹⁸ The density is, thus, of 21.56 persons per square kilometer. It is pertinent to note that the population density in 1950 was of 15.57 persons per square kilometer.¹⁹

The most thickly populated and developed area of the country is the Meseta Central, so called because it is a highland plateau located in the center of Costa Rica. Although the Meseta Central accounts for less than one tenth of the total area of the country, being about 60 miles long and 30 miles wide, it claims nearly 75 per cent of the total population of Costa Rica. On this Central Plateau are located the four largest cities of the country: San José, Alajuela, Cartago and Heredia. Figure 3 shows the location of these and other important cities in each of the seven provinces into which Costa Rica is divided. Turrialba is located at the east end of this Central Plateau, which has altitudes ranging from 3,000 to 6,000 feet and a mean annual temperature of about 60° F.

17. Dirección General de Estadística y Censos, Boletín Informativo Censos de 1950 (San José, Costa Rica: November-December, 1950), p. 1. 1 sq. km. equals .386 sq. mi.

18. Dirección General de Estadística y Censos, Cálculo de la población 1958, p. 2.

19. Antonio M. Arce, "Socio-Economic Differentials Associated with Leadership in Turrialba, Costa Rica" (Unpublished M.A. thesis, Michigan State College, 1952), p. 28.

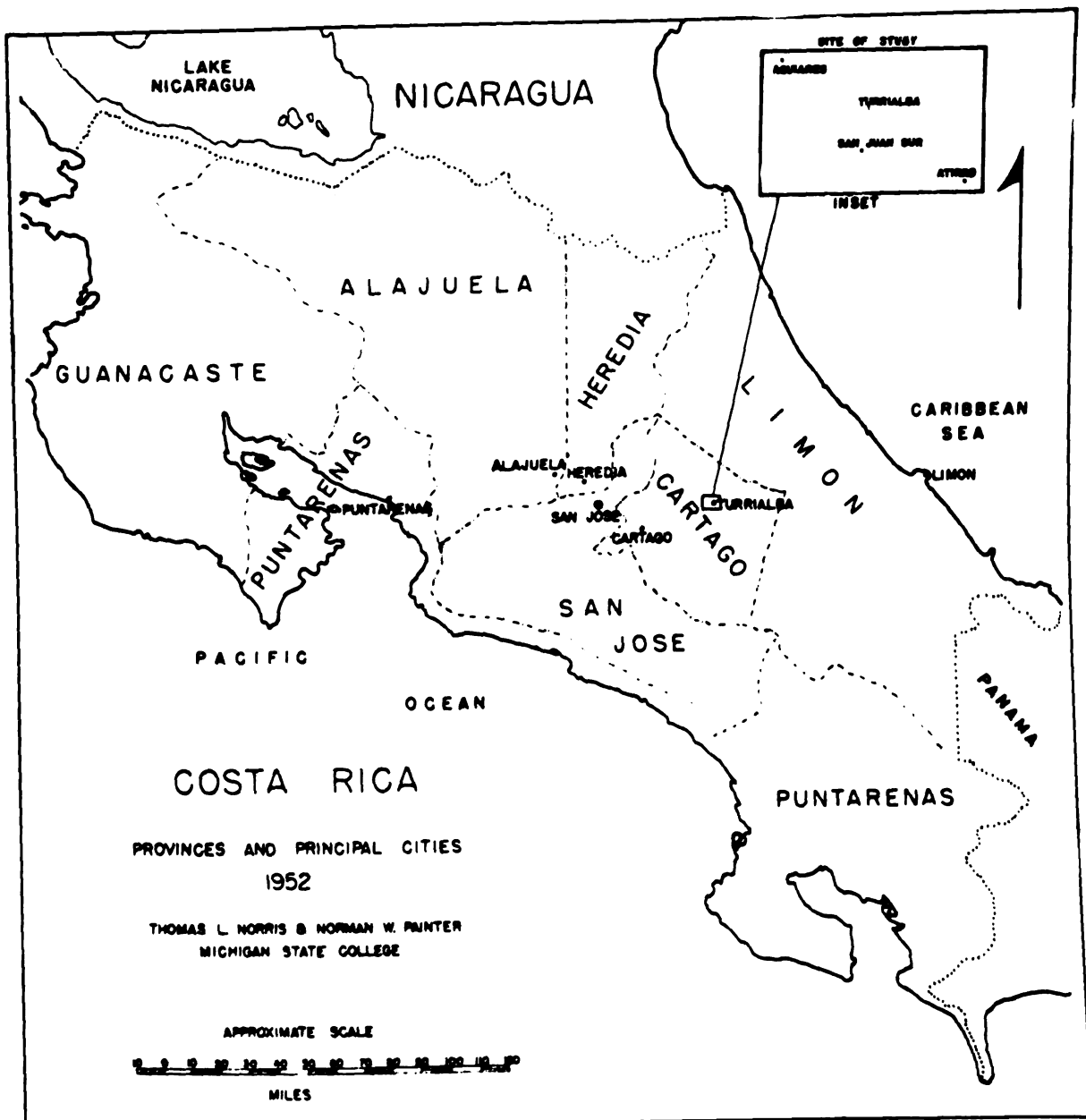


Figure 3

The principal sources of Costa Rican economy are coffee, bananas, cacao, sugar cane, cattle and lumber. Most of the coffee is produced on the Central Plateau. The banana plantations are found in the tropical lowlands of the coastal regions. The cattle industry is located mainly in the province of Guanacaste, although Cartago Province is also important in this respect. The cultivation of sugar cane and maize is carried on within and outside the Central Plateau. Lumber is still abundant and is exploited in several sections of the country.

Although these and other products are important to the national economy, there is no doubt that coffee is the most important of all products in Costa Rica, in terms of its economic value.

Coffee was introduced into Costa Rica about 1810. It was a part of the rapid diffusion of the coffee plant from Asia and Europe to the American hemisphere. In 1829 coffee became the most important product of the country and it has maintained this position to the present time.²⁰

Coffee placed first among all products exported by Costa Rica in 1957. In that year, 29,444,905 kilograms of coffee, with a value of \$40,617,140 were exported.²¹ In the same year there were exported 310,291,205 kilograms of bananas with a value of \$32,201,385 and 7,349,530 kilograms of cacao whose value was of \$3,992,474.²² Sugar is also an important product, but is used mainly for local consumption.

20. Chaparro, op. cit., p. 58.

21. Dirección General de Estadística y Censos, Anuario Estadístico de Costa Rica 1957 (San José, Costa Rica: 1958), p. 121.

22. Ibid.

Coffee and sugar cane are the two major products of the Turrialba Valley. With respect to the former product, the Central District of Turrialba Canton is the nation's leading coffee-producing district. Many small farmers utilize part of their land in subsistence crops, especially maize, or corn. But most of them try to produce both coffee and sugar cane in commercial quantities. Most of the land on all the big haciendas in the Turrialba area is planted in coffee.

Presentation of the Study

The presentation of the present study on rational introduction of technology will be the following:

Immediately after this introductory chapter, follows a chapter devoted to explaining the theoretical model which guided this research. Two main aspects are covered in this chapter: the social system concept and some general ideas on functionalism.

The methods, procedures, instruments and techniques utilized in the gathering of the data are presented in the third chapter. This chapter also gives some emphasis to the limitations of the study.

The next three chapters are devoted to presentation of findings, although in different degrees of systematization. The function and content of each one of these three chapters are the following:

Chapter four is a description of Aquiares some years before the change in ownership; it is not a strictly technical description, although it is based on field work carried out by this investigator and on careful examination of investigations carried out by others. The description refers mainly to the services and facilities available on the hacienda, to land use, to population, to the general structure of the hacienda, with special emphasis on the structure of the agricultural system, and to the operation of the colono system (share-cropping tenants who cultivated and lived on a part of the hacienda).

Chapter five is devoted to a description of Aquiares as it is now, that is, after its change in ownership; it is based mainly on personal investigation. The description covers the same items described in chapter four, with the exception of the colono system, which has been eliminated.

In chapter six, a sociological analysis of what has happened in Aquiares is attempted. To put it another way, the chapter attempts to make a comparison between the hacienda as it was before the change in ownership and as it is now, with the purpose of presenting some evidences which may help to answer the questions implicit in the objectives of this study. In this chapter, an effort is made to analyze in a systematic way the changes which have occurred in goals and means, as well as some of the factors hindering or facilitating the attainment of the objective of getting

the maximum possible production of coffee. In relation to changes in means, the analysis concentrates on the two principal means utilized by the hacienda to fulfill its goals: the elimination of the colono system and modifications in coffee technology. The elimination of the colono system is analyzed in relation to its possible effects on patterns of land tenure and land use, population composition, services and facilities on the hacienda, and on the general structure of Aquiares, with special emphasis on the structure of the agricultural system. In connection with modifications in coffee technology, special emphasis is given to the introduction of new agricultural practices in coffee on the hacienda.

In chapter six, consideration is given to some of the possible effects of the application of means on coffee production. The chapter ends with a section devoted to examining some of the sociological implications of the study. In other words, in this section an attempt is made to discover the meaning of the findings in relation to sociological theory and, more specifically, in relation to the social system theoretical model.

The presentation of this study ends with a summary of the whole work, that is, an abstract of its main aspects: the central problem, objectives, theoretical orientation, methodology and findings. Some attention is also given to the formulation of some conclusions, that is, the meaning of the findings for theoretical and practical purposes.

Besides the "body" of this study which has been described above, there is an appendix containing a glossary of Spanish terms used in the work, in alphabetical order and translated into English. After this glossary, some of the instruments used in the research are included.

CHAPTER II

THEORETICAL ORIENTATION

Introduction

Most sociological writers seem to agree that one of the main functions of theory is to guide, to systematize research.¹ In the case of this study, the theoretical model of the social system has been the guiding light for the planning, the conducting and the analysis of the investigation designed to get answers to the central problem. This chapter will attempt to make a description of the theoretical model as it relates to both the basic assumption of this study and to what has been called functionalism.

Basic Assumption

The point of departure, and the axis of this study, has been an assumption, supported by research data, which, stated briefly, reads as follows:

Change in the ends or goals of an hacienda produces significant changes in other elements of the social system.

1. For a detailed treatment of this aspect, see Robert K. Merton, Social Theory and Social Structure (Glencoe, Illinois: The Free Press, 1951), Chapter ii, and William J. Goode and Paul K. Hatt, Methods in Social Research (New York: McGraw Hill, 1952), pp. 9-12.

The change in reference will be discussed in detail in the chapter devoted to analysis. For immediate purposes, it will only be said that this investigator considers that to get the maximum possible production is one of the main new goals of the hacienda.

A Theoretical Model: The Social System

The study of some changes on the hacienda, brought about by the rational introduction of technology, as well as the study of some influences of the existing social structure and culture upon that introduction of technology, required a theoretical frame of reference. The theoretical model of the social system seemed to this investigator to be the most suitable for that purpose, for several reasons: first, because the model provides a frame of reference for understanding the component parts and the interrelationships of the total community, which are related to technological change. Second, because the model has proved to be useful for applied uses, as demonstrated by the works of Loomis and Beegle, Sower and others.² And third, because the investigator has had the opportunity of seeing the application of this concept to a familiar situation: introduction of change in the community

2. See especially Charles P. Loomis and J. Allan Beegle, Rural Social Systems (New York: Prentice Hall, 1950), and Rural Sociology: The Strategy of Change (New York: Prentice Hall, 1957).

Christopher Sower used the social system model in his study, The Ceylon Village Development Program: A Sociological Analysis. Because the copy this investigator received from the author was a mimeographed one stating that the report "should be restricted for use only in the offices to which it is being sent for criticisms," no quotations will be made from this study.

of Turrialba. Furthermore, he collaborated in the research and in the writing of the final report on this subject.³

There are, of course, other theoretical treatments of the social system concept which have been of help to this investigator.⁴

The description of the model which will be attempted further in this chapter, and which constitutes the core of theoretical notions which have guided this study, is based mainly on a new book that Loomis is writing and from which this investigator has some mimeographed chapters.⁵ Two other important sources guiding the description which follows are the abovementioned books by Loomis and Beegle, Rural Social Systems and Rural Sociology: The Strategy of Change.

What a Social System Is

In any collectivity of individuals -- a family, a school, an hacienda -- persons interact with one another to exchange ideas, beliefs, customs, traditions, etc., i.e., cultural elements. The human animal is characterized by the possession of these cultural elements and his capacity or ability to transmit them. Man is able to transmit or acquire cultural elements because of his capacity to create and manipulate symbols. This is, precisely, what distinguishes man from other animals.

3. Loomis et al, Turrialba: Social Systems and the Introduction of Change.

4. Talcott Parsons, The Social System (Glencoe, Illinois: The Free Press, 1951).

5. Charles P. Loomis, Sociology: The Persistence of Social Systems (in preparation).

What has been said up to here means that any human collectivity must have, in order to persist, at least three conditions: a plurality of individuals, some cultural elements and a way to communicate these elements, that is, interaction. These are the basic conditions of any social system and are reflected, in one way or another, in most of the definitions or descriptions of the concept which are offered by different authors. Some sociologists say, for instance, that "social systems are composed of social interactions and the cultural factors which structure these interactions."⁶

It is important to distinguish between what has been called concrete social systems, such as a family, a football team or a community, and an abstract social system, in which the interaction may prevail from generation to generation or from geographical region to geographical region, such as the Catholic Church. The concern of this study is with concrete and not abstract social systems.

Another important distinction which it is necessary to make is that between social systems and social sub-systems. The distinction is more a matter of emphasis or of degree than something which is in the nature of the collectivities. This means that if the emphasis of a study is put on an occupational group

6. Loomis and Beegle, Rural Sociology: The Strategy of Change, p. 2.

or on a family, these groupings are "legitimate" social systems. But if the emphasis is on, let us say, an hacienda, this may be considered as a social system and the occupational group as a sub-system.

From what has been said up to now, it appears clear that the significant unit of social systems is interaction. However, something must be said about the nature of this interaction, because it is this special nature that gives its identity to the social system. This interaction within the social system must be meaningful. And this means, according to Sorokin, that interaction should be an event "by which one party tangibly influences the overt actions or the state of mind of the other."⁷ Another condition of this interaction is that in the social system the individuals interact with each other at a higher frequency than with non-members of the system when this is in operation.

The definition which seems to summarize what has been said about social systems and which has been one of the main guides for this study is the following:

The social system, in bare essentials, consists in a plurality of status-roles enacted by actors interacting with one another in a situation possessing symbolic and physical aspects.⁸

7. Ibid.

8. Loomis, The Persistence of Social Systems.

The discussion of the concept status-roles, which will be made in the following section, will clarify, it is hoped, the definition already presented.

The Elements of Social Systems

Different social systems such as an hacienda, a school or a health center have, in spite of their differences, some elements or component parts in common. The most important of these elements are the following:

Ends, objectives or goals - The objectives of a social system are, in general, what the system expects to accomplish. More specifically, the ends refer to the changes which the members of the system expect to accomplish through the operation of the system. But the members of a social system are not always interested in the achievement of some changes. In some cases they expect to maintain the status quo, and this is also a legitimate goal of the system. This suggests that when it is said that a system has an objective, it does not necessarily mean that there is a unanimous agreement on that goal among all members of the system.

The objectives, as a component part of the value system, are closely related to the norms, beliefs and sentiments prevailing in the social system.

Norms - The norms are the guiding standards or rules prescribing for the individual member of a social system the behavior

which is socially acceptable or unacceptable in a given situation. These rules govern the application of means for the attainment of goals or objectives. They are, in everyday language, "the rules of the game."

Norms have a pervasive influence throughout the system by functioning in guiding the operation of status-roles, determining the manner in which goals may be realized, power utilized, facilities allocated, sanctions applied, beliefs held, sentiments expressed, and rank established, to name just a few of the normative functions.⁹

Status-roles - In any social system there are different socially defined positions. Individual members of the system are expected to perform certain specific actions, according to the position they occupy. Thus, it may be said that what is expected of individuals occupying a given status or position may be labelled as his status-role.

The concepts of status and role have been of current use in sociological literature for some time. Status has been equated, in general, to position. Role, on the other hand, has been regarded as the dynamic aspect of status. The use of the two concepts combined, which is something relatively new,¹⁰ seems to make both concepts more useful as analytical tools. This combination reflects reality, since positions occupied by people do not exist unless

9. Ibid.

10. According to this writer's knowledge, the first authors who used the two terms combined were Loomis and Beegle in their Rural Sociology: The Strategy of Change, a publication mentioned several times in this study. Loomis also uses this combination of terms in his book in preparation, Sociology: The Persistence of Social Systems.

something is to be expected from such positions. Conversely, action cannot take place in a vacuum. There must be persons occupying positions if action is expected to take place.

The importance of the status-role element has been emphasized by the definition of social system offered before. In fact, a social system consists of a plurality of status-roles enacted by actors interacting in a cultural as well as a physical environment. In other words, a social system such as an hacienda, consists of certain positions, such as that of the patron, the administrator, the overseer, the foremen, the carpenters, the peons and so forth, occupied by persons who interact with one another and from whom certain specific behavior is expected.

Power - Power may be defined as control over the actions of others. This control may be of two different kinds:

a) Authority, which is the right, as determined by the system, to exert control over the actions of others, and

b) Influence, which is control over others based mainly on personal qualities or characteristics, such as superior knowledge, human relations skills, high family position, the ownership of certain types of wealth, past favors, and others.

In the case of influence, the control over the actions of others involves always the consent of the persons upon whom that control is being exercised. In the case of authority, this is not necessarily so.

These two types of power are not exclusive. For instance, a person in a status-role, let us say, the overseer of an hacienda, may have the right, determined by specific rules of the hacienda, to control some actions of the peons. He may also make some workers perform special jobs for him because of gratitude for past favors received.

Social rank - In any social system, there is a continuous process of evaluation, which is the basis for the rating of certain characteristics as high or low, which, in turn, are the basis upon which the "standing" of the individual members of the system is determined. The criteria for ranking the actors may be different in different systems. However, in most social systems the social rank of individuals is closely related to the status-roles they enact in the system. Power, with its two components, authority and influence, is also an important factor in the ranking of the individual members in most social systems. This does not mean that the most powerful members of a system always have the highest rank or standing. "Prestige," "respect," and "esteem" are also factors related to social rank in some social systems. Different types of wealth, which in many cases is related to power, may also be a source from which social rank is derived.

Social rank, as the term is used here, refers to a specific system. To put it another way, the standing of an individual may refer to an hacienda in general, to the agricultural system in particular, or, even more, to the peon group, taken as a social system.

Sanctions - Any social system has some arrangements to make its members conform to its norms and ends. These arrangements are called sanctions. In most systems, there are positive and negative sanctions. The former are the rewards available to the members of the system for conforming to its values, ends and norms. The latter are the penalties to be applied to members who deviate from the prescribed ends and norms.

The rewards in a system such as an hacienda may consist of a lot of land to be cultivated without charge, free wood for cooking purposes, promotions, special gifts for Christmas, good housing facilities, prestige derived from the positional aspects of status-roles, esteem derived from the active aspects of status-roles, privileges as a result of prestige and esteem, and many others.

The penalties in a system such as an hacienda may consist, among others, of discharge from the job, degrading of the occupational position, reduction of the housing facilities, in other words, the deprivation of those rewards mentioned above. Other penalties at the disposal of the system may be ridicule, ostracism, and direct aggression.

Facilities - As mentioned before, any social system has an objective or objectives which the members of the system try to fulfill. The means used within the system for the fulfillment of the ends, in accordance with the system's norms, are the facilities.

In the case of an hacienda, facilities may consist of the land, houses and buildings, services and equipment. This means that facilities are possessions. Because a possession is defined as "an entity which is transferable from one actor to another, or one system to another through the process of exchange; it is never as such a physical object, but always consists in rights of use, control or disposal of social or physical objects,"¹¹ the individuals in a social system, and, more specifically, the workers on an hacienda may be considered, to some extent, as facilities.

Beliefs - "Any given proposition about any aspect of the universe which is accepted as true may be called a belief."¹² Beliefs are primarily cognitive and represent what "we know" about the universe, no matter how we know it.

Beliefs are fundamental to the existence and continuity of the social system, partly because of their close relationship to the ends, norms, status-roles, and most of the other elements of the system.

Any given social system is characterized by certain specific beliefs held by the majority of its members. This is what is called a belief system, since the majority of the members share some specific beliefs which help give identity to the social system.

11. Loomis, The Persistence of Social Systems.

12. Ibid.

Beliefs are at once products and producers or keepers of customs and traditions, which are also fundamental to the cohesion of a social system.

Beliefs may be based on empirical evidence or upon faith, prejudice, or intuition. The distinction is clear, but for practical purposes, in most cases the important thing is the consequences of the beliefs, no matter their testability or untestability. Beliefs based on prejudice may produce more action than beliefs based on tangible evidence.

Sentiments - If beliefs represent thoughts, sentiments embody feelings. Sentiments represent "what we feel" about the universe, no matter why we feel it.

Sentiments have a pervasive influence throughout the social system. They are present in most of the elements of the system. As in the case of beliefs, there is a close relationship between sentiments and customs and traditions. More specifically, sentiments may be said to represent to some extent the morals and mores of the system if the definition of sentiments as "the internalization of morals and mores"¹³ is accepted. Morals, at the same time, may be defined as "conventions to which have been given a judgment of societal welfare."¹⁴ Conventions, on the other hand, are defined

13. Alfred McClung Lee, "Social Determinant of Public Opinion," Public Opinion and Propaganda, ed. Daniel Katz et al (New York: The Dryden Press, 1954), p. 102.

14. Ibid., p. 98.

as "traditional patterns (verbal and other) which are accepted in a society as the proper modes of conduct for the man-as-he-should-be, with correspondingly disapproved conventions for the man-as-he-should-not-be."¹⁵ In the case of mores, it may be said that they are a type of folkways, that is, of behavior traits common and traditional in a group, which "become vested with 'an opinion that a usage is favorable to welfare.'"¹⁶

The foregoing definitions show with clarity the net of interrelationships which exist in connection with sentiments, and support to some extent the assertion made previously about the pervasive influence of sentiments throughout the social system.

Territoriality - This is not really a component part of the social system, but rather a condition for the effective functioning of the system. In brief, territoriality refers to the geographic location or spatial arrangements of social systems. They are located, in one way or another, in a geographical space.

Social Processes

Social processes, as in the case of territoriality, are not elements of a social system, but rather conditions for the effective functioning of the system. The elements already discussed represent mainly the structure of the system. Territoriality locates this structure in space, and the processes locate it in

15. Ibid.

16. Ibid., p. 100.

time. To put it another way, these processes aid in the interlocking of the elements, taking into consideration temporal changes occurring in the system. Some of the more important social processes are the following:

Communication - By communication is meant "the process by which information, decisions, and directives pass through a social system, and the ways in which knowledge, opinions, and attitudes are formed or modified."¹⁷ Communication may be carried out in personal, face-to-face interaction or through mass media, a more impersonal way to communicate. In most instances, this is communication in only one direction: from the sender to the receiver.

The importance of this process for the functioning, and even for the existence, of the system is a paramount one. It suffices to remind the reader of what was said at the beginning of this section: that interaction is one of the basic conditions for the existence of social systems. For interaction to take place, there must be some sort of communication. This is why some writers say that "society means communication"¹⁸ or that "communication is interaction."¹⁹ It is then safe to state that communication is essential for the effective functioning and the persistence of social systems.

17. Loomis and Beegle, Rural Sociology: The Strategy of Change, p. 17.

18. Alfred R. Lindesmith and Anselm L. Strauss, Social Psychology (Rev. ed.; New York: The Dryden Press, 1956), p. 6.

19. Eugene L. and Ruth E. Hartley, Fundamental of Social Psychology, (New York: Alfred A. Knopf, 1958), pp. 31-32.

Evaluation - In the discussion related to social rank, the function of this process and the essential part it plays in the proper functioning of the system was made evident. But evaluation within a social system is not only concerned with social rank, for evaluation is a "process through which positive and negative priorities or values are assigned to concepts, objects, persons, or collectivities, or events, either past, present or future."²⁰ This process explains, in part, variations or differences among social systems, because some ends are valued highly by some systems, whereas the same or similar objective may be valued lowly by others; norms governing the application of means for the achievement of ends may be valued differently by different social systems or even by the same system at different points in time; the prestige ascribed to certain status-roles may vary from system to system or at different periods within the same system.

Evaluation is a process which permeates the whole social system, having influence on most of its elements.

Decision-making - The foregoing process, that of evaluation, has some influence on the process of decision-making. There is, however, a fundamental difference, and that is that the former is oriented primarily to the past and the present, whereas the latter is oriented toward the future. Decision-making is the

20. Loomis, The Persistence of Social Systems.

Page

12

186

18

of

for

the

and

P

h

:

"process whereby alternate courses of action available are reduced."²¹

In a social system there are always persons who make, or are expected to make, decisions in specific situations. On a coffee hacienda, for instance, decisions in relation to land use, to change of agricultural practice or any other factor which is supposed to fundamentally affect the production of coffee, are made mostly by those occupying the status-roles with the most power: the patron and the administrator. Power is, undoubtedly, one of the most important components of decision-making. Communication, on the other hand, is one of the most important means in the process which ends in the execution of a decision.

Boundary maintenance - This process refers to the ways used by the system directed toward the maintenance of its identity. In other words, this is a process whereby all parts of the system -- the ends or objectives, the norms, the power structure, the ranking system, and so on -- function in relative harmony. The equilibrium of the system is maintained, in some instances, by the integration and solidarity required of the members of the system as a consequence of prospective drastic changes from the outside, and, to some extent, from the inside. Values, beliefs, sentiments, objectives, norms and other elements of the system are sometimes reinforced in order to present a united front to the outside threat.

21. Loomis and Beegle, Rural Sociology: The Strategy of Change, p. 18.

Of importance in boundary maintenance in a social system such as a coffee hacienda are, among others, the language spoken, especially the argot used in relation to agriculture, the beliefs and sentiments held in relation to agricultural practices, the prevalent myths in relation to power, status-roles and agriculture in general, and the way people dress, talk, and act in specific situations.

Systemic linkage - If it is true that any system, to a greater or a lesser degree, tries to maintain its identity, it is not less true that any system is linked, in one way or another, to the outside world. Systemic linkage refers to the process whereby a system becomes linked with the outside world, that is, with other social systems. Some of the people of the Aquiares coffee hacienda, for instance, have economic, educational, recreational and friendship links with the Turrialba trade center and even with the capital of Costa Rica. These are only some of the links which really exist. The relations of the hacienda with the Costa Rican Ministry of Agriculture, the Inter-American Institute of Agricultural Sciences, and with other institutions, could also be mentioned.

Some General Ideas About Functionalism

For a person familiarized with what has been called functionalism, or, in a more sophisticated way, functional theory, it will be clear that the foregoing description of social systems falls

820

820

820

820

820

820

820

entirely within that theory. In fact, functionalism is the basic material from which the social system concept has been built.

Functional theory, in a general and over-simplified way, means that the system maintains itself as a functioning whole; that each element of the system is related in such a way to every other element that a change in one of them will affect, in one way or another, the other elements.

The functional interdependence of social elements is explained, in a more precise way, in the following statement:

Most difficult perhaps for the layman to comprehend is the fact that no one of the "parts" -- the specific modes of adjustment to nature or to other men -- of a society can be validly considered apart from the whole. The layman is prone to evaluate a given mode of action in terms of some scale of absolute moral values. Functionally, however, no social practice has any inherent value; whether it will help or hinder human survival depends, not on the character of the practice, but on the way the particular practice fits into -- functions in relation to -- all the other practices that in total constitute the society. . . . because a society is a system of interdependent parts, that a change in one part disturbs the functioning of the entire social order.²²

In the preceding statement all references are made to society and not to social systems. In this connection it is important to say that most of the present social system theorists equate this concept to that of society. For Parsons, for instance, society is a social system.²³

22. Richard T. LaPiere and Paul R. Farnsworth, Social Psychology (New York: McGraw-Hill, 1949), pp. 48-49.

23. See for instance, Talcott Parsons, The Social System, p. 151, and A.L. Kroeber and Talcott Parsons, "The Concepts of Culture and Social System," American Sociological Review, XXIII, 582-83.

the

the

the

the

the

the

the

the

The relation of the "part" to the entire social order or the function every "part" performs for the total society is recognized, in general, by most sociologists. These postulates, however, should not be taken as true in every instance. In a more precise definition of functional theory, Merton says that there are three postulates which are not always true and which, rather than aid to the appropriate application of functional theory, are obstacles, as they do not leave room for other important concepts. He specifically says:

Substantially, these postulates hold first, that standardized social activities or cultural items are functional for the entire social or cultural system; second, that all such social and cultural items fulfill sociological functions; and third, that these items are consequently indispensable.²⁴

In the case of the first postulate, that of the functional unity of society, Merton criticizes Radcliffe-Brown for saying that "the function of a particular social usage is the contribution it makes to the total social life as the functioning of the total social system."²⁵ Merton's position is that a given item may be functional for some groups and disfunctional for others in the same society.

In relation to the second postulate, that of universal functionalism, Merton criticizes Malinowski for saying that "the functional view of culture insists therefore upon the principle that in every type of civilization, every custom, material object, idea and belief fulfills some vital function."²⁶

24. Merton, op. cit., p. 27

25. Ibid.

26. Ibid., p. 32.

Ver

ti

fo

82

+

+

+

+

+

+

+

+

+

+

+

+

+

+

+

+

+

+

+

+

+

+

+

+

Merton's position is that in this postulate there is the assumption that every item has a function and hence the way is closed for the study of disfunction.

In the case of the third postulate, that of the indispensability of items, Merton again criticizes Malinowski for stating that "in every type of civilization, every custom, material object, idea and belief fulfills some vital function, has some task to accomplish, represents an indispensable part within a working whole."²⁷ Merton's position in relation to this postulate is that "just as the same item may have multiple functions, so may the same function be diversely fulfilled by alternate items,"²⁸ and he proposes the concept of functional alternatives, or functional equivalents, or functional substitutes.

27. Ibid., p. 34.

28. Ibid., p. 35.

CHAPTER III

METHODS OF PROCEDURE

Introduction

This chapter is concerned with the "how" of the study, especially with the instruments and techniques utilized in the gathering of the information. Some other aspects of this "how" have been taken care of in the introductory chapter and in the chapter devoted to explaining the theoretical orientation of this study.

Some investigators include a section on definition of concepts in the chapter devoted to methodology. They are right in considering conceptual analysis an essential aspect of the methodology of any empirical research, since concepts are frequently used as tools of research. A clear knowledge of what is meant by what is an indispensable prerequisite of research. This does not deny the fact that conceptual analysis, or the clarification of key concepts, is also an indispensable phase of theoretic work.¹

This investigator recognizes the importance of conceptual analysis, but is against the idea of having a special section for that purpose. He has preferred to make this clarification of concepts throughout the work, when necessary and in connection with

1. See Robert Merton, op. cit., p. 87.

other

been

of

with

con

be

A

A

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

other pertinent ideas, i.e., dynamic approach. This has also been the rationale for not including a special section on review of pertinent literature. Books or other publications reviewed which are pertinent to some aspects of the study are cited in connection with that aspect. Literature pertinent to the problem but which has not been cited will appear in the bibliography.

General Basic Information About Aquiares

Agricultural and Demographic Census, 1948

The Department of Economics and Rural Life of the Inter-American Institute of Agricultural Sciences carried out in 1948 an agricultural and demographic census of the Central District of Turrialba Canton. This census, in the preparation and execution of which this investigator collaborated, covered the Aquiares hacienda, which is a part of the Central District. The already mentioned census has been one important source for this investigation.

A Schedule for Demographic Data, 1955

In order to get up-to-date information about demographic factors in Aquiares a schedule asking for information on the following demographic characteristics was constructed:

Name of the head of family

Names of other members of the family

Relation to the family head

Sex

Age

Civil status

Religion

Last year of schooling

Whether or not attending school

Whether or not knows how to read and write

Occupation

Date of birth

Use of shoes

How long the informant has lived in Aquiares

The interviewing of all families on the hacienda was carried out by the investigator, with the help of the school teachers, in February, 1955. The original schedule used in the interviewing may be seen in Appendix II.

The information was tabulated by hand and some tables in relation to age, residence, schooling, occupation, and other factors were made.

A Schedule for Demographic Data, 1958

In an effort to keep some general information about Aquiares up-to-date, another schedule on demographic factors was constructed at the end of 1957. It asked for information on the same demographic characteristics included in the 1955 schedule. In addition, some specific questions on horizontal mobility, community services, and community organizations were included.

All families on the hacienda were interviewed in February, 1958, by the investigator, with the help of the school teachers. The original schedule used on this occasion may be seen in Appendix II.

The information was tabulated by hand and tables relating to residence, age, place of birth, schooling, occupation, horizontal mobility and other factors were made.

Informal Interviews

As mentioned in the introductory chapter, the hacienda was sold by its original owner in September, 1953. Before that date, the investigator had been doing field work in connection with other problems, and had had the opportunity of getting some knowledge on the general orientation of the hacienda.

The day the hacienda was "officially" sold, there was a meeting of the original and the future patrones with the workers. This meeting will be discussed in detail in the chapter "Aquiaries Now." For present purposes, it will only be said that in that meeting the new patron explicitly stated that their main goal was to make the farm produce at its maximum, that the colono system would be eliminated, and that new agricultural practices would be introduced. In order to get more concrete information about the goals or objectives of the new management of the hacienda, the investigator made use of three different techniques: direct observation, casual conversations and informal interviews.

Informal interviews were held mainly with people in top managerial positions, namely the patron, the administrator and the overseer. Some of the specialized workers, such as the head of the health dispensary, carpenters and chauffeurs, were also interviewed. These informal interviews were, in fact, structured, in the sense that they were directed to getting information on specific aspects, such as objectives and means. They were informal in the sense that no instruments were used for the interviewing and that they had the appearance of being casual. In this way, the patron was interviewed on the day of the meeting in September, 1953; in August, 1954; in July, 1958; and on other occasions. The administrator was also informally interviewed on several occasions, for example, July, 1958, and December, 1958, as well as the overseer, in July, 1958, and December, 1958.

Immediately after each interview, the investigator reconstructed it as accurately as possible, so as to keep a record of most informal interviews.

Intensive Interviews on Agricultural Practices in Coffee

Knowing that modifications in coffee technology were one of the means being utilized by the hacienda in the fulfillment of one of its goals, the investigator decided to conduct intensive interviewing in this area.

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

The rational introduction of technology, which is one of the main interests of this study, refers mainly to technology in agriculture, and more specifically to agricultural practices. This seems to be a logical procedure, since agricultural practices are an aspect of technology if the following definition of it is accepted:

Technology is the combination or totality of the techniques employed by a people or at a given period for the purpose of adaptation to their bio-physical environment. More broadly, it includes elements of social organization such as cooperation, division of labor, management, etc.²

By rational introduction of technology, and, in the present case, of agricultural practices, is meant the planned and systematic introduction of those practices with the specific purpose of getting some expected results. This seems to be in line with Parson's inference of Weber's ideas about rationality:

An act is rational so far as: a) it is oriented toward a clearly formulated unambiguous goal, or to a set of values which are clearly formulated and logically consistent; b) the means chosen are, according to the best available knowledge, adapted to the realization of the goal.³

Rational action, defined in the foregoing manner, is in direct contrast to traditional action, as it has been defined by Weber:

2. Fairchild, Dictionary of Sociology.

3. Max Weber, The Theory of Social and Economic Organization, trans. A.M. Henderson and Talcott Parsons (New York: Oxford University Press, 1947), p. 16.

Strictly traditional behavior lies very close to the borderline of what can justifiably be called meaningfully oriented action, and indeed often in the other side. For it is very often a matter of almost automatic reaction to habitual stimuli which guide behavior in a course which has been repeatedly followed.⁴

The intensive interviewing on agricultural practices in coffee was carried out in two component parts of the Aquiares population: the "administrative" group and the peon group.

Interviewing of the "Administrative" Group

For the purposes of this study, "administrative" group of the hacienda was defined as the collectivity made up of those persons responsible for most of the decisions concerning the general orientation of the hacienda. According to this definition the "administrative" group of Aquiares was made up of the patron, the administrator, and the overseer. It was planned to interview all three of these persons, but only two of them, the administrator and the overseer, were interviewed. The reason for this is that the patron refused to be interviewed for two reasons: first, that he is always short of time in the few days he visits the hacienda, and second, that his opinions and the administrator's opinions in relation to agriculture are very similar. The investigator believes that there was no antagonism on the part of the patron against him, but that he was sincere in thinking that the information to be given

4. Ibid., p. 116.

by the administrator was sufficient. The patron was very cooperative with the investigator before and after this phase of the study. On the other hand, there were many opportunities to verify that the administrator's opinions reflected in many respects the patron's opinion.

A Guide for Interviewing - The interviewing of the administrator and the overseer was done by means of a guide, which may be seen in Appendix II. The guide, designed to get information mainly on means utilized by the hacienda to get the maximum possible production of coffee, had two main sections: information about agricultural practices in coffee and information about other means.

In relation to information about agricultural practices in coffee, the guide first included a checklist of 33 practices. For each practice, the informant was asked if it were carried out on the hacienda, if it were new, and if it were carried out in a different way than previously. (New practices were excluded from this question). Besides, the informant was asked to mention two of the practices that he had pointed out as new or modified which he considered the most difficult to carry out in terms of the resistance presented by the peons and some of the difficulties presented by each one of those two practices. Another information asked in relation to this checklist was about the two of those agricultural practices the informant had mentioned as new or modified which he considered had been the least difficult to carry out in relation to the peons, and his reasons for thinking so. The guide contained enough space for reasons for the difficulties or lack of difficulties in each case.

It is pertinent to mention that some "Instructions for Filling Out the Guide" were written with the purpose of having a clear definition of some terms used during the interview. For instance, a new practice is defined as one which had not been carried out when the hacienda was owned by the previous patron; that is, a practice which had been introduced by the new patron. The "Instructions for Filling out the Guide" are included in Appendix II.

At this point, it seems important to mention how the 33 agricultural practices in coffee were selected. The following sources helped in the construction of the final list.

1. A list of 16 practices "common" in coffee culture, according to the head of the Costa Rican Ministry of Agriculture and the coffee specialist of STICA.⁵

2. The five practices in coffee culture selected by Alvaro Chaparro for his study on adoption of new farm practices.⁶ All but one of these practices coincided with the previous list of 16 practices.

3. The information acquired through the informal interviews mentioned in another section of this chapter.

4. Several interviews with Professor Juvenal Valerio, who is a vocational agriculture specialist of the Inter-American Institute of Agricultural Sciences and who owns a coffee farm.

5. Servicio Técnico Interamericano de Cooperación Agrícola (Inter-American Technical Service of Agricultural Cooperation), a bilateral service of the Governments of Costa Rica and the United States.

6. Chaparro, op. cit., p. 36.

Ze

a

ft

z

He suggested new practices and the ordering of all of them in a logical fashion.

5. A revision of the final list by Dr. Jorge León, coffee specialist and head of the Plant Industry Department of the Inter-American Institute of Agricultural Sciences.

In order to get information on other means utilized by the hacienda to get the maximum possible production of coffee, the guide included some questions about production in the colonias, difficulties in increasing production other than those related to agricultural practices, factors other than agricultural practices which had helped the effort to increase production, the elimination of carretas (ox-carts), and experiments carried out on the hacienda.

The Interviewing - The interviewing of the administrator and the overseer was done by the investigator. They were interviewed separately on different days in November, 1958.

Interviewing of the Peon Group

Sampling Procedures - The individuals who in the last instance work with agricultural practices in coffee are the peons. For this reason and because they constituted 79 per cent of the total population of Aquiares in 1958, it was decided to interview a sample of this group in an intensive manner.

Because technological change in relation to agricultural practices in Aquiares was one of the main interests of the study,

it was not possible to draw the sample from the total number of peons. The universe, for the purposes of this aspect of the study, was considered to be made up of all peons who were family heads and who had lived in Aquiares for ten or more years. It was then decided to interview a one-fourth sample of peon family heads who had lived on the hacienda for ten or more years. If it is remembered that the hacienda was sold in 1953 and that the interviewing was done in 1958, it is easy to see that the sample took into account only those peon family heads who had lived in Aquiares five years before and five years after the hacienda was sold. How the sample compares with other segments of the Aquiares population may be seen in the following data:

<u>Population segments</u>	<u>No of family heads</u>
Total population	216
Peons	171
Peons living in Aquiares for ten or more years	132
Sample of peons	33

From the foregoing data it follows that the peons made up 79 per cent of the total population and that the peons who had lived in Aquiares for ten or more years made up 61 per cent of the total population and 77 per cent of all peons on the hacienda. The sample, as mentioned before, represents 25 per cent of the peons living in Aquiares for ten or more years. This group was considered as the universe for this specific aspect of the study.

It was thought that a one-fourth random sample was adequate for getting representativeness for the whole universe.⁷ If average age, average years of residence in Aquiares, and percentage of family heads who were born on the hacienda are good indexes for comparison, it may be said that the sample is, in general, representative not only of the peons who had lived on the hacienda for ten or more years, but for all peons of the hacienda. Table 1 shows a comparison of these three indexes in three different segments of the Aquiares population.

TABLE 1

AGE, PLACE OF BIRTH AND AVERAGE YEARS OF RESIDENCE IN
THREE SEGMENTS OF THE AQUIARES POPULATION,
1958

Population Groups	Indexes		
	Average Age	% born in Aquiares	Average yrs. residence
Total of peons.....	41.1	40	25.1
Peons (ten or more years in Aquiares)....	41.8	45	31.3
Sample.....	43.5	48	29.7

7. In the drawing of the sample the investigator was advised by Professor Rodrigo Umaña of the Institute of Statistics, Faculty of Economic and Social Sciences of the University of Costa Rica.

As expected, the average years of residence in Aquiares of the workers in the sample was higher than the average years of residence of the totality of peons on the hacienda.

Of the total of ten foremen on the hacienda, four were drawn by random to be interviewed with the same schedule designed for interviewing the peons. The purpose of this interviewing was to get insight into some of the areas in which information was to be gathered from the peons and not with the purpose of making statistical generalizations on the basis of such a small number of cases.

The Schedule - The interviewing of the peons in the sample was done by means of a schedule, which may be seen in Appendix II. The schedule was designed to get information about agricultural practices in coffee and about other means utilized by the hacienda with the purpose of getting the maximum possible production of coffee.

The part devoted to agricultural practices included three sections: 1) general information about agricultural practices in coffee; 2) specific information about total pruning by rows, which was the practice considered by both the administrator and the overseer as the most difficult to carry out in relation to the peons; 3) specific information about the use of chemical fertilizers, which was considered, according to the information rendered mainly by the administrator, as the least difficult to carry out in relation to the peons.

The section on general information about agricultural practices included the checklist of 33 practices described in relation to the guide for the interviewing of the administrative group. The questions asked to the peons in relation to that checklist were, in part, different. For each practice, each peon in the sample was asked if the practice were being carried out on the hacienda, if he had worked with it, how long ago he had started working with the practice, and where he had first worked with it.

The section on specific information about total pruning by rows included questions on different periods the peon had worked with the practice, on the source of learning the practice, on the "best" way to carry out the pruning of coffee, on the main difficulties in working with total pruning by rows, and on attitudes toward it.

The section on specific information about the use of chemical fertilizers included questions on most of the areas mentioned above: periods in which the informant had worked with the practice, source of learning it, the "best" way to fertilize the soils, difficulties in working with the practice, aspects which facilitate working with chemical fertilizers and attitudes toward the practice.

The part of the schedule devoted to getting information on other means utilized by the hacienda with the purpose of increasing production included questions on the elimination of carretas, the increase of motor vehicles, the utilization of hacienda land by the peons, and the raising of domestic animals by the informants.

Notes

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

66

The Interviewing - The interviewing was done during November and December of 1958 by this investigator and a capable interviewer, the principal of the Aquiares school. This man had a good knowledge of the farm and an excellent rapport with most people on the hacienda, from the patron and the administrator down to the peons. Although he was considered a good interviewer, the investigator was present during most of the interviews, to help the interviewer on special occasions and to observe as many events as possible which would help in the understanding and the interpretation of the information.

There was a good receptivity on the part of the peons. This was demonstrated by the fact that only two persons from the list of alternates (which was drawn by random) were interviewed: in one case because the worker in the sample refused to give the information, and in the other case because the peon in the sample had left Aquiares at the time of the interviewing.

It seems pertinent to mention that on several occasions only one interview could be made in one day, due mainly to the isolated location of the farm in which the informants lived, and to the difficulty of finding them at home, as some peons worked extra time for the hacienda or in a lot the farm let them use.

Informal Techniques

The information relevant to this study was gathered not only by the conducting of formal interviews and the administering of schedules. Besides the informal interviews described in another section, other informal techniques were used. Informal visiting with some Aquiares friends presented the opportunity to observe important aspects related to the main problem and to hear some opinions valuable for a better understanding of community life.

Occasional conversations with people of different occupational levels proved to be useful for the understanding of some aspects of general life of the community or of specific events related to the agricultural system in particular. Giving "rides" to people to or from Aquiares proved to be an excellent occasion for free and informal conversations about work, recreation, living facilities, innovations and many other aspects.

Participation in community events, such as attending basketball games, soccer games, or community meetings in the schoolhouse, were excellent occasions for observing different facets of community life, as well as a good means for building rapport with members of the community. One of the soccer teams, for instance, dedicated a match with an outside team to the investigator, who reciprocated the honor by giving the winner a soccer ball.

202

202

202

202

202

202

202

202

202

202

202

202

202

202

202

202

202

202

202

202

202

202

202

202

A written record of some aspects and events of these informal gatherings, relevant to the study, was kept by the investigator.

Use of Documents

Besides the documents mentioned in another section as valuable to this study, such as the agricultural and demographic census carried out in 1948, other documents were used. Of these the most useful were the school, PTA, and health dispensary records. No less useful were some records the farm keeps on production and other activities which were consulted in the presence of the administrator.

Some Limitations of This Study

Besides the "natural" limitations of studies dealing with human behavior, this study has had the following limitations: first, the lack of comparable information in some aspects. Because this is a comparative study of two different periods, the investigator has been forced in some cases to utilize data, such as articles on population stability or coffee production, which were prepared by other investigators with other purposes in mind. Fortunately, this has been the exception rather than the rule. The second limitation refers to the period of time passed since the hacienda was bought by the present patron. Since this is a study of change, there is the limitation that not enough time has passed

to see the change in some specific aspects. It is recognized, however, that this limitation exists, to a greater or lesser degree, in most studies of change. This study tries to picture one point in the process of change on a coffee hacienda. The third limitation has been the impossibility of going deeper into the problem of the elimination of the colono system, especially in reference to the attitudes of ex-colonos, because this is a sensitive area for the patron.

CHAPTER IV

AQUIARES BEFORE

Introduction

The general description of the hacienda, which is the main purpose of this chapter, will refer to the Aquiares of ten years ago. In other words, the description will refer to Aquiares as it was about four years before the change of ownership. One of the reasons for making this decision is that Thomas L. Norris was doing systematic research in the community in 1949-1950, and there is a great deal of information that is extremely useful for the purpose of the present chapter. Besides, the investigator has been doing research in Aquiares since 1948, in connection with the Community Development Program that the Department of Economics and Rural Life of the Inter-American Institute of Agricultural Sciences had been carrying out. He was the one who helped Norris in gaining entrance into the community, as he himself explicitly states in his Ph.D. thesis.

The Hacienda in Terms of Services and Facilities

As already mentioned in a previous chapter, Aquiares is a large coffee hacienda, much larger than it was some years before its purchase in 1908 by the man who was to become its owner for 45 years.

rem

lat

ri

re

to

v

c

f

o

u

g

h

i

j

k

l

m

n

o

p

q

r

s

t

u

v

A general look at the Aquiares of ten years ago would reveal large patches of coffee groves, large areas of pasture-land, some plots of sugar cane, and quite a large region covered with forest and brush.

A gravel road, starting from the end of the paved road which connects Aquiares with Turrialba, crossed through the center of the hacienda from one end to the other. Some narrow gravel trails connected the main gravel road with some isolated parts of the hacienda. But communication was mostly limited to dirt trails and ox-cart (carreta) transportation. Carretas were widely used, not only on dirt roads but throughout Aquiares. In this respect the following description is of interest:

The estate collects the picked berries in ox-carts (carretas). At the end of each day, at about 3 p.m., the carretas leave the center area in single file to pick up the coffee which the day workers have picked in the areas operated directly by the estate In the mornings, carretas travel through the colonias picking up the coffee from large storage boxes located on each colonia. . . . The ox-drivers (boyeros) measure the coffee when picking it up at the colonia, and a worker rechecks it when the₁ coffee is brought in at the beneficio for processing.

Some families earned their living from work related to the ox-cart. One of the informants, who arrived at the hacienda 56 years ago at the age of 19 and who worked as a boyero, told

1. Thomas L. Norris, "Decision-Making in Relation to Property in a Costa Rican Coffee Estate." (Unpublished Ph.D. dissertation, Michigan State College, 1952), pp. 29-30.

the investigator that there were in Aquiares more than twenty boyeros. Another informant, the overseer, mentioned the same figure to the investigator.

Trucks were scarce. Only one truck was generally in use within the hacienda.

People living and working on the hacienda differed in their housing facilities and in the opportunity to make use of certain services.

Some houses were clustered in the center of the farm (El Centro) and near El Centro: Palomar Viejo, Palomar Nuevo, La Esperanza, La Plaza. Other houses were scattered far away from the center, in different areas: Colonias, El Bananal, La Isla, Cañales, Teutonia, Los Folios and Bajo Aquiares. Only the colonos and peons lived these areas. They inhabited what has been called in other studies two-room and three-room peon-style homes, with vertical plank walls and broad-plank floors, but no ceiling.² None of these houses had such facilities as electricity and running water and only a few of them had privies; the latter were substituted by the cafetales or brush.

Houses in the area near El Centro were also two-room and three-room peon-style homes and most of them were occupied by peons.

2. For a detailed description of the housing situation, see Thomas L. Norris and Paul C. Morrison, "Some Aspects of Life on a Large Costa Rican Coffee Finca," Papers of the Michigan Academy of Science, Arts and Letters, XXXVIII, (1952), 335.

822

823

824

825

826

827

828

829

830

Some few encargados lived in these houses, none of which had glass windows. Some of these houses had outhouses.

In El Centro lived the overseer, the bookkeeper and the foreman of the beneficio, all in similar houses: large, painted outside, with such facilities as electricity, running water and outhouses. The chief carpenter also lived in this area, although his house was less comfortable. The administrator lived in the second largest house of the hacienda; his house was painted outside and inside, and was provided with electricity and running water and a flush toilet inside the house. The patron lived in the "big house" (casa grande), apart from El Centro and built on a hill from which the main buildings and houses of the community could be seen. The house had most of the services available in houses of the upper class in San Jose, the capital of the country.

In total there were 220 houses on the hacienda. It is said that in 1908, when Mr. X bought the hacienda, there were only 20 houses.

Other buildings on the hacienda were: the beneficio (coffee processing plant), the largest building in Aquiares; the commissary, in the central area, where most of the food was bought by Aquiares residents; and, in the commissary building, the central offices of the hacienda, the police office and the health dispensary, where first aid was given to the workers. All workers were, by law, under the Social Security Act. More difficult cases were sent to the Turrialba hospital for treatment.

A short distance from the commissary was the horse stable; in the same building the truck and the patron's station wagon were kept for minor repairs.

Another important building was the trapiche (sugar mill), where dulce (brown-sugar cake), one of the basic foods in the diet of the Aquiares residents, was elaborated. This trapiche was located in Colonias, near the area planted with sugar cane. Norris and Morrison provide an excellent description of the Aquiares trapiche:

The trapiche is a wood structure, with a corrugated iron roof and sides partly closed by spaced vertical slats. The sugar cane is brought in ox-carts and dumped down a chute to a grinding machine that is powered by a water wheel. The juice runs along a trough to the five boiling tanks and is dipped from one to another in succession. . . . The resulting syrup is ladled into a large box, where it is whipped, to thicken it. It is then poured by bucket into cupcake shaped molds. The hardened brown cakes, called dulce, weigh about two and a half pounds each, and are sold in the finca commissary for local use.³

The school was an old, peon-style building, located near the church; five teachers taught approximately 100 children, who were housed in three classrooms. Because of the small number of teachers, the conditions of the building, and other circumstances, it was necessary to divide the classes into morning and afternoon sessions. Schooling was provided to the sixth grade level, but most children attended only the first two or three grades. Two organizations, the Board of Education and the PTA, helped the

3. Norris and Morrison, op. cit., pp. 336-37.

teachers in some of their school problems. The principal had no specific group of children to take care of, so he was more or less free to participate in community affairs. He lived with his family in the school building, in an apartment remodeled for him by the hacienda.

The church was a much better building than the school and it was located at a point equidistant between the school, the commissary and the beneficio. It was painted outside and inside. It was well decorated and well furnished. The church was equipped to accommodate about 100 people. A separate room was provided for the priest to live in on his semi-monthly visits to the hacienda. A church committee (Junta de la Iglesia) kept an eye on the maintenance of the building and its equipment and helped, along with the "Daughters of Mary" (Hijas de María) and the "Catholic Labor Youth" (Juventud Obrera Católica) in the organization of religious festivities. These festivities in Aquiares are attended by almost the whole community. The total population, with the exception of the patron, was Catholic. The patron, however, gave full support to Catholic religious activities, as did his wife, who was a Catholic.

There was a small field for sports, especially soccer. Soccer was the most important sport and the people were always trying to get better facilities for it. The community had several soccer teams. A board or club was in charge of the organization of activities related to this sport.

It is important to mention the fact that the patron was the legal owner not only of the land on which the hacienda lies, but also of all the buildings, such as residences, church, school, commissary (where the police office and health dispensary were located), beneficio, horse stable, jail, slaughter house, trapiche, and of the sports field.

Land Use

The hacienda, about four years before the change of ownership, had an area of 1,372 manzanas, which were utilized in the following manner:⁴

Coffee in <u>colonias</u>	341 <u>manzanas</u>
Coffee in farm lots	179 <u>manzanas</u>
Sugar cane	36 <u>manzanas</u>
Pasture	394 <u>manzanas</u>
Forest and brush	422 <u>manzanas</u>

It is important to emphasize the fact that of the 520 manzanas cultivated in coffee, two thirds were cultivated by colonos (share-cropping tenants who cultivate and live on a part of a large hacienda).

Land occupied by residences and farm buildings is included in the pasture-forest-brush categories.

4. Loomis et al, Turrialba: Social Systems and the Introduction of Change (Glencoe, Illinois: The Free Press, 1953), p. 90.

Some other important features of land use in Aquiares, described in a Morrison and Norris publication⁵ are the following: Of the 394 manzanas used in pasture, 124 were used by colonos and peons and the rest by the hacienda proper. There were an estimated 150 manzanas of garden plots, which are included in the land indicated as pasture, forest and brush. These garden plots were cultivated mainly by colonos and peons.

An analysis of the agricultural and demographic census carried out by the Department of Economics and Rural Life in 1948 shows that there were in Aquiares in that year 84 horses of which 27 were hacienda property, 42 belonged mostly to colonos and 15 to peons. In addition, the hacienda had 29 mules.

In relation to cattle (cows, calves, oxen) there were on the hacienda 516 animals, of which 323 were hacienda property, 109 belonged mostly to colonos and 84 to peons. Included in these figures are 178 work animals, of which 174 were hacienda property and 4 belonged to colonos. Also included in these figures are 66 milk cows, of which 12 were hacienda property, 29 colono property, and 25 peon property.

There were on the hacienda other animals, such as swine, goats, turkeys, ducks and chickens, but those belonged only to the colonos, peons and specialized workers.

5. Paul C. Morrison and Thomas L. Norris, "Coffee Production and Processing on a Large Costa Rican Finca," Papers of the Michigan Academy of Science, Arts and Letters, XXXIX, (1954), 313-14.

Population

An analysis of the demographic data of the demographic and agricultural census carried out by the Department of Economics and Rural Life in 1948 reveals that there were in Aquiares 222 families, totalling 1,303 persons. The population, according to a broad classification of occupations, presented this picture: colonos, 84 families, totalling 592 persons; peons or jornaleros, 84 families, totalling 421 persons; specialized workers and others, 54 families, totalling 290 persons.

It is important to note that a little over one third of the families on the hacienda were colono families.

In the category labelled as specialized workers, were included skilled and semi-skilled workers, such as the bookkeeper, the encargados, the chauffeur and the boyeros. For reasons of convenience, 17 housewives who were family heads are included in this category.

The family heads in 1948 had an average age of 42.4. For the specialized, colono and jornalero occupational categories, the average age was 44.7, 44.0 and 39.3 respectively.

In a study of rural population stability in the Central District of Turrialba, Costa Rica, made during part of 1948 and 1949, it was found that, in general, stability, measured by the average years lived in the present place, was higher in the small farm communities than in the hacienda type communities. However, Aquiares was an exception to that finding.

The higher stability indicated for the large finca (plantation) Aquiares, greater even than in San Juan Sur, was exceptional, and for this reason was excluded from the large holdings place-group and studied separately. The average years of residence of 48 family heads interviewed was 23.88. None of these family heads had been in Aquiares as little as a year, and only 6.2 per cent, five years or less. . . . Although 22.9 per cent of the family heads were native, only another 8.3 per cent had made their last move from within the district, while 37.5 per cent came from the province and an unusually high percentage, 27.1, from the national. . . . All of the natives had lived in their present place more than ten years.⁶

The population of Aquiares about four years before the change in ownership was about 207 families, as shown in a research study:

Approximately 1,372 persons live within the bounds of the estate. On January 1, 1950, there were 75 families with a total of 547 persons living in colonias, and 132 families, including managerial and administrative personnel, and peons living in the center area, a total of 825 persons. The average length of residence for heads of households is 24 years.⁷

These population figures were computed from the estate roster of housing and occupants. The average length of residence was computed from a schedule administered to a sample of the population.

6. Norman W. Painter and Paul C. Morrison, "Rural Population Stability, Central District of Turrialba Canton, Costa Rica," Rural Sociology, XVII, (1952), 363.

7. Norris, "Decision-Making in Relation to Property," p. 38.

General Structure of the Hacienda

The hacienda was organized to produce coffee. Almost all activities were directly or indirectly related to this purpose. These activities have been called by some investigators primary and secondary activities and they seem to be related to the position an individual has in the agricultural system of the hacienda and to the authority inherent to that position:

The organization of labor around these primary and secondary activities is highly complex. A structural position in the division of labor may be concerned almost exclusively with primary activities, secondary activities or both. The configuration of technical and social skills, delegated and implied rights and duties characteristic of a given structural position in the hierarchy of estate organization, largely determines the authority which one exercises in the total systems and subsystems.⁸

The structure of the agricultural system and the lines of authority of Aquiares are shown in Figure 4. This figure shows some, though not all, of the major occupational positions in the agricultural system of Aquiares. A brief description of the general organization of the hacienda seems pertinent at this point.

The patron was the supreme power holder of the hacienda. He was also the principal decision-maker of Aquiares, especially in matters related to the production of coffee which, in turn, permeated the whole life of the community.

8. Ibid., p. 63.

Structure of the Agricultural System of Aquiares, 1952

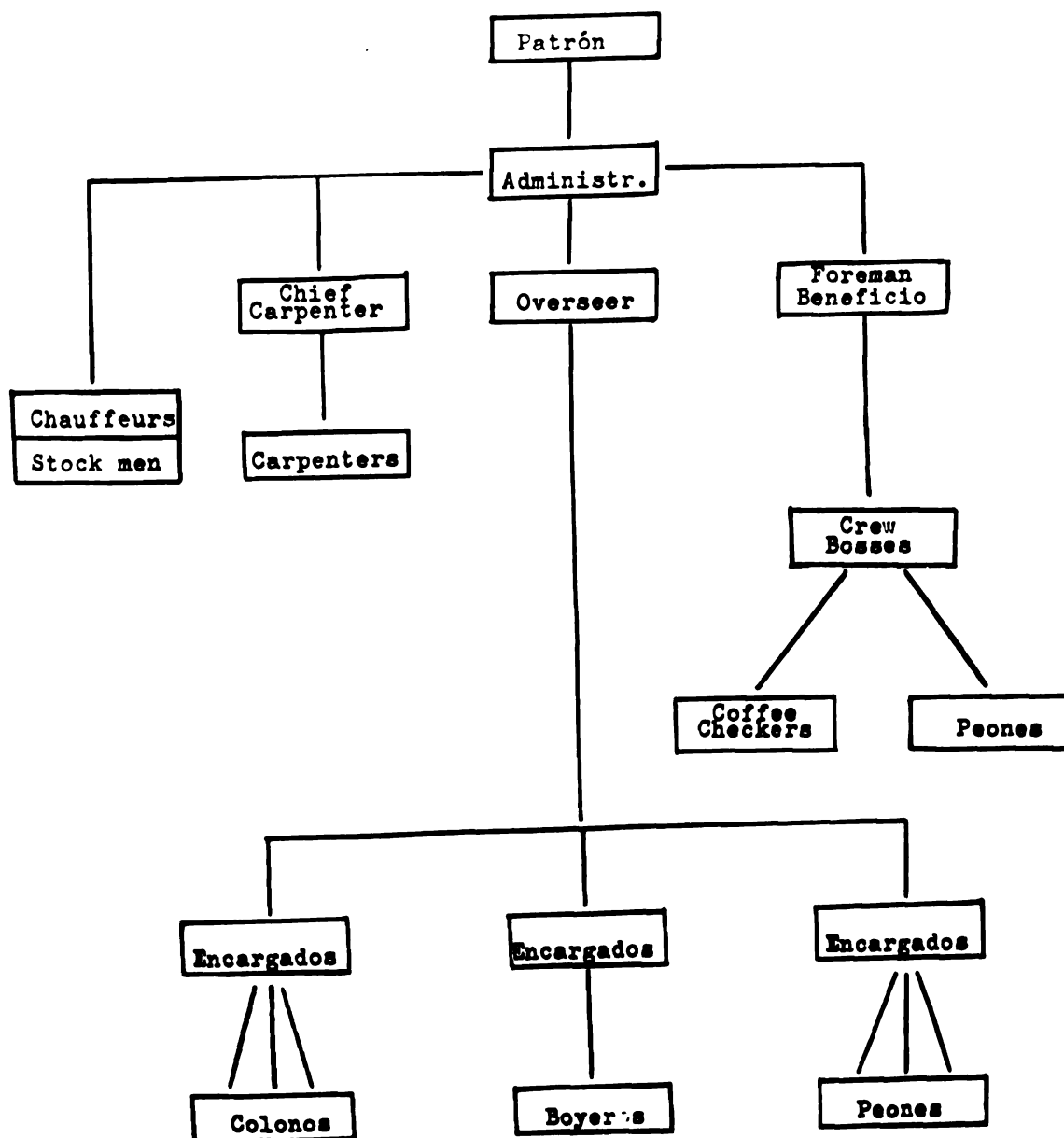


Figure 4

"The patron and one brother, born in Jamaica of English parents, bought the hacienda in 1908 in state of formation. They began with 150 manzanas of coffee and in 1952 the hacienda had about 520 manzanas in coffee."⁹ About seven years after the purchase of the farm, he introduced the system of colonias, which was strongly opposed by other landowners because, as the patron told the investigator in an informal interview, they said it was a "communistic" idea. In this connection one author says that "these critics did not agree that the colono system could be one of the most effective means by which the farm could achieve its ends."¹⁰

The patron had a special ability in exercising his authority in a paternalistic way. To some extent he was a charismatic figure to most of the Aquiareños. His portrait was, and even now is, in many of the workers' houses. In most instances this portrait and some religious images are the only framed pictures in the houses. He used to say that Aquiares was a large family, and many peons considered him as a benevolent father. The day he sold the farm he gave each one of the peons, colonos and other workers an envelope containing money, and made a short, emotional speech that impressed even this investigator.

9. Antonio M. Arce and Julio O. Morales, 20 Cases of Community Development (in preparation).

10. Thomas L. Norris, "Decision-Making in Relation to Property," p. 81.

One of the workers present in that meeting, who had been a colono for 38 years, told the investigator that he received 6,000 colones (plural of colon, basic unit of Costa Rican currency, equivalent to about 15 cents in U.S. money). The head of the health dispensary told the investigator he had received 9,000 colones. Another informant said the patron had given him 3,500 colones. Length of residence on the hacienda, size of the colonia and position held in the occupational hierarchy, were factors related to the amount received by the worker as a "last gift" from the "good father."

Although one of the goals of the hacienda was to produce coffee, it seems that no specific effort was made on the part of the patron to increase production, especially a few years before he sold the hacienda. The new owner's idea of the previous patron was expressed to the investigator thus: "For him the hacienda was like a cow. He milked her day by day, getting the most he could out of her, without giving her special food or care."

One of the reasons for such an attitude could be that he was tired after many years of hard work. As the man in charge of the health dispensary, who has been with the hacienda for the past 49 years, told the investigator last year:

Mr. X was tired after sixty years of hard work in agriculture, 45 of which had been dedicated to Aquiares. He is almost 80 years old. In my presence he asked his son to take care of the hacienda, but the son refused, saying that it was a bad farm, that the area was too rainy, and many other things. The patron's son liked the farm only as a place to have a good time with his friends. In view of his son's answer, Mr. X said: 'In this case my only alternative is to sell the farm,' and he sold it.

It is obvious that the lack of incentive to build something for the future, satisfaction with the income he was getting, and the idea of having a "happy" family are related to his apathy towards making changes. In fact, activities on the hacienda were carried out in more or less the same way year after year. In relation to agricultural practices, no changes that might have had some repercussion on the production of coffee were detected by the investigator, either in the field or in his analysis of literature related to the hacienda. The position of the patron in this respect was commented on by the overseer, who has been working in Aquiares for the past 44 years, in an informal interview the investigator conducted last year:

These people the new owner and the administrator really like to experiment. In contrast, Mr. X, who, according to my opinion knows more about coffee than any other person, used to tell me: "Z, we must let others experiment for us. When we see that they haven't gone broke as a result of their experiments, we will do it."

The patron's permanent residence was in San Jose; he visited Aquiares almost every week. The administrator, a German, held the authority on the hacienda, especially during the patron's absence; because the patron delegated to his administrator a great deal of his authority, the administrator had the right to hire and fire workers and to issue orders to all workers, through the channels that the formal organization of the hacienda provided. His contacts with peons and colonos were made through the overseer who, directly or by means of the encargados, tried to get things done. This

referred especially to administrative aspects. The administrator also had direct contact with the head of the beneficio, the chief carpenter, the commissary head, and with stock men and chauffeurs.

It seems that, in general, the administrator was not well liked by the majority of the people in the community, especially be those in the lower occupational positions. It is not known by the investigator whether or not this factor was responsible for his replacement, about one year before the hacienda was sold. The new administrator, a Costa Rican practical agriculturalist, tended to mix more intimately with his employees, especially those specialized workers who were between him and the peons and colonos in the occupational hierarchy. This administrator was on the boards of several community organizations.

The overseer came to the hacienda in 1914 to work in the cafetales, changing to a better job in the beneficio, and later becoming one of the two mandadores (overseers). The other overseer became ill, and the patron decided to have only one, in order to avoid rivalry and other problems.

The overseer was under the authority of the administrator and the patron. His relations with the former were mostly administrative in nature, since his knowledge of coffee culture put him in a position of making decisions of his own. He looked to the patron, of course, for orders and advice.

The overseer supervised field work, especially in relation to coffee. He was assisted by three encargados for the direction of the work in the colonias. Because of the importance of this section of the hacienda, the system of colonias will be discussed in greater detail later. For the coffee produced by the hacienda as such, there were several work crews under the direction of encargados who, in turn, were under the overseer's supervision.

It was also the responsibility of the overseer to supervise, through the chief of the ox-drivers, the work of the twenty boyeros.

The cane fields had their own crew of workers, supervised by an encargado who, in turn, was responsible to the overseer.

The overseer had a great deal of power on the hacienda. This was taken for granted by almost everybody in the community, although it was not "officially" recognized by some persons in the higher ladders of the occupational structure. He managed to fire people who displeased him, and to hire those he liked. He had a talent for knowing how to help his own relatives and friends and how to embarrass persons he disliked.

The foreman of the beneficio, whose main job was to get the coffee processed at the beneficio and to supervise repairs made on the machinery and beneficio when coffee was not being processed, came to the hacienda in 1914 and in 1918 was put in charge of the beneficio. From that date on, he has been the head of the beneficio.

He was helped in his duties by peons and coffee checkers, who were under the supervision of crew bosses. Under the supervision of the foreman of the beneficio were also two firemen and a night watchman.

The chief carpenter was in charge of the carpenter shop located at the beneficio. His main job was to make additions and repairs in the hacienda buildings, as well as in the houses. He had under his supervision four carpenters for field jobs when necessary, one general carpenter who was in the shop, and an ox-cart maker.

Up to this point, the general organization of the hacienda as an agricultural system has been discussed. There were, of course, other structural positions held by persons operating in other systems, related to the agricultural system. Some of these positions were those of the school teachers, the police agent, the head of the health dispensary, the priest and the doctor. This is what has been called "tangential system" by one investigator. He has also called "the over-all organization of the estate life the general structure"¹¹ of the hacienda.

The Colono System

In the description of the general structure of the hacienda, it was said that the system of colonias would be given special attention. The reason for this is that the system was crucial in terms of coffee production and the impact it had on the total life

11. Ibid., p. 68.

of the hacienda. From the sections on land use and population it can be concluded that about four years before the change in ownership, two thirds of the land used for coffee in Aquiares were cultivated by a little over one third of the families living on the hacienda. What were the main features of this system and how did they influence the economic and social life of the community?

The system of colonias was introduced in 1915, as a partial solution to the problem of securing adequate labor supply during the harvest. In Turrialba the harvest is longer than in other areas, because of climatic conditions. This makes the berries ripen at different rates and it is necessary to go through the coffee groves from ten to fourteen times before all the beans are harvested.¹²

The mechanics, or functioning, of the system was not simple, as can be seen in the following description:

A colono contracts to care for and harvest under the supervision of a finca foreman a coffee plot, known as colonia, containing from three to ten acres, for a fixed payment of 60 colones (the official exchange rate is 5.61 colones to a United States dollar) per fanega of coffee berries produced. In addition, most colonos have land for a small garden and some have the use of finca pasture for animals they may own. All are provided with housing. Since the caring for the coffee and, especially, the harvesting, are on a family basis, the system provides the necessary labor, when it is needed, at a minimum cost to the finca. At the end of the harvest, the colono is paid any sum due him after the total of the weekly advances he has received has been deducted from the value of his crop at the contract rate.¹³

12. Ibid., pp. 28-29 and 110-11.

13. Morrison and Norris, "Coffee Producing and Processing," op. cit., pp. 311-12.

The contract stipulated that colonos and their families were to be at the disposition of the farm management when labor supply was needed, especially during the harvest season, but they did not have the right to work on the farm unless they were asked.

Although there were several foremen of colonias, the colonos had some degree of independence as to how and when to work on the colonia, using almost all members of their families. This independence and some of the facilities provided by the hacienda were designed, in part, to provide a stable population throughout the year.

Some important facts in relation to the system of colonias in 1950 were the following:¹⁴

Number of <u>colonos</u>	75
Average size of <u>colonias</u>	5 <u>manzanas</u>
Range size of <u>colonias</u>	2 to 10 <u>manzanas</u>
Average harvest per <u>colonia</u>	47 <u>fanegas</u> ¹⁵
Average coffee production return to <u>colonos</u>	2,800 <u>colones</u>
Average income per year for peon	1,500 <u>colones</u>
Average income per year for <u>colono</u>	2,800 <u>colones</u>
Difference average income peon- <u>colono</u>	1,300 <u>colones</u>

¹⁴. For a more complete description of these aspects, see Norris, "Decision-Making in Relation to Property," p. 115.

¹⁵. Measure of coffee equal to 11.35 bushels.

According to interviews and informal conversations the investigator has held with peons and colonos during the past ten years (from 1953 on, the conversations have been held with ex-colonos) it can be said that both peons and colonos think that, in general, the life of the colono was more desirable. This seems to be corroborated by one author, who says:

As members of a system distinct from that of the peons, the colonos as a whole feel that their situation is somewhat more advantageous. The values involved are not only pecuniary, but are related also to the relatively greater degree of independence which accrues to the colono in his work, as exemplified in this comment by a colono: "The advantage of being a colono is that I can get up in the morning whenever I want, while the peons must be at work by six a.m."¹⁶

The patron was aware of the satisfaction that most colonos felt with their situation, as he himself told the investigator on several occasions. It is this author's speculation that the patron was proud of the system because he felt it was an opportunity to reinforce his role of "good father." This does not mean that the system was not giving him some rewards other than the "emotional" ones. There is reason to believe that the system was beneficial to the patron, from the production standpoint, as is demonstrated by its functioning for about 38 years. The patron told the investigator he was satisfied with the colonias from the point of view of production.

16. Thomas L. Norris, "A Colono System and Its Relation to Seasonal Labor Problems on a Costa Rican Hacienda," Rural Sociology, XVIII, (1953), 377.

Production

Production of Coffee

As previously stated, the hacienda was organized to produce coffee. This was one of the main goals of the hacienda. For this reason, no emphasis is given in this description to the production of sugar cane, timber, milk and other minor products.

In a formal interview held with the administrator in November, 1958, in relation to agricultural practices, the conversation turned to the aspect of production. It is important to mention that the hacienda has kept a record of production for the last twenty-five years.

The administrator showed the record to the investigator, making at the same time interesting remarks which will be commented on later. When he was asked to facilitate the abovementioned information, the administrator, although he supposedly had knowledge of the purposes of the investigation, gently refused, arguing that it would be dangerous for the Aquiares agricultural enterprise to let some figures be published. He agreed, however, to let the investigator copy some round figures and proportions related to production. The data concerning the hacienda when it was in the hands of the previous patron are the following:

Maximum harvest	10,518 <u>fanegas</u>
Minimum harvest	2,917 <u>fanegas</u>
Average harvest for the last 20 years	6,778 <u>fanegas</u>
Average <u>fanegas</u> per <u>manzana</u>	12

The maximum production of 10,518 fanegas was obtained during the harvest of 1936-1937. The minimum production of 2,917 fanegas was obtained during the harvest of 1953-1954. In this connection it is important to remind the reader that the change in ownership of the hacienda occurred in September, 1953. Another important fact worth mentioning is that in Aquiares the harvest takes about six months, from September to January.

From the same source it was known that the average weekly payroll during the last year of the previous patron's ownership was about 8,000 colones. This figure had been previously indicated by the bookkeeper in an interview held with him in 1955. It is important to point out that before the hacienda was sold the payroll covered only peons and specialized workers and not the colonos and their children of working age, and that the daily wage for peons one year before the hacienda was sold was 5.80 colones.

It is worth mentioning that in comparing the previous figures, taken from the hacienda records, with the notes the investigator has from an informal interview held with the overseer four months before, there was a very close correspondence. This fact reinforces the confidence of the investigator concerning the knowledge the overseer has on most aspects of the hacienda's life and functioning.

Coffee Technology

The cultivation and care of the cafetales require many different operations which we shall call agricultural practices.

All of these practices are supposed to be important for accomplishing the purpose of getting the maximum yield from the plants.

One of the first agricultural practices in the process of coffee culture that was carried out in Aquiares was the selection of seed, in order to have a good nursery. Berries from the "best" trees were collected during the coffee harvest. These berries were generally planted in March in a seed bed prepared previously. About five weeks later, they were transplanted to the nursery itself. The custom was to have this nursery under shade. The plants remained in the nursery for more or less one year. After this time, the plants were transplanted, with earth balls, to the cafetales, where holes had been dug beforehand to receive the seedlings. In some other instances, the holes were dug at the time of planting the seedlings. In areas of sloping terrain, the planting was done on the contour, but this was not a generalized practice. In order to prevent or minimize erosion, retention ditches were occasionally dug.

The coffee trees were spaced in rows about three varas (eight feet) apart. Shade trees were used in the coffee groves, the most common being platano, guineo, cuajiniquil, guava and poro.¹⁷ The first two were a source for the basic diet of the workers. When the harvest was over, around February, the trimming of the shade

17. Musa paradisiaca L., Musa sapientum L., Inga spp. (small leaves), Inga spp. (large leaves), and Erythrina spp. respectively.

trees was started. This task was performed by young jornaleros, who had to climb tall trees such as the guava and the cuajiniquil. At this same period, the cleaning of the aisles between coffee rows by shovelling the weeds (palea) was started. Jornaleros were careful not to shovel too close around the trunks because of the danger of damaging them. Earth shovelled from the aisles was thrown, together with the weeds, near the plant roots (raspa y aporca). This was also the time for the pruning of the coffee trees (poda), an operation which consists of the cutting off of the "dead" or defective branches in order to get buds from which new branches may develop. The poda requires ability and some degree of judgment as to which branches are to be cut and where the cut should be made. A machete was used to cut the branches; sometimes large branches had to be cut by using a maceta (club) to strike against the machete. The right number and pressure of the strikes were considered very important. If the strike were too strong, there was the possibility of cutting the branch suddenly with the danger of damaging other branches that were in good condition. Pruning was, to some extent, a source of prestige for peons and encargados, as it required some degree of skill. A great deal of folk knowledge surrounds this activity. For instance, the inclination of the cut, as well as getting a smooth surface in the cut, was essential to avoid the formation of foam (espuma) in the cut, which would cause the death of the branch. Some people were supposed to have the "right warmth" in their hands, in other words, "a good hand." This was one of the reasons for being considered an excellent pruner.

Several types of poda were used in Aquiares: moderate pruning (poda moderada), which consisted in a light trimming of the branches; heavy pruning by trees (poda profunda por matas), which consisted in cutting large branches from the base. Sometimes almost half of the tree's branches were cut.

The poda was always done by machete.

The poda was carried out on the farm as such and in the colonias. Because this was considered a delicate and important operation, encargados were sent to supervise it, even on the colonias.

Another agricultural practice which is considered by some coffee experts as a type of poda is the bending over of old plants (agobio de plantas viejas). This practice was also carried out in Aquiares. The operation consists of bending the tree to an inclination of approximately 45 degrees, holding it permanently in this position by means of a cord or wire. Buds form a few inches over the roots, from which new branches develop. When this has been achieved, the old branches are cut off.

Chemical and organic fertilizers were used, but not liberally. Chemical fertilizers were applied in some sections of the farm, where the need for them was clearly evident. Organic fertilizers, mainly the peelings and pulp from the coffee berries, were used throughout the farm.

0001

0002

0003

As the reader may well imagine, coffee culture is a complicated combination of interrelated operations. The previous description represents not all, but only the more important operations or agricultural practices in the cultivation of coffee.

CHAPTER V

AQUIARES NOW

Introduction

This chapter will be devoted to a description of Aquiares as it is now. By "now" is meant the year 1958, that is, five years after the purchase of the hacienda by its present owner. Because the interest here is in describing Aquiares after the change in ownership, it is possible that in some instances the description may refer to other dates after 1953, the year in which the farm was sold. Whenever this is the case, the year or period other than 1958 will be made explicit in any description of persons, events or things.

The Hacienda in Terms of Services and Facilities

A macroscopic view of this large coffee hacienda would give the observer no impression of change in its physical features as compared with the farm of previous years: large patches of coffee groves, extensive areas of pasture, some plots of sugar cane and large areas covered with forest and brush. The roads, trails, houses and buildings would appear to him unchanged. This picture is, in general, true. Physical features of the hacienda, taken as a whole, have changed little. However, a microscopic look at the hacienda would reveal some changes in its physical and social structures.

The gravel road which crossed the hacienda from one end to the other is in better condition and is wider in some sections. There are about 15 kilometers (one mile equals one kilometer plus 609 meters) of new gravel trails which permit communication to the more isolated coffee groves. Motor vehicles, especially trucks and jeeps, travel through the hacienda doing different tasks. During the harvest season the three trucks, aided sometimes by the two jeeps, pick up daily the coffee which the jornaleros have picked during the day, carrying it to the beneficio for processing. Trucks and jeeps are able to collect the coffee from even the more isolated coffee groves. Not one carreta is now utilized during the harvest season.

According to a census of houses carried out by an employee of the hacienda in December, 1958, there are in Aquiares 204 houses to accommodate 216 families. This means that twelve families share their houses with other families. Some of the houses that have been eliminated or that have fallen down because of poor condition were located mainly in the areas of Las Colonias and La Isla. The 204 houses, which are, in general, the same as ten years ago, are located in the same areas mentioned in the previous chapter.

There have been no perceptible changes with regard to style, condition or facilities of houses occupied by the different occupational groups of the hacienda. The carpenters are busy, as before, making the indispensable repairs, and some workers whitewash the houses from time to time.

There has been no change in the way the houses are inhabited by the different occupational groups. Peons inhabit the houses outside the center of the hacienda and most specialized workers live in El Centro. The overseer, the foreman of the beneficio, and the chief carpenter still live in the same houses. The administrator (the one who had replaced the German administrator) lived in a house comparable to those of the overseer and the foreman of the beneficio, because the house designated for the administrator was transformed into a school building. The old school building is now occupied by an ex-colono, a brother of the overseer's. This administrator was in turn replaced by a nephew of the patron's. The new administrator lives in the casa grande (large house), because the patron lives in San Jose and visits the hacienda once every one or two weeks. There is now a new casa grande a few yards away from the old one. The patron's son-in-law lives with his wife and child in the new casa grande.

In relation to other buildings on the hacienda, there have been few changes. The trapiche is no longer functioning. The wood structure, with its corrugated iron roof, is now being used as a store house from time to time, but it is in very poor condition. This means that the hardened brown sugar cakes (dulce) are not made on the hacienda any more. The dulce is bought by the commissary from another place, and the sugar cane is sold to sugar mills in the area.

will

but

the

of

ci

a

a

t

The school building, as mentioned before, is the house which was formerly inhabited by the German administrator. The building is in poor condition and is not large enough to accommodate the 139 boys and 130 girls, who are taught by five teachers, three of which are men and two, women. The school has, besides, a principal, who has no specific group of children to take care of, and a music and a religion teacher. In addition to the help received from the Board of Education and the PTA in some of its activities, the school receives some economic help from the Comite Pro-Cultura y Educacion (Pro-Culture and Education Committee). This is a new organization, established in February, 1954, and whose main objective is to coordinate the activities of most formal organizations in Aquiares.¹

In order to avoid problems caused by the use of the beneficio for the celebration of some community activities such as turnos (community fairs), the hacienda has contributed with most of the materials and with some workers for the construction of a galeron (large open shed). This "building" is already being used by the community.

The other buildings described in the previous chapter are more or less in the same condition. The services offered by the church are the same as before and the activities are organized by

1. A complete description of the structure, objectives and functions of this organization is presented in the case "Comité Pro-Cultura y Educación," written by this investigator in Arce and Morales, 20 Cases of Community Development.

the same organizations described in the preceding chapter. The same may be said of the commissary, the police office and the stable. The health dispensary now offers more services to more people. As an example may be cited some of the activities carried out in February, 1958, which, according to the head of the dispensary, was an average month. Detailed records show the number of injections administered to different types of persons insured under the Social Security Act and the number of minor cures practiced by the head of the dispensary. There were, in total, 2,065 injections given and 596 minor cures practiced in that month.

A new soccer field was constructed. It was dedicated to one of the sons of the patron.

The relationship of the patron to the land, residences and buildings follows the same pattern as before. He is the legal owner of everything, except the workers.

Land Use

The size of the hacienda has not changed in the last ten years. As before, there are now a total of 1,372 manzanas. According to the information given by the administrator and the overseer, the only significant change is that there are now 40 more manzanas planted in coffee than before. These forty manzanas were taken from the land used for sugar cane, pasture, and forest. The informants were not specific on the proportion taken from each part.

Because one of the first policy measures of the new patron was the elimination of the system of colonias, the totality of the 560 manzanas in coffee is now cultivated by peons, under the direct administration of the hacienda. The land cultivated in coffee was divided, for administrative purposes, into ten sections, two of 80 manzanas each and eight of 50 manzanas each. Each section has its own encargado.

All the land utilized in pasture is now used by the hacienda, including the 124 manzanas that were used by colonos and peons.

Some of the 150 manzanas which were utilized by colonos and peons in garden plots are now under the control of the hacienda. However, peons still have opportunity to plant something for their own consumption. It is important to mention in this connection that 73 per cent of the peons have garden plots. In relation to these plots, the following information was gathered:

Maximum size	1/2 <u>manzana</u>
Minimum size	1/8 <u>manzana</u>
Average size	1/3 <u>manzana</u>
Most frequent size	1/2 <u>manzana</u>

The most common crop raised in these plots is the platano (plantain), which is cultivated in 88 per cent of the plots. Other products planted were vegetables.

In relation to animals, no systematic study has been made for the hacienda as a whole since 1948. However, direct observation

and informal interviews reveal a decrease in all kinds of animals, with the probable exception of chickens.

The investigator asked a sample of peons about the number and different classes of domestic animals that they had by the end of 1958. From the answers, the situation may be described as follows: all but one of the jornaleros have domestic animals. They have only chickens and pigs. Chickens are owned by 97 per cent of the peons. The maximum number of chickens per family is 18. Only two families own pigs, one each family.

Population

An analysis of a demographic census carried out by the investigator with the aid of the school teachers in 1958 reveals that there were 216 families in Aquiares, making a total of 1,342 persons. This population, according to a broad classification of occupations, presents this distribution: peons, or jornaleros, 171 families, or 78 per cent of the total families on the hacienda. These 171 jornalero families make up 1,096 persons. There were also 45 families of specialized and other workers on the hacienda, which amounted to 246 persons.

In the category of specialized workers are included occupations such as overseer, foreman of the beneficio, head of the health dispensary, head of the commissary, carpenters, police agent, electrician, teachers and encargados. Some women heads of family are included in the specialized worker category.

The average age of family heads is now 42.3 years. For the jornalero and specialized occupational categories, the average age is 41.1 and 47.1 respectively.

The average years of residence in Aquiares of the family heads is 25.7.

Only 5.1 per cent of the population has lived less than one year in Aquiares and 15.3 per cent has lived five years or less on the hacienda.

Of the total family heads, 34.7 per cent was born in Aquiares, 2.3 per cent in the Central District and 44 per cent in the province of Cartago. From the rest of the nation came 19 per cent of the family heads.

General Structure of the Hacienda

As will later be explained in detail, one of the goals of the hacienda is to produce the maximum possible amount of coffee. Hence, the general structure of the hacienda, and especially the structure of the agricultural system, is designed to a considerable degree to fulfill that goal.

The position an individual occupies in the agricultural system seems to be related to the activities he performs in connection with the production of coffee. This position, in turn, seems to be related to the authority, with its inherent rights, that an individual may have in the agricultural system of the hacienda. Figure 5 attempts to show as clearly as possible these relations. In other

Structure of the Agricultural System of Aquiares, 1958

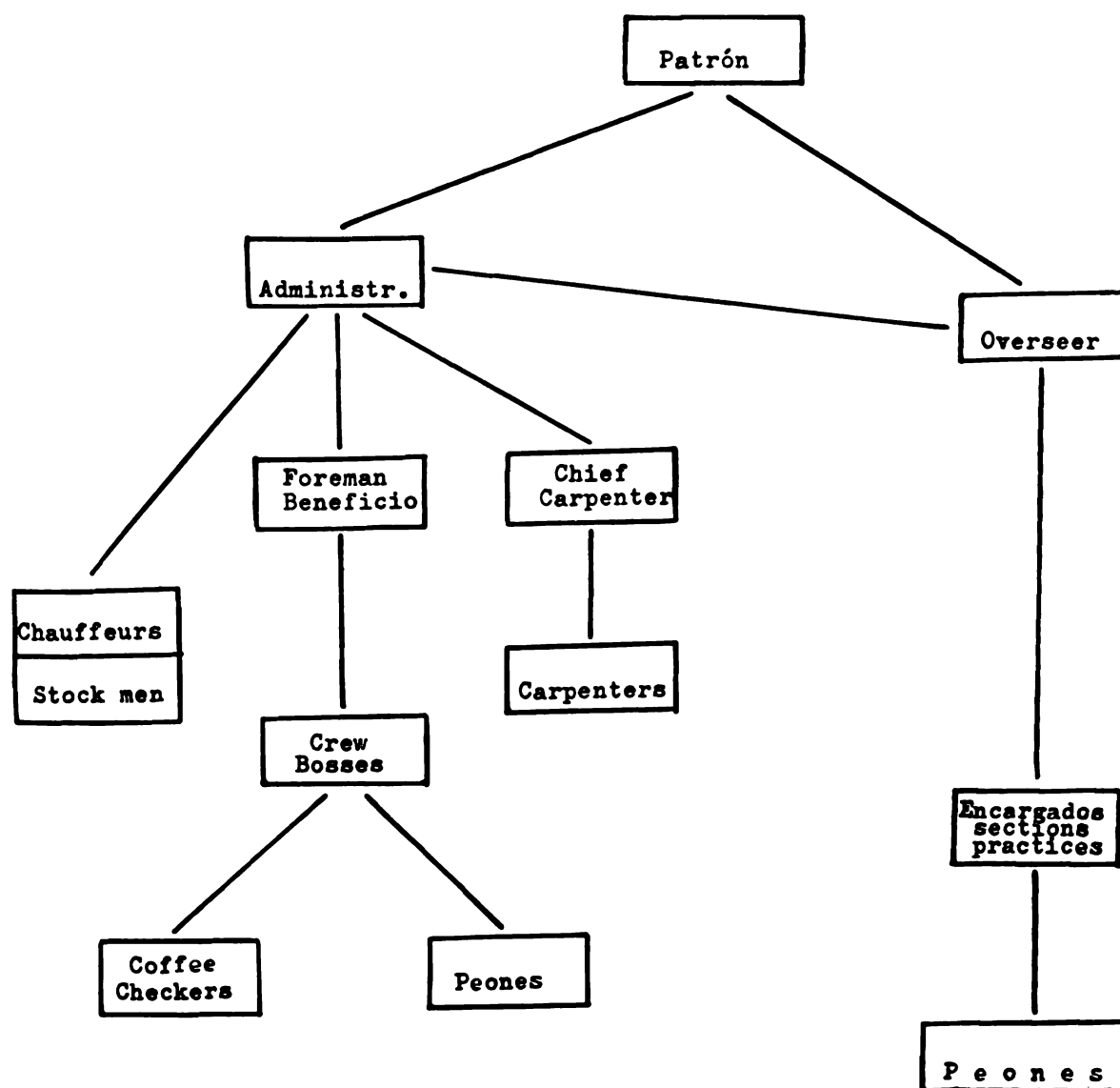


Figure 5

words, Figure 5 shows the present structure of the agricultural system and the lines of authority of the hacienda of Aquiares. It can be seen in that figure that the patron is the highest authority holder of the hacienda. In this connection it is important to mention that the real owner of Aquiares is a "society" which owns other properties in different parts of the country. The two strongest stockholders are two brothers, one of which is considered for the purposes of this study to be the owner or patron of the hacienda of Aquiares. The reason for this is that he is the one directly responsible for most aspects of the hacienda. He is the one who visits the hacienda periodically and who issues orders directed to attaining the maximum production of coffee. The other brother, an ex-president of Costa Rica, is busy in politics and in intellectual matters in connection with universities and other organizations. This does not mean that he does not care about the hacienda or that he does not cooperate in its functioning. He participates in some aspects of the work, but his participation is more concerned with the general orientation and organization of the agricultural enterprise. This means that orders, directives and changes of significance for the future of the enterprise may be issued by one of the brothers, but they generally represent the thought of both brothers. For the purposes of this study, the man considered as the patron is the one who is directly responsible for the general management of the

hacienda, and who synthesizes his and his brother's thought in most of the directives issued and in the changes that have been and are being made.

The patron exercises his authority over the peons and encargados through the administrator and the overseer. He also has frequent contacts with the foreman of the beneficio, and the chief carpenter, and occasional contacts with other specialized workers and with peons. He often visits the coffee groves with the administrator and the overseer to be sure that his orders have been executed and to personally see some of the problems and progress.

The way the patron exercises his authority is not, by any means, paternalistic. It cannot be said that he is autocratic, but the workers know that his decisions must be executed correctly, because otherwise he may be severe.

The patron seems to have a clear picture of what he wants from the hacienda and of the ways to get it. Most of his relationships with workers are structured in terms of the ways he thinks are the most suitable for getting what he wants from the hacienda. This became clear to the investigator during the meeting the seller and the buyer of the hacienda had with colonos, peons and specialized workers in September, 1953. In that meeting the financial operation was "officially" concluded. After a short, emotional speech from the previous patron, which ended with the distribution of

envelopes containing money, the new patron addressed the workers in a concise, objective speech. He told the workers that some changes in the organization of the hacienda would be introduced. He read a previously prepared document containing the following seven points and making some specific remarks on each point:

1. The system of colonias will be abolished. Colonos will work on a payroll basis as peons.

2. There will be six work days per week. All persons of working age in the families may work on the farm.

3. The rights of the workers, as established in the Labor Code, will be maintained.

4. Ten per cent of the wages or salaries will be kept by the farm and will be reimbursed for Christmas.

5. School lunch service will be reinforced.

6. An obstetric nurse will be hired to reside permanently in Aquiares.

7. New agricultural practices will be introduced on the hacienda.

The workers, especially the colonos, were asked to sign a contract in which most of the above points were taken into account.

In an informal interview held with the patron a few days after the meeting described, he amplified and clarified to the investigator some of the above points. He explicitly stated:

To have the maximum possible production will be our main concern. In order to have more production we must make the plant (of coffee) produce, making use of fertilizers and applying other agricultural practices. To do this, we must get rid of the colonias. With this system it is impossible to make changes because some persons will adopt the practice, others will do it in their own way, and still others might not want to make changes. It might seem absurd, but we must feed and take care of the plant first in order to be in a position to better feed the peon, to build a new school, to have better roads on the farm, and many other improvements. If we are able to raise the production of coffee, all of these and more things can be done, because "del mismo cuero salen las correas."²

About one year after this statement was made, in an informal interview the investigator conducted in August, 1954, the patron reaffirmed that their main objective was to make the farm produce at its maximum and that they were doing systematic work to achieve that end. He said that in relation to the agricultural aspect as such, their efforts could be summarized in two items: to feed the coffee plant and to protect it by means of anti-erosional practices. In another informal interview held with the patron in July, 1958, the investigator was able to confirm that the patron's original position had not changed but, on the contrary, seemed to be reinforced. He explicitly stated:

2. This is a very typical expression in Costa Rican rural regions. It is very difficult to make an exact translation of it. It means that in order to be able to make the leather straps we must first have the leather.

In order to have the maximum possible production we are taking care of the coffee plant, because she is like a human being. She needs health, food, cleanliness, and sun. These four aspects are what I call the four legs of the stool. In other words, the plant needs:

1. New tissue, that is, new branches. This is what I call health. Of course, with new branches we may also have new adult plants.
2. Fertilizers, which correspond to food in man. The plant needs food, plenty of food. Of course, plants must be given the right quantity and kind of chemical fertilizers. We are taking this aspect into account.
3. Cleanliness, that is, the elimination of weeds. We are doing that by means of the use of weed-killers.
4. Sun. The plant is like a child. She needs sun, plenty of sun. We are giving it to the plant.

The preceding observations may be considered as evidence of what was said before: that the patron seems to have a clear picture of what he wants from the hacienda and of how to get it. In this connection, one more illustration seems to be pertinent: In an interview with the patron about one year after he had bought the hacienda, the investigator asked him about difficulties or problems they had had in the management of the hacienda. He mentioned, among other things, the pressure he had had from one group of the community, trying to convince him he should fire the overseer. The reason given was that before and during the revolution of 1948, in which the Costa Ricans were divided into two factions, the calderonistas and the oposicionistas, the overseer had been an active member of the calderonista political party. In spite of the fact that that political campaign had been one of the crudest of Costa Rican history, leading to a revolution which left hundreds of deaths, the political sympathies of the overseer would not have

been very important if he had been working on a different farm. But he was in Aquiares and the man who had led and won the anti-calderonista revolution was the patron's brother. As a consequence, he had become head of the Junta Revolucionaria (Revolutionary Junta) first, and later president of the country. It is now clear why the anti-calderonistas of Aquiares were pressing for the dismissal of the overseer. Some of them sent "letters" to the patron, other visited him asking for the destitution of the overseer. The pressure was becoming greater. Finally the patron made his decision, and explained it as may be seen from the following excerpt from an interview with him:

I told everybody that we are interested in efficiency and that the overseer was efficient. That after being with the hacienda for more than 35 years he knew how to work with coffee and with people. I told them that I considered that nobody on the hacienda was more efficient and able than he. After this, troubles and gossip disappeared.

The patron has confidence in science as applied to agricultural problems. This is why the introduction of technologies in coffee has been one of his efforts from the first day he bought the hacienda. He favors experimentation and practices it on the farm. As the overseer says:

These people really like to experiment. They have put a lot of money into the farm on experiments. The hacienda has about twenty experiments on different kinds of fertilizers and weed-killers and other things. They have been doing this for the past year. The idea came from Mr. X (the patron) and Mr. Y (the administrator) and STICA is helping in the technical aspects. We don't know of results yet.

In relation to the length of time the experiments have been practiced, the administrator says it has been two years. Another point which is important to note is that the overseer was referring to experiments as such. As will be seen later, there are some agricultural practices which are being carried out on a commercial basis, such as the poda total por calles (total pruning by rows, sometimes called "stumping"), of which the administrator says he is "not completely sure of the results."

The patron, who is about 46 years old, is a dynamic person who works hard and who is well informed on most aspects of the agricultural system of Aquiares. He looks optimistic about the future. He seems to have incentive for working hard and for trying to make changes directed, according to him, towards getting from the hacienda the maximum possible production of coffee. Some of these incentives might revolve around his relative youth, his young son, his whole family, and the positive results obtained by him on other farms.

The position of administrator, under the new ownership, has been occupied by two persons. The first was the practical agriculturist who replaced the German administrator in times of the previous patron. The second one is a nephew of the patron, who has had training in a vocational agricultural school located in Honduras, and some courses in American educational institutions. This young man came to the hacienda at the beginning of 1957 to substitute the practical agriculturist.

The authority inherent in the position of administrator is not very clear in some respects. It is somewhat diffuse, at least in relation to the overseer. This is not an accidental happening, but a planned, rational one, as may be seen in an excerpt from an interview with the patron in August, 1954:

I don't consider Mr. X as an administrator, but as my representative when I am not here. Between my representative and the overseer there exist very few work relationships. Once in a while there are some cara-jaditas ("fishy things") between them and I have to resolve these problems. This is why I act on many occasions as administrator, considering both of them more or less at the same level. I try to go with my representative everywhere in order to train him as administrator, in case I decide to give him that responsibility. But I don't know if I will bring a new man here for that position.

About two and a half years after that interview, the patron replaced his "representative" with his nephew. The position of administrator gained in authority. However, in relation to the overseer this authority seemed to be as diffuse or even moreso than in the case of the preceding administrator. This has explicitly been recognized by the patron and the administrator.

On one occasion, when the investigator was trying to get the patron's approval for the carrying out of this study, he emphatically manifested the following:

If you want to do something here, you must keep in contact with X. He has had 40 years of hard work on the hacienda. Just think how much he knows.

The administrator, on the other hand, expressed the following:

From the first day I came to the hacienda, I have followed my uncle's advice: "You can experiment in anything you want, but you must respect X. You must respect his experience. You know that in matters of coffee he is a real encyclopedia." My uncle is right. In coffee X knows much more than I do.

Our relations are not in terms of superior to inferior but in terms of equals. When there are changes to be made or practices to be introduced, I try to convince him first. I never try to do it directly, even though I know it is more difficult to convince him than to make love to a fifteen-year-old girl. I never tell the peons to do this or that without consulting first with X.

I assure you that if I had to leave the hacienda for 15 days or more, everything would work exactly as now if X were left in charge of the hacienda. The reason for this is that he knows not only about agriculture, even though he has a name for each plant on the hacienda, but also about the people and their problems.

The overseer is aware of his influence on the administrator's decisions which are, to a considerable degree, a reflection of his uncle's thoughts and opinions. Very frequently he shows his almost complete identification with his uncle's views by making some remarks such as "I agree one hundred per cent with my uncle," or "You ask my opinion on this, and I tell you that my uncle's opinion, which I completely accept, is that. . . ."

The administrator, whose authority emanates to a considerable degree from the patron, has the right to hire and fire workers and to introduce fundamental changes in the agricultural system, changes which in most cases have their origin in the patron. The administrator contacts the peons through the overseer and the

encargados as well as personally. He is considered by the peons as a hard working man because he is in the coffee fields almost every day. Some peons think he is a little rough with them.

The administrator is the man responsible for the smooth running of the hacienda. He directly supervises the work of the foreman of the beneficio and of the chief carpenter and through these the work of other workers. He also directs the work of the chauffeurs, which must be well coordinated, especially during the harvest season. The foreman of the beneficio, the chief carpenter, and most of their workers, have been with the hacienda for many years, long before the change in ownership.

The administrator is optimistic about the results of the changes they are introducing, although he is not completely sure about the results of some of these changes. As he once told the investigator, he expects to see, in the near future, the effects of those changes reflected in a large and stable production.³

The position of overseer has been held by the same person for the past 44 years. He came to the hacienda in 1914 to work

3. At the end of January, 1959, one month after the field work in relation to agricultural practices in coffee for this study had been finished, the administrator "resigned" and went to work with a company owned by non-relatives of his and located in San Jose. The new administrator, a young single man who has had some courses in agriculture in the United States, is the son of the patron and consequently a first cousin of the administrator who preceded him. It is interesting to note that in little more than five years there have been three administrators in Aquiares. The situation when the hacienda was in the hands of the previous patron was not different. During the 45 years he owned the hacienda, there were 15 administrators in Aquiares.

in other activities before becoming the overseer. His authority and influence on the hacienda agricultural system and on the total life of Aquiares have been amply commented in this and in the preceding chapter. It is important, however, to add something in relation to his present functions. He supervises the field work which is being carried out throughout the hacienda, with special emphasis on coffee. As a result of the elimination of the colono system, a new organization was set up, consisting in the division (for working purposes) of the 560 manzanas of coffee into ten sections, two of 80 manzanas each and eight of 50 manzanas each, each section with crews of peons supervised by an encargado. Some of the present most important functions of the overseer refer to the supervision of the work carried out by the peons, either through the ten encargados or directly. He also supervises the work of a new type of foreman, the encargados de practicas, whose function it is to supervise the work of peons engaged in specific agricultural practices in coffee. There are, then, encargados of pruning, of weed-killers, of bending over the plant, of elimination of shade, of coffee-picking (cogida). These encargados are substituting the encargados of sections and will, according to the opinion of the administrator, eventually substitute all of them.

The overseer still supervises the crew of workers in the sugar cane fields through the encargado especially assigned to that section of the hacienda.

The attitude of the overseer towards experimentation and technification is, in general, one of skepticism, as may be inferred from some expressions and comments already mentioned in this and in the preceding chapter. The following excerpts from interviews held with him will serve to further illustrate this point:

There is general agreement in that the removal of shade is not a good thing, because of the chasparria.⁴ They (the patron and the administrator) think that the intensive application of fertilizers is a way to counteract chasparria.

When they (the patron and the administrator) decided to make the poda total por calles (total pruning by rows), that is, to cut all the branches, I told them that I was against that practice because it is a barbarity, a cruelty.

I have told Mr. X (the administrator), who is an agronomist, that in these times agronomists are not worth a penny.

The structural positions already described refer, as has been said several times, to the agricultural system of the hacienda. The structural positions besides those already described, which are part of the general structure of the hacienda, are the same which were mentioned in the chapter "Aquiaries Before." In most cases, other persons are occupying those positions: there are a new school principal, new teachers, a new priest, a new police agent and new medical doctors.

4. Cercospora coffeicola

Production

Production of Coffee

In the formal interview held with the administrator in November, 1958, which was described in the preceding chapter, in relation to production of coffee, very interesting information was gathered on this same aspect for the period of time the hacienda has been in the hands of the new patron. Some data for this period are the following:

Maximum harvest	10,400 <u>fanegas</u>
Minimum harvest	6,100 <u>fanegas</u>
Average harvest in 5 years	9,250 <u>fanegas</u>
Average <u>fanegas</u> per <u>manzana</u>	17.53

It is important to mention that the five harvests on which the average of 9,250 fanegas is based correspond to the following five periods: 1954-55, 1955-56, 1956-57, 1957-58 and 1958-59. When this information was given by the administrator, the 1958-59 harvest season had not finished. The administrator estimated this harvest at 10,000 fanegas. When the harvest season was over, the investigator found that the difference between the administrator's estimate and the real amount of fanegas harvested was minimal.

The 1953-54 harvest, even though the hacienda was bought in September, 1953, appears in the books as the last harvest of the previous owner. The reason for this may reside in the nature of the financial operation.

The maximum harvest of 10,400 fanegas refers to what the administrator considers their first harvest in Aquiares, that is, the 1954-55 harvest.

The average weekly payroll for the period October, 1957 - September, 1958, according to the figures the administrator showed the investigator, was of 20,000 colones. This refers to regular work on the hacienda, as the cogida (coffee-picking) represents a different item in the account books. It seems to be important to remind the reader that at present there are only peons on the hacienda to do the field work.

The daily wage for peons is now 8.50 colones.

The administrator thinks the time will come when they will have a steady production of at least 20,000 fanegas in every harvest.

The patron has the same optimistic expectation.

Coffee Technology

An observer interested in coffee culture and who had had knowledge of the hacienda before the change in ownership, would immediately be impressed by some changes present in the coffee groves. He would see new practices in the cafetales. He would see that throughout the hacienda the coffee trees of every sixth row are totally pruned. In this poda total por calles (total pruning by rows) all branches are cut, leaving the tree with only about three feet of trunk and the base of some original branches, from which new buds emerge to originate new branches. This means that an almost

completely new plant is obtained after two or three years. It is important to point out that, according to the patron and the administrator, the pruning of the trees of every sixth row every year will result within five years in a total renovation of the cafe-tales.

The observer would also see two new agricultural practices in coffee which are considered by some coffee experts⁵ as types of pruning: the planting of small trees at an angle (instead of vertically as was done previously) and the bending over of new plants. This last practice is carried out in the same way and for the same reasons as the bending over of old trees, a practice which was described in the preceding chapter. Planting the small tree at an angle avoids the waste of time and effort of bending over the plant afterwards.

The observer would be able to see the coffee trees from a long distance because the shade trees that previously obstructed the view have been completely removed from many coffee groves. The practice of complete removal of shade leaves the coffee plants exposed to the direct full sun; this is really good for the plant,

5. Dr. Jorge León, Head of the Plant Industry Department of the Inter-American Institute of Agricultural Sciences, told the investigator during an interview that there are two main types of poda (pruning): the corriente (common) and the agobio (bending over the plant). He subdivides the poda corriente into moderada (moderate) and profunda (heavy). The poda profunda or heavy pruning may be practiced by rows (sometimes called total pruning by rows, as in this thesis) or by trees. The agobio may be practiced on old or new trees. When the small tree is planted at an angle (siembra del arbolito inclinado), this practice is considered by Dr. León as a type of agobio of new trees.

according to the patron and the administrator. For this same reason the nurseries are at present planted under full sun. These nurseries are protected against insects by the frequent application of insecticides.

The observer would also be impressed by the presence in the coffee groves of masked persons, wearing rubber boots and gloves and carrying on their backs metal tanks from which a corrugated hose emerges. These people, in spite of their rare apparel, are merely peons preparing to apply the weed-killers or veneno (poison) as they call them. The application of weed-killers would explain why he does not see peons engaged in the palea (shovelling of the weeds) or doing the raspa y aporca (light cultivation and mounding with shovel), which is a type of palea, as was done previously.

The practice of using weed-killers is general throughout the hacienda, in spite of the fact that most peons are against it because, as they say, it is too dangerous and some workers in the Turrialba area have died from working with the material. This statement is true, according to evidences that the investigator has. The practices of total pruning and removal of shade have also been met with some resistance from the peons, but this aspect will be analyzed in further detail, with special emphasis on the reasons for this resistance with reference to a specific agricultural practice.

In connection with coffee technology, it must be said that not only new agricultural practices may be observed, but also the modification of practices that used to be carried out in Aquiares. One of these practices is the application of chemical fertilizers. Both the administrator and the overseer agree on the fact that the main modification in the realization of the practice consists in the larger quantities of chemical fertilizers applied now as compared with before. Before, according to the administrator, the use of chemical fertilizers was not a regular practice on the hacienda, and for that reason he was tempted to consider it a new practice. The overseer, on the other hand, does not go so far as the administrator, but he agrees on the great difference in quantities used. Now the fertilizers are applied four times a year. Each application consists of about 4,000 sacks of fertilizers. Each sack weighs about 40 pounds. Another variation resides in the larger number of varieties of fertilizers which are now applied.

Some other practices have gone through minor variations which will not be discussed, because they are not important for the purposes of this study.

As may clearly be seen after the preceding description of coffee technology, the general pattern of the cultivation and care of the coffee plant, which was described in the previous chapter, has not changed significantly. The sequence and combination of different operations or agricultural practices are practically the same.

It seems important to mention that all the agricultural practices in coffee which were in use in Aquiares and which were described in the previous chapter are still being carried out, with the exception of the palea and the raspa y aporca. This does not mean that all of them are receiving the same emphasis as before. Some are still in use, such as moderate pruning and pruning of shade, but they seem to be in the process of being substituted by other practices.

In summary, it may be said that some of the more important agricultural technologies that are being carried out at present are: selection of seeds, nursery under shade, nursery under full sun, transplanting with earth ball, holes dug previously, planting on the contour, retention ditches, use of chemical fertilizers, use of organic fertilizers, use of insecticides on nurseries, use of weed-killers, moderate pruning, heavy pruning by trees, total pruning by rows, planting the small plant at an angle, bending over new plants, bending over old plants, pruning with machete, removal of shade and pruning of shade trees.

CHAPTER VI

SOCIOLOGICAL ANALYSIS

Introduction

According to Jahoda et al, "it is the purpose of analysis to order the completed observations in such a manner that they yield answers to the research questions."¹ In line with this thought, this chapter attempts to make a comparison between the hacienda as it was before the change in ownership and as it is now, with the purpose of presenting some evidences which may help to answer the questions implicit in the objectives of this study.

As may well be remembered, the specific objectives which have guided this research, are the following:

1. To find out what changes have been effected in goals.
2. To discover what means are being used to fulfill goals.
3. To discover some of the factors that have hindered or facilitated the attainment of goals.
4. To analyze significant changes in the hacienda social system in terms of their sociological implications.

1. Marie Jahoda, Morton Deutsch and Stuart W. Cook, Research Methods in Social Relations (New York: The Dryden Press, 1951), p. 252.

The analysis will be made in relation to these objectives. In relation to Objective 2, it is necessary to say that it will be expanded to cover, not only the discovering of the means, but also some of the consequences in the application of those means.

In summary, this chapter attempts to describe, as objectively as possible, what has happened in Aquiares in the last decade, with emphasis on the period 1952-58. Attention will be given to the changes which have occurred as well as to the aspects in which the status quo has been maintained.

Goals

From a comparison between the two previous chapters, one thing becomes obvious: that there has been a change in the general orientation of the hacienda. It is true that in both periods, before and after the change in ownership, the hacienda was organized mainly to produce coffee. But there is a difference in the why and the how to produce coffee in both cases.

In the case of the previous patron, he seemed not to have had much incentive to make the farm produce, because, partly, of such conditions as age, family relationships and his ideology with respect to coffee culture. His behavior in relation to the hacienda seemed to be to let the farm produce by itself, without making systematic efforts to increase production. This attitude may be considered as one of his goals or perhaps as a means to something else.

The main goal of the hacienda, when it was in the hands of the previous owner, may be characterized as "traditionalistic," because "traditionalism is here thought of in a very narrow sense as merely inertia to change."² Traditionalism is here considered as an extreme in a continuum which has rationalism at the other extreme. "Obviously neither of these extreme conditions exists in reality."³ This means that it is impossible to say without incurring in error, that the hacienda had a completely traditional orientation.

The hacienda is, in the hands of the new patron, oriented towards efficiency in production. The present patron explicitly stated his basic goal with respect to the farm: "To make the hacienda produce at its maximum." He is making systematic efforts to increase production by the rational application of clearly defined means. The application of these means has implied, in some cases, radical changes of the existing situation.

He also explicitly stated that some of his objectives in relation to the community were to improve the nutritional and housing conditions, to have new or better services and facilities, such as a new school, better roads, a resident community nurse. These may be called subsidiary goals because they are dependent, according to

2. Loomis and Beegle, Rural Social Systems, p. 802.

3. Ibid., pp. 20-21.

the patron, on the goal of increasing production. "The first thing is to make the farm produce. Then we will be able to make improvements," the patron told the investigator.

From the above discussion it becomes clear that the hacienda now has a different goal than before. The change in goals is assumed to have produced changes in other segments of the hacienda.

Means

The hacienda has utilized various means in the attainment of the goal of getting the maximum possible production of coffee. However, there are two which are the principal ones and which contain within them other secondary means. The two fundamental means the hacienda has made use of are: the elimination of the system of colonias and modifications in coffee technology.

Elimination of Colonias

The elimination of the colonias has had some effects on different aspects of the social organization of Aquiares. To put it another way, some changes have occurred in relation to land tenure and land use, in the composition of the population, and in the general structure of the hacienda, mainly in the structure of the agricultural system. The situation in relation to all these aspects, as well as in relation to the pattern of services and facilities for the hacienda in general will be examined in detail.

Its Effects on the Pattern of Land Tenure and Land Use -

How has the elimination of the colono system affected the previously existing pattern of land tenure and land use?

If land tenure is defined in terms of the rights individuals have over the land, it may be said then that a great change has occurred in Aquiares in relation to land tenure. Table 2 shows the changes which have occurred in this respect.

TABLE 2

LAND TENURE IN AQUIARES BEFORE AND AFTER THE CHANGE
IN OWNERSHIP OF THE HACIENDA

Land Tenure	1950	1958
	Manzanas	Manzanas
Extension operated by <u>colonos</u> (coffee).....	341	0
Extension operated by the hacienda. (coffee).....	179	560
Extension operated by the hacienda (other crops).....	852	812
Total extension of the hacienda.....	1,372	1,372

As mentioned in a previous chapter, the conditions under which the land was to be operated by the colonos were stipulated in a contract. This contract was signed by the colonos every year. In that document, the obligations as well as the rights of both parties, the colonos and the hacienda, were made explicit. The colonos had

certain rights over two thirds of the total land planted in coffee. The totality of the present 560 manzanas in coffee is now cultivated by peons, under the direct supervision of the hacienda.

Colonos had other rights not explicitly stated in the contract. One of these implicit rights referred to the use, along with the peons, of 124 of the 394 manzanas planted in pasture for the feeding and care of cattle which the hacienda permitted them to have. Because peons are not permitted to have cattle now, the totality of pasture land is at present utilized by the hacienda.

As was mentioned in Chapter IV ("Aquiaries Before"), in 1948, colonos and peons (and a few specialized workers) owned 57 of the total 84 horses. They owned 193 of the 516 cattle and they also owned other animals, such as swine, goats, turkeys, ducks and chickens. In 1958, and based on the sample of peons interviewed in relation to agricultural practices, it may be said that they had only chickens and pigs. Chickens were owned by 97 per cent of the peon families. Only two families had pigs, one each family.

The decrease in the number and classes of animals has not been accidental. It is the result of a planned action of the patron which was taken at the same time of the elimination of the system of colonias.

Peons still have garden plots in which they have the opportunity to plant something for their own consumption.

The elimination of the colonias has had little effect in the use of land on the hacienda as a whole. The only appreciable

change is that there are now 560 manzanas in coffee instead of the 520 manzanas that there were before. These 40 additional manzanas in coffee have been taken from the 36 manzanas used in sugar cane, the 394 manzanas used in pasture and the 422 manzanas used in forest and brush. The exact proportion taken from each of these sections of the hacienda was not available to the investigator.

It seems that an attempt is being made to reach the goal of maximum possible production of coffee on the hacienda through improvement of coffee groves rather than through an increase in the area of land to be planted with coffee. The increase of the extension of land planted in coffee is only 40 manzanas in a farm of 1,372 manzanas and during the last five years. This fact and the information the investigator has on modifications in coffee technology seem to confirm that statement.

Its Effects on the Composition of the Population - There has been an appreciable change in the composition of the population of the hacienda, due, in part, to the elimination of the colonias.

As may well be remembered, the change in ownership of the hacienda occurred in 1953. Table 3 shows the composition of the Aquiares population by occupations five years before and five years after the change in ownership. The sources of this information were discussed in Chapters IV and V.

TABLE 3

COMPOSITION OF THE AQUIARES POPULATION BY OCCUPATIONS,
FIVE YEARS BEFORE AND FIVE YEARS AFTER
THE CHANGE IN OWNERSHIP

Occupational Groups	1948		1958	
	Nº families	Nº persons	Nº families	Nº persons
Colonos.....	84	592	0	0
Peons.....	84	421	171	1096
Specialized workers....	37	200	35	199
Others★.....	17	90	10	47
Total	222	1303	216	1342

★ Mostly housewife family heads

As mentioned in Chapter IV, there were in Aquiares in 1950, 75 colono families totalling 547 persons, and 132 families of peons, specialized workers and "others," totalling 825 persons. There was no specific information available to make possible a breakdown for these last occupational categories.

Table 3 shows that there has not been appreciable change in the size of the population between 1948 and 1958, but, on the other hand, there has been a considerable change in the composition of the population of the hacienda. This change seems to be closely related to the elimination of the colono system, as may clearly be seen in Table 4 and Figure 6.

.....
.....
.....
.....

Occupational Position of Heads of Families of Aquiares in 1948 and 1958 by Percentage of the total

118

- Others
- ▤ Specialized workers
- ▥ Colonos
- ▧ Peons

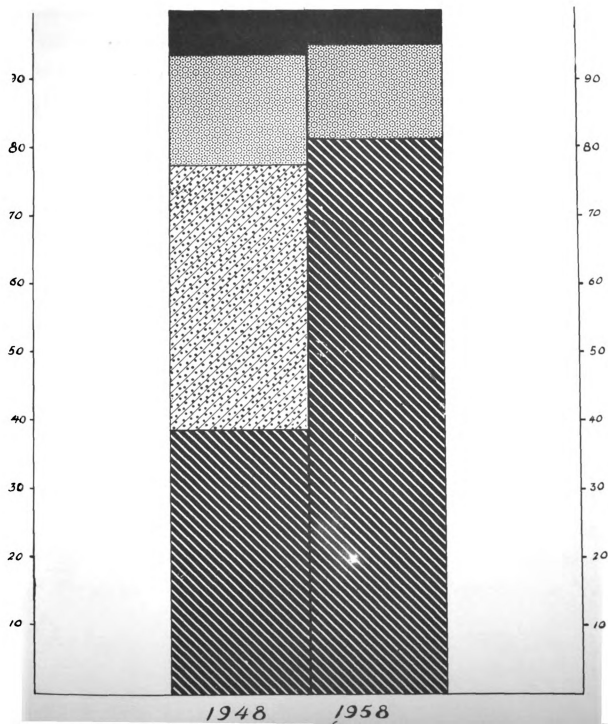


TABLE 4
OCCUPATIONAL POSITION OF AQUIARES FAMILY HEADS IN 1948
AND 1958 BY NUMBER AND BY PERCENTAGE
OF THE TOTAL

Occupational Groups	1948		1958	
	No families	% of total	No families	% of total
Colonos.....	84	38	0	0
Peons.....	84	38	171	79
Specialized workers.....	37	17	35	16
Others.....	17	7	10	5
Total	222	100	216	100

The information available on the number of colono families in 1950 shows little change in relation to 1948, as is indicated by the fact that in the former year, colono families represented 36 per cent of the total number of families on the hacienda.

A careful observation of Table 4 reveals three main things: first, that there has been little change in the proportion of specialized workers and "others" between 1948 and 1958; second, that the proportion of peon families is little more than double, in 1958, what it was in 1948; and third, that the proportion of peon families in 1958 is little more than the combination of colono and peon families. This third fact suggests the possibility of the absorption of the colono families by the peon occupational category, once the

colono system disappeared. In order to prove or disprove that possibility, an analysis was made as to the number and proportion of family heads working on the hacienda in 1958, who had been colonos in 1948. It was found that 32 ex-colono family heads were still working on the hacienda in 1958. If it is remembered that in 1948 there were 84 colono families in Aquiares, it is easy to conclude that 62 per cent of the colonos were not on the hacienda, because most of them had left Aquiares.

The preceding data show mainly two things: first, that there has been a considerable emigration of colonos, and second, that the increase in the proportion of peon families on the hacienda cannot be assumed to be the result of absorption of the majority of the colono families by the peon occupational category.

In order to see if the "pattern" of spatial mobility showed by the colonos was peculiar to that group or general among the whole population, an analysis was made of the families of the four occupational groups living in Aquiares in 1958, who had also lived on the hacienda in 1948. In other words, an analysis was made to isolate the families in the four occupational groups who have lived in Aquiares for ten or more years. The results are the following:

Ex-colonos	32 families
Peons	103 families
Specialized workers	23 families
Others	10 families

The above data show that in 1958 there were in Aquiares 168 families, or 77.8 per cent of the total population, that had lived on the hacienda for ten or more years. It is important to know the percentage in each occupational group having lived on the hacienda for that length of time. This can be done only after it is established to which occupational groups the 32 ex-colono families belong. The analysis of their occupational status in 1958 shows the following results:

Peon	29 families
<u>Encargado</u>	2 families
Carpenter	1 family

Now it is possible to see the proportion of the different occupational groups of the 1958 Aquiares population that have lived on the hacienda for ten or more years. Table 5 shows that proportion.

TABLE 5

PERCENTAGE OF THE 1958 POPULATION OF AQUIARES LIVING
ON THE HACIENDA IN 1948

Occupational Groups	Total families in 1958	No families in 1948	% of total
Peons.....	171	132	77.2
Specialized workers...	35	26	74.3
Others.....	10	10	100.0
Total	216	168	77.8

•
•
•

.....

...

.....

Table 5 shows that in the total population as well as in the particular occupational categories, horizontal mobility has been relatively small in the last ten years.

Table 5, as well as the information given above on mobility of the colono group, seems to suggest that on the hacienda as a whole the only group fundamentally affected by the elimination of the colono system, in terms of spatial mobility, was the colono occupational group.

If the proportion of the population that has lived on the hacienda for ten years or more is an acceptable index of population stability, it may be said that population stability is still high in Aquiares. The change in goals of the hacienda and the application of means for the attainment of those ends have not apparently affected the stability of the hacienda's population taken as a whole. On the contrary, it seems that population stability, measured by the average years lived in Aquiares, was a little higher in 1958 than in 1948-49. For the former period the average was 25.7 years and for the latter, 23.9 years. There is, however, an aspect which demands some caution in the complete acceptance of that difference: the average years of residence for 1958 was computed by this investigator from a complete coverage of the population, whereas the average for 1948-49 was computed by Painter and Morrison from a sample of 48 family heads.⁴ Information about the

4. Painter and Morrison, op. cit., p. 363.

nature of the sample and the way in which it was drawn was not available to the investigator.

The average years of residence for the peon group, the specialized workers and the "others" groups in 1958 was 25.1, 25.0 and 38.2 respectively.

In relation to place of birth, the 1958 population shows a higher proportion of family heads born in Aquiares as compared with the family heads born in Aquiares in the 1948-49 population, as may be seen in Table 6. The information for the latter period has been taken from the Painter-Morrison publication mentioned above.⁵

TABLE 6

PLACE OF BIRTH OF AQUIARES FAMILY HEADS
IN THE PERIOD 1948-49 AND IN 1958

Place of Birth	1948-49	1958
	% of the population	% of the population
Aquiares.....	22.9	34.7
District.....	8.3	2.3
Province.....	37.5	44.0
Country.....	27.1	19.0
Total	95.8 [★]	100.0

★ Figures taken from the publication do not total 100%.

5. Ibid.

Another important aspect shown by Table 6 is that the proportion of family heads born outside the province in the 1958 population of Aquiares is lower than the proportion of family heads born outside the province in the 1948-49 population: 19.0 per cent as compared with 27.1 per cent. This fact, and the proportion of family heads born in Aquiares for both populations seems to confirm the idea that spatial mobility has been low for the hacienda as a whole.

The average age of family heads has had practically no change on the hacienda as a whole from 1948 to 1958. For the former year, the average age was 42.4 years and for the latter year it was 42.3 years. However, when this factor is analyzed according to occupational groups, some differences between them and between the two periods becomes apparent, although they seem to be small differences. Their importance is that they might show a trend in the population of the hacienda, as may be seen in Table 7.

TABLE 7

AVERAGE AGE OF FAMILY HEADS IN 1948 AND 1958,
ACCORDING TO OCCUPATIONAL STATUS

Occupational Groups	1948	1958
	Average Age	Average Age
<u>Colono</u>	44.0	--
Peon.....	39.3	41.1
Specialized workers.....	40.8	43.2
Others.....	53.1	60.6
Total	42.4	42.3

1

.....

.....

.....

.....

Table 7 shows two main things: first, that the difference in average age among the different occupational groups is consistent for both periods. In both 1948 and 1958, the peons have the lowest average age; the "others" group, the highest; and the specialized workers are between the two. Second, that the average age of workers in each of the occupational groups in 1958 is consistently higher than the average age of the same occupational groups in 1948.

As may be remembered, a change in the general orientation of the hacienda occurred. This change implied the application of new means, the elimination of the colono system being one of the more important means. The effects or relationships of the application of this means on the population of Aquiares may be summarized as follows:

1. There has been no fundamental change in the size of the population.

2. There has been a considerable change in the composition of the population. In 1948, colono families made up a little over one third of the population and the peon families constituted exactly the same proportion as the colono families. In 1958, there were no colono families and the peon families constituted a little over two thirds of the total population. No fundamental changes occurred in the proportion of specialized workers and "other" families.

3. The increase in the proportion of the peon group has not been due to the absorption of the colono group by the peon

category. Only about one third of the original colono families became peons.

4. Spatial mobility for the hacienda as a whole has been relatively small: 78 per cent of the families in 1958 have lived on the hacienda for ten years or more. For the specific occupational groups, with the exception of the colonos, spatial mobility has also been relatively small. In other words, population stability was high in 1958 both in terms of the proportion of the population that had lived on Aquiares for ten years or more and in terms of average years of residence for the total population and for the specific occupational groups.

5. The elimination of the colono system seems to have fundamentally affected only the colono group in terms of spatial mobility: 62 per cent of the colono families of 1948 were not in Aquiares in 1958. Even taking into account the deaths which have probably occurred, the percentage is high enough to assume high horizontal mobility. The colono group was also affected in terms of occupational status. Of the 32 families that remained in Aquiares, 91 per cent became peons.

6. Average age and place of birth of family heads for the hacienda as a whole apparently have not been affected by the elimination of the colonias.

Its Effects on the Agricultural System - The general structure of the agricultural system was, in Aquiares before the change in ownership, closely related to the purpose of producing coffee. The positions individuals occupied in the agricultural system seemed to be related to the activities they performed in connection with the production of coffee. That position, in turn, seemed to be related to the authority, with its inherent rights, that individuals might have in the agricultural system of the hacienda. The general orientation of the farm changed. A new goal was set: to make the farm produce at its maximum. New means were applied in the reaching of that goal. The elimination of the colonias, as has been stated repeatedly, was one of the principal means chosen by the new patron. Have all of these apparently interrelated factors affected the general structure of Aquiares and especially the structure of its agricultural system? If so, in what degree?

A comparison between Aquiares before and Aquiares after the change in ownership of the hacienda will reveal that the elimination of the colono system has produced the elimination of some positions, the creation of new positions and a variation in the number of persons occupying specific positions.

In relation to the elimination of positions, a comparison between Figures 4 and 5 will show that the status-role of encargado of colonias as well as the status-role of colono have disappeared from the hacienda. The importance of the colono system for the

economic and social life of Aquiares was amply discussed in Chapters IV and V. In terms of number of persons, of the agricultural activities performed and of the social contacts, the colono group was fundamental in the social organization of Aquiares before the change in ownership. If it is accepted that the social organization of the hacienda was in accord with the general orientation of the farm, the importance of the colono group will become clear.

Two more status-roles have disappeared, if not as a direct consequence of the elimination of the colonos, at least due to the same reason as the disappearance of the colono system, that is, the change in the general orientation of the hacienda. These two status-roles which were eliminated are the encargado of boyeros and the boyero. The functions performed by these workers were discussed in Chapter IV.

The new status-roles which were created are: the encargado of sections and the encargado of practices. As might well be remembered, as a result of the elimination of the colono system, a new organization was set up, consisting of the division (for work purposes) of the 560 manzanas of coffee into ten sections, two of 80 manzanas each and eight of 50 manzanas each, each section with a crew of peons supervised by an encargado.

The existence of the colono system, according to the patron, was a handicap for modifications in coffee technology, the other

fundamental means in the attainment of the goal of maximum possible production, which will be discussed separately in this chapter. Once the colono system was eliminated, it was attempted to introduce new agricultural practices. There are now crews of peons engaged in specific agricultural practices in coffee, such as weed-killing, total pruning by rows, elimination of shade, bending over the plant, and others. The supervision of these crews of peons demanded the creation of a new position on the hacienda: the encargado of practices.

The other positions and the functions expected of those positions have not fundamentally changed. There has been, however, a change in the number of persons occupying certain positions. This is the case of the peon. The number of peons is now double what it was previously, as was shown in the section on population. The number of chauffeurs has also increased considerably in relation to the number there were before.

The lines of authority have changed in some aspects. In other respects, they remain as before. Again, a close look at Figures 4 and 5 will reveal, among other things, the following:

In Aquiares before as well as in Aquiares after the change in ownership, the principal authority holder was and is the patron. There is, of course, a difference in the way in which both of them exercised their authority. This fact may mislead the occasional observer, causing him to say that one of the patrones had more authority over his subordinates than the other. The way in which the authority is exercised must not be confused with the authority itself.

Before, the authority was, for most practical purposes, centralized in the administrator by delegation of the patron.

Before, the patron delegated his authority in the administrator, and this authority was, for most practical purposes, centralized in the status-role of administrator. He exercised his authority directly over the overseer and through him over the field workers. The administrator also exercised his authority directly over the specialized workers.

Now the authority delegated by the patron is less centralized in the administrator. It is shared to a greater degree with the overseer. The administrator exercises his authority over the overseer in a less direct way, and through the overseer, exercises his authority over the encargados and field workers. Now, as before, the administrator exercises his authority over the specialized workers of high occupational positions directly.

Before, the overseer was a direct subordinate of the administrator. There was, on the other hand, the direct authority of the overseer over three types of encargados: encargados of colonos, of boyeros and of peons. The influence of the overseer on the patron was strong, but his influence on the administrator was weak.

In Aquiares now, the overseer may be considered as an indirect subordinate to the administrator. There is, on the other hand, the direct authority of the overseer over two types of encargados: the encargados of sections and of practices. The influence of the overseer on the patron and the administrator is very strong.

In summary, it may be said that the elimination of the colono system, as one of the means utilized in the fulfillment of the new goal of maximum possible production, has considerably affected the structure of the agricultural system and the authority pattern of the hacienda. Evidences presented show that four status-roles were eliminated, two new status-roles created and two status-roles increased considerably in the number of their members. On the other hand, the existent authority pattern was substantially modified. This modification occurred mainly in the more important group of decision-makers, namely, the patron, the administrator and the overseer.

The general structure of the hacienda has not been basically affected by the elimination of the colono system. There are now the same positions as before: doctor, priest, school principal, school teachers, police agent, head of the commissary and head of the health dispensary. Different persons occupy these positions, with the exception of the head of the health dispensary. But the positions are the same, as well as the behavior expected from the holders of these positions.

Its Effects on the Pattern of Services and Facilities - In general, minimal changes have occurred in services and facilities in Aquiares as consequences of the elimination of the colono system and its related implications. The situation may be summarized as follows:

Housing: Same distribution. Imperceptible variation in services such as electricity and running water. No variation in the general condition of the houses; the privies, almost the same in number and conditions. There are now 16 houses less than before, taking into consideration the large new house built for the patron or his relatives.

Buildings: Same location. Little change in general conditions. There is now a new "building," the galeron (large open shed), for community activities. The trapique building is now used for other purposes. The school is now located in the house of the previous administrator.

Roads: There are about 15 more kilometers of new gravel trails, travelled by trucks and jeeps instead of carretas. The main gravel road is in better condition.

Services: The church offers the same services as before and the same organizations are carrying out the regular religious activities. The school offers more or less the same services, but to a larger number of children, taught by more teachers. There are now 269 children in comparison to 100 in 1952, and eight teachers in comparison to five in 1952. A new organization, the Comité Pro-Cultura y Educación (Pro-Culture and Education Committee) is helping the school, mainly in its economic problems. The health dispensary is now offering more services to more people.

Modifications in Coffee Technology

Another of the more important means in the attainment of the goal of the hacienda has been the application of modifications in coffee technology. The findings to be presented in this section are the result of systematic investigation carried out in this respect, making use of a guide for the administrative group and of a questionnaire administered to a one-fourth sample of the peon population living in Aquiares for 10 or more years. Direct observation and informal interviews with members of the administrative group and with some specialized workers gave the basic information for the construction of the above mentioned two instruments of research. A detailed description of the construction of the instruments of investigation was given in the chapter on methodology.

The modification of coffee technology will be analyzed taking into consideration three main aspects: 1) agricultural practices in coffee that were being carried out in 1958; 2) new agricultural practices in coffee in 1958; and 3) modified agricultural practices in coffee.

For the sake of simplicity, the terms "practice" or "practices" will be used throughout the text of this section with the meaning of agricultural practices in coffee.

Agricultural Practices in Coffee Carried Out in 1958 - As mentioned in the chapter on methodology, the "Guide to Interview the Administrative Group" contained a list of 33 practices which

are important, according to the opinion of some coffee specialists. This list was presented to the administrator and the overseer during interviews which were held separately and on different dates. They were asked to tell this investigator which of the 33 practices were being carried out on the hacienda on a commercial basis. The analysis of the answers revealed that 20 practices were mentioned as being carried out on the hacienda by both the administrator and the overseer and four practices were mentioned only by the overseer. Both of the respondents agreed on nine practices as not being carried out on the hacienda.

The 20 practices which, according to both the administrator and the overseer, were being carried out on the hacienda were:

Transplanting with earth ball

Chemical fertilizers

Organic fertilizers

Use of weed-killers

Moderate pruning

Total pruning by rows

Planting at an angle

Pruning with machete

Removal of shade

Selection of seeds

Nursery under shade

Retention ditches

Pruning of shade

Planting on the contour
Heavy pruning by trees
Nursery under full sun
Bending over new plants
Bending over old plants
Use of insecticides on nurseries
Holes dug previously

The questionnaire administered in December, 1958, to a one-fourth sample of the peon population living in Aquiares for or more years had the same list of 33 practices included in the guide for the administrative group. The peons were also asked which practices, according to their knowledge, were being carried out on the hacienda. Table 8 shows the results of that inquiry.

In a comparison between the practices indicated by both the administrator and the overseer as being carried out on the hacienda, and the data from Table 8, three main things appear clearly: first, that in general there is an agreement between the administrative and the peon groups on the practices that are being carried out. In fact, the first 18 of the 20 practices mentioned by the administrator and the overseer were also mentioned by at least 73 per cent of the peons. The first ten of those 20 practices were mentioned by 100 per cent of the peons. Second, that of the list of practices mentioned by both the overseer and the administrator, only the last two, use of insecticides on nurseries, and holes dug previously, were mentioned by less than 50 per cent

TABLE 8

NUMBER AND PERCENTAGE OF PEONS INDICATING WHICH OF
33 PRACTICES WERE BEING CARRIED OUT IN
AQUIARES IN 1958

Agricultural Practices in Coffee	No Peons	% Peons
Transplanting with earth ball.....	33	100
No cultivation near trunk.....	33	100
Use of chemical fertilizers.....	33	100
Use of organic fertilizers.....	33	100
Use of weed-killers.....	33	100
Moderate pruning.....	33	100
Total pruning by rows.....	33	100
Planting at an angle.....	33	100
Pruning with machete.....	33	100
Removal of shade.....	33	100
Selection of seeds.....	32	97
Nursery under shade.....	32	97
Retention ditches.....	31	94
Pruning of shade.....	31	94
Planting on the contour.....	29	86
Light cultivation and mounding (with shovel).....	29	86
Holes dug at time of planting.....	28	85
Heavy pruning by trees.....	26	79
Nursery under full sun.....	25	76
Bending over new plants.....	24	73
Bending over old plants.....	24	73
Introduction of new varieties.....	21	64
Use of insecticides on coffee trees.....	17	52
Use of insecticides on nurseries.....	16	48
Use of fungicides on the trees.....	16	48
Use of fungicides on nurseries.....	13	39
Pruning with saw.....	12	36
Free growth.....	11	33
Holes dug previously.....	7	21
Light cultivation (with shovel).....	9	27
Construction of "Lister Pits".....	5	15
Transplanted bare root.....	3	9
Polyethylene-covered earth ball.....	0	0

of the peons. Third, that only one practice, no cultivation near the trunk, was mentioned by a high proportion of peons (100 per cent) and not by both the administrator and the overseer.

From the preceding analysis we may safely conclude that there is agreement between the administrative and the peon groups on the first 18 practices of the 20 mentioned by the former group as being carried out on the hacienda. For purposes of this analysis, the first 18 practices mentioned by both the overseer and the administrator and by more than 72 per cent of the peons will be considered as the practices which were being carried out on the hacienda in 1958.

New Agricultural Practices - During the guided interviews conducted separately with the administrator and the overseer, and after they had mentioned the practices which were being carried out on the hacienda, they were asked the following question: "Which of the practices that you said are being carried out do you consider as new?" In the "Instructions to Fill Out the Guide," a new practice is defined as one which had not been carried out when the hacienda was owned by the previous patron; that is, a practice which had been introduced for the first time by the new patron.

The analysis of the answers to that question shows agreement as well as a divergence of opinion between the two informants as to the practices which were considered as new. Both of the informants mentioned the following six practices as being new:

Nursery under full sun

Use of weed-killers

Total pruning by rows

Planting at an angle

Bending over new plants

Removal of shade

There were four practices considered as new by the administrator but not by the overseer. On the other hand, there were five practices considered as new by the overseer but not by the administrator. These practices considered as new separately by each one of the informants do not refer only to the 18 practices which both of them and the peons agree were being carried out on the hacienda. There is the case, for instance, of the use of insecticides on coffee trees, the use of fungicides on nurseries and the use of fungicides on coffee trees which were three practices considered as new only by the overseer. On the other hand, he was the only one of the two informants who said that these three practices were being carried out on the hacienda.

For purposes of this analysis, the six practices mentioned as new by both the administrator and the overseer will be considered as the new practices which have been introduced on the hacienda. It is important to notice that all of the six new practices fall within the group of 18 practices which were considered as being carried out on the hacienda in 1958. The new practices constitute one third of the practices which were being carried out.

With respect to new practices, only the point of view of the administrative group has been presented so far. The point of view of the peon group was also systematically investigated. Making use of the check-list of 33 practices included in the questionnaire for this group, the peons were asked, besides the question on practices carried out on the hacienda, three more questions: "Have you ever worked with the practices you said were being carried out on the hacienda?," "How long ago did you first work with the practice?" and "Where did you first work with the practice?" An analysis of the responses to the question, "Have you ever worked with this practice?" was made for the 18 practices which were being carried out on the hacienda. Table 9 shows the results in relation to the six new practices. It is important to remind the reader that the number of peons interviewed was 33, which constituted a one-fourth sample of the 132 peon family heads who had lived in Aquiares for ten or more years.

The analysis of the remaining 12 practices (not presented here for the sake of space) revealed that more than half of the peons had worked with two thirds of those practices. In the case of the new practices, Table 9 shows that more than half the peons had worked with only one third of these practices. This seems to suggest that the newer the practices the smaller the number of peons who have worked with them.

TABLE 9

NUMBER AND PERCENTAGE OF PEON FAMILY HEADS WHO HAVE
WORKED WITH SIX NEW AGRICULTURAL PRACTICES
IN COFFEE INTRODUCED IN AQUIARES

New Practices	No peons	% peons
Planting at an angle.....	21	64
Bending over new plants.....	18	55
Removal of shade.....	12	36
Total pruning by rows.....	11	33
Use of weed-killers.....	8	24
Nursery under full sun.....	7	21

The question "How long ago did you first work with this practice?" was asked for all those practices the informant claimed to have worked with. An analysis of the responses to this question for the 18 practices carried out on the hacienda was made. Table 10 shows the results in relation to the six new practices.

In the analysis of the average years since peons worked for the first time with the 18 practices that were being carried out on the hacienda (not presented here because of space limitations), the highest average of years is 23 and the lowest average is two years. If it is remembered that the farm was bought by the new patron in 1953, and if the definition of new practice given before is kept in mind, Table 10 seems to present a logical picture with respect to new agricultural practices.

TABLE 10

AVERAGE YEARS SINCE PEONS FIRST WORKED WITH SIX NEW
AGRICULTURAL PRACTICES IN COFFEE
INTRODUCED IN AQUIARES

New Practices	No peons have worked with practice	Average years
Bending over new plants.....	18	5
Planting at an angle.....	21	3
Use of weed-killers.....	8	2
Removal of shade.....	12	2
Nursery under full sun.....	7	2
Total pruning by rows.....	11	2

The decision to consider as new agricultural practices the six on which the administrator and the overseer were in agreement seems to be validated by Table 10. To put it another way, there seems to be no disagreement between the administrative and the peon groups as to what are new practices on the hacienda.

Two more comments on Table 10 seem to be necessary: first, that, although the table presents the average years, there is no one case in the original data in which peons have worked more than five years with any of the six practices; second, that the analysis of the question, "Where did you first work with the practice?" revealed that all the informants worked for the first time with bending over new plants, use of weed-killers, removal of shade and nursery under full sun, in Aquiares. With respect to planting at an angle and

total pruning by rows, only one informant in each case had worked for the first time with those practices outside of Aquiares.

Modification of Old Practices - During the guided interviews held with the administrator and the overseer, and after they had named the practices in the check-list which they considered were being carried out on the hacienda and the practices they considered were new, they were asked the following question: "Which of the practices that are being carried out on the hacienda are being done in a different way than they were in the time of the previous patron?" The practices considered as new by the informant were, of course, excluded from this question. The informants were asked to explain the nature of the modifications. Both of them mentioned chemical fertilizers. The modifications mentioned were: greater quantities are used now, fertilizers are applied four time a year instead of once a year as before, and the methods of application differ in the sense that previously a circle was dug around the plant, the chemical fertilizer was placed into the dug-out circle and it was covered with clods. Now the fertilizers are thrown down around the coffee trees. Both of them stressed the point of large quantities of fertilizers used now as compared with previously. Most of the peons mentioned these same modifications in the application of these practices.

Two practices which were considered as modified by the administrator but not by the overseer were: holes dug previous to the planting of the seedlings, and the pruning of shade trees.

In the first case, a special kind of fertilizer is placed in the hole to insure, according to the informant, the success of the planting. In times of the other patron this procedure was not followed. In the case of the pruning of shade trees, the pruning is now heavier than before.

The overseer, on the other hand, mentioned the construction of retention ditches as a modified practice. The modification, according to him, consists in the larger proportion of retention ditches constructed now than before. This is due, in his opinion, to the present use of weed-killers, which leaves the floor completely clean permitting the water to run freely. This would cause erosion if retention ditches were not dug. Before, according to him, the weeds retained the water, preventing in this way the erosion of the soils.

Application of Means and Coffee Production

As mentioned before, the two more important means utilized by the hacienda in the attainment of the goal of getting the maximum possible production of coffee have been the elimination of the colono system and modifications in coffee technology. As may have been seen in the previous analysis, those two principal means have had many ramifications which may have had some influence on coffee production. This does not mean the neglect of other factors only because they are ignored but partly because of the impossibility of studying everything in a study which is sociological in nature; the author recognizes the fact that other factors are involved which have not been studied thoroughly in this investigation.

Some aspects related to production of coffee in Aquiares before and after a change in orientation on the hacienda and before and after the application of new means are presented in Table 11.

TABLE 11
PRODUCTION OF COFFEE IN AQUIARES BEFORE AND AFTER
THE CHANGE IN OWNERSHIP

Production Items	Aquiares Before	Aquiares After
	<u>Fanegas</u>	<u>Fanegas</u>
Maximum harvest.....	10,518	10,400
Minimum harvest.....	2,917	6,100
Average fanegas per <u>manzana</u>	12.0	17.53
Average harvest in 20 years.....	6,778	----
Average harvest in 5 years.....	----	9,250

Table 11 shows, in general, that the hacienda is producing more now than before. The only item in which production is higher before than now is the one on maximum production, but this difference is relatively small.

The information in Table 11, however, may not be accepted as conclusive for several reasons, the more important being that the data are based on two different periods: one of twenty years and the other of five years. Table 11 is useful, however, because it shows a trend favorable to Aquiares now as compared to before. In this trend, the item which seems to better describe the production

situation is the average fanegas of coffee per manzana because it takes into account the area of land planted in coffee. In the actual case of Aquiares, the difference is, as stated in another chapter, relatively small, because there were before 520 manzanas planted in coffee and in 1958 there were 560 manzanas in coffee.

The data presented on production suggest that the hacienda is moving toward the attainment of the goal of maximum possible production and that the means applied are related to that movement.

In this respect, one thing must be made clear: that no ethical judgment has been made in saying that in general the hacienda shows a trend towards more production now than before. No ethical judgment has been made because the investigator has not implied that the hacienda is now in a better or a worse economic position as compared to before. He cannot say either of the two things because he has not investigated the relationships between production and expenses. The reason for this omission is to be found in the sociological rather than the economic emphasis of this study.

Some Factors Promoting or Hindering an Increase in Production

As may well be remembered, Objective 3 of this study was to discover some of the factors that have hindered or facilitated the attainment of goals. In order to attain the goal of getting the most possible production of coffee from the hacienda, the new patron made use of two principal means: the elimination of the colono system and modifications in coffee technology. It was thought that

a systematic study of some factors facilitating the application of those means was an appropriate way to get answers to Objective 3 of this study. However, two fundamental reasons compelled this investigator to limit the study to one of the means: modifications in coffee technology. The first reason was the impossibility, in terms of time, of making a systematic study in relation to both means. The second reason was that a study on the elimination of the colonias, based on systematic interviewing of peons and other workers would have spoiled the whole research. This is explained by the fact that the investigator knew of the patron's negative attitude towards the colono system. To investigate an area in which the patron was sensitive would have been risky. In fact, in an interview conducted with the patron in August, 1954, he expressed the following, in relation to changes they had made on the hacienda:

As you know, when we bought the farm, there were a great many vested interests and commitments. Of course, from the first we decided to get rid of the colonias. And the reason for that resides in the fact that the colono system was a complete farce. The whole family used to work in the colonias. When it was time to clear accounts, the colono received, let's say, 2,500 colones, and he was really happy. But what is 2,500 colones for a complete year of family work? Most of the colonos were happy when they received money when accounts were cleared, but they didn't realize that the colonia business was no more than a delusion for them.

On several occasions after interview, the patron as well as the administrator reinforced the point of view reported above, but pointed out that the colonos had, in general, a favorable attitude toward the colono system.

For these reasons, the investigation was limited to modifications in coffee technology. Because the interest was in making a systematic investigation, and because of time limitations, the investigator was compelled to limit the research to only two agricultural practices: the one the administrator and the overseer considered most difficult to work with, in terms of the peons, and the one both of them considered least difficult to carry out, also in relation to the workers. The "most difficult" agricultural practice chosen for investigation was total pruning by rows.

Total Pruning by Rows

How and why total pruning by rows was chosen for intensive investigation will be briefly explained in this section, so as to give a better understanding of some of the findings to be presented further on.

The guide for interviewing the administrator and the overseer included these questions: "Of the agricultural practices that you mentioned as new or modified, which two practices do you consider most difficult to carry out in terms of the resistance presented by the peons?" and "Would you tell me something about the difficulties presented by each one of those practices?"

Both the administrator and the overseer mentioned total pruning by rows as one of the most most difficult practices to work with, in terms of resistance or problems with the workers. In relation to difficulties, the analysis of the answers according to the

areas suggested to the informants and discussed in the chapter on methodology, presents the following results:

Both the administrator and the overseer agreed that total pruning by rows presented no difficulties in terms of:

1. Skill in working with the practices. The peons have worked for many years with pruning, although not with total pruning by rows. They have the skills and the knowledge necessary to work with pruning.

2. Materials. The basic material for working with this practice is the coffee tree, and the peons have worked for many years with this material. Hence, there was no negative attitude of the peons toward the material.

3. Equipment or tools. The only tool necessary for working with this practice is the machete and the peons have worked with the machete almost all their lives. Hence, no negative attitude seemed to exist among the peons toward the equipment or tools.

The above points represent the opinions of both the administrator and the overseer. The analysis of the responses of peons to the questions on number of agricultural practices they had worked with and on time since they first worked with those practices, presents additional information in relation to total pruning by rows, Table 12 shows the percentage of peons that have worked with four related practices and the average years since they first worked with each practice.

TABLE 12

PERCENTAGE OF PEONS WHO HAVE WORKED WITH FOUR
PRUNING PRACTICES AND AVERAGE YEARS
THEY HAVE WORKED WITH PRACTICES

Agricultural Practices	% peons	Average years
Moderate pruning.....	97	21
Pruning with machete.....	94	22
Heavy pruning by trees.....	33	12
Total pruning by rows.....	33	2

Both the administrator and the overseer agreed that the main difficulty with total pruning by rows in terms of the workers falls in the area of beliefs and customs, although they did not put it in exactly those words.

The overseer said:

In times of Mr. X they (the peons) used to leave some branches to the coffee trees for the breathing of the tree. Because in times of Mr. X the plants were left with some breathing channels, the peons don't like to cut a coffee tree completely. What happens is that it is hard, sorrowful, for the peons to use the machete on a three or four year old plant.

The administrator, on the other hand, commented:

There is the belief that a coffee tree cannot be totally cut because it gets "rotten" and may die. The peons, for this reason, cut high instead of low because they think it is better for the plant, even though they know they should cut low in order to eliminate all branches. At the beginning, the overseer was completely opposed to the practice, because he believed the plants got "rotten" and might die. I think that he is not convinced, even now, of the advisability of this practice.

The administrator mentioned the use of weed-killers as the other most difficult practice to carry out in terms of resistance presented by the workers. The difficulties he mentioned were that the practice requires skill, ability and attention and that the peons lack all of these conditions; that they are afraid to use the materials because they are new and dangerous; that they are not accustomed to using special apparel such as boots, gloves and masks; that they have to learn how to manipulate new instruments; and that they are afraid of being in the group of disoccupied workers since the weed-killers do the work of many paleros (shovellers).

The analysis of the responses of peons to questions related to 33 practices shows that only 24 per cent had worked with weed-killers, with an average of two years since they had first worked with the practice.

The overseer mentioned the removal of shade as the other most difficult practice in relation to the peons. His comments in relation to difficulties were similar to those given for total pruning by rows: peons have the skill to work with the practice because they have pruned shade trees for many years; no difficulty with materials and implements, since they are used to working with trees and the machete. But they are not accustomed to completely removing the shade; they believe that to remove the shade completely is bad because of chasparria (Gercospora coffeicola), which causes the coffee beans to get dry and damaged as a result of too much sun. No one among the peons believes that removing shade may be good for the coffee.

The average years since the 36 per cent of the peons who have worked with removal of shade first worked with the practice was two years. There were, however, 61 per cent of the peons who had worked with pruning of shade trees, with an average of 18 years since they had started working with the practice.

The main reason why total pruning by rows was chosen for investigation of difficulties in the introduction of new agricultural practices in terms of the workers is that it was mentioned by both the administrator and the overseer as one of the two most difficult practices. Another reason is that the practice presented a real challenge for more systematic investigation, since it was not a completely new practice: the peons had the knowledge and skill to work with it, the materials and tools were familiar, and they had experience in some aspects of the practice. However, the peons, according to the administrator and the overseer, presented some resistance to working with the practice. Some of the reasons supporting that attitude were investigated with a one-fourth sample of the peon population, making use of the questionnaire described in the chapter dealing with methodology.

Why Peons Offer Resistance to Total Pruning by Rows -

Peons' experience with the practice -- The questionnaire asked for information about the experience the peons had had with total pruning by rows, that is, about whether or not they had worked with the practice. To those who had worked with it,

information was requested on the period in which they had worked with the practice: only before the change in ownership, only after the change, or both before and after the change. Table 13 shows the results of the responses to those questions.

TABLE 13

AQUIARES PEONS' EXPERIENCE WITH TOTAL PRUNING BY ROWS
IN RELATION TO THE CHANGE IN OWNERSHIP
OF THE HACIENDA

Experience with Practice	No peons	% peons
Worked with practice before the change.....	0	0
Worked with practice only after the change.....	11	33
Have not worked with practice.....	22	67
Total.....	33	100

Sources of learning the practice -- In relation to the question, "How or from whom did you learn to work with total pruning by rows?", which was included in the questionnaire, Table 14 shows the different sources of learning and the proportion of respondents influenced by those different sources.

As mentioned in the section dealing with the sample, four foremen were interviewed, in order to get insight into some of the problems investigated, and not with the purpose of making statistical generalizations based on such a small number of cases. Only two of the four foremen said that they had worked with the practice. One of them said he had learned the practice from the overseer and the other mentioned the overseer and the administrator.

TABLE 14
SOURCES OF PEONS' LEARNING THE PRACTICE OF TOTAL PRUNING
BY ROWS IN AQUIARES

Sources of Learning	No peons	% peons
Learned from foreman only.....	5	46
Learned from overseer only.....	2	18
Learned from overseer and foreman.....	2	18
Learned from overseer and <u>patron</u>	1	9
Learned from foreman and father.....	1	9
Total.....	11	100

Table 14 shows that foremen and the overseer were mentioned by the totality of the peons who had worked with the practice. From this it is possible to make the inference that the foremen and the overseer had been the principal channels through which the practice was learned by the peons. This inference becomes of crucial importance when it is remembered that the administrator doubts that the overseer is convinced of the advisability of the practice. Different expression given by the overseer in relation to this practice and to general changes on the hacienda, which have been quoted throughout this study, seem to confirm the doubts expressed by the administrator. There is, besides, another point which seems to be important, and that is that at least a bit of evidence has been presented which shows some influence of the overseer over some foremen in the learning of the practice.

The "best" way to do pruning in terms of production --

Peons were also asked if they thought the type of pruning which was more frequently being used on the hacienda (total pruning by rows) were the best for a good production of the plant or if there were a better way to do the pruning. All the peons in the sample were asked this question, regardless of their experience with total pruning by rows. Table 15 shows some results of the responses to that question.

TABLE 15

PEONS' OPINIONS ON THE BEST TYPE OF PRUNING FOR
A GOOD PRODUCTION OF THE PLANT

Opinions	Have worked with total pruning by rows		Have not worked with total pruning by rows	
	Nº peons	% peons	Nº peons	% peons
Total pruning is the best way..	2	18	0	0
There is a better way to prune.	8	73	21	95
Undecided.....	1	9	1	5
Total.....	11	100	22	100

It is interesting to note that the majority of the peons, regardless of their experience with total pruning by rows, thought that there is a better way to prune than total pruning by rows to get a good production of the plant. Actually, 88 per cent of the totality of respondents said that there is a better way.

.....

.....

Another important fact shown by Table 15 is that only peons that had worked with total pruning by rows mentioned this practice as the best for a good production of the plant. This shows, of course, only a trend, since no conclusion can be made on the basis of such a small number of cases.

The questionnaire asked for comments on why the informant thought one type of pruning was the best. The analysis of the answers indicated that all the reasons given may be catalogued as beliefs, most of which may be said to be rooted in customs and traditions. Table 16 shows an arbitrary classification of the comments given by the interviewees who said total pruning by rows was not the best type of pruning for the production of the plant.

TABLE 16

COMMENTS OF PEONS WHO SAID THERE IS A BETTER WAY TO
PRUNE COFFEE THAN TOTAL PRUNING BY ROWS IN
RELATION TO EXPERIENCE WITH THAT PRACTICE

Comments	Have worked with total pruning by rows		Have not worked with total pruning by rows	
	No	%	No	%
	peons	peons	peons	peons
Emphasis on production.....	2	25	6	29
Emphasis on beliefs, customs and traditions.....	6	75	15	71
Total.....	8	100	21	100

As mentioned before, the classification presented in Table 16 is arbitrary. It is convenient to add that the classes show only the emphasis of the comments. Those classes are not exclusive because there is the possibility of having, for instance, customs, traditions and beliefs behind some comments with emphasis on production. The opinions in relation to total pruning by rows are presented in Table 16 according to the aspects emphasized by the respondents. To illustrate this point, three "typical" comments, in relation to the first category, and six "typical" comments in connection with the second, will be presented.

<u>Original Spanish</u>	<u>English</u>
Todo lo podado con poda total hubiera producido mucho café este año.	Everything that was pruned with total pruning would have produced lots of coffee this year.
Lo menos se llevan tres años esos troncos podados con poda total para dar producción.	Those totally pruned trunks will take at least three years to produce again.
Cuánto café cree Ud. que le puede dar esa cantidad de matas en plena producción que cortan totalmente?	How much coffee do you think this number of coffee trees in full production that they totally cut would yield?
Me parece mejor la poda moderada porque siempre hemos acostumbrado dejarle algo nuevo y bueno a la mata, quitándole lo que no sirve.	I think moderate pruning is better because we have always left something new and good to the plant, removing what is no good.
Es mejor cortar sólo la rama dañada pues me parece que no es conveniente cortar toda la mata.	It is better to cut only the damaged branch, because I think it's not the thing to do to cut the whole tree.

Original SpanishEnglish

Es mejor cortar sólo la rama mala, revienta mejor el hijo y se ve que es más fuerte y sano.

It's better just to cut the bad branch, the bud sprouts better and you can see it's stronger and healthier.

En poda total el hijo no viene tan bueno. Se sangra mucho la mata y cuando brota el hijo viene amarillo, débil.

In total pruning the bud does not sprout as good. The tree "bleeds" too much and the bud is weak and yellowish.

En esa poda total el agua aviragua el corte y se pudre y el hijo que nace ya viene malo. Una mata con buenas ramas distribuye bien ese alimento (la savia) y no permite la sangría.

In that total pruning the water mildews the cut and it gets rotten and the bud that come is already bad. A coffee tree with good branches distributes that food (the sap) right and does not allow "bleeding."

Para que sirva, la poda tiene que ser moderada; en la total se "sangra" de viaje el corte.

To be useful, pruning has to be moderate; in total pruning the cut "bleeds to death."

It is important to mention that the four foremen interviewed said that there is a better way to prune than total pruning by rows. They gave comments very similar to those transcribed above. This position of the foremen as well as the position of the peons pictured in Tables 15 and 16 and the expressions reported above may be taken as an indication of a negative attitude of both occupational groups toward total pruning by rows originated in beliefs rooted mainly in customs and traditions.

Main difficulties in working with the practice --

All the peons in the sample, irrespective of having worked or not having worked with total pruning by rows, were asked which were the main difficulties they thought existed in working with that practice. The question presented the following six alternatives:

1. It requires some skill.
2. It requires the use of complicated equipment.
3. New tools must be used.
4. It requires great physical effort.
5. It is dangerous to work with the practice.
6. Other difficulties.
7. None.

Analysis of the responses revealed that no one of the possible difficulties included in the questionnaire were mentioned by the informants. Only two informants mentioned difficulties, saying that it takes more time to prune totally by rows than to do the other types of pruning. Of the 31 peons who said that there was no difficulty whatsoever in working with the practice, 25 (81 per cent) added that total pruning by rows is easier to work with than any other type of pruning.

It is interesting to note that the fact of having worked or not having worked with the practice seems to have had no influence on the responses, since the majority of the respondents said it is not difficult to work with the practice. Furthermore, of the two who mentioned difficulties, one had worked and the other had not worked with the practice.

All of the four foremen interviewed said there are no difficulties whatsoever in working with total pruning by rows.

Why some peons do not like the practice -- In an effort to get more specific information related to the non-acceptance of total pruning by rows by most of the peons, all the peons in the sample were asked the following projective question, regardless of whether or not they had experience with the practice: "If it is not difficult to work with total pruning by rows, what do you think are the reasons why most peons do not like it?"

The analysis of the answers showed that the opinions referred to certain specific areas. In other words, the reasons given by the informants emphasized certain aspects. Consequently, the reasons were arbitrarily classified by this investigator, for purposes of analysis, into five categories: 1) reasons based mostly on sentiments, 2) reasons based mostly on beliefs and customs, 3) reasons based on interest in production, 4) reasons based on importance given to skills and knowledge, and 5) reasons based on other considerations, such as more work, and obligation to do the work they are ordered to do.

The classification, it is repeated, is arbitrary. Each of the categories represents the main emphasis of the opinions in certain areas. This means that the categories are not completely exclusive, since opinions with emphasis on production, skills, knowledge, etc., may be influenced by beliefs, customs and sentiments. Conversely, opinions based on sentiments may be influenced by the knowledge and skills the respondent has of agricultural practices.

Table 17 shows the distribution of total opinions in five areas and according to the experience the peons in the sample had had with total pruning by rows.

TABLE 17

COMPARISON OF OPINIONS OF PEONS WITH AND WITHOUT
EXPERIENCE IN TOTAL PRUNING BY ROWS ON
REASONS WHY MOST PEONS DO NOT
LIKE THAT PRACTICE

Areas of Emphasis	Have worked with total pruning by rows		Have not worked with total pruning by rows	
	No reasons	% reasons	No reasons	% reasons
Emphasis on production.....	7	35	7	20
Emphasis on sentiments.....	5	25	9	25
Emphasis on beliefs, customs.....	3	15	8	22
Emphasis on skills, knowledge.....	3	15	4	11
Emphasis on other factors..	2	10	8	22
Total.....	20	100	36	100

Table 17 shows a classification of the different reasons given by the respondents who, in general, gave more than one reason as to why most peons do not like total pruning by rows. What might be concluded, in a general way, from Table 17, is that peons who have worked with the practice based their opinions more on interest in production, whereas peons who have not worked with the practice based their opinions more on beliefs and customs. This

.....

.....

.....

.....

.....

may be taken more as a trend than as a conclusion, since the classification is a very crude one and its classes overlap in different ways. Perhaps it would be more accurate to say that sentiments, beliefs, customs and traditions seem to be at the root of the reasons given by all peons, regardless of their experience in total pruning by rows. This does not contradict what was said before, that is, that certain groupings of opinions seem to emphasize certain specific areas. To illustrate this point, three "typical" expressions of each of the five categories will be presented:

Original Spanish

Calculan que van a coger 10,000 fanegas. Nosotros decimos que 9,000, pero podrían haber cogido 12,000 si no hubieran hecho esa poda total.

A nadie le gusta esa poda total por la pérdida de café que hay. Los que más entienden de café calculan que se han perdido de coger este año 2,000 fanegas, debido a la poda total.

Si uno llega y corta una mata alentada como ésta, qué gana? Nada. Se pierde toda la cosecha y no se volverá a ver sino hasta dentro de 3 o 4 años.

Da lástima echarle el cuchillo a matas buenísimas, en todo su apogeo. Es como matar a una muchacha de 18 años.

English

They estimate they will pick 10,000 fanegas. We say 9,000, but they could have picked 12,000, if they hadn't done that total pruning.

Nobody likes that total pruning, because of the loss of coffee there is. Those who know most about coffee estimate that this year they've missed picking 2,000 fanegas, because of the total pruning.

If you come and cut off a healthy plant like this one, what do you gain? Nothing. You lose all the harvest and you won't see it again for 3 or 4 years.

It's a shame to use the knife on perfectly good plant in full production. It's like killing an 18 year old girl.

Original Spanish

No es cosa de uno, pero es algo que duele corta toda una mata que está bonita.

Si a uno le dicen que corte todo, uno lo hace, pero da lástima. Uno lo siente a la par del alma.

Con esos experimentos, todos sabemos que hay que esperar mucho tiempo. En cambio, uno sabe que la poda moderada da buenos resultados porque desde que uno nació la está viendo.

Se ha visto que con la poda total el tronco no responde al hijear y algunos hasta se mueren, sobre todo en invierno. Al corte se le hace como una espuma blanca que se chorrea hacia abajo y al reventar el hijo ya viene amarilloso.

No les gusta porque ya están acostumbrados y saben que es mejor como antes.

Antes se podaba muy bien, había que llevar el cuchillo muy afilado y tener gran cuidado al hacer el corte.

Ahora no necesitan podadores porque para corta la mata de viaje todos sirven. No se necesita saber podar. A uno le llenaba de gusto ver cuando podaba una matica cómo quedaba de bonita.

English

It's none of our business, but it just hurts to cut off a plant that is pretty.

If they tell us to cut it all off, we do, but it hurts. You feel it at the bottom of your heart.

With those experiments, we all know that you have to wait a long time. But we know that moderate pruning gives good results because we've been seeing it since we were born.

It's been seen that with total pruning, the trunk doesn't respond when the bud sprouts, and some of them even die, especially in the rainy season. The cut gets a kind of white foam that runs down and when the bud emerges, it already comes yellowish.

They don't like it because they're already used to the other way and they know it's better.

Before pruning was done very well. You had to take the knife well sharpened and be very careful in making the cut.

Now they don't need pruners because anybody can cut the plant off completely. You don't have to know how to prune. You used to feel real good after pruning a little plant, seeing how pretty it turned out.

Original SpanishEnglish

Para la poda total no se necesita la maceta ni nada de eso, sólo saber cortar.

For total pruning you don't need the club or any of that, you only have to know how to cut.

Si a mí me mandan a hacer la poda total, yo no la hago o la hago contra mi gusto.

If they tell me to do the total pruning, I won't do it, or I'll do it against my will.

Nosotros la hacemos porque nos lo mandan.

We do it because we are told to.

Un peón que tenga conciencia no hace esa poda si no es a la fuerza. Eso duele, aunque la cosa no sea de uno.

Any peon that has a conscience won't do that pruning unless he is forced to. It hurts, even if the plants don't belong to us.

The four foremen interviewed gave very similar reasons to the ones transcribed above. They personalized the answers, as did also the majority of peons, even though they were asked about the other peons and not about themselves.

If it were possible to summarize in a few words the reasons why most peons do not like the practice of total pruning by rows, it would be said that it is because the practice conflicts with some customs and traditions of the workers, with some of their beliefs and sentiments. Furthermore, the practice deprived some of the workers of a source of prestige derived from the ability to practice the moderate pruning, in which the workers had to decide what branches should be cut and how they should be cut.

Hypothetical application of the practice -- The fact that a group of peons were working with total pruning by rows

does not mean that the practice had been "accepted" by them, using this term in its broader meaning. The evidences presented herewith reveal some resistance of the workers toward the practice. In order to get more evidence about this point, the totality of peons in the sample, regardless of their experience with the practice, were asked: "If you were the owner of a coffee farm, would you or would you not apply total pruning by rows on that farm?"

The analysis of the responses to this question revealed that only one of the respondents, a peon who had worked with the practice, said that he would apply it on a farm of his own. The reasons given by him are the following: "The plant is totally cut, but after a time you get the results. The patron invited us to Santa Elena (another farm) to see how it was done over there."

The 32 peons who said they would not apply the practice on a farm of their own gave reasons referring to certain specific areas. In consequence, these reasons were arbitrarily classified, for purposes of analysis, into two categories: reasons based mostly on economic interests, and reasons based mostly on beliefs, customs and sentiments. It is recognized, however, that the categories are not exclusive. They only show the emphasis made by the respondents in their answers. Table 18 shows the distribution of the totality of reasons, classified in two areas, and according to the experience of the 32 informants with total pruning by rows.

TABLE 18

COMPARISON OF REASONS GIVEN BY PEONS WHO HAVE WORKED
AND HAVE NOT WORKED ON TOTAL PRUNING BY ROWS
AS TO WHY THEY WOULD NOT APPLY THAT
PRACTICE ON A FARM OF THEIR OWN

Areas of Emphasis	Have worked with total pruning by rows		Have not worked with total pruning by rows	
	No reasons	% reasons	No reasons	% reasons
Emphasis on economic interests.....	9	75	15	65
Emphasis on beliefs, customs and sentiments..	3	25	8	35
Total.....	12	100	23	100

It is necessary to say that in relation to answers to this question, the reasons based mostly on beliefs, customs and sentiments were combined into one category because of the small number of responses, especially in the group of peons who had worked with the practice.

Table 18 shows that in both groups of peons, the majority of reasons supporting why they would not apply the practice on a farm of their own are based mostly on economic interests. This suggests that another of the factors responsible for the resistance of most peons to total pruning by rows might be the threat that the practice represents, even in a hypothetical way, to their economic security. The fact that the majority of reasons emphasized the economic aspect does not mean, of course, that those reasons are

.....

.

.....

devoid of sentiments, beliefs or customs as may be seen in the following transcription of three "typical" expressions in each category. However, expressions with special emphasis on sentiments, beliefs or customs have been groups in a separate category.

<u>Original Spanish</u>	<u>English</u>
Porque sería la ruina para mí. Si corto una mata que está buena, qué hago el año entrante?	Because it would be my ruin. If I cut a good plant, what do I do next year?
Una mata que dé una cajuela se apea de viaje para que dentro de 3 o 4 años venga a dar lo mismo? Ningún pobre hace eso.	A plant that gives a <u>cajuela</u> (about ½ bushel) is cut down, so that in 3 or 4 years it will give the same? No poor man does that.
Porque tarda mucho tiempo para ver la cosecha de nuevo y uno necesita que siempre haya cosecha en un cafetal.	Because it takes too long to see the harvest again, and you always need to have a harvest in a coffee grove.
Nunca haría yo eso; la mata es la que dice lo que se le debe cortar.	I would never do that; the plant is the one that tells what should be cut.
Es mejor lo ya conocido y que uno sabe que da buenos resultados.	It's better to stick to what you know; you know it gives good results.
No haría poda total para no perder el trabajo en una cosa inútil, porque ya se sabe que no sirve.	I wouldn't do total pruning because I wouldn't waste work on something that's useless, because it's already known that's no good.

All of the four foremen interviewed said that they would not apply that practice on a farm of their own. The reasons given are very similar to those reported above. Three of the four foremen interviewed stressed the economic aspect.

Use of Chemical Fertilizers

As mentioned in a previous section, it was decided to do intensive and systematic investigation on only two agricultural practices: the one considered most difficult to work with, in terms of the peons, by both the administrator and the overseer, and the one both of them considered the least difficult to carry out in relation to the workers.

How and why was it decided to use chemical fertilizers for intensive investigation? The guide for interviewing the administrator and the overseer included these questions: "Of the agricultural practices which you mentioned as new or modified, which two practices do you consider have been the least difficult to carry out, in relation to the peons?" and "What do you think are the reasons that there has been no difficulty or little difficulty with the peons?"

The analysis of the responses to the question on the two practices which were least difficult to carry out revealed complete disagreement between the two respondents. The administrator mentioned use of chemical fertilizers and heavy pruning by trees. The overseer, on the other hand, mentioned use of insecticides on the coffee trees and use of fungicides on the coffee trees. The reasons given were consistent with the practices mentioned by each respondent as being carried out on the hacienda, making it more difficult for the investigator to choose one practice for intensive investigation. Fortunately, in an informal conversation with the

patron, the question was asked him and he immediately mentioned the use of chemical fertilizers, giving very similar reasons to those offered by the administrator.

The administrator, according to the areas suggested by the guide, gave the following reasons supporting his opinion as to why there had been little or no difficulty in carrying out the practice of use of chemical fertilizers.

1. The peons had previous experience with the practice, since they had applied chemical fertilizers before the change in ownership of the hacienda.

2. There is very little change in the method of application. Before the fertilizers were buried; now they are just poured over the ground.

3. No basic change of materials, since the changes in the chemical composition of the fertilizers are not detected by the peons.

4. No instruments were needed before and no instruments are needed now. Peons use their hands to pour the material.

5. They know that the use of chemical fertilizers is something good. This is a general belief among the peons throughout Costa Rica. They know that fertilizer for a plant is like food for a baby.

6. The application of chemical fertilizers is very simple.

On

the

work

will

the

20

an

a

a

the

the

the

That is what the administrator said about the practice. On the other hand, the analysis of the responses of the peons to the questions on the number of agricultural practices they had worked with and on the time elapsed since they had first worked with the practice, revealed that 100 per cent of the peons said they had worked with chemical fertilizers, with an average of 20 years since they had started working with the practice.

It is significant to remember that both the administrator and the overseer considered the use of chemical fertilizers as a modified practice.

Why Peons Do Not Resist the Use of Chemical Fertilizers -

Experience with the practice -- The questionnaire asked for information about the experience peons had had with the practice and the periods in which they had worked with it, taking the change in ownership of the hacienda as the point of comparison. Table 19 shows the results of the answers to those questions.

Table 19 shows that all the peons had had experience with the practice and that most of them had worked with it before and after the change in ownership of the hacienda.

With respect to the four foremen interviewed, all of them had worked with the practice before and after the change.

Sources of learning the practice -- In relation to the question, "How or from whom did you learn to work with chemical fertilizers?" which was included in the questionnaire,

1

2
3

4

5

Table 20 shows the different sources of learning and the proportion of respondents influenced by those different sources.

TABLE 19

PERIODS IN WHICH PEONS HAVE WORKED WITH CHEMICAL
FERTILIZERS, TAKING THE CHANGE IN
OWNERSHIP AS A POINT OF COMPARISON

Periods	No peons	% peons
Worked with practice before the change.....	32	97
Worked with practice after the change.....	33	100
Worked with practice before and after change....	27	82

TABLE 20

SOURCES OF LEARNING USE OF CHEMICAL FERTILIZERS OF
PEONS WHO HAD WORKED WITH PRACTICE BEFORE
THE CHANGE IN OWNERSHIP

Sources of Learning	No peons	% peons
Learned from foremen and overseer.....	10	31
Learned from foremen only.....	9	28
Learned from overseer only.....	6	19
Learned from father.....	5	16
Learned from others.....	2	6
Total.....	32	100

Table 20 shows that the foremen and the overseer, either separately or combined, were mentioned by a little over three fourths of the peons as the source of learning the practice. This means that in both practices, total pruning by rows and use of chemical fertilizers, they are the main sources of learning the practices. The peons who mentioned their fathers added that they had learned how to work with chemical fertilizers on the colonias operated by their fathers. The category "others" refers to the administrator and a farmer.

Of the four foremen who had worked with the practice before the change in ownership of the hacienda, two mentioned their colono fathers as a source of learning the practice, one mentioned an administrator and one mentioned the overseer.

The "best" way to carry out the practice -- Peons were asked if they thought the way the practice of applying chemical fertilizers was being carried out were the best for a good production of the plant or if there were a better way to fertilize the lands. Table 21 shows the results of this inquiry.

Table 21 shows that the majority of the respondents think the present method of fertilizing the soils is the best. The minority thought there is a better way. Because the difference between the two groups seems not to be pronounced, an examination of the reasons given to support each type of opinion may help to

see more clearly whether the opinions really differ markedly. The analysis of these reasons revealed that the 42 per cent of peons who said there was a better way were referring not to a different method or type of fertilization but to variations in the application of chemical fertilizers. This means that the totality of respondents thought the use of chemical fertilizers is a good thing for the plant and hence for production.

TABLE 21

PEONS' OPINIONS ON WHICH METHOD OF FERTILIZING
THE SOIL IS BEST

Opinions	No peons	% peons
The present method is the best.....	19	58
There is a better method.....	14	42
Total.....	33	100

Some of the reasons given by the group that said the present method used on the farm was the best, were that fertilizers are now of better quality, more quantities of fertilizers are applied, more applications are made during the year, it is more practical and faster because the fertilizers are just poured and not buried as before, and that there is now less chasparria.

The reasons given by the peons who said there is a better way to fertilize refer, as mentioned above, to variations in the

application of chemical fertilizers. All of the reasons given seem to be rooted in beliefs, customs and traditions. Almost all of them said the method used before, that of burying the fertilizer, is better than the method used now, that is, just throwing the fertilizer on the ground. And it is better, according to them, because the plant profits more, the fertilizers are not wasted in the way they are wasted now, and too much fertilizer is bad for the plant.

Of the four foremen interviewed, three said the present method used on the hacienda to fertilize the soils is the best, giving similar reasons to those of the peons. The fourth foreman, who thinks the use of chemical fertilizers is a good thing in terms of production, said it is better to apply the fertilizer as it was done before, that is, to bury it.

From what has been said up to now, it seems that one of the factors for the non-resistance of peons toward the use of chemical fertilizers is that all of them believe it is a good thing for the plant, and hence for production. The four foremen interviewed expressed the same belief.

Difficulties in working with the practice -- In order to have a general idea about some of the difficulties the practice presented to the workers, the questionnaire included the following questions: "Have you had a great deal of difficulty, some difficulty or little difficulty in working with chemical fertilizers?" and "Why?"

The analysis of the responses revealed that 100 per cent of the respondents said that they had had little difficulty in working with the practice. For the possible answers to the question "Why?" there were five areas in the questionnaire, besides a space for "other reasons." Table 22 shows the number and percentage of peons whose responses to the question, "Would you tell me why it has not been difficult to work with chemical fertilizers?" referred to each one of five pre-established areas.

TABLE 22

NUMBER AND PERCENTAGE OF PEONS WHOSE REASONS AS TO WHY
THEY HAVE HAD LITTLE DIFFICULTY IN WORKING WITH
CHEMICAL FERTILIZERS FALL IN
FIVE DIFFERENT CATEGORIES

Reasons	No peons	% peons
Had had previous experience.....	33	100
Little or no change in use of instruments.....	26	79
Belief in the advisability of the practice.....	23	70
Little or no change in method of application....	18	55
Little or no change in materials.....	15	45

Table 22 shows, among other things, that a little over two thirds of the peons gave reasons related to the belief that the practice is advisable. This seems to corroborate, even though to a lesser degree, what was said in relation to Table 21. The circumstance that two out of every three of the respondents "believes"

.....

.....

.....

...

.....

in the practice seems to be a factor related to the non-resistance of the peons to the practice. Other factors related to this non-resistance might be that out of the respondents who said it had not been difficult for them to work with chemical fertilizers, all of them gave reasons related to previous experience, and more than half gave reasons related to little or no change in the use of instruments and to little or no change in the manner of working with the practice.

Twenty-five of the 33 peons interviewed gave "other reasons" besides those catalogued in the five areas. Of those 25, 84 per cent gave as the main reasons that working with chemical fertilizers is a very easy job which does not require special skill or knowledge.

Hypothetical application of the practice -- The fact that the totality of peons had worked with the practice and that a majority believed in the advisability of the practice, explains, in part, why there was no resistance of peons toward the practice, according to the administrator and the overseer. But peons had worked with the practice mostly on land not owned by themselves. In order to get more information as to why the peons presented no resistance to the practice, they were asked the following hypothetical question: "If you were the owner of a coffee farm, would you or would you not apply chemical fertilizers on that farm?"

The analysis of the answers to that question reveal that only one of the respondents, who has worked with the practice, said that he would not apply it on a farm of his own. His comment was: "I would prefer to use organic fertilizers (compost), which I consider the best fertilizers for the plant."

Most of the reasons given by those who said they would apply the practice support, in one way or another, the belief that chemical fertilizers are good for the coffee tree. This is also the case of the four foremen who said they would apply the practice on a farm of their own.

Sociological Implications

This section is devoted to studying the meaning of the findings in relation to the social system theoretical model. In other words, this section intends to be a sociological interpretation of the findings, if it is accepted that "it is the purpose of interpretation to search for the broader meaning of these answers by linking them to other available knowledge."⁶

Some Findings in Relation to the Social System Theoretical Model

Some evidences have been presented which show that there has been a change in the general orientation of the hacienda. New, specific goals were formulated by the new patron: to make the farm produce at its maximum. The new goals called for the application of new means or facilities. Evidence has been presented which shows

6. Jahoda et al, op. cit., p. 252.

that the two more important means applied by the hacienda social system to fulfill the new goals have been the elimination of the colono system and modifications in coffee technology. According to the originator of the new orientation of the hacienda social system, these two means are related, since the elimination of the colono system was a requisite for carrying out modifications in coffee technology. Other means, contained within those two already mentioned, were applied by the social system.

The application of new means has had some consequences on the system of status-roles of the hacienda. In other words, this system has been fundamentally modified. Evidence has been presented which shows that four status-roles were eliminated, of which the colono was the most important in terms of number and of the impact on the economic and social life of the hacienda. The elimination of the colono status-role is closely related to modifications in population composition and in land tenure, that is, in two important means utilized by the social system to fulfill its goals. Not only the elimination of status-roles, but also the creation of some new ones have been responsible for the modification of the status-role structure of the social system. This modification has been, in turn, related to norms and sanctions. The way of working with coffee has been modified. Some of the rewards which the hacienda used to grant to some of its members have been withheld or modified: use of farm land, the right to raise domestic animals, and, of course, the right to cultivate a colonia, with all its privileges and obligations.

Concomitant with the change in status-roles there has been a change in the lines of authority of the system. The disappearance of some status-roles and the emergence of new ones would be evidence enough on which to base those changes in the power structure. But there have also been changes in the ways in which authority has been exercised by the occupants of some positions, i.e., the patron, the administrator and the overseer. This has been reflected to some extent in the customary way of making decisions.

Changes in the status-roles and in the lines of authority on the hacienda are closely related to modifications in the channels of communication. In fact, a quick look at Figures 4 and 5 will show appreciable difference in the ways information, decisions and directions are supposed to pass, for example, from the patron to the peons.

Beliefs and sentiments, which have been shown to be rooted mainly in customs and traditions, have been present to a greater or lesser degree in all these changes which have been summarized. Of special importance is the role played by these beliefs and sentiments in favor of the maintenance of the status quo, mainly in relation to the introduction of new agricultural practices. This may be considered as one of the mechanisms utilized by the system for the protection of its identity, that is, for its boundary maintenance. As has been shown, beliefs and sentiments of the peons, among other

workers, were against some new agricultural practices. And this peon group constituted four fifths of the total population of the hacienda. This does not mean that the system was isolated from the "outside world." Some links between the hacienda and other social systems have been discussed. In agricultural matters, the hacienda has been linked with other systems such as the Inter-American Institute of Agricultural Sciences, with the Costa Rican Ministry of Agriculture and even with some American universities. In social matters, the links between the hacienda social system and other systems in Turrialba and elsewhere have been maintained through church, school, health, economic and recreational activities, as well as through informal visiting. The systemic linkage and boundary maintenance processes of the hacienda social system seem to be in equilibrium. Few families now live in Turrialba, unlike the case of El Cerrito, in which the linkage with Pueblo has been so strong that "more people from El Cerrito now live in Pueblo than have remained in El Cerrito."⁷

The foregoing is only a simplified description of the way in which changes in some elements of the hacienda social system have affected other elements. The functional interdependence of those elements is more complex than has been shown in this last

7. Charles P. Loomis, "Systemic Linkage of El Cerrito," Rural Sociology, XXIV (1959), 54-57.

summarized description. In other words, only some effects of the changes in one element on only some of the other elements have been pointed out. For the purposes of this study, the changes and interrelationships presented seem to be enough.

In summary, this study, in accordance with the foregoing interpretation, has intended to prove that:

1. The social system model is a useful tool for the study of change.
2. Functional theory, which is the backbone of the social system theoretical model, is a valid theory.
3. Theory is a guide to research. Conversely, research may serve to reinforce existing theory. In the present case, this research has supposedly reinforced existing theory in relation to social systems and functionalism.

CHAPTER VII

SUMMARY AND CONCLUSIONS

Introduction

This is a sociological study of change, as it relates to some aspects of agriculture and rural life. Its central problem has been the study of some changes in an hacienda social system, brought about by the rational introduction of technology; conversely, the study of some of the influences of the existing social structure and culture of this coffee hacienda on the rational introduction of technology. Some emphasis has been put on investigating the introduction of new agricultural practices in coffee, which is considered as an aspect of agricultural technology.

Methods and Procedures

The study was conducted in Aquiares, a village of the Central District of Turrialba Canton, Costa Rica, from September, 1953, to December, 1958.

The theoretical model of the social system guided the investigation from its beginnings. The basic assumption of the study was that a change in the ends or goals of an hacienda produces changes in other elements of the social system.

Two kinds of information were gathered: in relation to Aquiares in general and in relation to agricultural practices in coffee. The former was gathered by making use of an agricultural and demographic census carried out in 1948, by the design and application of a schedule for demographic data in 1955, and by the design and application of another schedule for demographic data in 1958. Systematic information on agricultural practices in coffee was gathered by means of intensive interviewing of the administrative and the peon groups. The interviewing of the administrative group was done by means of a guide. The interviewing of the peon group was done by means of a schedule. Not all peons were interviewed, but rather a one-fourth sample of peon family heads who had lived on the hacienda for ten or more years.

General information about Aquiares and information related to agricultural practices in coffee were also gathered by means of informal interviews and other informal techniques, such as occasional conversations, informal visiting and participation in community events. A written record of most of the informal interviews and of relevant aspects of the already mentioned informal gatherings was kept by the investigator. The use of documents from several organizations of the hacienda was another technique used in this study.

General Findings

Goals and Means

The hacienda, a social system organized mainly to produce coffee, changed its general orientation after 1953. More specifically, the new goal made explicit by the new patron was to make the farm produce at its maximum. In order to fulfill this goal, the patron has rationally applied clearly defined means. Among the means made explicit by him, the two most important are: the elimination of the colono system and modifications in coffee technology.

Effects of the Elimination of the Colono System

The elimination of the colono system, which was a consequence of the change in goals of the hacienda, has had some consequences in different segments of Aquiares. The most important effects of the elimination of the colono system are, in summary, the following:

Land Tenure - Two thirds of the 520 manzanas planted in coffee before the change in ownership of the hacienda were cultivated by colonos. The totality of the present 560 manzanas in coffee are now cultivated by peons under the direct supervision of the hacienda.

Population Composition - There has not been fundamental change in the size of the population but a considerable change in its composition. In 1948, colono families made up a little over

one third of the population and the peon families constituted exactly the same proportion as the colono families. In 1958 there were no colono families and the peon families constituted a little over two thirds of the total population. No fundamental changes occurred in the proportion of the specialized workers.

Spatial mobility for the hacienda as a whole has been relatively small: 78 per cent of the families in 1958 have lived on the hacienda for ten years or more. For the specific occupational groups, with the exception of the colono group, spatial mobility has been relatively small.

The elimination of the colono system seems to have fundamentally affected only the colono group in terms of horizontal mobility: 62 per cent of the colono families of 1948 were not in Aquiares in 1958. The colono group was also affected in terms of occupational status. Of the 32 families that remained in Aquiares, 91 per cent became peons.

Average age and place of birth of family heads for the hacienda as a whole had not apparently been affected by the elimination of the colonias.

General Structure of the Hacienda - The utilization of some means by the hacienda social system in the fulfillment of the new goal of maximum possible production has considerably affected the structure of the agricultural system and the authority pattern of the hacienda.

Four positions were eliminated: encargado of boyeros, boyero, encargado of colonias and colono. Of these, the most important in terms of number and of the economic and social impact on the hacienda as a whole were the colonos. Two new positions were created: encargado of sections and encargado of practices. Besides, two positions increased considerably in number of members: the positions of peon and chauffeur.

The elimination of positions as well as the creation of new ones has altered the lines of authority and the channels of communication throughout the hacienda. Besides, there have been some changes in the way authority is being exercised, especially in the administrative group.

The general structure of the hacienda has not been basically affected, apart from the structure of the agricultural system. There are now the same positions as before: doctor, priest, school principal, school teacher, police agent, head of the health dispensary and some others. In most cases other persons occupy those positions, but the positions as such have not changed.

Services - In general, minimum changes have occurred in services and facilities. Changes in relation to housing and buildings have been small. Some improvements in road facilities have occurred. Religious, educational and health services have changed little.

Modifications in Coffee Technology

Modifications in coffee technology refer, specifically, to agricultural practices in coffee. Four main aspects were investigated: agricultural practices in coffee being carried out in 1958, new agricultural practices in coffee in 1958, modified agricultural practices in coffee in 1958 and opinions about some practices.

Practices Being Carried Out in 1958 - Of a list of 33 practices, 18 practices were being carried out in Aquiares, according to the opinion of the administrator, the overseer and the peons. Those 18 practices were mentioned by both the administrator and the overseer and by more than 72 per cent of the peons as being carried out on the hacienda.

New Agricultural Practices in 1958 - Of the 18 practices considered as being carried out on the hacienda, six were new, according to the administrator, the overseer and the peons. These six practices were mentioned as new by both the administrator and the overseer: nursery under full sun, use of weed killers, total pruning by rows, planting at an angle, bending over new plants and removal of shade. Besides, the peons who had worked with the six practices, had started working with them after 1953.

Modified Agricultural Practices in 1958 - There seemed not to be much modification of old practices. The only practice in which there was agreement among the informants as to their being modified was the use of chemical fertilizers.

Production

The two more important means utilized by the farm in the attainment of the goal of getting the maximum possible production of coffee have been the elimination of the colono system and modifications in coffee technology. Those two principal means, with their ramifications, may have had some influence on production. The findings presented show, in general, that the hacienda is now producing more coffee than before: 17.53 fanegas per manzana now, as compared with 12.0 fanegas per manzana before the change in ownership. The minimum harvest on the hacienda after 1953 has been of 6,100 fanegas as compared with the minimum of 2,917 fanegas under previous ownership. The available data are not sufficient to conclude that the goal has been fulfilled, for the following reasons: first, because a more systematic investigation which takes into account other factors, neglected in this study, would be necessary, and second, because the goal has been stated in subjective, ambiguous terms such as "maximum possible" production, making an objective analysis difficult. The findings on production suggest, however, that the hacienda is moving towards the attainment of the goal. It seems that the means applied by the hacienda with the purpose of increasing production are related to that movement.

It seems pertinent to mention that when the peons were asked if they thought production per manzana is more, about equal, or less now than before, only 15 per cent of them said that is more, 27 per cent said that it is about equal and more than half said that production is now less than before.

Cultural Factors in Relation to Technology

The investigation of cultural factors in relation to technology was concentrated on two agricultural practices in coffee: total pruning by rows and use of chemical fertilizers. One of the purposes of this investigation was to find out some factors associated with the acceptance or non-acceptance of agricultural practices. The position workers take in this respect is assumed to be associated with production.

Introduction of Total Pruning by Rows - In relation to this practice, which was considered by both the administrator and the overseer as the most difficult to carry out because of resistance presented by the peons, it was found that:

Only 33 per cent of the peons had worked with it.

There was an average of two years since peons who had worked with the practice had first worked with it.

Peons had had experience with other types of pruning, as demonstrated by the fact that in relation to moderate pruning, pruning by machete and heavy pruning by trees, 97 per cent, 94 per cent and 33 per cent respectively of the peons had worked with those practices. Besides, the average time they had worked with each one of those practices was 21, 22 and 12 years respectively.

The overseer and the foremen had been the principal channels through which total pruning by rows was learned by the peons.

The overseer had a negative attitude toward the practice, according to the administrator's opinion and other information.

When peons were asked if they thought the type of pruning which was more frequently being used on the hacienda (total pruning by rows) were the best for a good production of the plant or if there were a better way to do the pruning, 88 per cent of the respondents said that there is a better way. Main reasons given were related to customs, traditions, beliefs and production. Experience or lack of experience with the practice seems to have had no influence on the answers given.

Working with total pruning by rows, according to the administrator, the overseer and all the peons interviewed, presents no difficulty in terms of skills, materials, equipment or tools, physical effort or danger. The majority of peons, 81 per cent, said that total pruning by rows is easier to work with than any other type of pruning. Experience or lack of experience with the practice seems to have had no influence in the responses.

When peons were asked to tell why they thought most peons do not like total pruning by rows, if it is not difficult to work with, they gave reasons based mainly on sentiments, beliefs, customs, interest in production, skills and knowledge. More specifically, sentiments, beliefs, customs and traditions seem to be at the root of the reasons given by all peons, as may be seen in the "typical" expressions which appear in the text. Experience with the practice seems to have had no influence in the responses.

When the informants were asked: "If you were the owner of a coffee farm, would you or would you not apply total pruning

by rows on your farm?" only one said he would apply the practice. The reasons given for not applying the practice were based on economic interests and on beliefs, sentiments and customs.

Four foremen interviewed said they would not apply the practice on a coffee farm of their own, giving similar reasons to those of the peons.

Use of Chemical Fertilizers - In relation to this practice, which was considered by the administrator as one of the easiest to carry out in relation to the peons, it was found that:

The peons had previous experience with the practice, as shown by the fact that 97 per cent of them had worked with chemical fertilizers before the change in ownership of the hacienda and that 100 per cent had worked with them after the change.

The foremen and the overseer, either separately or combined, were mentioned by a little over three fourths of the peons as the main sources of learning the practice.

When peons were asked if they thought the way the practice of applying chemical fertilizers was being carried out were the best for a good production of the plant or if there were a better way to fertilize the soils, 58 per cent said that the present method was the best. Further analysis revealed that the 42 per cent who said there was a better way were referring not to a different method or type of fertilization but to variations in the application of chemical fertilizers. The totality thought that the use of chemical fertilizers is a good thing for the plant and hence for production.

One hundred per cent of the peons said that they had had little difficulty in working with the practice. When asked why, 100 per cent said that they had had previous experience, 79 per cent that there had been little change in the use of instruments, 70 per cent that they believe the practice is good, 55 per cent that there has been little or no change in the method of application and 45 per cent that there has been little or no change in the materials.

Only one of the informants said he would not apply chemical fertilizers on a coffee farm of his own. Those who said they would apply chemical fertilizers on a farm of their own gave reasons which support, in one way or another, the belief that chemical fertilizers are good for the coffee tree. This is also the case of the foremen interviewed, all of whom said they would apply the practice on a farm of their own.

Sociological Implications

The findings show that a change in goals, in orientation of the farm, have called for the application of new means, which, in turn, have had effects on the structure of status-roles, on the norms, on the power structure, on the sanctions and on the sentiment and belief systems of the hacienda. There has been, in addition, a change in the communication system, in the evaluation patterns, and in the decision-making process of the hacienda. Belief and sentiment systems, especially in relation to agricultural

practices, have served to maintain the hacienda's identity, that is, the social system boundary maintenance. Systemic linkage between the hacienda social system and other social systems, especially the town of Turrialba, has been made mainly in connection with services not available on the hacienda, or which are functioning in an inadequate or incomplete way.

This study, according to the foregoing simplified description, has intended to prove that:

1. The social system model is a useful tool for the study of change.

2. Functional theory, which the backbone of the social system theoretical model, is a valid theory.

3. Theory is a good guide to research. Conversely, that research may serve to reinforce existing theory. In the present case, this research has supposedly reinforced existing theory in relation to social systems and functionalism.

General Conclusions

The most important conclusions of this study, in relation to different areas, may be summarized as follows:

General Orientation:

New means were utilized as a consequence of the change in goals of the hacienda.

Land Use:

The utilization of means in achieving the end of maximum possible production did not appreciably affect the use of land on the hacienda.

Land Tenure:

Means used in achieving the end of maximum possible production have produced a fundamental change in the pattern of land tenure on the hacienda.

Population:

Utilization of means in achieving the end of maximum possible production did not fundamentally affect the size of the hacienda's population but it did affect the population composition considerably.

Means used in the attainment of the goal of maximum possible production have not fundamentally changed the population stability of the hacienda, as measured by the average years lived on it and by the proportion of the population living on the hacienda for ten or more years.

Spatial mobility has been relatively low for the hacienda as a whole and relatively high for the colono occupational group.

Average age and place of birth of family heads for the hacienda as a whole had not apparently been affected by the utilization of means in the attainment of the goal of maximum possible production.

Structure of the Agricultural System:

The structure of the hacienda agricultural system has been fundamentally modified by the application of means in the fulfillment of the new goal.

The modification of the structure of the agricultural system has affected, in part, the authority pattern of the hacienda.

Coffee Technology:

The findings presented in the section "Modifications in Coffee Technology," in Chapter VI, suggest that the degree of acceptance of a practice is a function of values, beliefs, sentiments and customs. This means that when a practice conflicts strongly with basic values, beliefs, sentiments and customs of the probable adopter, the chances of its acceptance by him are minimum.

In the case of total pruning by rows, one important reason for the non-acceptance of the practice by almost the totality of the peons is to be found mainly in the existence of conflicts between the practice and the cultural items already mentioned. Evidence presented shows that the practice was in conflict with some of the basic values, beliefs, sentiments and customs of the peons in relation to agriculture.

In the case of the use of chemical fertilizers, the practice was not met with resistance mainly because it was in accord with the peons' beliefs, sentiments and customs.

It is recognized that there may be other factors related to the acceptance or non-acceptance of total pruning by rows and

the use of chemical fertilizers. How the practice is understood by both the introducer and the probable adopter, how the practice conflicts with work habits, and what economic and social consequences are expected from the practice by the probable adopter are some few of the factors which need further investigation.

From the above, it may be concluded that harmony or conflict of basic values, beliefs, sentiments and customs with a practice determines to a great extent its acceptance or non-acceptance.

SELECTED BIBLIOGRAPHY

SELECTED BIBLIOGRAPHY

Agricultural Extension Service, Iowa State College. "How Farm People Accept New Ideas," Special Report Nº 15. Ames, Iowa, 1955.

Alers-Montalvo, Manuel. "Cultural Change in a Costa Rican Village." Unpublished Ph.D. thesis, Michigan State College, 1953.

_____. "Cultural Change in a Costa Rican Village," Human Organization, XV (1957), 1-7.

_____. Pucará de Huancayo (in preparation).

Arce, Antonio M. "Socio-Economic Differentials Associated with Leadership in Turrialba, Costa Rica." Unpublished M.A. thesis, Michigan State College, 1952.

_____ and Morales, Julio O. Sociología, 7 Casos de Desarrollo de la Comunidad. Turrialba, Costa Rica: Editorial SIC, 1954.

_____ and Morales, Julio O. 20 Casos de Desarrollo de la Comunidad (in preparation).

Chaparro, Alvaro. "Role Expectation and Adoption of New Farm Practices." Unpublished Ph.D. thesis, Pennsylvania State College, 1955.

Dirección General de Estadística y Censos. Anuario Estadístico de Costa Rica 1957. San José, Costa Rica; 1958.

_____. Cálculo de la Población de Costa Rica al 31 de Diciembre de 1958. San José, Costa Rica; 1959.

_____. Boletín Informativo Censos 1950, Noviembre-Diciembre 1950. San José, Costa Rica; 1950.

Fairchild, Harry Pratt (ed.). Dictionary of Sociology. New York: Philosophical Library, 1944.

Goode, William J. and Hatt, Paul K. Methods in Social Research. New York: McGraw Hill, 1952.

- Gross, Neal. "The Differential Characteristics of Acceptors and Non-Acceptors of an Approved Agricultural Technological Practice," *Rural Sociology*, XIV (1949), 148-156.
- Hartley, Eugene L. and Hartley, Ruth E. *Fundamentals of Social Psychology*. New York: Alfred A. Knopf, 1958.
- Jahoda, Marie et al. *Research Methods in Social Relations*. New York: The Dryden Press, 1951.
- Kluckhohn, Clyde and Kelly, William H. "The Concept of Culture," *The Science of Man in the World Crises*. Ralph Linton (ed.). New York: Columbia University Press, 1945.
- Kroeber, A. L. and Parsons, Talcott. "The Concepts of Culture and Social System," *American Sociological Review*, XXIII (1958) 582-83.
- La Piere, Richard T. and Farnsworth, Paul R. *Social Psychology*. New York: McGraw Hill, 1949.
- Lee, Alfred McClung. "Social Determinants of Public Opinion," *Public Opinion and Propaganda*, Daniel Katz et al (eds.), New York: The Dryden Press, 1954.
- Lindesmith, Alfred R. and Strauss, Anselm L. *Social Psychology*. New York: The Dryden Press, 1956.
- Loomis, Charles P. *Sociology: The Persistence of Social Systems*. (In preparation).
- _____. "Systemic Linkage of El Cerrito," *Rural Sociology*, XXIV (1959), 54-57.
- _____. et al. *Turrialba: Social Systems and the Introduction of Change*. Glencoe, Illinois: The Free Press, 1953.
- _____ and Beegle, Allan J. *Rural Social Systems*. New York: Prentice Hall, 1950.
- _____ and Beegle, Allan J. *Rural Sociology: The Strategy of Change*. New York: Prentice Hall, 1957.
- Merton, Robert K. *Social Theory and Social Structure*. Glencoe, Illinois: The Free Press, 1951.

- Morrison, Paul C. "Population Pattern, Central District of Turrialba Canton, Costa Rica," Papers of the Michigan Academy of Science, Arts and Letters, XXXVII (1951), 219-25.
- _____. "Land Utilization, Cartago to Turrialba, Costa Rica," Papers of the Michigan Academy of Science, Arts and Letters, XL (1955), 205-16.
- _____. "Notes on the Regional Geography of Costa Rica," Journal of Geography, Tokyo Geographical Society, LXV (1956), 80-85.
- _____ and Norris, Thomas L. "Coffee Production Processing on a Large Costa Rican Finca," Papers of the Michigan Academy of Science, Arts and Letters, XXXIX (1954), 309-22.
- Norris, Thomas L. "Decision-Making in Relation to Property in a Costa Rican Coffee Estate." Unpublished Ph.D. thesis, Michigan State College, 1952.
- _____. "A Colono System and Its Relation to Seasonal Labor Problems on a Costa Rican Hacienda," Rural Sociology, XVIII (1953), 376-78.
- _____. "Decision-Making Activity Sequences in a Hacienda Community," Human Organization, XII (1953), 26-30.
- _____ and Paul C. Morrison. "Some Aspects of Life on a Large Costa Rican Finca," Papers of the Michigan Academy of Science, Arts and Letters, XXXVIII (1952), 331-45.
- Painter, Norman W. "The Delineation, Demographic Comparison and Population Stability of Selected Types of Locality Groupings in the Central District of Turrialba Canton, Costa Rica: 1951." Unpublished Ph.D. thesis, Michigan State University, 1956.
- _____ and Morrison, Paul C. "Rural Population Stability, Central District of Turrialba Canton, Costa Rica," Rural Sociology, XVII (1952), 356-66.
- Parsons, Talcott. The Social System. Glencoe, Illinois: The Free Press, 1951.
- Pérez, Víctor Ml. "Prácticas Culturales del Cafetal." Mimeographed paper, Inter-American Institute of Agricultural Sciences, Turrialba, Costa Rica, no date.

- Ryan, Brice. "A Study of Technological Diffusion," Rural Sociology, XIII (1948), 273-85.
- _____ and Gross, Neal C. "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," Rural Sociology, VIII (1943), 15-24.
- Sower, Christopher. "The Ceylon Village Development Program: A Sociological Analysis." Mimeographed, Michigan State University, 1957.
- Spicer, Edward H. Human Problems in Technological Change. New York: Russell Sage Foundation, 1952.
- Trejos, Juan. Geografía Ilustrada de Costa Rica. San José, Costa Rica: Trejos Hermanos, 1941.
- Weber, Max. The Theory of Social and Economic Organization. New York: Oxford University Press, 1947.
- Wilkening, Eugene A. "A Sociopsychological Approach to the Study of the Acceptance of Innovations in Farming," Rural Sociology, XV (1950), 352-64.

APPENDIX I

APPENDIX I

GLOSSARY

Following is a list, in alphabetical order, of Spanish terms used more than once throughout the thesis.

<u>Spanish</u>	<u>English</u>
Agobio de plantas viejas	Bending over of old coffee trees.
Boyero	Ox driver
Beneficio	A plant where coffee berries are processed for shipment
Cafetal	Grove of coffee trees
Casa grande	The large house of the owner of the hacienda
Colon	Basic unit of Costa Rican currency, about 15 cents in U.S. money
Colones	Plural of <u>colon</u>
Colonia	A piece of land belonging to a large estate which is occupied and cultivated by a tenant
Colono	A share-cropping tenant who cultivates and lives on a part of a large hacienda
Carreta	Ox cart
"Chasparria"	Term used by Costa Rican laborers to name a disease in coffee in which the coffee beans get dry. Scientific name: <u>cercospora coffeicola</u> .
Dulce	Brown sugar cake

Spanish

English

El Centro	The center of the hacienda, in which the most important buildings such as the school, the church, the <u>beneficio</u> and the central offices are located.
Encargado	Foreman
Encargado de boyeros	Foreman of ox drivers
Encargado de colonias	Foreman of <u>colonias</u>
Encargado de practicas	Foreman of agricultural practices
Fanega	A measure equal to approximately 11.35 bushels of unprocessed coffee berries
Finca	A large coffee farm or estate
Galeron	Large open shed
Jornalero	Peon, a laborer who works for a daily wage.
Manzana	A measure of land, 1.727 acres
Palea	Shovelling of weeds
Patron	An estate owner
Poda	Pruning
Poda moderada	Moderate pruning
Poda profunda por matas	Heavy pruning by trees
Poda total por calles	Total pruning by rows, also called stumping. In this type of pruning all branches of all coffee trees in every sixth row are cut.

Spanish

English

Raspa y aporca

Light cultivation and mounding
(with shovel)

Trapiche

A small sugar mill producing
brown sugar cakes

Vara

A measure, approximately
33 inches

APPENDIX II

Department of the Interior, Bureau of Land Management, Alaska Division, Fairbanks, Alaska

SOCIOLOGIA
Información Básica

Características Demográficas

Características personales		Educación				Ocupación	Lugar de nacimiento	Uso de zapatos
		Ultimo grado cursado	¿todavía en la escuela?	Sabe leer y escribir	Oticio			
		Religion	Estado civil	Edad	Sexo			
Nombre	Parentesco con el Jefe de la familia							
(1)	(2)							
Jefe								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Miembros Ausentes

1							
2							
3							
4							

POSIBLES CONSECUENCIAS SOCIO-ECONOMICAS DE LA
INTRODUCCION RACIONAL DE TECNOLOGIA EN UNA HACIENDA DE CAFE

Tech:

Lugar:

Miembros arcuados					
1					
2					
3					
4					

II. MOVILIDAD

1. Cuánto tiempo hace que vive usted aquí? _____
2. Dónde vivía antes? _____
3. Dónde trabaja actualmente? _____
4. Cuánto hace que trabaja en el lugar que mencionó antes? _____
5. Dónde trabajaba antes? _____

III. SERVICIOS

1. Tienen excusado? Sí _____ No _____
2. Si lo tienen, de qué clase es? a) Inodoro _____ b) Excusado de hueco _____
c) Excusado sobre río o acequia _____
3. De dónde obtienen el agua para beber y cocinar? a) Cañería _____
b) río _____ c) quebrada _____ d) acequia _____ e) lluvia _____ f) otros _____
4. Tienen corriente eléctrica? Sí _____ No _____

IV. ORGANIZACIONES

1. Cuáles organizaciones o clubes sabe usted que funcionan en este lugar?

2. A qué organizaciones o clubes pertenece usted?

3. A qué organizaciones o clubes quisiera usted pertenecer?

Instituto Interamericano de Ciencias Agrícolas
Departamento de Economía y Bienestar Rural
Turrialba, Costa Rica

INTRODUCCION RACIONAL DE TECNOLOGIA EN UNA HACIENDA DE CAFE
Y SUS CONSECUENCIAS SOCIO-ECONOMICAS

Antonio M. Arce

Instrucciones para llenar la guía para entrevistar al
"Grupo Administrativo"

A. Introducción

Una breve introducción relacionada con la compra de la hacienda, con el objetivo fundamental de lograr la mayor producción posible y con algunos de los medios para alcanzar esos objetivos (mencionados por miembros del grupo administrativo) se hará con el objeto de crear un ambiente favorable a la entrevista. Preparar mental y emocionalmente al entrevistado para que conteste las preguntas del interrogatorio es uno de los objetivos de esta introducción.

B. Instrucciones para llenar los cuadros

1. Con respecto al Cuadro N° 1, llenar de una vez las tres primeras columnas para cada una de las 33 prácticas. Las preguntas a hacer para llenar esas columnas son las siguientes:

- a. Columna 1: Se realiza esta práctica agrícola en esta finca?
- b. Columna 2: Considera usted que esta práctica que se realiza en esta finca es nueva?

Por práctica nueva queremos decir una práctica que no se hubiera realizado en el tiempo de Mr. Lindo. Es decir, una que los nuevos dueños la introdujeron por primera vez en la hacienda.

- c. Columna 3: Se hace esta práctica en forma diferente a como se hacía en el tiempo de Mr. Lindo? Por supuesto que esta pregunta no se hará para aquellas prácticas que el interrogado considera nuevas.

2. Cuadro N° 2

Inmediatamente después que las prácticas han sido marcadas (✓) en la columna 3 del Cuadro N° 1 porque el entrevistado considera que se realizan en forma diferente a como se hacía en tiempo de Mr. Lindo, pasar al Cuadro N° 2 y preguntar para cada una de las prácticas marcadas:

En qué consiste la diferencia entre como se realiza ahora esa práctica y como se realizaba en tiempos de Mr. Lindo? Anotar en el Cuadro N° 2 el número de la práctica (de acuerdo con la numeración de prácticas en el Cuadro N° 1) y la respuesta correspondiente en el espacio provisto para el caso. Las diferencias en la realización de la práctica pueden referirse a:

- a. Forma o mecánica de la práctica
- b. Uso de nuevos instrumentos
- c. Mayor cantidad y/o variedad de materiales

- d. Mayor uso de material humano
- e. Más constancia en la aplicación (sistematización)
- f. Otros

Las posibilidades anteriores servirán para que el entrevistador informe mejor al entrevistado, caso de que éste encuentre la pregunta original muy abstracta o muy general.

3. Cuadro N° 1, Columna 4

Volver al Cuadro N° 1 y con respecto a la columna 4, preguntar:

De las prácticas agrícolas que son nuevas o que se han variado en esta finca (columnas 2 y 3) y en relación con los trabajadores, cuáles dos prácticas se les ha dificultado más realizar?

4. Cuadro N° 3

Inmediatamente después que la primera de las dos prácticas ha sido marcada (✓) en la columna 4 del cuadro N° 1 porque el entrevistado considera que es una de las que más se les ha dificultado realizar, pasar al Cuadro N° 3 y preguntar:

En qué han consistido esas dificultades con los trabajadores? Anótese en el Cuadro N° 3 el número de la práctica y la respuesta correspondiente en el espacio provisto para el caso.

Inmediatamente después hágase la pregunta N° 1 de la guía: Qué otras dificultades ha presentado la práctica?

Con la segunda de las prácticas que el entrevistado considera que es una de las que más se les ha dificultado realizar, hágase la misma pregunta que para la primera de las prácticas y anótese la respuesta en el espacio provisto para el caso en el Cuadro N° 3. Inmediatamente después hágase la pregunta N° 2 de la guía: Qué otras dificultades ha presentado la práctica?

5. Cuadro N° 1, Columna 5

Volver al Cuadro N° 1 y con respecto a la columna 5, preguntar:

De las prácticas agrícolas que son nuevas o que se han variado en esta finca (columnas 2 y 3) y en relación con los trabajadores, cuáles dos prácticas considera usted que se le han dificultado menos realizar?

6. Cuadro N° 4

Inmediatamente después que la primera de las dos prácticas ha sido marcada (✓) en la columna 5 del Cuadro N° 1 porque el entrevistado considera que es una de las que menos se le ha dificultado realizar, pasar al Cuadro N° 4 y preguntar:

A qué cree usted que se debe que haya habido poca o ninguna dificultad con los trabajadores con respecto a esa práctica? Anotar en el Cuadro N° 4 el número de la práctica y la respuesta correspondiente. Posibles causas se anotan en ese espacio.

Sígase el mismo procedimiento anterior con respecto a la segunda de las prácticas que el entrevistado considera que le ha costado menos realizar.

Instituto Interamericano de Ciencias Agrícolas
Departamento de Economía y Bienestar Rural
Turrialba, Costa Rica

INTRODUCCION RACIONAL DE TECNOLOGIA EN UNA HACIENDA DE CAFE
Y SUS CONSECUENCIAS SOCIO-ECONOMICAS

Antonio M. Arce

Gufa para Entrevistar al "Grupo Administrativo"

Fecha _____

Nombre del Entrevistado _____

- I. Medios empleados por la hacienda para alcanzar sus objetivos.
Facilidades y tropiezos en la aplicación de esos medios.-

A. Prácticas Agrícolas

Después de la introducción general a la entrevista (véanse las "Instrucciones para Llenar la Gufa"), recójase la información sobre prácticas agrícolas en café (Cuadro N° 1). Conviene, antes de recoger esa información, decirle al entrevistado más o menos lo siguiente:

" En relación con esas prácticas agrícolas, tengo aquí una lista de las que parecen más importantes en el cultivo del café. Me gustaría que usted me diera alguna información sobre cada una de esas prácticas. "

Prosigase la entrevista de acuerdo con las "Instrucciones para Llenar la Gufa".

./.

Cuadro N° 1. INFORMACION SOBRE PRACTICAS AGRICOLAS EN CAFE

Prácticas Agrícolas en Café	Realizan la práctica? (1)	Es nueva? (2)	La rea- lizan diferen- te? (3)	Dificul- tades (2 prác- ticas) (4)	Poca o ni- guna di- ficultad (2 prácti- cas) (5)
1. Selección de semillas					
2. Introducción nuevas variedades					
3. Almacigo a la sombra					
4. Almacigo al sol					
5. Trasplante con pilón					
6. Uso sacos plásticos (pilón)					
7. Trasplante en escoba					
8. Hoyos hechos con anticipación					
9. Hoyos hechos al trasplantar					
10. Siembra en contorno					
11. Construcción zanjas retención					
12. Raspa y aporca					
13. Raspa regada					
14. Construcción gavetas o cajuelas					
15. No usar pala alrededor del tronco					
16. Abonos químicos					
17. Abonos orgánicos					
18. Uso insecticidas en almacigo					
19. Uso insecticidas en la mata					
20. Uso fungicidas en almacigo					
21. Uso fungicidas en la mata					
22. Uso de herbicidas					
23. Poda moderada					
24. Poda profunda por calles					
25. Poda profunda por matas					
26. Siembra del arbolito inclinado					
27. Agobio de plantas nuevas					
28. Agobio de cafetos viejos					
29. Libre crecimiento					
30. Poda con cuchillo					
31. Poda con serrucho					
32. Supresión de sombra					
33. Poda de sombra					

Cuadro N° 2. DIFERENCIAS O MODIFICACIONES EN CIERTAS PRACTICAS

Nota: La información se obtendrá de sólo aquellas prácticas marcadas (✓) en la columna 3 del cuadro N° 1. Se sugiere hacer la pregunta "En qué consiste la diferencia entre como se realiza ahora esa práctica y como se realizaba en tiempos de Mr. Lindo?" inmediatamente después de que se ha marcado (✓) la práctica en la columna 3 del cuadro N° 1. Para mayores detalles, véanse "Instrucciones para Llenar la Gufa".

Práctica N°	Diferencias en la realización de la práctica

Práctica N°	Diferencias en la realización de la práctica

Práctica N°	Diferencia en la realización de la práctica

Cuadro N° 3. NATURALEZA DE LAS DIFICULTADES CON LOS TRABAJADORES
PARA REALIZAR DOS PRACTICAS AGRICOLAS

Nota: Se sugiere hacer la pregunta "En qué han consistido esas dificultades con los trabajadores?" inmediatamente después que se ha marcado (✓) cada una de las dos prácticas en la columna 4 del Cuadro N° 1. Véanse "Instrucciones para usar la Gufa".

Práctica N°	Naturaleza de las dificultades
	a. Capacidad o habilidad _____

	b. Espíritu de cooperación y responsabilidad _____

	c. Actitud con respecto a equipo y materiales _____

	d. Creencias o costumbres _____

	e. Otros _____

Práctica N°	Naturaleza de las dificultades
	a. Capacidad o habilidad _____

	b. Espíritu de cooperación y responsabilidad _____

	c. Actitud con respecto a equipo y materiales _____

	d. Creencias o costumbres _____

	e. Otros _____

1. Qué otras dificultades presenta la práctica _____
(primera mencionada en columna 4, Cuadro 1°) en cuanto a:

a. Costo _____

b. Materiales y equipo _____

c. Frecuencia con que se realiza _____

d. Resultados a muy largo plazo _____

e. Otras dificultades _____

2. Qué otras dificultades presenta la práctica _____
(segunda mencionada en columna 4, Cuadro 1°) en cuanto a:

a. Costo _____

b. Materiales y equipo _____

c. Frecuencia con que se realiza _____

d. Resultados a muy largo plazo _____

e. Otras dificultades _____

Cuadro N° 4. RAZONES POR LAS CUALES HA HABIDO Poca O NINGUNA DIFICULTAD CON LOS TRABAJADORES EN DOS PRACTICAS AGRICOLAS.

Nota: Se sugiere hacer la pregunta "¿Qué cree usted que se debe que haya habido poca o ninguna dificultad con los trabajadores con respecto a esa práctica?" inmediatamente después que se ha marcado (✓) cada una de las dos prácticas en la columna 5 del Cuadro N° 1. Véanse "Instrucciones para llenar la Guía".

Práctica N°	Razones de la poca o ninguna dificultad
	a. Experiencia previa _____

	b. Poco cambio en la forma (procesos) _____

	c. Poca o ninguna variación en aparatos y materiales _____

	d. Acorde con creencias y costumbres _____

	e. Otras _____

/

Práctica N°	Razones de la poca o ninguna dificultad
	a. Experiencia previa _____

	b. Poco cambio en la forma (procesos) _____

	c. Poca o ninguna variación en aparatos y materiales _____

	d. Acorde con creencias y costumbres _____

	e. Otras _____

B. Otros Medios

1. En términos de producción, qué opinión tiene usted del sistema de Colonias?

2. Aparte de prácticas agrícolas, querría usted mencionarme, en forma general, las principales dificultades que impiden una mayor producción?

3. Aparte de prácticas agrícolas, querría usted decirme, en forma general, qué cosas han ayudado a ir mejorando la producción?

4. Por qué se ha casi eliminado el uso de carreta en la finca?

5. Cuántos kilómetros de nuevos caminos se han construido desde que los Figueres son dueños de la finca?

6. ¿Qué otras innovaciones se han introducido en la finca desde que pertenece a los Figueres?

7. ¿Querría usted contarme algo acerca de los experimentos que se están llevando a cabo en esta finca? (Insistir especialmente sobre el número de los experimentos, naturaleza de los mismos y tiempo que hace que los realizan).

8. Cree usted que hay diferencias de peso entre como ustedes manejan esta finca y como se manejaba en el tiempo de Mr. Lindo? Explique.

Instituto Interamericano de Ciencias Agrícolas
Departamento de Economía y Bienestar Rural
Turrialba, Costa Rica

INTRODUCCION RACIONAL DE TECNOLOGIA EN UNA HACIENDA DE CAFE
Y SUS CONSECUENCIAS SOCIO-ECONOMICAS

Antonio M. Arce

Cuestionario para Jornaleros y Encargados

Enumerador _____ Fecha _____

Nombre del Entrevistado _____

MEDIOS EMPLEADOS POR LA HACIENDA PARA ALCANZAR SUS OBJETIVOS.
FACILIDADES Y TROPIEZOS EN LA APLICACION DE ESOS MEDIOS.

I. Prácticas Agrícolas

A. Información General sobre Prácticas Agrícolas.

Introducción a la entrevista y al Cuadro N° 1 de la página siguiente:

Como sé que usted tiene experiencia en cuestiones agrícolas y especialmente en el cultivo del café, quisiera que me ayude con ciertos datos relacionados con ese cultivo. La información que usted me dé en nada puede perjudicarlo. Por otra parte, los patronos saben que estoy haciendo este trabajo y están de acuerdo en que lo haga.

Tengo aquí una lista de las prácticas que parecen más importantes en el cultivo del café. Me gustaría que usted me diera alguna información sobre cada una de ellas.

Pasar al Cuadro N° 1 en la página siguiente. Para las columnas 1, 2, 3 y 4 hacer las siguientes preguntas respectivamente:

1. Cuáles de estas prácticas sabe usted que se realizan en esta finca?
2. Ha trabajado usted alguna vez en esta práctica?
3. Cuánto tiempo hace que trabajó por primera vez en esta práctica?
4. Dónde trabajó por primera vez con esta práctica, en Aquiares o en otra parte?

Pr

1.1

1.2

1.3

1.4

1.5

1.6

1.7

1.8

1.9

1.10

1.11

1.12

1.13

1.14

1.15

1.16

1.17

1.18

1.19

1.20

1.21

1.22

1.23

1.24

1.25

1.26

1.27

1.28

1.29

1.30

1.31

1.32

1.33

1.34

1.35

1.36

1.37

1.38

1.39

1.40

Cuadro N° 1. INFORMACION GENERAL SOBRE PRACTICAS AGRICOLAS EN CAFE

Prácticas Agrícolas en Café	Se realiza la práctica?	Ha trabaja do en la práctica?	Cuánto tiempo hace?	Dónde? Aquiáres?
	(1)	(2)	(3)	(4)
1. Selección de semillas				
2. Introducción nuevas variedades				
3. Almacigo a la sombra				
4. Almacigo al sol				
5. Trasplante con pilón				
6. Uso sacos plásticos (pilón)				
7. Trasplante en escoba				
8. Hoyos hechos con anticipación				
9. Hoyos hechos al trasplantar				
10. Siembra en contorno				
11. Construcción zanjas retención				
12. Raspa y aporca				
13. Raspa regada				
14. Construcción gavetas o cajuelas				
15. No usar pala alrededor del tronco				
16. Abonos químicos				
17. Abonos orgánicos				
18. Uso insecticidas en almacigo				
19. Uso insecticidas en la mata				
20. Uso fungicidas en almacigo				
21. Uso fungicidas en la mata				
22. Uso de herbicidas				
23. Poda moderada				
24. Poda profunda por calles				
25. Poda profunda por matas				
26. Siembra del arbolito inclinado				
27. Agobio de plantas nuevas				
28. Agobio de cafetos viejos				
29. Libre crecimiento				
30. Poda con cuchillo				
31. Poda con serrucho				
32. Supresión de sombra				
33. Poda de sombra				

- B. Información específica sobre la práctica que según el "grupo administrativo" ha costado más realizar por causa de los trabajadores.

-
1. Si ha trabajado en la práctica antes de que los nuevos dueños compraran la finca: Cómo o de quién aprendió la práctica?

2. Ha trabajado usted en esa práctica sólo después de que los nuevos dueños compraron la finca? Sí ____ No ____

Si es SI,

- a. Cómo o de quién aprendió la práctica?

3. Si ha trabajado en la práctica antes y después de que los nuevos dueños compraran la finca, ha cambiado usted en algo la manera de hacer la práctica? Sí ____ No ____

Si es SI,

- a. En qué ha cambiado?

4. Casi todos están de acuerdo en que el propósito de esta práctica es lograr que la planta produzca más.

Cree usted que como se está haciendo actualmente la práctica es la mejor manera de hacerla para lograr mejor producción en la planta ____
o que hay alguna otra manera mejor de hacerla? _____

Comentarios: _____

5. Hay ciertas prácticas con las cuales es más difícil trabajar que con otras.

Querría usted decirme cuáles son las principales dificultades que usted ha encontrado al trabajar con esta práctica?

- a. Que requiere gran habilidad _____

- b. Que hay que usar equipo complicado _____

- c. Que hay que usar aparatos que nunca había usado antes _____

- d. Que requiere gran esfuerzo físico _____

- e. Que hay que usar materiales peligrosos _____

- f. Otras _____

- g. Ninguna _____

6. Si usted fuera dueño de una finca de café, aplicaría esta práctica en su finca? Sí _____ No _____

Por qué? (ahondar) _____

- C. Información específica sobre la práctica agrícola que, en relación con los trabajadores, el "grupo administrativo" considera que se ha dificultado no nos realizar.

1. Si ha trabajado en la práctica antes de que los nuevos dueños compraran la finca: Cómo o de quién aprendió la práctica?

2. Ha trabajado usted en esa práctica sólo después de que los nuevos dueños compraran la finca? Sí _____ No _____

Si es SI,

- a. Cómo o de quién aprendió la práctica?

3. Si ha trabajado en la práctica antes y después de que los nuevos dueños compraran la finca, ha cambiado usted en algo la manera de hacer la práctica? Sí _____ No _____

Si es SI,

- a. En qué ha cambiado?

4. Casi todos están de acuerdo en que el propósito de esta práctica es lograr que la planta produzca más.

¿Cree usted que como se está haciendo actualmente la práctica es la mejor manera de hacerla para lograr mejor producción en la planta _____ o que hay alguna otra manera mejor de hacerla? _____

Comentarios: _____

5. Le ha costado a usted mucho _____ o poco _____ trabajar con esta práctica?

Si le ha costado poco, querría usted decirme por qué?

- a. Porque tenía experiencia previa _____

- b. Porque ha habido poco o ningún cambio en el uso de instrumentos

- c. Porque ha habido poco o ningún cambio en el uso de materiales

d. Porque ha habido poco o ningún cambio en la forma de realizarla

e. Creencia en que la práctica da buen resultado _____

f. Otros motivos _____

6. Si usted fuera dueño de una finca de café, aplicaría usted esta práctica en su finca? Sí _____ No _____

Por qué? (ahondar) _____

II. Otros Medios Tendientes a Aumentar la Producción

1. Cree usted que el haber eliminado casi totalmente las carretas de la finca ha sido una buena _____ o una mala _____ idea?

Por qué? _____

2. Cree usted que el haber aumentado el número de camiones y jeeps en el trabajo de la finca ha sido una buena _____ o una mala _____ idea?

Por qué? _____

CAMBIOS SIGNIFICATIVOS

1. Cree usted que la producción de café por manzana ha sido en el tiempo de los nuevos dueños mayor _____, menor _____, o igual _____ que en el tiempo del dueño anterior?

Comentarios: _____

2. Ocupa usted alguna parcela de la finca para hacer sus propias siembras?
 Sí _____ No _____

Si es SI,

a. De qué tamaño es, más o menos? _____

b. De qué está sembrada? _____

3. Recibe o toma usted de la finca algunos productos para su alimentación sin costo alguno? (plátanos, frutas, etc.) Sí _____ No _____

Si es SI,

Cuáles? _____

4. Tiene usted animales domésticos? Sí _____ No _____

Si es SI,

Cuadro N° 2: ANIMALES

Animales	N° de Animales
Gallinas	
Chompipes y patos	
Cerdos	
Cabras	
Caballos y mulas	
Vacas	
Bueyes, toros, terneros	

USE ONLY

~~111111~~ ROOM USE ONLY

~~JUN 7 1961~~

MAR 29 1962

~~DEC 15 1964~~

~~MAR 15 68~~

MAR 15 68

~~JUN 1 1969~~ Rpd 75

JUN 18 1969 Rpd 72

~~JUN 29 1969~~ Rpd 72

MICHIGAN STATE UNIVERSITY LIBRARIES



3 1293 03082 3383