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ANNEX 5.7

EXTENSION OF HEALTH SERVICES TO FINCA WORKERS

GUATEMALA HEALTH SECTOR ASSESSMENT

November 1977

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Annex 5.7

EXTENSION OF HEALTH SERVICES TO FINCA WORKERS

NATURE OF THE PROBLEM

POPULATION OF CONCERN

The size of the population employed as laborers on large farms (fincas) in Guatemala is estimated to be about 500,000. These workers can be classified as full-time employees (100,000) and part-time employees (400,000). The part-time employees either migrate to an area (cuadrillas), or live permanently in the area (voluntarios), and work during the time of the crop planting or harvest. The total number of migrant workers is difficult to estimate because some workers migrate from one job to another and are thus subject to double-counting. The total population that is dependent on farm workers for their living is estimated to be about 2,000,000.[1] This total farm population represents about 36 percent of the estimated total population of Guatemala, based on adjusted 1974 census figures. The population size and the fact that 80 percent are migrants serves as a major justification for a specialized study of the health of farm workers and their families.

It is not size alone, however, that supports the study of the health of farm workers as a special health concern. There are two related characteristics that lend support to such a study. The first characteristic relates to the location of workers and their

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[1] This figure represents an average family size of five, with at least 1.2 workers being reported as laborers, either full or part-time, per family. (See Appendix 1).

families in areas that are geographically isolated, and living on property and in homes privately owned by the farm owners. The second characteristic relates to the level of living, including health status and health services. The level of living of the farm workers and their families is below that of most other population groups in the country.[1]

POPULATION LOCATION

The geographic isolation of the population of concern is due to the large size of the fincas. Thirty percent of the total farm area is contained in farms having over 900 hectares[2] and 60 percent of the area is represented by farms of over 45 hectares. Over 50 percent of these large farms are located on the southern coast and another 30 percent are located in the central and northern highlands. The isolated nature of these farms is also related to the fact that almost all are privately owned and thus are not served by public transportation or other public utilities. This isolation results in lack of access to public services and to all types of preventive and curative health services.

The fact that the fincas are almost all privately owned introduces one of the major dimensions of the problem of the health status of finca workers and their families. Almost all access to this population is controlled by private landowners and almost all facilities, such as houses, water supply and latrines, are owned by them. This condition limits, or at least strongly influences,

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1 Another population group sharing a similar low level of living conditions is that living in migration areas in Guatemala City. Many of these urban residents were former laborers on large farms.

2 A hectar is 2.47 acres.

the type of program that can be introduced and maintained to extend health services to this population group. It is the controlled access and ownership of facilities by private landowners that serves as a major justification for a special study of finca workers.

NATURE OF THE HEALTH PROBLEM

Data on the level of health status of the worker population and their families are very sketchy, coming primarily from special studies carried out in specific areas. From the data available, and from observations and discussions carried out during this study, it can be concluded that living conditions are among the worst for any population group in the country. With regard to the migrant population, living conditions are frequently inhumane and are considered to be as bad as any living conditions in the country. These conditions result in a very poor level of health of this population. It has the highest rates of malnutrition in the country, which contributes to a high rate of morbidity and mortality. The poor living conditions and health status are perpetuated by the almost total isolation of this population group from preventive and curative health services. Access and utilization rates are among the lowest of any population group in the country. The fact that living conditions, health status, and access to health services are among the lowest in the country serves to justify the specific focus on this population group.

Living Conditions

The environment in which finca workers and their families live is a direct cause of much illness and hardship. Housing is traditionally provided by the finca owner, but is usually of very poor quality. Most of the houses consist of a single room with a tin, tile or thatch roof, wood walls and a dirt floor. Ventilation is often inadequate and space is limited for the 5-10 people which compose the typical family. Water is seldom piped to each house, but rather must be carried from a central faucet or well, or drawn from a stream. The water available may vary in quantity and is frequently contaminated.

The relatively poor access to an adequate quantity of pure water, as well as a lack of knowledge about health and disease, contribute to a generally low level of personal hygiene. Hand washing is frequently omitted before eating or preparing food, and bathing is done in streams. There is often no provision for the disposal of garbage or excreta, further contributing to the contamination to which the finca population is exposed.

Health

The precarious conditions under which the finca populations live are reflected in a high level of morbidity and mortality. Crowded housing contributes to the spreading of infectious diseases. Lack of environmental and personal hygiene contributes to the high prevalence of skin infections, dental disease, parasitic infection, and gastrointestinal disease.

Poverty, and the lack of nutritional knowledge, makes provision of an adequate diet next to impossible. Coupled with a high rate of infectious diseases, these conditions lead to a high level of malnutrition which is particularly evident in children.

Poor living conditions[1/] and the high level of disease are, in turn, reflected in a high level of mortality. It has been estimated that one child in five dies in the first year of life (ref. INCAP). Fertility is also high, approximately 50 births per thousand population, stimulated by the desire to produce enough children so that some will survive to care for the parents in their old age.

Health Services

Access of finca families to health care is limited by the distance to health centers and by the cost in cash and lost income to visit the clinic. Some finca owners provide nurse or physician services at the finca on a part-time basis, but this is not generally the case. Even when services are accessible, the quality is variable and usually provides only paliative treatment. More importantly, even with adequate therapy the people return to the same living conditions which cause recurrent disease.

Programs for disease prevention are irregularly applied. Immunization programs are not systematically carried out and frequently do not reach the fincas at all. It is estimated that only 10 percent of this population is immunized, compared to a national rate of 80 percent. As a result, preventable diseases such as

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1/ An Environmental and Economic Study of Consequences of Pesticide Use in Central American Cotton Production, Instituto Centroamericano de Investigación y Tecnología Industrial (INCAP), January 1977, pp. 92-95.

whooping cough and measles occur frequently and result in high morbidity and mortality in malnourished children. There are few concerted programs for the detection and prevention of other diseases such as tuberculosis screening and therapy, anemia screening and therapy, periodic prophylactic treatment for intestinal parasites, or house spraying to control insect infestation. Nor have there been effective programs to provide latrines or to increase the availability of potable water.

SUMMARY OF THE PROBLEM AND RELEVANCE TO GOG AND AID

The health status of farm workers and their families is considered a problem area for specialized study due to:

1. the large size of the population, (approximately 2,000,000)
2. the migrant nature of the population
3. the isolated living conditions on large fincas
4. the fact that workers live on private property and in private dwellings owned by the finca owners, and
5. the fact that living conditions, health status and access to health services are among the worst of any population group in the country.

The analysis of the problem carried out in the following section is guided by the fact that the problem of the health status of finca workers is consistent with the areas identified by the Government of Guatemala as needing priority attention. While not identified specifically, the extension of health services to finca workers is consistent with the stated priorities of the Ministry of

Health and Social Assistance (MSPAS) to extend health services to underserved population groups (MSPAS, Diagnóstico de la Situación de la Salud). The fact that the health of finca workers is not specifically identified suggests that the nature and magnitude of the problem is not understood and/or that workable solutions have not been identified. Given the fact that this health problem is consistent with stated national priorities, little attention will be given to justifying it as a relevant problem area. Instead, primary attention will be given to describing the nature and magnitude of the problem and to the analysis of possible alternative solutions.

The relevance of the problem to AID priorities can be described first, in terms of the need to develop health service programs in areas that are for all practical purposes not currently being served; second, the study focuses on the migrant population made up of families who originate almost totally from the altiplano and must migrate to other areas in order to earn an income sufficient to support their families. The population of the altiplano has been a priority concern to AID. Due to the nature of the population of interest, however, the study will be carried out in, and programs directed at those geographic areas that include the largest and most productive farms in the country. These large farms employ the majority of the farm laborers. It is true that the houses, water system, latrines, etc. are owned by those who are economically

most capable of improving conditions, a factor that would seem to suggest a divergence from AID priorities. It is also true, however, that the workers themselves are not owned by the land owners, and that their living conditions and level of health is the poorest in the country. Many of the finca owners are well-off economically and thus, are able to considerably improve conditions. This fact only serves to influence the nature of the health programs and their financing and cannot be used to justify overlooking this major social problem. It is, therefore, felt that the analysis of the problem and an involvement in implementing proposed solutions is consistent with AID goals of developing health programs for under-served populations.

ANALYSIS OF THE PROBLEM

METHOD OF ANALYSIS

This study includes an analysis of a range of economic, geographic, socio-cultural and epidemiological conditions that affect the health status or the delivery of health services to the population of concern. Two constraints were encountered in carrying out the analysis; they resulted from the desire to include considerable detail on each of the variables identified and yet to retain a national focus and not limit the analysis to small area. The first constraint was the shortage of information in sufficient quantity and detail on each of the variables considered. Of the detailed information that was available, most was derived through special studies carried out in specific areas. The approach used to deal with this problem was to identify geographic regions that are homogenous on one or more of the variables considered in the study, ie economic, socio-cultural, geographic, and epidemiologic. For each region, a profile was constructed for each of the variables relevant to it, although each region does not have a distinct profile for each of the variables considered. For example, for some conditions, such as educational level, there is no differentiation by region. For such conditions, a general discussion is provided that is applicable to workers in all regions. Other conditions, such as risks related to the spraying of cotton, are specific to a given region and [illegible] discussed

under a regional heading. This analytical approach results in a matrix format, where the analysis is carried out either under a "regional" or a topical heading. This format provides a basis for

	Economic	Geographic	Socio-Cultural	Epidemiologic
Region 1				
Region 2				
etc.				

generalizing to large areas based on data gathered from special studies focused on small areas. This approach was useful in overcoming the problem of data shortages.

The second problem encountered was one of presenting data in sufficient detail to be useful for planners, but organized in such a way that it could be used. It is recognized that most planning efforts will be based on municipal, state (departamento) or other small area boundaries. It would be impractical however, to carry out a study of the health of farm workers based on small area analysis. This problem is also resolved through the use of the matrix, with a slight modification of the one described previously. A municipality, state or other small area can be used as a basis for planning by entering the matrix and selecting those characteristics that are relevant to it. For example, a given state (departamento) might have within it a range of conditions such that it can be described in terms specific

characteristics within one or more of the general profiles, (see below)

	Region 1	Region 2	Socio-Cultural	Economic	etc.
State	X	X	X	X	
Municipality	X		X	X	

Using this general matrix approach one can select any area of concern and describe it in sufficient detail to provide baseline data for planning.

When defining the geographic areas an attempt was made to define areas that were small enough to be rather homogenous on most relevant traits, but yet large enough to keep the analysis managable. Due to the agricultural-based nature of the population it was decided to first define regions according to their economic (export) characteristics and by crop type. It was known that most farm employees worked on large farms that raise coffee, cotton or sugar and that export much of the product. In undertaking this analysis, a most useful study was encountered on the regionalization of agriculture in Guatemala (SIECA-IICA, Regionalización Agrícola de Guatemala). This excellent study identifies a range of factors such as crop, population size and density, soils, rainfall, size of farm, altitude, and accessibility,and through and analysis of variation

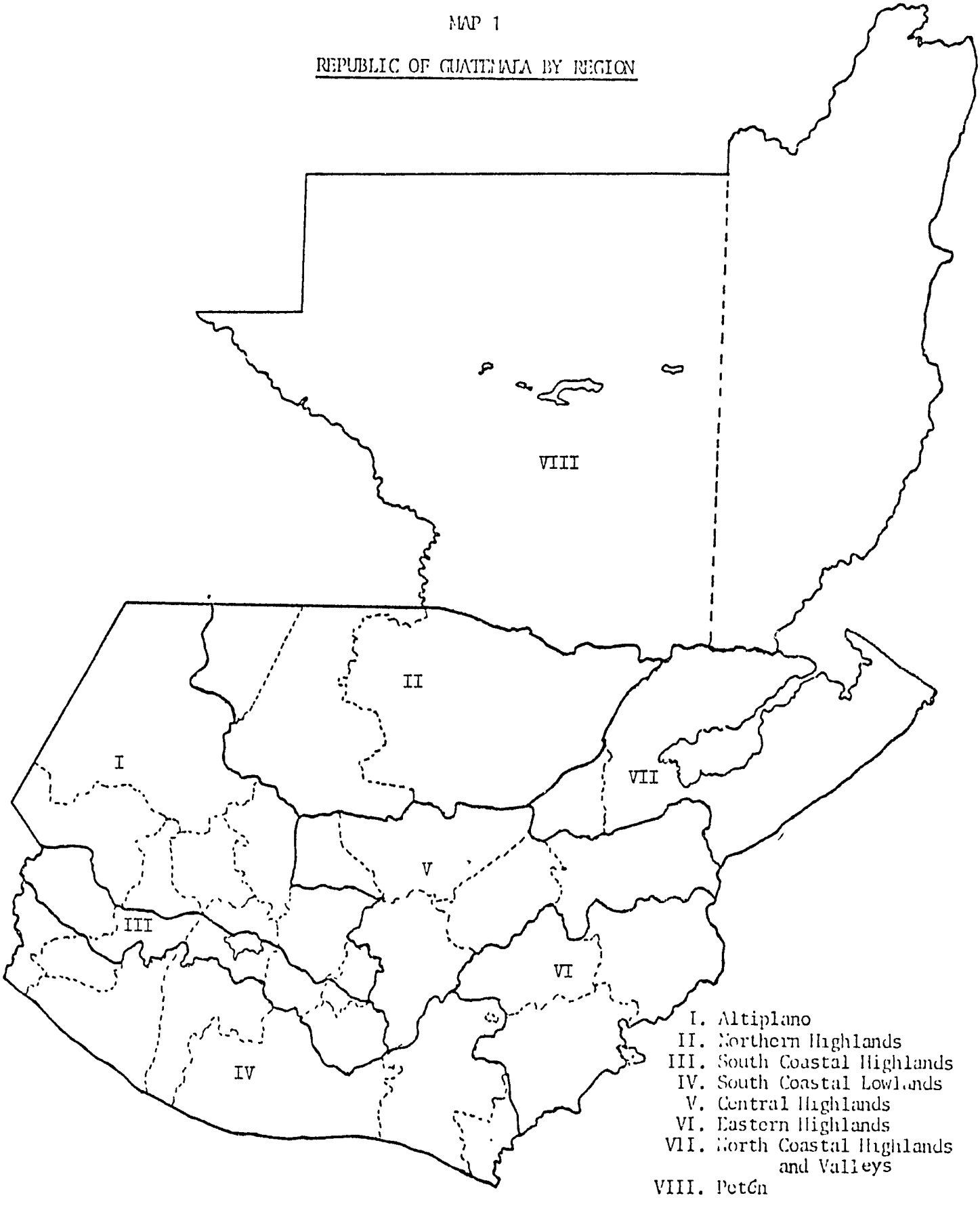
between and among factors defines homogenous regions and subregions. By giving greater emphasis to some variables and less to others that were considered in the SIECA-IICA analysis, subregions were reallocated to form homogeneous regions on the variables important to this study. The regions defined are identified in Map 1 and are named as follows:

I. Altiplano
II. Northern Highlands
III. South Coastal Highlands
IV. South Coastal Lowlands
V. Central Highlands
VI. Eastern Highlands
VII. North Coastal Highlands and Vallys
VIII. Petén

To the extent possible departamento boundaries were followed, and municipal boundaries were always followed. The variables relevant to defining health and health services conditions and needs, eg epidemiologic, socio-cultural, etc., will be described and analyzed using these geographic regions. Where conditions are generalizable to the country as a whole or to many regions, they will be discussed under a general heading. This is true for most of the socio-cultural data and the health status data.

MAP 1

REPUBLIC OF GUATEMALA BY REGION



GENERAL CHARACTERISTICS OF THE WORKER POPULATION

Size and Distribution of the Finca Population

The population of concern includes full-time and part-time farm employees and their families. There are estimated to be about 500,000 farm workers, and with their families constitute a total population of about 2,000,000.[1] The majority of these workers (400,000) are migrants and along with permanent workers, are located primarily in the coffee, cotton and sugar farms on the south coast. Ministry of Labor data reflect that about 80 percent of the workers are located in the six departamentos in the south coast highlands and south coast lowlands (Escuintla, Santa Rosa, Quetzaltenango, Suchitepéquez, Retalhuleu, and San Marcos) and that of these, 50 percent are located in three of the departamentos, Escuintla, Suchitepéquez and San Marcos.[2] Table 1 provides a good estimate of the distribution of farm workers by departamento in 1974, although the actual size of the population was probably under-reported and approximates the estimated 500,000. Given the nature of the population distribution, programs to provide health services could take on a strong regional orientation. A program could thus be directed at the south coastal highlands and lowlands and reach, if effective, 80 percent of the total farm population. It is difficult at this time however to justify droping other regions from the analysis in that all, with the exception of Petén contains a sizable

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[1] Appendix 1 gives a detailed estimate of the number of farm employees and their families.

[2] Ministry of Labor, Informes Patronales del Año de 1974.

Table 1

NUMBER OF WORKERS IN AGRICULTURAL ACTIVITIES IN GUATEMALA, BY NUMBER OF EMPLOYERS BY DEPARTMENT
1974

(Absolute numbers)

DEPARTMENTS	TOTAL NUMBER OF	
	Employers	Workers
NATIONAL TOTALS	2,536	413,560
Guatemala	209	11,382
El Progreso	26	585
Sacatepéquez	66	5,116
Chimaltenango	109	16,703
Escuintla	303	94,772
Santa Rosa	163	23,831
Solola	34	4,616
Totonicapán	1	18
Quetzaltenango	257	37,833
Suchitepéquez	365	70,341
Retalhuleu	187	43,477
San Marcos	289	57,203
Huehuetenango	124	3,650
El Quiché	34	4,484
Baja Verapaz	40	2,485
Alta Verapaz	210	25,773
El Petén	1	40
Izabal	22	7,250
Zacapa	32	2,415
Chiquimula	23	329
Jalapa	10	130
Jutiapa	31	1,092

SOURCE: Ministry of Labor, Informes Patronales del año de 1974.

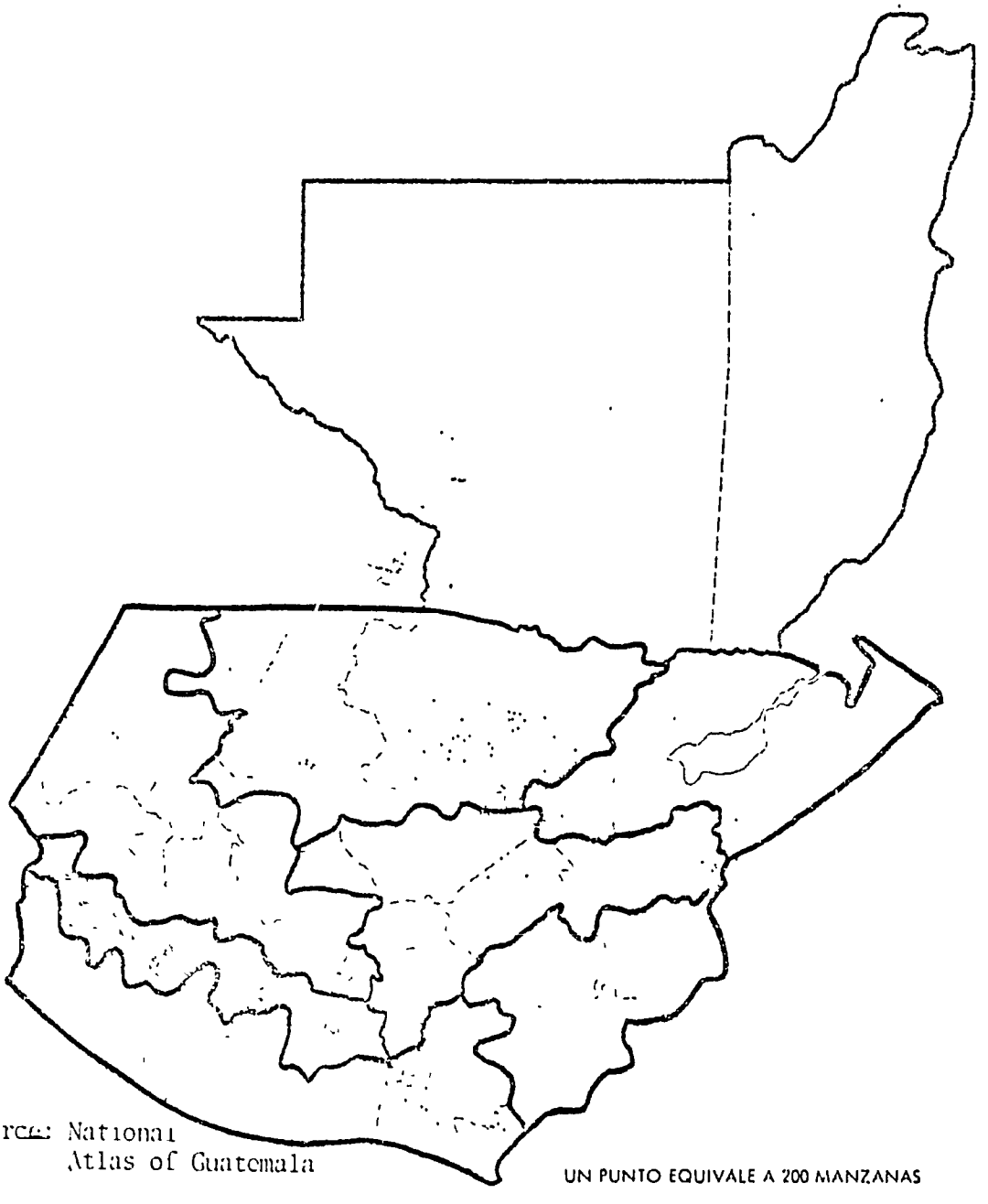
population of workers and their families. Petén will be droped from the analysis; the remaining seven regions will be analyzed on the basis of their socio-cultural status, economic and geographic characteristics and their epidemiologic conditions. When priorities are set for developing health programs, however, consideration will be given to assigning priority to the regions identified as south coastal lowlands and south coastal highlands.

Crops Produced on Fincas Employing Farm Workers

The population of concern is also concentrated primarily on coffee, cotton and sugar plantations, all heavily export-oriented. It is estimated that about 90 percent of the migrant labor force, and about 80 percent of the permanent employees work on farms producing primarily one of these export crops. A program of health services thus could also reach the vast majority of the workers if it were provided on the basis of type of crop. While there is a heavy correlation between the regional geographic areas discussed previously and crop-based regions, they are not totally the same. Regional definitions based on export crops would include, in addition to the south coastal lowlands and highlands, the large coffee fincas of the western slopes of the altiplano and the north central highlands, and the sugar plantations in the Departments of Guatemala, Baja Verapaz, and Quiché in the central highlands. The attached Maps Nos. 2, 3 and 4, identify the regions with heavy cultivation of coffee, cotton and sugar.

MAP 2

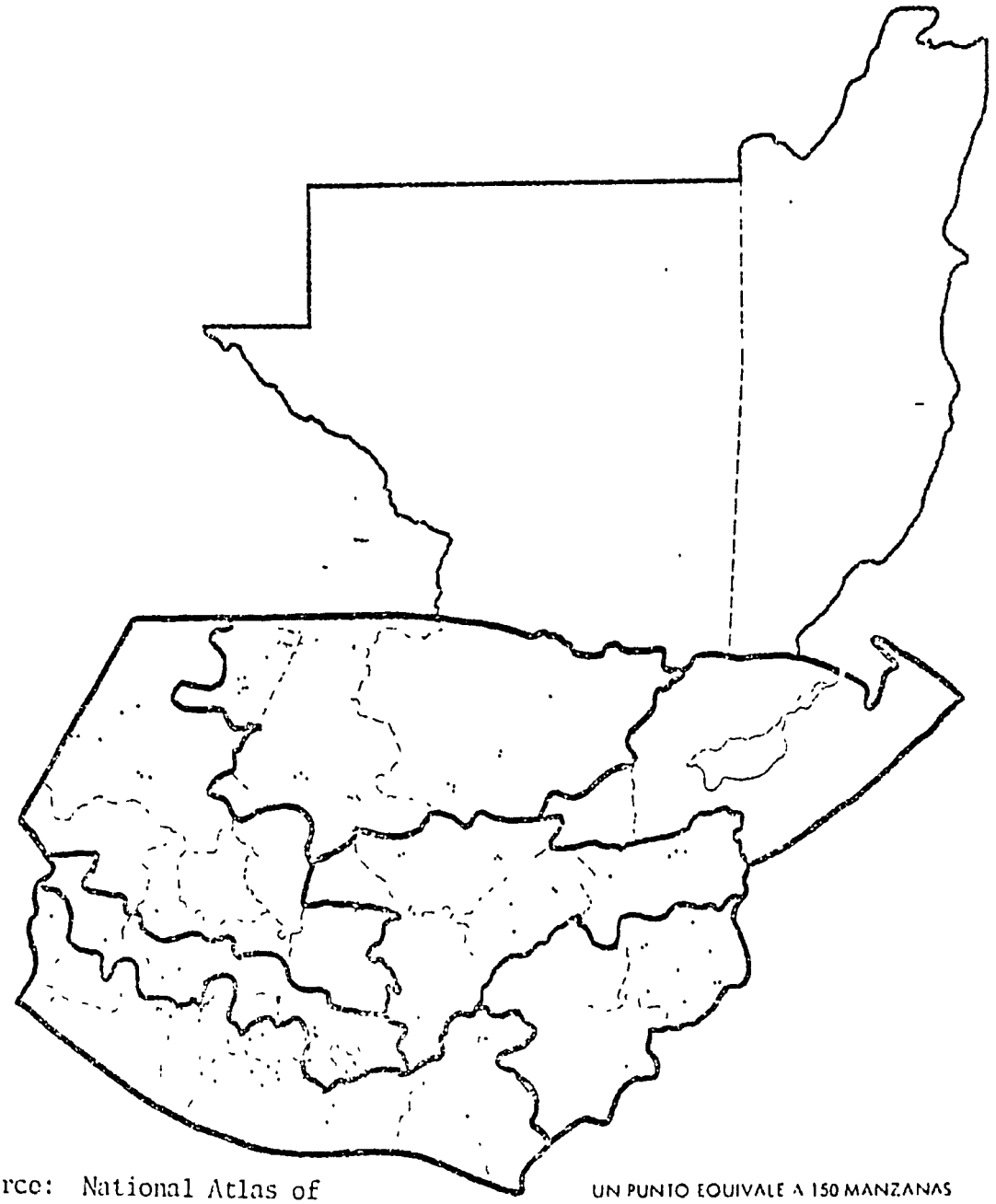
GEOGRAPHIC LOCATION OF COFFEE PLANTATIONS



Source: National Atlas of Guatemala

MAP 3

GEOGRAPHIC LOCATION OF SUGAR PLANTATIONS



Source: National Atlas of Guatemala

MAP 4

GEOGRAPHIC LOCATION OF COTTON PLANTATIONS

Source: National
Atlas of Guatemala

The data available are not sufficient to provide an analysis of differences in health status, living conditions or health services by type of crop raised. While cotton is the most labor intensive of the export crops, the number of hectares and number of workers is greatest for coffee. From discussions with finca workers and owners and with national agricultural associations, it appears that the living and working conditions on cotton fincas are worse than in sugar or coffee fincas. In part this is due, no doubt to the fact that they are located in the hottest climate and the work is the most difficult and unpleasant of any crop. Some support could thus be generated for focusing on cotton fincas, but given the fewer number of total workers in cotton farming this option cannot be suggested. It is estimated that between 118,000 to 150,000 migrant laborers work on cotton fincas while 167,000 to 237,000 work on coffee plantations; sugar plantations use about 17,500 to 21,000 (Servicio Nacional de Erradicación de Malaria).

A crop-based health system, possibly through agricultural cooperatives or associations, might prove to be an effective means for delivering services. One of the main attractions of a crop-based health system is the availability of potential sources of financing and the fact that national and regional agricultural associations, for example the National Coffee Association (ANACAFE) and the Association of Eastern Coffee Growers in Guatemala (ACOGUA), might be effective in getting the cooperation of farm owners that are members, to implement and maintain health services for their

workers. Due to the concentration of farm workers in a few crop areas, the implementation of health services based on type of crop produced should be considered.

Size of Finca on Which Workers Live

There are no specific data available on the distribution of employees by farm size although, in general, few farms under 45 hectares have permanent workers or other than day laborers from nearby communities. Cotton cultivation is more labor-intensive and fincas of around 45 hectares might start to have permanent workers. The number of laborers on farms will, of course, be directly related to farm size, and many of the cotton, sugar and coffee fincas are very large. There are 250 coffee fincas, 59 sugar fincas, and 45 cotton fincas having over 900 hectares each (Second Agricultural Census, 1964).

There were few data encountered on health status or health services available by size of finca. Most special studies that have been carried out have concentrated on large fincas due, in part, to the large populations located there and due to the willingness of large finca owners to participate. From these studies it can be concluded that conditions of health and the provision of health services on large fincas are at low levels. Conditions on smaller fincas are, no doubt, as bad, and in general are probably worse, but no data were available on this point other than the limited observations during the course of this study. In general, it is considered

that employees on all sizes of fincas are experiencing very poor living conditions, health services, and health satus. Larger fincas do, however, support larger population concentrations and programs directed at them might be more cost effective. From this study a general feeling has also developed that large finca owners are more likely to cooperate in introducing and maintaining health services. This might be true due to their higher economic status or the impact of observing large population concentrations. This factor might be considered when initiating health programs.

If health programs are initiated on large fincas, the size and isolation of the population will be an important factor to take into account. Due to the isolated nature of the population and because they are relatively immobile, services will have to be extended to the fincas. This will create problems of getting permission to provide services on the fincas and of providing them on a continuous basis. This will influence both the type of service as well as the method of delivery.

Ownership of Fincas

The ownership of fincas that employ farm workers consists of four basic types: national, cooperative, individual, and corporation. There are 24 national fincas of which 21 are 45 hectares or more and employ 4,100 employees. These fincas are owned by the national government and are operated by the National Institute for Agrarian Transformation (INTA), a semi-autonomous national organization. All are coffee fincas and are located in a dispersed pattern in

south coastal highlands and the north central highlands. There are over 18,000 fincas owned by cooperatives but almost all are made up of farms of less than seven hectares per family and thus, employ few or no workers. This group will not be included in the analysis: Most of the large fincas are owned by private corporationsor individuals. Information available on crop, size, etc. do not differentiate between these two types of ownership. There are about 9,000 fincas that are owned by individuals or corporations and having 45 hectares or more.

There are insufficient data available on living conditions, health status and health services on fincas to permit a comparison between those privately and publicly owned. Most of the special studies that have been done have been carried out on private fincas. During this study discussions were held with representatives from INTA and the conditions described on national fincas appear to be at least no better than private fincas and worse than some. Health services provided on national fincas are the responsiblity of INTA and not the Ministry of Public Health and Social Assistance. Most national fincas maintain a small infirmary, staffed by an auxiliary nurse. There are few preventive health services other than the participation in national vaccination campaigns. A visit was made to a national finca (Chocolá) that was described by INTA as typical of large national fincas. The housing conditions found at Chocolá were some of the worst that were observed during the study.[1]

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[1] It should be noted that many of the private fincas visited were selected because they had an innovative health service, resulting, no doubt, in a selection of fincas with better than average living conditions.

There was considerable overcrowding, with poor ventilation, lighting, dirt floors, and badly leaking roofs. There were no latrines available and the water that was piped to each area was described as contaminated. The infirmary provided primarily curative services, and was well-staffed; it also seemed to be functioning well. It could be concluded that, in general, the living conditions on national fincas are no better than private fincas and thus, both types will be included in the analysis.

The nature of health services needed on fincas will have to make little distinction by type of ownership. The health conditions and types of problem that exist are the same for public and private fincas. The organization of the health program might differ. Given the nature of the administration of the fincas by INTA, approval of any health program will have to be made by them. An expanded INTA-based health program to serve the national fincas is not recommended due to the small number of fincas involved and their dispersed location in the country. The integration and coordination of health services would be better done with neighboring private fincas. The difficulty in doing this is recognized. Some national fincas are of such a size to be able to support a rather extensive health service of their own. There might be some advantage to using national fincas as demonstrations, to develop models of health delivery programs. The primary advantage would be that access to the finca would be easier given its public

ownership. Given the Government's interest in extending health services to underserved populations it is somewhat difficult to understand why fincas it owns are so underserved themselves. It would seem that they would be models of general living conditions and health services. One disadvantage of using national fincas as demonstration areas would be the acceptance of models by private owners. It is quite probable that private finca owners do not relate well or consider favorably the national fincas, and it is doubtful if using them as a setting to develop model programs as a means of diffusing information to other fincas would be effective.

Summary

This section has provided a general description of the characteristics of the worker population and the fincas on which they live. Through this description an attempt has been made to focus the problem to those geographic areas and finca types that should be given priority in terms of health programs. A major problem that exists is the question of cooperation by the finca owners. The current level of interest and support for finca health services is not considered to be very high. A best guess would be that maybe 10 percent are actively interested in such a program and maybe another 20 percent are passively interested (they would cooperate if a reasonable plan were brought to them). This leaves about 70 percent who are not interested or that

oppose such initiatives. The analysis of alternative solutions will give strong emphasis on this fact.

The following sections provide a detailed description of each geographic area defined in the study and the health status and socio-cultural factors important to this study. These sections serve as baseline data for the analysis of existing services and for making recommendations.

ECONOMIC AND GEOGRAPHIC CHARACTERISTICS

Much of the content of this section is in the form of descriptive baseline data that has been used throughout the study. As previously indicated, the development of regions of analysis has permitted the use of specific studies to make generalizations about areas and populations. However, other types of analyses, e.g. assessments of health service needs in an area, call for detailed statistics on small political areas such as municipality. By defining regions around municipalities this requirement can also be satisfied. The detailed breakdown of each region by area, population, population density, crops produced, climate, soils, size of finca, number of workers, and worker income and expenses is presented in Appendix 2. This material is key to this analysis but is placed in the appendix so that its bulk does not detract from the theme of the study report. This section will contain an overview of each region.

South Coastal Lowlands (Region IV)(1)

This region is one of primary interest in this study because it is a primary area for both migrant and colono populations. The total population of the region is 740,687 and the census of 1973 reports 92,307

(1) See Map 1 for a map of the region. Note that the numbering of the regions does not follow the sequence in which they are discussed. The regions are discussed in terms of their importance as locations of farm worker populations. The numbers of the regions are adapted from the agricultural census, from where the regional definitions were drawn.

agricultural workers in the region.[1] This worker population is made up primarily of workers on fincas (90 to 95 percent) and entirely of colono workers.[2] There are few traditional Mayan communities but many enter the area as migrants. The size of the migrant population coming to the zone is not statistically reported. This population and its characteristics are discussed in the following section on socio-cultural characteristics.

The population is dispersed in the region with generally low population density. The farm worker population is located on fincas that do not have easy access to towns, but the region is rather well served by a major highway. The roads leading to the fincas are generally improved but not easy to travel. Some fincas are served by a daily bus from the nearby town, although most are isolated from any form of public transportation.

The region is fairly low, extending from the Pacific to about 1,000 feet. It is an area of heavy rainfall, hot temperatures and high relative humidity. It is the major malaria zone of the country and a fairly high percentage (est. 30 percent) of the population contracts malaria. It is also an area of numerous valleys and fast flowing streams. Most of the onchocerciasis in the country is found in this region.

The major crops of the area are corn, cotton, sugar, and coffee, the latter three being the export crops. The region is the producer of cotton and the major producer of sugar. Much coffee is grown in

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(1) See Appendix 2 for a population breakdown by municipality and worker breakdown by departamento.

(2) Resident workers on the fincas.

the eastern part of the region, in the departamentos of Escuintla and Santa Rosa. As such the area is a major user of migrant labor. The size of farms is large with over one-third of the total farm acreage in farms over 900 hectares. Eighty percent of the area in farms is in farms greater than 45 hectares. The majority of the land is, however, held by a small minority of those owning farm land. Eighty percent of the farm land is held by about two percent of the land owners.

The income of the colono population varies by crop but averages somewhat over $100 per capita per year and almost $600 per family per year. The cotton workers have the highest rate of earnings, that being $133 per capita and $665 per family. Those working on cattle farms make the lowest pay, $86 per capita and $490 per family. This income includes both monetary and non-monetary income, so it is more a reflection of real earnings than it is of just cash income. Appendix 2 contains a description of what is included under monetary and non-monetary income and the breakdown of rates by crop.

Given the high percentage of export crop activity and the corresponding high percentage of farm workers in the south coastal lowlands region, it will be one of the major areas of analysis in the study. If a health system for finca workers were to take on a crop-based or regionally-based emphasis, this region would be one of the major regions of emphasis. The regional and subregional geographic concentration of crops would make a crop-based approach possible.

South Coastal Highlands (Region III)

The south coastal highlands is a second major area of concern in this study. In general it is a region more densely populated than the south coastal lowlands but due to the smaller area, has a smaller

population. The census lists a total population of about 330,000 and a permanent worker population of about 45,000. This smaller worker population is greatly augmented by the migrant workers who come to pick the coffee in the months of October through December.

The south coastal highlands rise to an elevation of over 4,000 feet on the western slopes, and in general, have a much cooler and less humid environment. The area receives up to 120 inches of rain per year, starting in the month of May. Although the area is more rugged than the south coast lowlands it is served by a major road network on the downward slope of the mountains. Access to the fincas is not easy, however, frequently requiring trips of 20 to 30 kilometers on poor but improved roads.

The major crop in this region is coffee (See Map 2, p.17). It is produced on about 50 percent of the total land area farmed and dominates the economy. Much sugar is also grown in the lower elevations (Map 3, p.18). Corn is the major domestic crop, but not a major employer of farm workers.

The farm size in the south coastal highlands is large with 30 percent of the area in farms over 900 hectares and 75 percent in farms over 45 hectares. The land holdings of 45 hectares and more (75 percent of the area) are owned by less than two percent of those owning farms.

The income of coffee workers (colonos) is $ 72 per capita, per year and $ 392 per family. This is lower than the wage for cotton and sugar workers, although the difference between sugar and coffee is small. The difference is accounted for primarily by cash payment (monetary) differences and not non-monetary payment. In fact, the non-monetary payment for cotton is lower than that for coffee or cane.

This differential is also experienced in the earnings of migrant workers. This will be discussed in more detail in the following section. It is interesting to note, however, that even with the income differential, migrant workers would rather work on coffee fincas than on cotton fincas. This no doubt explains the need for the differential in order to recruit and retain workers on cotton fincas.

The Altiplano Western Highlands (Region I)

The altiplano is a vast area of rugged mountains and deep valleys, that includes a high percentage of the villages of traditional Mayan cultures. The population of this region is over 1,322,000, accounting for almost 24 percent of the nation's population. The region is both vast and densely populated. This population density and the fact that the soils of the altiplano are of poorer quality make this region the primary source of migrant labor for the south coastal highlands and lowlands. The region includes 127,000 permanent laborers, mostly scattered on small farms that employ relatively few workers. There are concentrations of large coffee, and sugar farms, however. Workers are also employed on wheat farms.

The major crop of the region is corn, which makes up half of the total land cultivated. Wheat is another major domestic crop of the region. Coffee and sugar are the major export crops and are produced in clusters of fincas on the western slopes and in the north. There are 17,000 hectares of coffee and 1,400 hectares of cane cultivated in the area. The size of the farms in the altiplano are much smaller than the south coastal highlands or lowlands. Less than 25 percent of the total area farmed is in farms over 45 hectares and only seven percent is in farms over 900 hectares. The majority of all

farms and farm area is in small plots that are below the level to provide a subsistence living for the family or of a size that employs few laborers.

The population of laborers in this region is thus more scattered across many farms than concentrated on large land holdings. This makes the population less accessible for health or other public services. In addition accessibility is limited due to the poor roads and very difficult terrain. This would make it more difficult to concentrate a health service on a finca and would suggest some type of mobile service. The lack of an in-migrant populations reduces the health problem associated with migrant laborers. This region is basically an area of out migration, with workers and families leaving to make enough earnings to sustain themselves the rest of the year.

Northern Highlands (Region II)

The northern highlands is a very mountainous region that is for the most part not densely populated. The total population of the region is 433,000 and a permanent farm labor force of 48,000. These laborers work in some domestic crop areas such as cattle but the majority work on coffee fincas. There are also some scattered sugar plantations but these account for a much smaller percentage of the total. The area includes many traditional Mayan Indian communities particularly in the western mountains.

The principle export crop from this area is coffee, with over 19,000 hecters or over 13 percent of the total farm area. The coffee fincas of this area are very large in size,many over 900 hectares. They are geographically concentrated, primarily in the southwest part of the region (Map 2, p.17). Over 37 percent of the total area farmed is contained in farms of over 900 hectares. Sixty-two percent of the area is in farms of over 45 hectares. The majority of the farms, however, are in units of less than 45 hectares(98 percent) and most in units of less than seven hectares(83 percent). The majority of the small holdings are in corn and beans.

The northern highlands are very rugged and contain some deep valleys. The mountain ranges reach to 13,000 feet. The temperature is mild with a long rainy season. The transportation in the area is very limited making access to areas very difficult. This is due both to the poor roads and the high mountains. Much of the worker population could be reached with regionally or crop-based services but access would still be difficult.

Central Highlands (Region V)

The central highlands include the Departament of Guatemala the central hub of economic and social activity in the country. As such it has some of the most densely populated area in the country. It also includes some remote areas in the departamento of El Progreso, which is very sparsely populated. The total population of the area is 1,400,000 mostly located in Guatemala. El Progreso for example contains only 73,000 people. There are 52,000 agricultural workers in the region, and an estimated 90 to 95 percent work on farms. The percentage could be a bit lower for this region due to a higher number of agricultural industries in the area.

The western part of the central highlands is dominated by the capital and is well served by work and public transport. Access to the city is good although most of the farm laborers have limited access to health services and other public services the city offers.

The major export crops of the region are coffee and cane, and the major domestic crop is corn. Over 119,000 hectares were planted with corn to 12,000 in cane and 10,000 in coffee. The coffee fincas are geographically concentrated in the far northern edge of the region, the far eastern edge, and the far southern edge. (Map 2, p.17). The northern and southern clusters are linked with those of other regions (northern highlands and south coastal highlands respectively) and could form a functional part of those regions. There is a smaller percentage of the area in farms in this region and a smaller percentage of the area farmed contained in large farms. Sixty-one percent of the total farm area is in farms of over 45 hectares and 15 percent in

farms over 900 hectares. Of all farms, 95 percent were of a size less than 45 hectares and 83 percent were less than seven hectares. Although the magnitude is a bit different in this region than in some others, the same general pattern exists of many small farms and a few large ones that account for both most of the land area and most of the farm workers.

Eastern Highlands (Region VI)

The eastern highlands are very hot and dry areas that receive less than 20 inches of rain per year. The area is not well suited to agricultural production and consequently has relatively few farm workers. The total population of the region is 272,000 , with a farm worker population of around 25,000. This population is quite dispersed and lacks accessibility to towns and to neighboring areas.

The primary crops in the region are corn, beans and rice with 40 percent of the land area used for this type of cultivation. Over half of the farm land in the region is in pasture. The major export crop is sugar, which is cultivated in widely scattered valleys in the region (Map 3, p.18). Due to the low number of large farms and farm workers in this region, it is not one of major importance in this study.

North Coastal Highlands and Valleys (Region VII)

This region is in the north eastern part of the country with access to the Caribbean. It includes large areas of lowlands that are very hot and humid. It includes a large lake and rivers cutting through deep valleys. The area is served by a major road leading to Puerto Barrios, the major commercial center of the region.

Major crops of the north coastal area include corn, pasture and bananas. Bananas are the major export crop and are produced primarily on a few very large farms owned by private corporations. There is some coffee raised on the eastern slopes.

The population of the region totals 195,000, of which 15,000 are listed as agricultural workers. A farm worker health program in this region could be crop-based, primarily on banana plantations. Due to the limited number of farm workers in this region, it will not be one of major concern in this study.

SOCIO-CULTURAL ASPECTS OF THE FINCA POPULATION

General Comments

The populations of multifamilial fincas producing crops for export are composed of two major types, permanent and transient. While the composition of the permanent labor force varies, there appears to be a relatively standard set of roles for all finca types. Hierarchically, from top to bottom, a resident finca population would comprise an administrator, supervisors, accountants, paymasters, foremen, field supervisors, tractor drivers, chauffeurs, mechanics, cowboys, maintenance personnel and a varying number of assistants for such individuals. In addition to these, there are also resident laborers generally grouped under the rubric '<u>colonos</u>', whose tasks vary according to crop types. On a cotton plantation these would include workers responsible for pruning, weeding, planting, clearing, flagmen for fumigation planes, and sprayers. On coffee plantations this category would include workers responsible for shade trees, pruning, clearing, planting, fertilizing, nursery work, and digging planting holes, as well as coffee-processing plant workers in charge of de-pulping, and drying-platform workers. (Ministry of Labor, 1972 and 1974) Sugar plantations have more reduced field maintenance needs because of the nature of the crop, but any cane plantation which has its own processing plant has a labor requirement ranging from quite sophisticated engineering skills to skills demanding strength

largely for loading, hauling, and heavy maintenance. All these workers are paid on a daily rate basis and also receive certain perquisites which will be discussed below. Among these are, in some cases at least, a small plot of land to cultivate corn, vegetables, and small livestock.

The transient or migrant finca complement, ranging widely in numbers according to seasonality and crop, is composed of two principal worker types: voluntarios (volunteers) and cuadrilleros (contracted workers). The former are simply workers who have come of their own volition from their homes, usually not far from the work site, to a given finca, or who go from one finca to another in search of work. Voluntarios are also paid a daily wage but receive no food rations.

Cuadrilleros are individuals who have been contracted as part of a group (cuadrilla) through a process to be described below. They are paid on a piecework basis (task performed or a quantity harvested) and receive as well, though this differs, a food ration. The work roles for both voluntarios and cuadrilleros on cotton plantations largely revolve around harvesting, clearing, weeding. On coffee farms, such workers are used for picking, planting, and fertilizing. On cane plantations, the bulk of the cuadrillero labor force is used for harvesting, clearing and planting.

The Migrant Population

As previously stated, there is estimated to be about 400,000 migrant workers in Guatemala supporting a population of around 1,500,000. There is some difference of opinion about whether this number of workers represents scarcity or surplus in terms of labor market needs. There are complaints from some finca operators that the available labor is inadequate in quantity and quality, but this seems to be a localized or idiosyncratic condition and there have not been serious crop losses from lack of harvest workers. There is,however, a constant search for cheaper or better labor (Adams, 1970). The current consensus is that the colono population is not only sufficient but perhaps excessive, due primarily to natural rates of population increase, and that the migrant population actually represents a labor surplus.

Causes of Migration

There are two principal phenomena which have characterized migration trends in the last two decades. One is a heavy, essentially permanent migration into three major zones: metropolitan Guatemala, the south central and southwest coast, and the northeast and northern lowlands, the last being the least important catchment area. (Zárate, 1967). This migration occurs either in direct or "step" fashion and is, while to some degree inclusive of Indians, largely Ladino. The second pattern is a seasonal, temporary migrationwave composed primarily of highland Indians and almost

entirely dedicated to securing plantation employment, not to any permanent change of address or life style.

There are two major "push" factors which have generated what has now become a traditional use of seasonal migration by Indians for survival purposes (Adams, 19[illegible]). One is scarcity of adequate amounts of arable, productive land in the highlands. The other is lack of employment opportunities. The two factors produce a perennial condition of income deficit for highland Indian families. A very recent study calculates an annual total net income from all sources for highland farms of 10 cuerdas or less at an average of $ 292.[1] This is well below the suggested subsistence level for the average campesino family.(Average size is currently between 5.2 and 6). The net income for migrant laborers in all departments was found to be far lower than that for cultivators who did not migrate. (Gollas-Quintero, 1969). Combining income from all sources, the average income reported per family for non-migrants was $ 268, while for migrants, it was $ 159. (See Table 2). Migrants as a group have less land; less productive land; less access to inputs, technical assistance and credit; less participation in local labor markets; fewer livestock holdings; and such concomitants of low incomes as poor housing and poor health. Their options of whether or not to migrate and to some degree the locations to which the migrate are extremely limited.

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[1] Unpublished data provided by Gerald O'Sullivan, Educación Extra-escolar, Ministry of Education.

TABLE 2

COMPARISON OF TOTAL INCOMES FOR MIGRANTS AND NON-MIGRANTS

Number	Non-Migrants 277	Migrants 71	Total 348
Average net income from agricultural production	$ 169.90	$ 99.63	$ 155.33
Income from employment in community	98.81	27.93	84.35
Net income fron employment as a migrant farm worker	-	31.55	6.44
	$ 268.71	$159.11	$ 246.12

Sources and Destinations of migrants.

There are no detailed studies of the origins and destinations of seasonal migrants, nor why some areas send as much as 90 percent of their worker population and others, often neighbors, send no one. It is known that the trend has been for more remote areas of the subsistence sector to fill the plantation labor needs. Labor movement in more central highland areas, (Quetzaltenango and Totonicapán) has recently been more toward specialized areas of commerce, production, and transportation, generating and important regional difference within the peasantry (Smith, 1972). Thus the seasonal migration complement tends to come from the most rural highland areas where economic problems are most acute (Instituto Indigenista Nacional, 1969). This may explain why migrants do not come from all highland departments in approximately equal proportion (Gollas-Quintero, 1969).

Most of the migrants seem to originate from Region I (Sololá, Totonicapán, San Marcos, Huehuetenango, Chimaltenango, Quetzaltenango, and El Quiché) with the largest numbers originating in Huehuetenango and El Quiché. (Schmidt, 1969; INN, 1969;EDESA, 1974). Most of those from Huehuetenango an El Quiché originated from the southern municipios. Most studies of migrants have found that almost all departments are the source of some migrant workers but distinct patterns are rather well defined. The coastal departments of Escuintla and Retalhuleu, for example, provided more voluntarios than cuadrilleros, because of the proximity of their homes to many of the cotton plantations.

A description of sources of migrants by crop is more difficult to provide although some studies have addressed this topic. The SNEM study showed that of 33,800 cotton workers studied, 78 percent were from the highlands. Of this group, 17 percent were from El Quiché and 17 percent from Huehuetenango.

From these studies it can be concluded that sources of migrants are quite localized in the country coming primarily from the interior highlands of the altiplano region (see Map 5). This correlates with the cause factors described in the previous section and gives a regional focus that would be useful in directing a health program aimed at the home areas of the migrants.

The data on the destination of migrants are quite limited but

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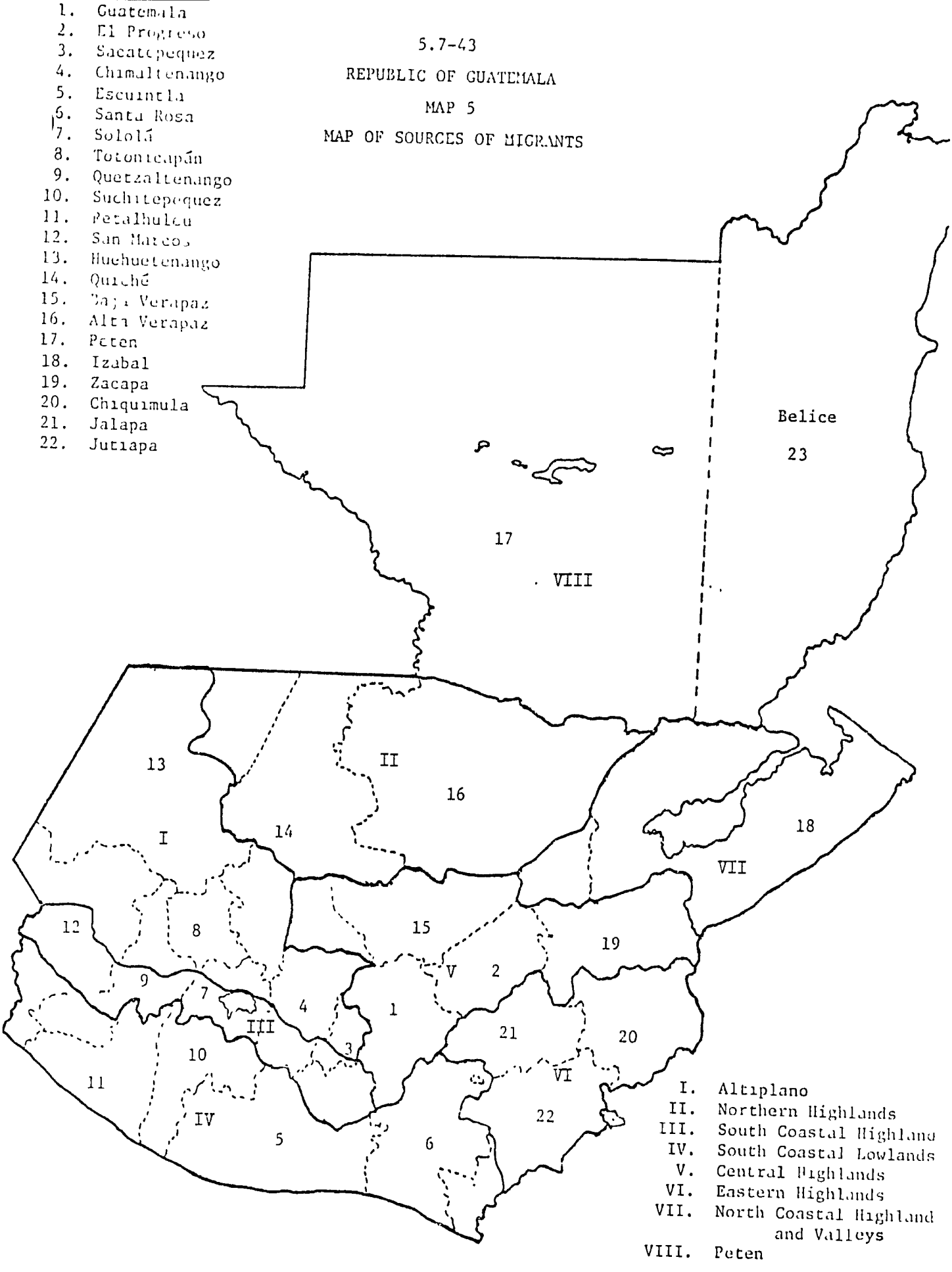
MAP 5

MAP OF SOURCES OF MIGRANTS



show rather consistent patters. The bulk of the temporary out-migration is toward the coast, although there is some international migration from northern Huehuetenango and San Marcos to the Mexican fincas and from Chiquimula, Jalapa, and Jutiapa into El Salvador and Honduras. (IIN, 1969; Appelbaum, 1967). The migration patterns conform heavily with the export cropsector of cotton, coffee, and sugar.

In addition to general geographical destination, there are definable patterns by specific type of crop. The SNEM study estimated that 118,000 to 150,000 migrants headed for the cotton plantations, 167,000 to 237,000 to coffee plantations, and 17,500 to 21,000 sugar plantations. A more recent analysis (Instituto de Investigaciones Económicas y Sociales de Occidente/IIESO, 1976) examined the migration phenomenon among 9,694 workers from San Marcos, Quetzaltenango, Sololá and Totonicpan and found the following:

From San Marcos,	65% of migrants went to coffee fincas, 21% to cotton fincas.
From Quetzaltenango,	36% went to cotton fincas, 33% to coffee fincas, and 10% to sesame plantations.
From Sololá,	47% went to cotton fincas, 28% to coffee fincas.
From Totonicapán,	81% went to cotton fincas, 7% to coffee fincas, and 7% to sugar plantations.

Part of the difference in destinations according to crop would seem to lie in geographical nearness, but there are also sets of attitudes which weigh in the decision to opt for one crop situation or another. These will be discussed later.

Migration Sequence and Length of Stay

Most data indicate that from 85 to 90 percent of migrants work on fincas for a period of less than 90 days. (Hill and Collas, 1964; Appelbaum, 1967; IIESO, 1967). One study varies from this finding, reporting that only 63 percent worked 100 days or less. (Schmidt, 1969). This study points out, however, that since the interviews were carried out on farms with the harvest season already under way, the probability of finding those who had worked for longer periods of time was greater. It might also be that there was a pre-selection factor operating as well; the fincas that permitted Schmidt to do his research might well have been those who made it either possible or desirable for their workers to stay longer. There is also general agreement that length of stay on farms differs by crop type; coffee fincas tend to offer longer contracts than either cane or cotton farms. Schmidt's study confirms this pattern, although the length of time spent still varies from other studies of this factor. All studies agree that workers who are accompanied by their families spend more time on the finca.

There is an apparent increase in the frequency of 30-day contracts on all types of fincas. Studies report a range from 22 percent (Appelbaum) to 49 percent (IIESO) with regard to the number of contracts for 30 days or less. The reason for this seems to be that it is more economical to contract with cuadrille-

ros for more than 30 days, since transportation costs and fees to the contractor would be less; however, it is claimed that thirty-day contracts are all that contractors offer. Other reasons given are that they did not like the lowland climate or because they had left their families behind. Schmid (1967a) suspects that workers might be less interested in longer contracts because of diminishing crop yields, and thus diminished earnings, as harvest peaks passed. It may also be that shorter contracts permit the worker with his own landholding to attend to his own crop necessities, which in some instances conflict with the harvest periods for major export crops (see Table 3).

A possible effect of shorter contract periods is multiple migrations. The IIN (1969) study claimes that for highland campesinos, temporary migrations often occurred several times yearly. In that study (177 migrants from 13 departments), 35 percent migrated once a year, 35 percent migrated twice yearly, 15 percent three times and 8 percent four times a year. Frequencies ranged from one to seven migrations a year, with some respondents gone as long as seven months out of the year trying to piece together survival.

In addition to worker incentives to contract for a shorter period of time, advantages of thirty-day contracts accrue to owners, contractors, and truckers. Truckers get more business from added worker mobility, contractors make more fees, and the fincas have

more flexibility in hiring and firing. Another suggestion has been offered for the prevalence of thirty-day contracts. This is that the farm is obligated by law to pay transportation costs of the worker and his family if the contract is for 60 days or more, but only for the transportation of the worker himself if the contract is a short-term one.[1]

Regardless of the motivation, the increase of 30-day contracts has important implication for worker health status and health services. First, if the 30-day contract results in multiple migration, the increased hazards of moving are apparent. These hazards include both the actual transportation on trucks as well as being subjected to increased risks of encountering communicable diseases. Secondly, the nature of the health services on fincas must be geared to population groups who will stay for short periods of time. A health education program on how to use latrines for example, provided on a finca would have little effect if the population moved after 30 days. This suggests a health service for migrants that is national or regional that will deal with the realities of migration patterns.

The timing of the seasonal migration and the juxtaposition with the agricultural cycle in the highlands is presented in Table 3 . While for highland residents migration is a year-round activity, the peak out-migration to export-crop plantations begins its upward slope in June and rapidly increases in August, declining

[1] Ministry of Labor. CODIGO DE TRABAJO, TOMO I, Article 33. Guatemala, 1962.

TAB[illegible]3

SEASONAL MIGRATION PATTERNS

MONTH	CORN	SUGAR CANE	COFFEE	COTTON
June	Second cleaning - first if it rains in May - if not, planting starts	Harvesting		
July	Harvesting toward end of month. Second cleaning. First cleaning is finished if it started late.	Harvesting		Planting
August	Harvesting Second cleaning		Second cleaning (toward middle of month)	Planting
September	End of harvest. Second cleaning ends. Third cleaning starts, if necessary		Harvesting (starts 15th of month)	Planting Cleaning
October			Harvesting	Some harvesting
November	Weeding may be started. Harvesting starts in the highlands		Harvesting (if good)	Principal harvest begins.
December	Weeding. Principal harvest begins (Dec. 20)		Harvesting - altitude coffe - if good	Harvesting
January	Harvesting starts			First Harvest
February	Land preparation (grubbing,weeding)		First cleaning	Harvesting
March	Planting-with beans (from the 10th to 15th(March)		Pruning and Fertilizing	Few harvests
April	End of planting-land preparation(grubbing)		pruning continues and coffee fertilizing	
May	First Cleaning-planting starts (with rains)		Banana planting-shade for coffee	

in January. The months of greatest movement out of highland communities are August, September, October and November.

In addition to the general migration patterns, there are also patterns for each crop. The crop harvest is such that it starts with sugar from June to August, with coffee starting in September and into December and cotton starting in December and extending into February. These phased harvest times allow long periods for migrant work but concentrate it somewhat for each crop. Corn cultivation is also included in the chart and reflects a more extended labor demand with no peak periods. This suggests that the migration of subsistence farmers to the coast cannot be easily phased with corn cultivation and thus results in a cost in terms of potential losses incurred in corn production. This dynamic will likely result in increased pressures against migration as small plots become more productive at home. This force appears to be offset by the rapidly growing population in the altiplano, that acts to neutralize gains made in increased productivity of farm plots.

The phased migration pattern by crop allows for the development of a health system that can reach the majority of the migrants but that can be concentrated in various geographic areas and time periods. This will make the problem of providing health services more manageable in terms of defining needs and designing interventions.

Contracting Arrangements

Formal contracting occurs with relation only to cuadrilleros; arrangements with voluntarios are on an ad-hoc, informal, verbal basis. Thus this section deals only with that group of migrants defined as 'cuadrilleros'.

The crucial role in finca-laborer contracting is that of the labor contractor. Through the labor contractor, between two-thirds and three-fourths of the total migratory labor force is recruited. The labor contractors number in the thousands; Schmidt estimated the number to be 2,000 in 1965-66. The contractors are not formally organized but the procedures are highly routinized and widely known by owners and workers. An overview of the process is useful in that it contributes to an understanding of the financial position of migrants entering and leaving the migrant labor face. The steps in the labor contracting system are customarily as follows:

1) The finca administrator or owner sends the contractor a letter of authorization empowering him to contract workers during the subsequent one-year period and stipulating a monthly salary.

2) The farm administrator estimates his forthcoming labor needs and contracts for a given number of days of work or amounts to be harvested. Both the letter of authorization and contract must be registered with the Ministry of Labor.

3) The contractors travel to the municipios where workers

are living, or to the farms where they are already working as migrant laborers. A popular time for home-site contracting is the market day, especially in the months of June, July and August, the months in which corn is at its scarcest and workers most in need of the cash advances which are generally part of the contracting arrangements (Appelbaum, 1967).

4) The contracting system itself is variable. Generally it consists of a verbal agreement between workers and the contractor. In some cases the contract is a written one, in others a verbal arrangement witnessed by other individuals, or simply the recording of the potential worker's cédula number.[1] Whatever the format, contracts are generally made with heads of families or with the head and the older sons. Wives and children contribute to fulfilling the amount of labor to which the head of family commits himself. On government fincas, women and children as young as 10 years have been given separate contracts entitling them to rations and payment of transporta' (Schmidt, 1967).

5) An important part of contracting is the cash advance, ranging from $ 1.00 to $ 50.00 but averaging from $ 2.00 to $ 10.00 (IIN, 1969; Schmidt 1967a). The amount taken in advance is generally what the worker considers indispensable and is used to, 1) defray transportation costs if not paid by the finca, 2) to leave with the family if left at home, or 3) for living expenses

[1] Sometimes witnesses are the local mayors. Otherwise, local authorities are usually not involved; they are called in only when workers do not fulfill their contracts. (IIN, 1969).

at the finca until he starts receiving payment for work. The value of the advance is deducted from the worker's salary at the end of his contract.

The worker thus enters the migrant labor force with little or no money, with an idea of what he needs to earn to enable him to return to his home. He then contracts for the work needed to earn this amount. It is clear from an understanding of these condition that there will be little ability and probably little interest by the worker to pay for any type of health services.

Transportation

The contractor arranges for workers to be transported to the farms, under the charge of foremen selected to direct the field work. Between 40 and 80 percent of the workers are transported in stake trucks, usually under conditions of danger and discomfort. (Schmidt, 1967a; IIESO, 1967). The fincas are supposed to pay for transportation but appear to do so only if the workers travel in the contracted trucks Bus fares are supposedly reimbursed through wage settlement, yet in some cases only the trip to the finca is reimbursed, the return trip cost being assumed by the worker. (Appelbaum, 1967).

Characteristics of the Migrant Population

Age and Marital Status

Data on family characteristics of the migrant population come almost totally from special studies. From these studies some

regional and crop differences can be identified. One study concludes that 21 percent of the workers were married and without children. Of the families with children, the average number per family was three. (Schmidt, 1969a).

Twenty-four percent of the respondents' wives were under age 20 and the majority of the male sample were under age 40, with a median age of 25.1. The proportion of single workers interviewed on cotton fincas was much higher than on coffee and sugar cane fincas. The young age of this particular migrant population would suggest that as young single men marry and young couples continue to have more children, the number of persons dependent upon migratory labor will grow.

A study by Gollas-Quintero in 1969, however found an average age of migrants in his sample to be 40.2 years. He observed, nevertheless, that migrant workers had been traditionally younger but as highland per family incomes persistently became lower, they operated as a push factor causing more migrants to come from all age groups.

Due to variability in study formats, there is no consistent pattern that can be derived concerning the numbers of migrants who travel accompanied by all or part of their families. Appelbaum estimated that one-third of the migrants from Ixtahuacán were women and children. The IIN study fround 56 percent of the migrants accompanied by families, and Schmidt found that the 120

workers in his sample were accompanied by a total of 112 family members, despite the fact that 38 of the workers were single. The latest study by IIESO, however, shows only 31 percent of migrant workers travelling accompanied by family members, the largest percentage coming from San Marcos (41 percent) and the smallest from Totonicaán (11 percent). This conforms to Schmidt's finding mentioned earlier that the longest contracts were found on coffee farms in San Marcos and that more couples were found on coffee farms than any other types. This finding indicates that the coffee finca maybe a more congenial host to migrants who wish to travel with their families, and because their families are with them, they stay longer on fincas. On the other hand, it might indicate that migrants can stay longer or need to stay longer during the months that happen to be peak coffee months, and thus bring their families with them because they will be staying longer.

These findings do indicate that a large percentage of workers are married and traveling with their families and that any finca health system for migrant workers will have to anticipate this population size and mix. This finding also serves to lower the estimate of the migrant population that actually is living on fincas from the estimate of the total population (1,500,000) dependent on migrants for their living. The actual migrant population living on fincas is probably around 1,200,000 or as low as 800,000. The latter figure is based on the IIESO data and assumes that fewer families

are now accompanying workers. This could be the result of shorter contracts.

Of the IIESO sample, those accompanying the migrants were a combination of brothers, male and female children, and wives or female companions. There data reflects that while there might be a decrease in the number of families that are accompanied, the number of family members that come with those who are accompanied is increasing. This may reflect two possible phenomena, 1) a greater need among those who do migrate to maximize the rewards of that effort, and 2) a larger migrant work force than has hitherto been imagined.

Literacy

Only one study supplies data on education and literacy. For the 120-worker sample interviewed by Schmidt, the literacy rate was 27.5 percent only about two percent less than national rural male literacy according to the 1964 Census (adjusted). Schmidt suspects that his sample was biased by the selection process and that the difference between the literacy levels of migrant workers and of the total rural population is probably greater than two percent. Eighty-two percent of the adults in the sample had not attended school at all and, although 76 percent of their children had attended school at some time, only 12 percent of them were attending school at the time of the interview.

Migration, language barriers, and the availability of

schooling facilities on fincas, all act as impediments to a normal educational sequence. Schmidt observes that migration does seem conducive to the learning of Spanish by highland migrants.

Attitudes Concerning Migration

The principle motive for migration is an economic one. The evidence gathered from a number of studies all point to this fact with great regularity and by an overwhelming margin. The principal reasons gathered from three studies are presented in Table 4.

TABLE 4

PERSONS INDICATING REASONS FOR MIGRATING

(Percentage)*

	Appelbaum	INN	IIESO
1. Need more money		78	89
- To purchase corn	60		
- To purchase corn & Clothes	16		
- To pay for cost of illness	6		
2. Need more land			
- Need money to purchase	4		
- Not enough land available		60	
- Poor yield from land		35	
3. Not enough jobs		30	9
4. Salaries in local area too low		18	3
5. Desired change in environment	4		

* Note: More than one reason was frequently given for needing to migrate.

The data suggest the low salaries paid on fincas would have little effect on whether or not people migrated, because the need to earn supplemental income is urgent. It does suggest that as salaries increase, workers might contract for shorter periods, unless population numbers offset the increased rate of earnings.

Disposition to Migrate Again

Of those surveyed in studies of this factor, consistently about 80 percent state that they plan on migrating the following season. (IIN, 1969; IIESO, 1976). From these studies, between five and 11 percent stated they were not sure, and from between four and 15 percent indicated that they would not. Of the 15 percent who stated that they would not migrate again, the following reasons were given: One suffers a great deal (20%), one gets sick (20%), one gets cheated on pay (20%), salaries are too low (17%), have other work (16%), and it is difficult to adapt to the environment (11%).

A somewhat different perspective is offered by Schmid's sample, in which he found that over one-third of the respondents wished to remain on the coast. Of that group 60 percent wished to become colonos, and 40 percent wished to work as voluntarios. The labor role as a cuadrillero is obviously perceived as an undesirable one.

Preference for Finca Type

The reasons given for preference of one finca type or of one particular finca over another were, in order of importance, the following: high pay, pay for the seventh day, free coffee and

atoles, free medicine, good water, easier work, shorter hours, better living conditions, better housing (Schmid, 1967). Since no percentages were given, it is difficult to gauge the relative importance of these factors for the migrants. Still, one can observe that the top-ranking four items are essentially economic in nature, correlating with the sharp sense of financial need typical of migrants.

The next in importance have to do with health which, as observed earlier, is a major factor in migrants' distaste for finca life. A perception which emerges in several ethnographies is that going to the coast to work is equated with getting sick (e.g., Cosminsky, 1972; Douglas, 1969). Indigenous medical belief includes the conviction that the human body can degenerate into a weakened condition due to carelessness, carrying overly heavy loads, overexposure to heat or cold, and sweating. Such conditions are thought to be endemic to the coast, causing it to be viewed as a dangerous and debilitating location by highland Indians. Among other things, excessive sweating under the coastal sun thins the blood, making one pale and weak.

Migrants state that they "know" they get malaria mange, rheumatism, shoulder pain, dysentery, diarrheas, and parasites, due to the heavy loads, perspiring, rain, cold water, poor sanitary conditions and poorly cooked or unaccustomed foods. As for malaria, migrants themselves report large number of cases (7% of coffee

workers, 25% of cotton workers, and 30% of cane workers; Schmid, 1967). At the same time, there is little generalized understanding of the mosquito as the vector. There is no doubt,however, that malaria is identified in the folk lexicon as a disease with a lowland origin. Furthermore, workers have become increasingly aware of the dangers of pesticides used on cotton fincas. Highland migrants, feel that they pay a high price,in health terms,for migration.

It is not surprising that more workers on coffee fincas preferred their location than did workers on cotton or sugar plantations (Schmid, 1967a). Coffee fincas are considered as having more acceptable climatic and generally more healthful environments. Also, the perquisites such as paid holidays, rations, some pay when ill, free medicine, permitting picking of fruit, and cutting of firewood, are more consistently provided on coffee fincas. Those workers on cotton fincas that stated they preferred their location cited as the major reason, that the higher wages paid, even given higher expenses for food, leave cotton workers in a slightly better economic condition than other finca workers.

The general attitude about finca life is quite negative; 41 percent compared to 32 percent who were positive. The positive group had no special complaints and were in the main satisfied with their work and food supplies. The negative group objected to overly hard work, unjust pay, illness, the quality or quantity

of the food, and migration in general. There was a positive correlation between the severity of the criticism and the length of stay, where, the longer the stay, the less enthusiasm was demostrated for finca life and the greater the sense of poverty, helplessness, and domination by the system (Appelbaum, 1967).

The conclusions one can draw from these studies of attitudes of migrants are that they are aware of their health status and the risks involved from migration and that they are in general negative about their work and their living conditions. Much of this attitude is shaped,no doubt,by the strong desire not to leave their homes and farms but the need to do so in order so supplement their income. The awareness of health risks and health status does indicate that migrants would value and utilize at least some types of health programs on fincas without the need to first be informed and persuaded as to their merit.

Effects of Migration on Family and Community

School Attendance

It is hard to calculate how many school-age children are affected in their educational trajectories by migration. Schmid (1967a) estimated that, at a minimum,there were 60,000 children of migratory workers on fincas in the 1965-66 season. This number could be considerably larger now, given the trend suggested earlier of greater numbers of accompanying family members.

Because of the youth of the migrants, we can assume that a number of these children will not be of school age. As some sort of guide to speculation, we can accept the same percentage of school-age children (ages 7 to 19) given in the 1973 Census (32.7% of the total national population), and conclude that roughly one-third or at least 20,000 of the children on fincas are between ages 7 and 19, or of school age.

The effect of migration on the education of these children is, in almost all ways, negative. When they migrate, because of the poor fit between the formal educational cycle and the coastal agricultural cycle, children miss weeks of schooling at both the beginning and end of the educational year. The result is missed or repeated grades and a loss of interest and/or dropping out. If children stay with relatives in the highlands while parents migrate, the impetus provided by parents is often lacking and quality of learning and attendance suffer accordingly. Needless to say, there are no educational facilities easily available to migrants on fincas. Even if there were, since children of school age are also of working age, the family's inclination would be to have children contributing to the fulfillment of contracts rather than attend school. The only apparent educational advantage for migrant children is that they do learn Spanish while on the fincas.

Ladinization

It is generally agreed that, with the exception of the learning of some Spanish as a second language the migration experience

does not ladinizice the majority of highland Indians. Amaro (1970) feels that what happens is that there is an essentially bi-cultural process in which the Indian adopts ladino dress, learns varying amounts of Spanish, and ladinoizes himself temporarily while on the coast. Upon return home, he returns to his Indian identity. Appelbaum (1967) found that the migrants from Ixtahuacán had little contact with colonos on the fincas where they went to work and might well have little contact as well with other indigenous groups whose native idiom was different from theirs. Elbow (1972) found that seasonal migration rarely induced the Indian to cut his ties with his home municipio, to move permanently, or to marry or establish permanent relationships with a woman outside his home municipio. Marshall (cited in Smith, 1972) found that not only do Indians who migrate to the South Coast retain firm ties to their highland communities, but that their religious practices are stronger, perhaps to compensate for the various traumas of migration and to maintain a sense of identity. It is clear from these data that any health service for the migrant worker will have to take into account the values, customs and beliefs of Indian cultures. This would support the involvement of the migrant worker in the delivery of services, possibly through the use of health promoters.

Summary

The nature and size of the migrant population working as laborers on large fincas presents one of the greatest complexities

of this study. The extension of health services to a sizable population that moves between regions and within a region, and that stays for rather short periods of time in any area, requires a program that has a broad regional focus and one that is well organized. Given the fact that this population group is economically active and employed in a rather stable export sector, the health program should be designed to draw on this economic resource. Given the level of health status and living conditions, the program should be organized to deliver, primarily, preventive types of health services. Due to characteristics of the migrant population, the health program should take into account cultural values and habits. The private and independent nature of the farm owners will require that a program be developed that is acceptable in terms of cost and type. These elements start to form some of the basic dimensions of a health program that can be initiated and maintained.

The Colono Population

Schmid (1967) and Manger-Cats (1966) have supplied the most complete profiles of colonos resident on export-crop plantations that are now available. Their descriptions will be summarized below.

Land Use

Colonos are often provided small plots of land by finca owners on which they may grow their own corn and vegetables and keep small stock. On the six coffee fincas studied by Manger-Cats, an average

of 30 hectares was provided per finca to colonos for their own plantings. On cotton and cane plantations there was generally little land provided for use of workers. The most common practice was for the owner to let out land and require the user to clear and establish pasture on it in return for its use. The average plot size was one to two hectares, with one-year's right to its use. The worker is also required to give the owner two quintales of corn per hectare, plus the established pasture. If the pasture activity was not part of the agreement, the colono could rent the land, paying the owner 3.5 quintales of corn per hectare, or $23.00 in cash, per hectare.

Income

The average income per domestic colono group was $ 245.00 per year. Adding income in kind and the colono's own production, the gross income per annum totaled $ 396.00. If one calculates housing, right to pick fruit and gather firewood, and the opportunity to buy corn at wholesale prices, it would appear that economically, the colono does better than the migrant. The same pattern of advantage prevails for the colono as for the migrant in terms of the comparative benefits of working on coffee, cane, or cotton fincas. Schmid and Manger-Cats agree that while cotton salaries are higher, the higher value of rations and land given on coffee and cane farms make the net benefits to the worker higher on coffee fincas.

Age, Family Size, and Education

Colonos, as a group, are generally older than migrants. In Manger-Cats' sample 56 percent were over 15. They have an average of 3.2 children, compared to 2.3 for migrants.

The level of education among colonos is on the average a little higher than the highland population in general, and that of the migrants. This is due to the fact that the law requires fincas with over 10 resident families to have a school. In 1950, 22 percent of all rural schools were on large land holdings. However, usually only two or three grades are offered and teachers are often unqualified and underpaid. Schmid reported that of his sample, 56 percent of the colonos were literate, as were 25 percent of their wives and 49 percent of their children, age seven and over. This was compared to a 27 percent literacy rate for migrants, 13 percent literacy rate for migrant wives, and 26 percent literacy rate for migrant children seven and over. Schmid feels that these estimates for the colonos are too high since they were supplied by finca administrators rather than by the colonos themselves.

General Well-Being

As a rule, living conditions are better for colonos than for migratory workers. While there are no countrywide data available on finca amenities, in Schmid's sample over one-third of the colono houses had electricity, 60 percent of the houses had windows, 25 percent had cement floors, and all had roofs of metal or tile, with

wooden or cement walls. The average house-size was about 12 by 18 feet. There are occasionally water supplies, at least in the form of some sort of neighborhood taps. Information is very fragmentary but it seems that few fincas have latrine facilities for their colonos. A few fincas --the number again is not known-- have some sort of health service for their workers, if nothing more than a once-a-month visit from a doctor. Such facilities are not available to migrants, nor as presently set up, could they handle the virtual doubling of the client population that occurs with the seasonal migrant influx.

As for the work benefits, coffee fincas were most likely to pay for the seventh day and holidays, and to give pensions or help to old people and widows. Despite the superior living conditions of colonos, however, less than 20 percent of the cuadrilleros Schmid interviewed wanted to stay on the fincas as colonos. Because of the natural population growth rate among colonos, and the landowners desire to keep the numbers of colonos to a minimum and to reduce them as much as possible, the migrant's opportunity to become a colono is limited in any case.

HEALTH STATUS AMONG FINCA WORKERS

Regional Reported Disease

Oficial data are not available to characterize disease rates within the regions defined for the finca health study, since these regions are defined along municipal boundaries and disease data is available only by department. In order to approximate the regions used in this study, departments have been grouped as shown in Map 6. The new regions formed correspond generally to the study regions. The major difficulty, not successfully overcome, was in defining Region III without cutting across departamental boundaries.

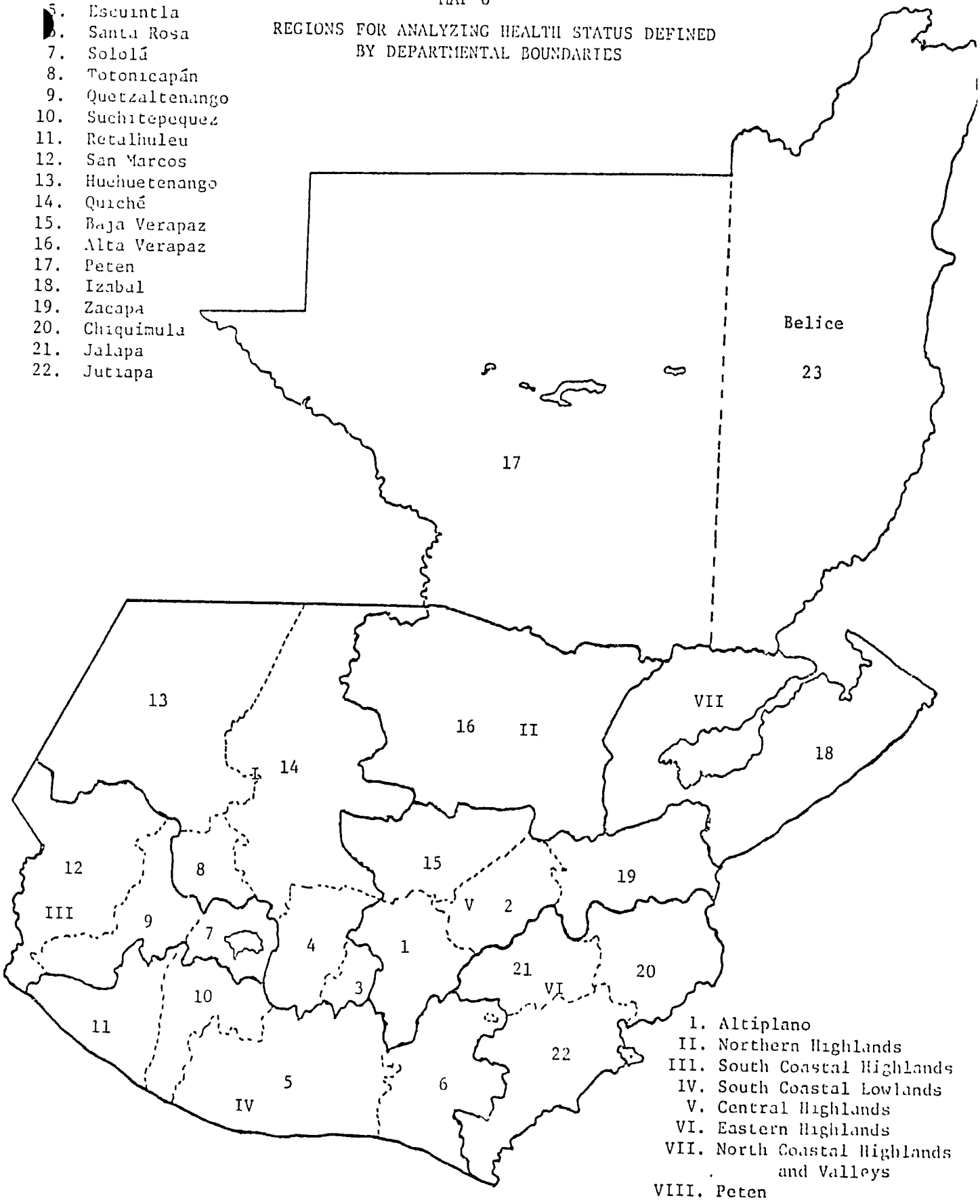
Data assembled by the new regions is presented in Table 5. The intent of this tabulation is to examine whether reported data over a three year period (1974,1975,1976) could be useful in characterizing differences in regional disease rates. However, some difficulties arise in the interpretation of this data. First, the rates presented are calculated on a simple population basis and are not adjusted for either the number of clinics on the level of clinic utilization which may vary among departments. Departments with more clinics and/or greater clinic utilization would artificially appear to have higher disease rates simply because they gather more information. An additional basic problem with the data is that they reflect only the diseases found in persons attending clinics which may not represent the disease experience of

REPUBLIC OF GUATEMALA

MAP 6

REGIONS FOR ANALYZING HEALTH STATUS DEFINED BY DEPARTMENTAL BOUNDARIES

1. Guatemala
2. El Progreso
3. Sacatepequez
4. Chimaltenango
5. Escuintla
6. Santa Rosa
7. Sololá
8. Totonicapán
9. Quetzaltenango
10. Suchitepequez
11. Retalhuleu
12. San Marcos
13. Huehuetenango
14. Quiché
15. Baja Verapaz
16. Alta Verapaz
17. Peten
18. Izabal
19. Zacapa
20. Chiquimula
21. Jalapa
22. Jutiapa



I. Altiplano
II. Northern Highlands
III. South Coastal Highlands
IV. South Coastal Lowlands
V. Central Highlands
VI. Eastern Highlands
VII. North Coastal Highlands and Valleys
VIII. Peten

TABLE 5

Disease Rates by Region (per 100,000 Population)

Region	Diarrheal Disease	Typhoid	Amebiasis	Measles	Pertussis	Tuberculosis	Malaria
I	159.3	6.1	136.2	22.7	15.2	71.9	7.6
II	244.3	4.9	137.8	61.4	47.3	64.2	5.1
III	178.2	14.1	134.3	22.3	18.7	177.7	6.8
IV	118.1	30.5	94.7	23.1	12.5	103.1	25.6
V	154.2	29.0	106.4	57.9	21.7	145.3	4.9
VI	213.8	36.5	220.8	40.6	11.8	74.3	39.0
VII	233.2	2.9	58.9	164.3	14.7	121.9	4.2
	165.4	20.9	125.2	41.0	18.4	116.0	12.8

the general population.

Despite these problems in data interpretation, the data may serve to indicate something of the relative frequency of important disease diagnoses. The data indicate several regions (Regions II, VI and VII) which report a relatively high rates of infectious disease. Region III reports a particularly high level of tuberculosis. Regions IV and VI report much higher rates of malaria than are encountered elsewhere. Within Region IV the majority of cases come from the department of Escuintla. Within Region VI the majority of cases reported from the department of Chiquimula. There has been increasing concern about a possible resurgence of malaria in these regions.

Health Studies of Finca Populations

The reported official data presented above provides some impression of regional disease patterns but provides no quantitative information regarding disease occurrence specifically in finca populations. A few studies relating specifically to health conditions on fincas have been conducted and are presented below.

Onchocerciasis Studies

Studies in Guatemala over many years have defined a regional pattern in the occurrence of onchocerciasis. The insect vector of this disease breeds in fast-flowing mountain streams so that the endemic areas for this disease are in mountainous terrain. The known onchocerciasis endemic zones are indicated in Map 7.

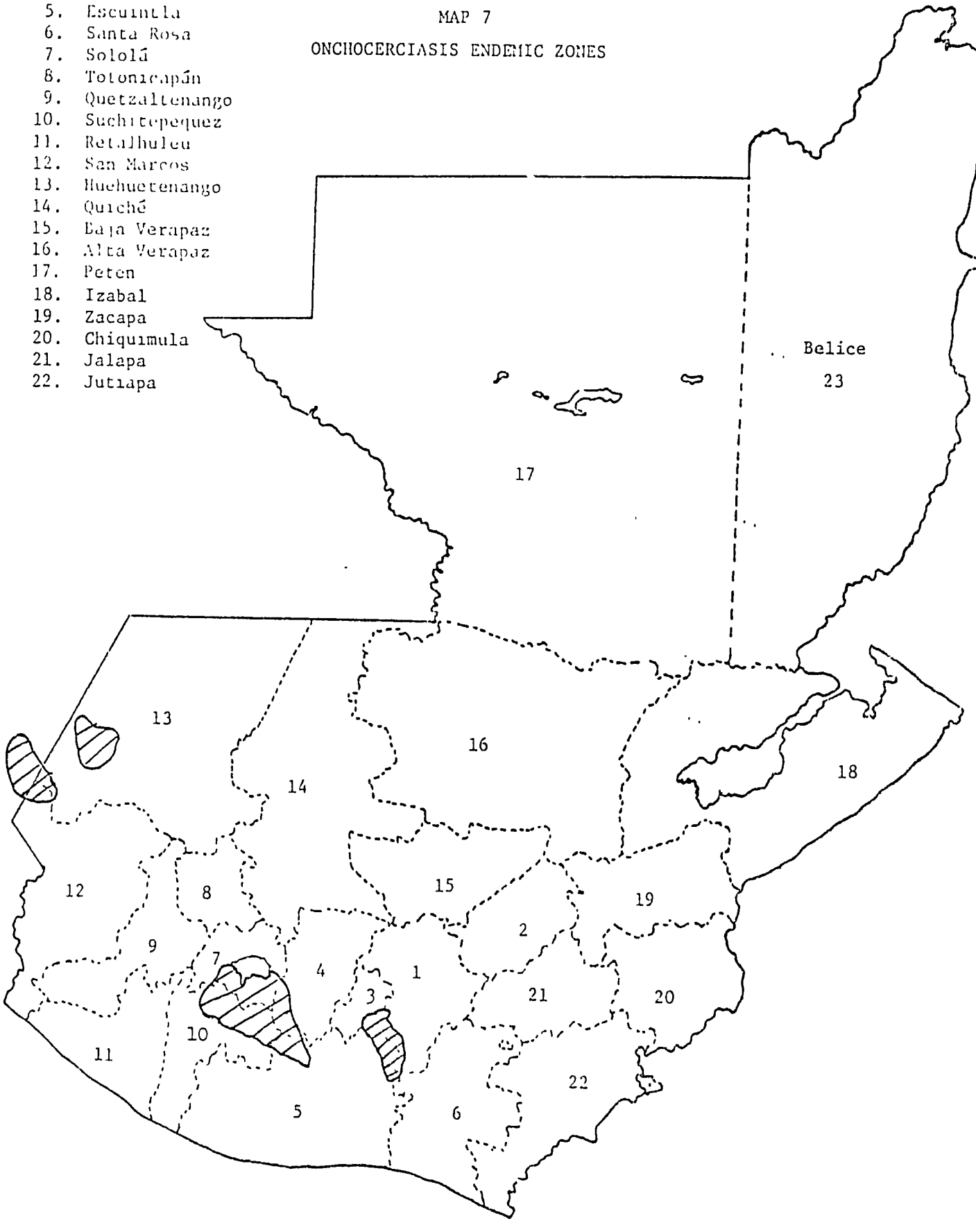
5.7-71

REPUBLIC OF GUATEMALA

MAP 7

ONCHOCERCIASIS ENDEMIC ZONES

1. Guatemala
2. El Progreso
3. Sacatepequez
4. Chimaltenango
5. Escuintla
6. Santa Rosa
7. Sololá
8. Totonicapán
9. Quetzaltenango
10. Suchitepequez
11. Retalhuleu
12. San Marcos
13. Huehuetenango
14. Quiché
15. Baja Verapaz
16. Alta Verapaz
17. Peten
18. Izabal
19. Zacapa
20. Chiquimula
21. Jalapa
22. Jutiapa



Studies carried out by the Central America Research Station (CARS) on coffee and cardamon fincas in the major endemic areas have indicated highly variable rates of infection with onchocerciasis. However, on the more heavily infected fincas infection is almost universal by adulthood. High levels of infection are associated with significant morbidity. Skin nodules occur which represent tissue reaction to the presence of adult worms. However, the most important complication is visual impairment which can progress to total blindness caused by the invasion of the eye by microfilaria. Preliminary results from a recent CARS study indicated that eye lesions caused by onchocerca infection may occur in as many as 15 percent of a heavily infected population. Bilateral blindness caused by onchocerciasis occurred in 3 of 86 (3.5 percent) adults examined on a heavily infected finca. It may be estimated that the rate of eye disease among finca workers caused by onchocerciasis in the endemic areas as a whole is in the range of five percent of the adult population, with blindness occurring in approximately one percent. These estimates indicate that severe eye disease caused by onchocerciasis, as well as that caused by trachoma, is a significant health problem which appears to affect many workers on the fincas of the endemic areas.

Finca Health and Nutrition Study - 1970

In July and August 1970 a broad assessment of health conditions on a finca in the pacific coastal region neal Retalhuleu

was carried out. In this study, finca workers and their families were examined clinically and data was collected related to disease problems, parasitic infection, anemia, mortality, fertility and nutrition status. This data has not been published. The results presented are taken from the draft reports made by the study participants, and must, therefore, be considered preliminary.

The prevalence of specific diseases was investigated by performing physical examinations on 653 finca workers and their families. Results indicated skin infections to be the most prevalent single condition, particularly in children. Scabies was encountered in all age groups. Overall, 159 of the 653 persons examined had a diagnosis of skin disease, representing almost 25 percent of the population.

Respiratory tract disease was encountered less frequently (6.0 percent). The majority of cases were upper respiratory infections in children. Bronchitis, found in nine individuals, was the most frequent lower respiratory disease noted. Three persons were diagnosed with bronchoneumonia and one with acute asthma.

Conjuntivitis was diagnosed in 43 persons (6.6 percent). Twenty three of the conjuntivitis cases were folicular in nature, possibly caused by trachoma. Pterygia were also found in 43 persons including many of those also having conjuntivitis. In 11 cases, more than one third of the cornea was encroached by

the pterygia formation. Thirty of the 43 pterygia cases were in persons over 40 years of age indicating that this is a chronically evolving process perhaps related to chronic irritation from dust and smoke in the environment. Corneal scarring was documented in two persons.

Injuries made an important contribution to the morbidity identified by examination. Of 157 adult males in the finca 10 reported temporary disabilities and 15 reported permanente disabilities. Four of the 10 temporary disabilities had resulted in a temporary inability to work, representing 2 1/2 percent of the work force. Two men had permanent disabilities which had resulted in a change of work after injury and the other 13 with permanent disabilities complained that their injury interfered with their work capacity.

Laboratory results indicated anemia and intestinal parasite infection to be prevalent disease problems. Overall 16.6 percent of the population were judged low in hematocrit level and 19.7 percent were judged deficient in this measure indicating an overall anemia rate of 36.3 percent. The most anemic group were adult males with approximately 35 to 40 percent having deficient levels and approximately 15 to 18 percent having low levels. Beyond the age of infancy a majority of persons had multiple intestinal parasites. Ascaris infection was the most prevalent followed by hookworm infection was shown to be related to anemia in some age groups.

Mortality and fertility were studied over the 10 year period prior to the survey. The birth rate was found to be 50.4 per 1,000 population compared with a crude death rate of 28.2 deaths per 1,000 population. Infant mortality was 129.9 per 1,000 live birth. This level of mortality is comparable to the 120 deaths per 1,000 live birth rate documented for rural El Salvador in a recent PAHO study. (Mortality in Childhood - PAHO Publication No. 262, 1973)

Causes of death in the 10 year period prior to the survey were documented where possible. Diarrheal illness was identified as the leading cause of death in all age groups except children less than one year of age. Respiratory tract infection including pneumonia was the leading cause of death in the first year of life and was a major cause of death in other age groups, particularly among adults. In the childhood age group measles was identified as the second most common cause of death, indicating the very serious impact of this disease on children with malnutrition. The severe nutritional deficiency state, kwashiorkor, was identified as the third most common cause of death in children one to four years of age. Neonatal tetanus was responsible for 6.8 percent of the deaths in the age group less than one year old. These deaths, as well those caused by measles, are potentially completely preventable by immunization.

The main focus of the finca health assessment was the

investigation of nutritional problems. Assessment was made of dietary intake in different age groups as well as physical growth as an index of nutritional adequacy. Dietary results in the 18 to 24 months age group indicated a consumption of only 55 percent of the recommended energy allowance and 68 percent of the recommended protein allowance. Dietary intake in the age group 25 to 36 months equaled 72 percent of recommended allowance for energy and 96 percent of recommended allowance for protein. Dietary intake in lactating women indicated the consumption of 82 percent of the recommended allowance for energy and 87 percent of the recommended allowance for protein. Studies in adult men indicated the consumption of 107 percent of recommended caloric intake and 134 percent of recommended protein intake. These results are comparable to other studies in Central America and stress the importance of energy as well as protein deficiency in the diets of the finca population.

Body measurement results in children indicated a high prevalence of growth retardation suggesting serious nutritional deficiency. Of the 83 children measured, 7.2 percent were in Grade III of weight for age deficit (less than 60 percent of expected weight for age). An additional 45.8 percent were classified as Grade II malnourished. The total 53.0 percent in Grade II and III represents a very high prevalence of severe weight deficit. The total number of children measured was small and for this reason the result must be considered approximate. However, recent field studies

in rural populations in El Salvador and previous studies in Central America (Central America Nutrition Survey - INCAP 1965-67) have indicated a prevalence of approximately 15-30 percent in the same Grade II and III category. The results of the finca study suggest that there may be significantly greater level of malnutrition among finca children than has been documented in other rural Central American populations.

Recent preliminary results from nutritional studies on several fincas by INCAP have also indicated a high rate of malnutrition among finca children. The prevalence of Grade II and III malnutritions was 33 percent in children 0 to 25 months of age and 50 percent in children 24 to 60 months of age, for an overall rate of 43 percent. Although the sampling for these studies is too restricted to draw firm conclusions, the data suggest that finca populations may be at a greater nutritional risk than other rural Guatemalan or Central American populations.

Conclusions and Program Possibilities

Although the data available is limited, sufficient information is at hand to characterize the major health problems of finca workers and their families: a high prevalence of infectious disease, malnutrition, high fertility and mortality. The fundamental causes of these health problems are the realities of poverty, a crowded, contaminated living environment and lack of basic preventive services. It seems reasonable that a program to improve the health

of finca workers should address itself as directly as possible to these basic causes. Of the three causes outlined, poverty is both the most fundamental and the most difficult to modify. However, environmental sanitation can be improved and programs aimed at this objective deserve a high priority. Such programs could include extension of piped water, provision of latrines and improvements in housing.

Provision of preventive services on a routine basis would also be of significant value. The morbidity and mortality caused by measles, whooping cough and neonatal tetanus could be eliminated. B.C.G. inoculation could reduce the impact of tuberculosis infection. Periodic provision of supplementary iron and semi-annual prophylactic treatment of intestinal parasites could reduce anemia and parasitic infection. Weekly medication against malaria may be a valuable measure in coastal fincas. Provision of family planning services could make a major contribution to health improvement and deserves high priority consideration.

Onchocerciasis persents special problems in terms of defining preventive programs. It is difficult to control the vector even in very localized areas, and broad programs have not been shown to be practical. However, development of some vector control activities, such as clearing breeding streams of vegetation, may be indicated in areas with particularly heavy infection. The removal of skin nodules, particularly those on the head, by special mobile teams

is an important measure which should help reduce the incidence of eye involvement. An onchocerciasis nodulectomy program currently exists in the Ministry of Health, but operates on very limited resources. Support might be considered to increase the resources available for this activity.

Overall, the major obstacle in developing programs for the improvement of the health of finca populations is not the definition of the important health problems or even the identification of the preventive measures required. The major obstacle is defining just how those measures can be applied in a practical, affordable and ongoing manner.

Existing programs of health care operating in the private sector offer some insights into how programs might be implemented. These programs depend upon what may be a growing awareness on the part of finca owners of the need for and even potential benefits from an improvement in living conditions and health on their farms. The interest of finca owners and their willingness to provide direct support is a resource which should be utilized in program development.

There are other institutional resources which may be utilized. The medical faculty of the University has little current capability in public health and preventive medicine. This institution might develop the faculty capability and provide a resource for in-country training in public health and in the orientation of students

towards the necessity of a preventive approach to disease control.

Development of government health programs could also contribute to improving health on fincas. However, the impact is more likely to come from extended preventive than from added curative services. Onchocerciasis teams currently operate and their role could be expanded. Immunization programs could be augmented. Developing programs through government channels offers the potential advantage of continuity by institutionalizing the activity. However, working through the health bureaucracy can be frustrating and difficult due to the rigidity of the system and the chronic limitation on resources. There may also be more resistance to government programs by the finca owners and even on the part of the finca workers, which may limit program acceptance.

AVAILABILITY AND UTILIZATION OF HEALTH SERVICES

General Availability and Utilization of Health Services

Levels of health services availability and utilization on fincas are considered to be among the lowest of any population group in Guatemala. The worker population is for all practical purposes without potable water and latrines, which contribute to high rates of parasitic infection and gastrointestinal diseases. Public programs to provide such services to rural areas through the Division of Epidemiology of the Ministry of Public Health and Social Assistance (MSPAS) are not available to fincas due to their private ownership. This is also true of national fincas operated by INTA. The only efforts to provide services are by the finca owners themselves, typically contracting with an outside private or voluntary health or medical group or individual. These efforts are very limited. The availability of nutrition programs such as food supplements, nutrition education or technical assistance in raising subsistence crops are equally limited. Again, they consist of a very few voluntary efforts or by owners contracting with outside groups or individuals. This contributes to an extremely low level of nutrition in the population and correlates with the high morbidity and mortality rates. Other preventive services such as vaccinations and malaria control are more available to the fincas due to the outreach nature of the services. Vaccination campaigns frequently do not reach much of the worker population due to their poor organization, and due to the migrant nature of much of the population. It is estimated that only about 10 percent of the population have received the majority of their vaccinations. The malaria campaign has been the most effective of the health services due to its outreach nature, the organization

and direct provision by special malaria teams and because much of the program is directed at targets permanent in nature, i.e. houses and swamps instead of people. The malaria campaign to spray houses has been currently halted due to a shortage of spray. Thus, although the malaria program is potentially effective it still suffers from interference from government bureaucracy from time to time.

With regard to medical services, the levels of availability and utilization are extremely low. The public health system of hospitals, health centers, and health posts are not easily accessible and are seldom used. The services of the Social Security hospitals are limited to accidents, and due to their non-accessibility, are used only by workers who incur major accidents. Most medical care services are provided by private clinics located on fincas (usually staffed by an auxiliary nurse) or through contracts with private medical doctors in surrounding small towns. The majority of fincas have almost no medical services available at all.

A basic planning decision is raised as to what priority should be given to the types of health services to be provided. All types of health services are currently inaccessible and underutilized. Given the poor nature of the general living environment, however, and the high levels of morbidity and mortality that are associated with it, the overwhelming evidence suggests that priority be given to water, latrine and nutrition programs. Unless the living conditions of workers and their families are improved, no amount of medical care can have much impact on health status. It is therefore recommended that almost the total initial effort to extend health services to fincas be in the area of preventive services. This again raises the question

of the interest and desire of farm owners in providing preventive types of services. While there has been some expression of interest by finca owners to jointly build hospitals and to provide other types of medical services, there seems to be little preference for these types of services over those directed at improving living conditions. Many owners who were interviewed during this study expressed the feeling that their business was not health and they would go along with what the health experts suggested. This comment does not suggest that there is an outpouring of interest and support by farm owners for health services. As previously indicated, this support comes from relatively few. The observation does suggest however that the finca owners have a strong "professional" orientation or mentality, resulting no doubt from the fact that they (appropriately) see themselves as professionals or experts in their areas. This orientation or set of values might be useful to draw on as a basis for selling the idea that health services of a specific type should be made available to their farm workers. It also suggest that the idea might be more effectively communicated to a finca owner by a medical doctor. This supports an impression that much less resistance will be given to a program that involves a medical doctor than those based on paramedical personnel. This does <u>not</u> suggest that the actual services cannot be entirely, or at least primarily carried out by paramedical personnel. It does suggest that a medical doctor be involved in initiating the program in a finca and continue to coordinate the service and relate to the finca owner.

The specific types of health programs initiated should build, to the extent possible, on those services that already exist and that seem to be achieving some success. The following sections include a

general discussion of various types of health services and systems that exist in the country. There will be no attempt to provide a comprehensive analysis of each service but only to provide some detail on how well they are meeting the need and their potential for expansion.

The Public Health System - Ministry of Public Health and Social Assistance

The Public Health system in Guatemala consists of basically three types of programs, 1) those provided through a decentralized system of public health hospitals, health centers and health posts and consisting of medical services provided on demand; 2) those provided through the same system but through national campaigns, e.g. vaccination, that are outreach programs organized and supervised nationally by the Ministry, and 3) those services organized and provided directly from the Ministry and bypassing the decentralized system, e.g. malaria and sanitation programs.

The decentralized public health system consists of hospitals located in the major city of most departaments and including all hospital services except specialty care. Health centers are located in large towns and are staffed by a medical doctor plus auxiliary personnel and provide medical consultations and referrals. Health posts are located in most municipalities and are supposed to be available on the basis of one health post for each 1,000 population. In general, services provided through these facilities are not accessible to finca populations and are infrequently used by them. It is possible for health posts to be located on fincas having more than 1,000 population but only about 40 exist. In order to have health posts

placed on fincas, the finca owner must make available at least 25 x 20 meters of land and a building. The ownership of these must be turned over to the Ministry of Health and the Ministry will then staff and operate them. Access to the health post by persons living off the finca must also be granted. This model for health services seems to have little potential to meet the problem, first because it is oriented to curative services and secondly, because it will not be accepted by the finca owners. There will be resistance to giving to the Ministry the title to land but more importantly there is considerable resistance to programs of the Ministry and to all programs administered by the Government. The general feeling is that the public health services are not available, are of poor quality, are inefficiently provided and involve much bureaucratic red tape. Given this widely held and strong feeling, it is doubtful if the public health system can be effective in extending health services to the fincas. Doing so will certainly meet with considerable resistance.

Services provided by the public health system but administered centrally by the Ministry have been more effective, in part because they have been outreach in nature. The national campaign to vaccinate children against measles, D.P.T. and polio and to administer BCG has reached most fincas but coverage has been very low. Due to the reported poor organization of the program, many individuals are not informed and others not provided transportation to where the shots are given. The migrant population presents a special problem here in that it frequently misses the services due to its migrant nature. Almost no workers retain their cards given to them to indicate what shots they have received, making it difficult to know who has received immunization and who yet needs them. It is recommended that vaccination campaigns take into

account the special problems of providing services to farm employees and become more effective in reaching a greater number of the population. By doing so, the current program should be effective in reaching a high percentage of the worker population. This type of delivery model is not recommended, however, as a means for delivering a more broadly based set of finca health services, such as other preventive health care and medical consultations. The nature of the program assumes that the service is provided only at periodic intervals through an intensive campaign. As such it is effective as a means for delivering vaccinations but could not be maintained as an efficient system for delivering routine health and medical care.

The third type of service provided by the public health system is the direct vertical programs that are organized and administered from the national level. Environmental health services and the malaria campaigns are examples of these services. The environmental health program will not be discussed here in that it does not reach the farm worker population and the potential for extending it to provide services is very limited. The primary limitation is that the water and sanitation systems on fincas are private systems and the environmental sanitation program is limited to public systems. The malaria campaign needs to be further explored as a type of organizational mechanism that might be used to deliver a broad range of health services to fincas on a continuing basis.

The malaria campaign is operated under the Division of Malaria, one of the nine Divisions reporting to the Director of the Dirección General de Servicios de Salud of the Ministry. This structure was created by Law number 31-69 in 1969. Under a Presidential decree in 1976, however, the Minister of Health was given the authority to modify

the organization and function of the Ministry where conditions in the country warranted. Under the decree (Reglamento de Ministerio de Salud Pública y Asistencia Social y sus Depedencias, 3 Feb., 1976) the Director of Malaria was placed administratively directly under the Minister. This served to identify malaria as a top national priority and increased the administrative efficiency of the program. Outside the Ministry the program is organized into nine regional zones and each zone into sectors or areas. In addition to the spray teams, each sector has a voluntary coordinator who serves as the facilitator and main point of focus for the program. The coordinators are selected so that they represent the most influential and prestigious individals in the area. They frequently include mayors, Fathers in the Church and owners of large industries or fincas. This arrangement is considered to be an effective means for having the campaign accepted in the community, and gives a focal point for resolving conflicts and problems of participation.

As a means for getting cooperation to participate in a program and as an organizational framework for effectively managing a program, the malaria campaign has many attractive features. It can be easily focused on a specific problem in a specific geographic area, and avoids the image and the reality of complex bureaucracy that characterizes the decentralized system of public health services. A primary strength is the visable focus on a community influential as a means of gaining acceptance for the program. It is recommended that an organization structure such as that used by the national malaria campaign be given consideration as an effective means for gaining acceptance, initiating services and maintaining services on large fincas. This does not suggest that the national program would actually deliver and pay for the service but

that it would be used as a technical assistance unit and as an organizational unit to bring together a delivery program that is acceptable and would be maintained by the finca owner. The primary involvement would thus be to start finca programs and to restaff or reorganize them as needed. The only variation on this theme might be that the direct national program actually provide services to migrant workers on fincas. When the migrant worker arrived they could be met by national health program workers and given health exams, vaccinations and instructed as to living standards that need to be maintained. Living areas could be improved through cooperation of the national program workers and finca owners and inspection and education programs maintained by the health workers while the migrants are in residence. The health workers could use members of the migrant population to assist in carrying out these functions if this would prove to be effective. It is likely that such a program would have some initial acceptance by finca owners and if well managed could gain acceptance with others. The provision of health services through the national program could be paid for by the finca owners on a per person-per day basis. Such an approach would result in little cost to the government. It is felt that the cost of such a program will be acceptable by the finca owners if the system can deliver high quality and well organized care. The primary resistance does not seem to be the cost of the program but the idea of paying something for nothing.(1) The health program must deliver.

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(1) Again, this does not suggest that there will not be considerable resistance to any finca health program but cost is not believed to be the main constraint with regard to acceptance.

It is recommended that consultation be given to the development of a national direct program for finca health services. Such a program could provide the organizational framework for initiating and maintaining private health services provided to colono populations and as a direct delivery program for migrant workers. As a program for migrant workers it would have a broad regional focus that could respond to migrant patterns and a capacity to deliver a major program in a finca for a short period of time. There are few if any options to such a national direct program that could meet these conditions.

The Social Security Institute (I.G.S.S.)

The Social Security system provides an important health service to farm workers but one that is very limited in terms of scope and accessibility. The services provided by I.G.S.S. to rural areas consist of a network of hospitals that provide services for the treatment of trauma. Both permanent and migrant laborers and their families are eligible for services and services cover both work and non-work related accidents. Although ambulance service is provided by I.G.S.S. the distance and accessibility to the finca make access difficult. I.G.S.S. hospitals are located primarily in department capitals and they are a great distance from most fincas.

The question of extending I.G.S.S. coverage to provide more services and to make them more accessible involves a more basic question of health system development and efficiency. While it is true that I.G.S.S. coverage, if it is going to be more effective, must be made more accessible and include more workers and services, it is difficult to generate much argument in favor of such a plan. I.G.S.S. has completed a plan to broaden the range of services offered in rural areas and for extending services to small population catchment areas, e.g.

fincas and pueblos (I.G.S.S., Planificación Integral y Solución Regional del Sistema Médico Hospitalario para la Región Nacional Sur de la República de Guatemala). This plan calls for the development on the south coast, of a system of health centers and health posts coordinated with I.G.S.S. hospitals to provide a full range of health services. The plan is six years old and still has had no action on it so there appears to be little probability that it will be initiated in the near future. It does serve to focus on the issue of the overall development of the health system in Guatemala and the advisability of developing multiple systems that will certainly lead to increased inefficiency. This increased inefficiency will slow the development of an overall system that reaches the maximum number of people with the maximum number of services. With this view in mind, it is not recommended that the I.G.S.S. system be expanded to provide more services and more accesible services to the finca population. It is recommended that a special study be initiated to provide guidance to the overall development of health services in Guatemala. The efficiency study planned by Planificación Nacional and USAID will address some of these issues but is too narrow in focus to provide sufficient analysis of the problem and future direction for planners and decision makers.

The Private Sector

The private sector includes health services provided through a contractual agreement between a private medical service, usually a doctor or hospital and a finca owner. A special type of arrangement includes services provided through contracts with private voluntary organizations (PVOs) such as C.A.R.E. and H.O.P.E. Private contractual arrangements must be credited with providing much of the health and medical care currently available to farm workers. Although relatively

limited in terms of total numbers of people covered, such programs have been growing and have been one of the most sucessful in extending services to finca populations. It is estimated that such services currently reach only one or two percent of the farm labor population. They do, however, provide many interesting models for the delivery care that can be extended. These will be explored in more detail in the following section.

If one includes in the private sector the employment of nurse auxiliaries by finca owners to staff an infirmary on the finca the percentage of coverage would have to be considered greater than one or two percent. These services are, however, so limited in terms of number and quality, they have not been included in the analysis.

The major constraint that results from a health system that is dependent on private initiative is the lack of options when the initiative is not great enough to extend and maintain an adequate health system. Such a system might reach the estimated 10 percent of the owners who are actively interested in making services available, and even a few percent of those who are more complacent but not opposed to such services, if the initiative is taken ty the private medical sector. The system is thus dependent on either the initiative of the finca owners or of the private medical system. There is probably considerable potential for expanding such a system, but to capture the maximum potential, the private sector will need some type of enabling organization. Such an approach would likely increase the effectiveness of the private system regardless of whether it is the finca owners or the medical providers that are organized. The organization of medical providers is more likely given their primary

interest in health, although the difficulty of doing this is recognized. In this regard, private voluntary organizations provide a type of organizational focus that could be effective in contacting finca owners and expanding services. They are limited in their effectiveness in that their approach has been more crusader oriented. They have been more oriented to operating independently and focused in certain isolated areas, than a broadly based health systems approach. They have then lacked the organization structure and expertise to effectively extend and maintain services.

PROPOSED ACTIONS AND PROGRAMS

RELATIONSHIP TO GENERAL HEALTH SYSTEM DEVELOPMENT

The development of any program to initiate or extend services in a country should be carried out within a more general framework or context of health system development. Health system development is considered as those activities that 1) provide an increase in the amount of funds allocated to the health sector, 2) provide an integration of services in order to increase the continuity and efficiency of care or 3) that increase the level of health services to the underserved population. To the degree possible any health development program should be so directed that it maximizes the development potential of the overall health system. Programs that promote one area at the expense of others should be avoided or carefully justified.

This general development philosophy will be followed in this analysis to arrive at recommended actions and programs. Programs recommended will be considered first in terms of their ability to be financed, particularly as they bring additional revenue into the health system. An important aspect of this objective, however, is the continuity of the funding source and not only its initial capacity. A second consideration will be the degree to which the program contributes to the coordinated development of the overall health system. This does not mean that new services and new organizational frameworks (health subsystems) will not be considered and recommended. It does mean that each program recommended will

be considered in terms of how it relates to the existing health system and its capacity to better nationalize the overall provision of health services. The third development objective serves as the primary focus for this project, to extend services to a population group that is currently underserved.

With regard to the extension of health services to finca workers, there are two basic development problems that have been identified. The first is to define and describe a basic program that brings to a finca those health services that are most needed and one that delivers services most effectively and efficiently. The type of services that have been defined as priorities in this study are those that are preventive and outreaching in nature. A second development problem is to define and describe an overall organizational framework within which services are extended to the maximum number of fincas possible and that is effective in maintaining them beyond the initial implementation phase.

ALTERNATIVE DELIVERY MODELS AND ORGANIZATIONAL FRAMEWORKS

Regional or Crop-Based Agricultural Associations-The ACOGUA Clinics

One of the more imaginative health services programs in rural Guatemala is provided under the initiative and direction of the Association of Coffee Growers in Eastern Guatemala (ACOGUA). Currently ACOGUA sponsors two rural health clinics, one located in the finca El Progreso (ACOGUA I) and a second located in Barberena (ACOGUA II) in the Departamento of Santa Rosa. The clinic located at El Progreso has been in operation for almost six years and the clinic at Barberena opened in February 1977. One of the most notable aspects of these clinics is that they are operated jointly

by members of ACOGUA, by the Ministry of Public Health, and by the Social Security System. ACOGUA II also includes as part of its operating structure the Municipality of Barberena. This organizational arrangement is unique in the country and has come about primarily through the progressive leadership of ACOGUA, including such individuals as Mr. Gregorio Padilla. There is a contractual agreement for each clinic that sets forth the rights and responsibilities (including financial) of each participating organization.

ACOGUA I, located at El Progreso, serves a population of some 20,000 located in a 12-kilometer radius from the clinic. Included in this services area are several fincas and small pueblos. All persons in the area have access to the clinic. It is the proximity to the population that provides one of the major advantages of this health center. The capacity of the Guatemalan health system to efficiently provide health clinics in isolated rural areas will depend in part on its ability to provide cooperation among the various subsystems in the health sector eg. IGSS, the public health system and private health programs. If each subsystem acts independently to provide such services, each will be constrained in its ability to extend care to underserved areas.

ACOGUA I is staffed by a full time medical doctor and two auxiliary nurses. The staff lives on the finca near the health center. The desire to have a full-time staff available in the finca community was one of the primary motivations for developing a centralized clinic involving a number of fincas. Prior to the

clinic most of the fincas had contracts with private medical practitioners who were available only one or two days a month. There is included in the clinic a dental chair, and a dentist visits the clinic one day a month. The Ministry of Public Health provides an ambulance for the clinic that is used only occasionally. The full time availability of an ambulance is probably unnecessary given its infrequent use. It was pointed out that the ambulance was an old model and was not worth much.

Currently there are 20 fincas that contribute regularly to the ACOGUA I health plan and thus have membership in the organization. Their monthly contribution is approximately $1,600. This membership entitles the farm workers and families of each finca to receive medical services from the clinic at a cost of $ 0.25 per treatment (not per visit). Dental costs are $ 0.50 per treatment. The cost to all other patients is $ 1.50 per treatment. The average rate of consultation per month was 617 in 1976, reaching a peak of 891 patients in January. The high January figure is partially the result of the utilization of services by the migrant population during that period. The rather high rate of utilization of services reflects the proximity of services to the population and their accessibility due to a full time clinic staff. The cost of the services to the patient is considered reasonable, yet sufficiently high to avoid much potential overutilization. The overall cost of the program is $ 1,800 per month at $ 2.90 per consultation. Given the full time nature and the high quality of the service this is very reasonable, and could

be easily maintained in other locations.

The major advantages of ACOGUA I are its close proximity to the population, the heavy financial contribution of the private sector and the integration of the private, public health and the IGSS systems. Its acceptance by fincas in the region also reinforces the feeling that a regionally based or crop based system can bring in fincas that would otherwise not participate. The primary disadvantage of ACOGUA I is that it is oriented almost entirely to medical consultations and not preventive health care. The clinic staff does provide an effective vaccination campaign but is not involved in nutrition education or in water and latrine projects. The clinic does distribute food supplements provided by CARE but lacks an effective nutrition education program to accompany it. There is no reason, however, that the clinic could not provide an effective program of preventive health services. Outreach services, possibly through the use of health promoters, could be added to the clinic with minimal extra cost in the short run and possible savings in the long run. The long term benefit of such a program could easily justify this cost. Such an extension of the current service of the clinic could be done with little or no reorganization of the health program and only slight modification of the clinic staff.

ACOGUA II does not have sufficient experience to provide baseline data for comparative purposes. A visit to the clinic demonstrates the very high quality of the facility and the involvement and level of activity of the clinic staff. ACOGUA II

will probably be less effective as a health program for farm laborers in that it is located in a town. The near proximity to the population is considered a major advantage of ACOGUA I.

The developers and managers of the ACOGUA clinics must be commended for their efforts to provide innovative ideas and programs for extending health services. Many of their ideas can be effectively introduced in other areas of the country and will serve as the basis for many recommendations contained in this study. The organizational framework within which program can be extended and maintained is the cooperative agreement between the various organizations involved. Within the agreement, any organization, e.g., ACOGUA or the Ministry, can provide the motivation for extending services to new areas. The organization most likely to provide this initiative will be ACOGUA. Within its regional area of influence it can be effective in initiating new clinics and enrolling more finca owners. This model includes both the regional orientation along with the crop orientation of the coffee growers. There is no reason why non-coffee producers cannot be enrolled in the plan, although there might be some initial sensitivity by a cotton producer to enroll in a coffee "dominated" (in terms of numbers and name) system. It is felt that this reluctance can be overcome.

The basic question wich this model concerns the number of other regional or national crop or agricultural associations that have an interest in taking the initiative to develop a finca health

system. Based on information gathered from major national and regional agricultural association it can be concluded that there are very few.[1] There has been some interest and efforts by other associations that might be used as a base for building new programs. For example, the Asociación General de Agricultores (A.G.A.) sponsors a study of the effect of using tape-recorded messages on sanitation, nutrition and health that were played in the areas where the women of the finca washed their clothes and utensils. They claimed some success in changing behavior, but the program has since been discontinued. The Asociación Nacional del Café (ANACAFE) has organized a social action section that is currently headed by a medical doctor. This section has participated in vaccination campaigns and in relief activities but lacks an organizational framework with which to maintain and manage programs. As a result, it combines its social action program as part of its public relations effort.

It is doubtful if sufficient agricultural associations can be involved in developing finca health system to provide a comprehensive system. Efforts should be made however to attempt to interest other associations, through demonstration visit to the ACOGUA clinics, reporting in the association journals such as ANACAFE, REVISTA CAFETALERA, and through visits to other associations and finca owners by representatives of ACOGUA. An organized effort to carry out these types of activities could be assumed by one of the national associations or a national direct program of the

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1 See list of Associations reviewed in Appendix 3.

Ministry of Health.[1] While such efforts will not result in a comprehensive finca program, where associations can be enlisted they can be effective in many cases in involving finca owners in a health services plan.

Private Preventive Health Services Model-Dr. Werner Ascoli

An approach to the delivery of health services to farm workers has been developed by Dr. Werner Ascoli, that has potential for application to other areas of the country. Dr. Ascoli is a private practitioner living in Guatemala City who has contracted to provide preventive health services to seven fincas on the south coast. One of the major attractions of such a program is that it is oriented almost exclusively to preventive health services, including TB testing, vaccination, potable water, latrines, family planning and vaccination of dogs. Dr. Ascoli strongly holds the belief that the extension of curative medicine to fincas will have little or no impact unless the living conditions of the population are first improved. This is also an argument made in this study . A second important aspect of this service model is that it is totally private, involving a private practitioner delivering services under a contract negotiated with the finca owner. Although the number of fincas provided services is only seven, Dr. Ascoli indicates that the interest by finca owners is much greater and that he could contract with many more fincas but that he does not have the time to spend each month delivering care on fincas. This fact reinforces the idea that finca owners are responsive to private medical initiative and that they will support the provision

[1] A national direct program refers to a program that is carried out directly from the Ministry and not through the public health system. The malaria campaign would be an example of an existing program.

of preventive health services. It does not answer the question of how widespread the interest and support is among finca owners but where it does exist, a privately-based health program most likely has the best chance of being implemented and maintained.

The fincas on which Dr. Ascoli provides services vary by crop and size, the largest having a population of 840. On most fincas, he visits one day each month, although he spends two days each month on the largest. Each of the larger fincas have a half-time health promoter who is paid by the finca. The promoter is responsible for maintaining the population records. to visit homes and assist families, to make observations about problems, to inform the people of the visit of Dr. Ascoli and to inform them of any services, that they need. The time that Dr. Ascoli spends on the finca involves vaccination, periodically taking stool specimens and doing blood samples, inspecting latrines, giving worm medicine and doing limited consultations. There is great emphasis away from consultations and if a medical consultation is needed, the person is typically referred to a private practitioner in the area, usually also contracted by the finca owner. In order for Dr. Ascoli to continue his program on a finca, the owner must agree to cooperate to build such things as latrines and water systems for the workers. On the one finca that was visited during this study,the owner had agreed to put in a sealed deep well with a florinator with water piped to each house. There was also an abundance of new latrines that had been constructed (although not properly used) and many new houses were being constructed for the

workers. It was also reported that 61 percent of the fecund women are practicing family planning (depro- Provera). The finca owners have expressed a great interest in family planning and the acceptance by the workers seem to be at a high rate. One apparent reason for the interest on both sides is the size of the young population that is growing up and living on the finca but that is not needed as finca labor. To the extent this pressure exists on other fincas, it might be an attraction of health programs to finca owners.

For the services provided to the finca Dr. Ascoli receives $ 150 per day. Additional costs of the program include the cost of any drugs as well as the investment in such programs as water systems and latrines. For the cost of the program it is considered to be and extremely good investment given the nature of the services provided. It is also a cost that could be assumed by even rather small finca owners.

One of the major shortcomings of the program as it currently exists is the total emphasis on permanent farm laborers and their families. The problem of providing preventive care to migrant workers is considered to be too great and too complex to effectively address through such a program. The major complexity is not with the provision of facilities and services per se but one of their proper use. Attempts were made on one finca to provide latrines to the migrant population but the effort was termed a "disaster" by Dr. Ascoli. The major problem with both migrant and permanent worker populations is changing life styles and

habits, suggesting a program of a long term nature. This is not possible with migrant population due to their increasingly shorter stays on the fincas. This suggests the need for a major effort to change living styles and habits in the home areas of the migrant populations, basically the altiplano. It also suggests that if health programs are provided to migrant workers on fincas they will have to be continuous in nature, closely supervised and oriented toward getting the cooperation of the migrants to participate. Programs such as those developed by Dr. Ascoli will likely not be effective in meeting these needs.

Another question that is raised by a program such as Dr. Ascoli's is its capacity to be extended to other areas. One of the major issues is the ability to attract medical doctors to such a program. It is difficult for a doctor to get to the location and to spend a week each month away from the city and his home. He has to be particularly willing to undertake these hardships for $150 a day. It is not apparent that a sufficient pool of medical doctors could be attracted to the program to serve even the probable limited interest that exists among finca owners. It is even less apparent that the motivation for extending the program can come from the doctors. It is possible, however, to visualize some modifications of such a program that might be equally attractive to finca owners yet to reach more fincas per doctor involved in the program. Such a program might involve the use of health

technicians to carry out many of visits and to supervise the health promoters on the fincas. Such a program should be given consideration. Such an effort would allow each medical doctor to provide services to many more fincas.

The individual nature of the program (finca owner and medical practitioner) results in a lack of a broad organizational framework within which doctors can be recruited and finca owners persuaded to purchase the services. Without such a framework being developed, the program would depend on the individual initiatives of either the owner or medical doctor. As indicated, neither group is likely to show great interest on their own, but might be persuaded if an organization existed to bring practitioner and owner together. This need is recognized not only for the initiation of a program but to maintain it if the medical doctor withdraws. Some organizational framework must be provided. Alternative approaches might be to organize a private corporation that could provide the organizational framework as well as technical assistance to programs. If special courses were needed for health promoters or technicians the corporation could be influential in getting the public sector to provide them or could provide them directly.

An alternative organizational framework might be a national direct program operated out of the Ministry of Public Health. Such an organizational framework has already been discussed in general terms(see discussion under Malaria Campaigns). The idea here would be to combine the national program as an organizational framework with private delivery models for actually providing the services.

The organizational structure for a national program could be similar to the malaria campaign previously discussed. There could be regional zones, initially on the south coast, with finca owners serving as volunteer coordinators for the program. The responsibility of the program would be to sell the idea of a finca health service to finca owners (through the involvement of the coordinator) and to design and organize a private service that could then be maintained by a private contract between the medical service and the finca owner. If special training progrms were required it would be the responsibility of the national finca health program office to provide for it. The national program could also be the focal point for organizing and expanding regional or crop-based agricultural association health plans such as those discussed in the previous section. It could also get involved directly in the provision of health care to migrant workers (see discussion on direct malaria campaign). Given the nature of the migrant labor health problem no other type of program is considered to have such a potential.

The development of a national finca health program will involve a major policy decision by the government. It will not be just another program within an existing structure but a new major health system of the Ministry. It is <u>not</u>, however, a new direction, and is considered to be an effective means of carrying out stated Ministry objectives to extend health services. The nature and magnitude of the finca health problem is considered to be sufficient to warrant the development of a major effort by the Government.

Finca Health Services through Private Voluntary Organizations (PVOs)

The description of PVO-based finca health services is one basically of the divergences between the potential and the reality. A good description and analysis of PVOs in Guatemala has been completed (Keaty and Keaty, A Study of Private Voluntary Organizations in Guatemala, 1977) and identifies that 150 are health-related. The interests, objectives and types of PVO programs are consistent with the needs on fincas, but few efforts to date have been initiated and fewer still have been maintained. The reasons for this are not entirely clear although the Keatys' report suggests that project location is related to the desirability of the area as a place to live (Keaty and Keaty, p. 264). While fincas were not specifically identified as living areas many of them would clearly not rate very high on the desirability index. Another possible explanation is the lack of information on finca health conditions and the need for health services. To the extent this is true one could support the recommendation of the creation of a clearing house of information on needs in the country (Keaty and Keaty, p. 278). The success of PVO efforts on fincas that have been attempted lend support to their organizational framework as a viable one for finca health services.

The most extensive effort to provide finca health services through a PVO was carried out by Project CONCERN on the fincas Moca, Panama, Adelaida, and Los Andes. This program included a clinic/health promoter based program where a medical doctor visited each finca once a week and provided consultation for complex cases that were beyond the competency of the promoter. Each clinic had an outreach program that included house visits to provide information on nutrition, sanitation,

family planning. Water quality was tested on all fincas and plans were being developed for improved water systems. In addition "Under Five" (nutrition education) programs and the distribution of food supplements were being carried out through nutrition centers located on each finca. Although data on the effect of the program are not available, the orientation of the program to preventive health services is supported by this study. The program was discontinued in 1976 when INCAP (Instituto de Nutrición Centro América y Panamá) initiated health services on the fincas as part of a research program.

The total cost of Project Concern finca programs in 1976 averaged about $12.00 per capita per year which includes all services provided. Of this amount about $9.00 per capita per year was spent for preventive and ambulatory services and $3.00 for hospitalization and general program administration. All costs of care provided in the finca were born by the finca owners. Project Concern paid for the hospitalization, and general program administration.

The cost of this program is higher than the ACOGUA program but delivers a considerably broader range of services. The cost is considered reasonable for the services provided and a level that should not present a problem for those fincas interested in such a program.

A second PVO based health service that has extended some services to fincas is the Behrhorst Clinic in Chimaltenango. One of the main thrusts of this health clinic and training program is the use of health promoters and the organization of the community to be served. Each community to which services are extended is asked to organize a community betterment committee, which among other things, identifies those individuals to be trained as promoters. The health promoter thus

represents the village and not the health system. The community can thus control whether or not the promoter is retained or dismissed. The selection of promoters, the training program and the use of promoters is similar to efforts being carried out in the Republic of Colombia. The Colombians have turned such a program into a national effort by preparing a standardized process of selection, training and practice. Promoters are provided, for example, with procedural packets that allow them to deliver a wide range of services following a check-list of procedures. It is recommended that such a national effort be developed in Guatemala so that each area and program does not undertake the development of their own program. It is more efficient to have a standardized program modified to fit local programs and conditions.

PVOs have considerable potential as models for initiating and maintaining health services on fincas. Their objectives are compatible with finca needs and their financial base provides some assurance of their continuity in the short term. One disadvantage is that some PVOs consider that health programs on private fincas are against their ideology of providing services to the most economically depressed areas. In this regard, however, the workers and their families on fincas, while economically active, are living in some of the worst conditions and are one of the most underserved population groups in the country, due to the cultural dislocation, geographic isolation, and lack of control over their lives.

Another shortcoming of current PVO efforts is their lack of internal management and external coordination with other PVOs and other health institutions. If PVOs are to provide the organizational frame-

work for initiating and maintaining coordinated programs, there will have to be better organizational coordination and management of the PVOs themselves. The Keaty recommendation of the creation of a Council of Private Voluntary Organizations would be a start in this direction (Keaty and Keaty, A Study of PVOs in Guatemala, April 1977, p. 277). Another need is to increase the understanding by those working in PVOs of alternative health service programs and their organization and management in the country. The limited current involvement of PVOs in finca health programs does not represent their potential as a resource for initiating and maintaining finca health services.

Private Clinic-Based Health Services

The nature of these health services consists of a private medical clinic located on a finca with a private practitioner or a private hospital contracted to provide medical coverage . Usually a doctor is present at the clinic for a certain number of hours a week. These facilities are maintained by finca owners because the health posts and health centers are either too far away or because they consider the service inadequate. In a sense these clinics are supplemental to the public health system and provide the same basic range of services. Because the majority of these clinics are medical care and not public health in their orientation, they do not fit the priority areas identified in this study. This does not imply that their services are not important and that they should not be continued or extended. It does suggest that they should not be given priority for development by the government of Guatemala and international agencies.

Two of the medical clinics studied that fit this model are the clinic on the finca El Salto and the finca clinics affiliated with Herrera Llerandi Hospital (Pantaleón and El Raúl). These clinics are seeing a large number of patients (El Salto saw 36,000 in 1976) and are meeting some of the shortcomings of the public health centers. As a development approach, however, the extension of public health centers or public health types of medical centers in the private sector is not recommended. They are not considered to be the most cost effective means of improving the living conditions and health status of finca workers and their families.

SUMMARY

This section has considered proposed actions and programs at three different levels. At the most macro level an assessment is made of the organizational framework within which specific health programs can be initiated and maintained. At this level consideration is given to the free market at one extreme and the national public health system at the other, to provide this coordination. Neither approach is considered as providing the greatest potential. Other frameworks considered are private national health corporations, a national program of the Ministry of Health and a regional or crop-based private corporation. Each of these has strength and limitations and are considered as possible alternatives or as combined programs.

At a second level, consideration is given to specific delivery models for providing finca health services. Included in the recommended approaches are those emphasizing preventive and not curative services. Several possible approaches to organizing such programs are considered.

At the most basic level, consideration is given to the specific composition and function of the health care team. Recommendations are made to base the team on the use of promoters or health technicians and to train them through standarized educational programs.

RECOMMENDATIONS AND CONCLUSIONS

The nature of the recommendations relate to three organizational levels within the program to extend health services to finca workers. The first level is the most macro level, to provide an organizational framework within which specific delivery programs for actually providing health services can be initiated and maintained. Such an organizational framework will have a national focus and be administrative in nature. The second level of organizational analysis is with the delivery programs themselves. These recommendations deal with the type of services to be provided, i.e., emphasis on preventive, and how they are organized on the finca, i.e., permanent staff and clinic or part-time coverage. The emphasis at this level is the nature of the service and how it is organized. The third level deals with the actual composition of the medical care team. This is the most micro level of analysis and deals with the use of health promotors, auxiliaries, etc. Some recommendations are more crucial than others to effect interventions on fincas. These will be identified. All recommendations are considered necessary for the development of the most cost-effective program.

The recommendations provided are of two basic types. First, those of a general nature designed to provide the direction for the program and the rationale for its existence. These recommendations are contained in the first section and contain no specific action

steps. The second section of recommendations sets forth those specific actions that are recommended for the Government of Guatemala (GOG) and AID/G.

GENERAL RECOMMENDATIONS

Initiate a Finca Health Program

Based on the analysis of this project, it is recommended that the GOG identify as one of the priority health areas of the country the extension of health services to the workers and families living on large farms. The justification for such a policy decision is based on the following arguments:

1. Population Size. The size of the worker population living on fincas is 500,000, and of the total population 1,200,000 to 1,500,000. The total dependent population of farm workers is around 2,000,000, larger than that living on the fincas because some of the dependents of migrants do not migrate with the worker. (pp.1-2, 14-16, Appendix 1).

2. The Migrant Nature of the Population. Of the 500,000 workers, 400,000 are migrants, migrating one or more times to the large fincas to earn enough to sustain their families. These workers come, primarily, from the altiplano. (pp.1-2, 14-16, 52-55, Appendix 1).

3. The Isolated Location of the Population. The population of concern is located on large farms, 30 percent of them working on farms of over 900 hectares. Due to the large physical

areas involved there is considerable geographic isolation of the population, resulting in poor access to all health and other public services.

4. Location on Private Property. This condition contributes in one respect to the isolation of the population in that almost all access to the population is controlled by the finca owner. In addition, the private ownership of the fincas results in the private ownership of many of the services on the finca, e.g., water systems, houses, latrines, and gardens. This fact is of major importance to consider in the design of any health system to improve these conditions (pp.2-3, 22-25).

5. The Low Level of Health of the Population. The level of health of the population is considered to be, in general, as poor as any other group in the country. Nutrition studies carried out on finca workers and their families have found that over 7 percent of the children have Grade III malnutrition, and 53 percent have Grade II or III. The rate of Grade II and Grade III malnutrition in the finca worker population as a whole is 43 percent. The leading cause of death in the population group under 10 years of age was diarrheal illness. Respiratory tract infection was the leading cause of death in the first year of life. In the childhood-age group (0-10) measles was identified as the second most common cause of death.

These health conditions support the provision of preventive health services as a priority program area. These services include vaccinations, piped water, provision of latrines and improvements in housing (pp.67-80).

6. The Poor Living Conditions on Most Farms. The environment in which finca workers and their families live is a direct cause of much illness and hardship. Housing is of poor quality, with dirt floors and poor ventilation. Water is seldom piped to each house and is usually contaminated. Many fincas provide no latrines at all, and on those that do, the latrines are usually not used or not properly used. Although many permanent workers have small garden plots, these plots usually produce little and are planted mostly to corn. The workers have little knowledge of gardening so that they can raise crops that could provide a more balanced diet. (p.4).

7. Low Level of Access and Utilization of Health Services. Access to all types of health services is very restricted on most fincas. Almost no fincas have programs of preventive health care. The vaccination campaign does reach many fincas but due to its poor organization, only about 10 percent of the worker population has received even two of the four required vaccinations. Medical care is provided by the health posts and health clinics of the Public Health System, but they

are almost totally inaccessible and are not utilized by this population. The IGSS hospitals provide treatment for accidents but are at such distances that they are utilized only for very severe cases. In effect, the majority of this population has access to neither preventive nor curative health care (pp.5-6, 81-92).

These facts serve to support the recommendation to initiate a finca health program in Guatemala. There exist many conditions, however, that serve to define the type of programs that will work and that are acceptable to the Government and to finca owners. First of all, the program should be paid for primarily by the owners themselves. They are in an economic position to do so. The health program must, therefore, be designed to meet the health needs of the people, as well as the expectations of the owners. Such a system should be carried out, to the degree possible through the private sector, involving private agricultural associations and private medical groups and individuals. Much of the identification of the program should be given to the finca owners and associations through representation on an advisory group to the finca health program and through individual efforts to promote and coordinate the program. If an attempt is made to extend health services through the Public Health System it will almost certainly fail. The major requirement of any program is that it must deliver a good product for the price and with minimum bureaucratic interference.

The interaction between the finca owners and the health system should be through a medical doctor, representing the "health system" . Finca owners will not deal with promoters or auxiliaries. They also do not want to get involved in the detailed aspects of health service delivery. Health is not their business and they will want someone to handle all of the details of the health services programs.

There should be some incentive provided (in addition to the improved health of their workers), to attract those finca owners who are not opposed to starting finca health programs but who will need some persuasion to initiate a program. This will be true, particularly if such a program will require an initial major capital investment, for example in a water system or in new or improved houses. The incentive in this case would be financial. Such an incentive will be key to the participation of many finca owners. There are many who will not participate initially, even with such incentives, but it is felt that this group will only support such a program after it has been initiated and proven successful on other fincas.

Give Priority to Preventive Health Services

Given the nature of the living conditions and health status of finca workers and their families, it is proposed that high priority be given to preventive health services. These services should include the areas of nutrition, potable water, sanitation and

housing. Such a program will require some capital investment by finca owners, for example in installing water systems and improving housing. Such investments are not sufficient, however. There needs to be extended to the finca, health workers who will co-ordinate improvements and who will work with the population in effectively utilizing the services. There needs to be effected considerable change in living patterns before such services, when provided, will be effective. This process of change will only occur over a long period of time. The health programs thus must be of a permanent nature.

Give Priority to the South Coastal Region

The priority area for developing health programs for farm workers should be in the south coastal lowlands and highlands, although encouragement and assistance should be given to any finca or area that is interested in extending health services to farm workers.

The primary justification for this recommendation is an economic one, based on the fact that 80 percent of all farm laborers and 90 percent of the migrant workers are located in the south coastal area. No priority as to type of crop produced is recommended, although the main crops affected will be cotton, coffee and sugar. Other crops such as rubber, cattle, tea, spices and quinine will also be included.

In implementing later recommendations, it might be necessary to work through various crop-based regional and national agricultural

associations to achieve cooperation and support. It is not recommended that a crop-based health system be developed.

Conduct a Major Study of Health System Development in Guatemala

It is proposed that there be carried out a major study of health system development in Guatemala with regard to the short-run and long-run effectiveness and efficiency of maintaining multiple health systems such as the Social Security Institute (IGSS), the public health system, national campaigns and programs of the Ministry, and private individuals and organizations.

Guatemala is in a relatively rapid stage of health system development. As such the many programs that exist are extending coverage to people who were previously not covered and extending the range of services to those who have had coverage. The IGSS system is a good example of such development. In general each program and system was well designed for the conditions for which it was intended to serve. As each program develops, however, their results increased duplication and lack of continuity. As these systems develop there should exist in the country an overall policy or set of strategies for integrating or coordinating programs.

The level of duplication and discontinuity is not great at this time because each system is still being extended to areas that remain relatively unserved. For this reason, the development of a general health policy to coordinate overall health system development will be easier. After programs become duplicative, competitive, and thus threatened by each other, the development of a plan to integrate

and coordinate them will be much more difficult. The experiences of other countries in Central and South America verify the difficulty of integrating services after they have been developed.

SPECIFIC RECOMMENDATIONS

Recommendation 1.

It is recommended that the Government focus attention on the need to extend health services to farm workers by providing information on those finca health programs that have been initiated.

Rationale

The purpose of this proposal is to first of all provide a recognition that the extension of health services to finca workers is a national priority and to provide technical assistance to owners or groups who are interested in providing such services. While there is general knowledge of some of the innovative programs, e.g. ACOGUA, few owners or agricultural associations are aware of most of what is being done in finca health programs and few have specific knowledge of any program. The value of having finca owners or agricultural associations demonstrate what they are doing is that the exchange will be between finca owner and finca owner. This information will most likely be better received than if presented by individual private medical doctors or doctors of the Ministry of Public Health and Social Assistance. It is felt that the best way for finca owners to become interested in health programs is to learn that their neighbors or that some other region is successfully running a program.

Recommended Actions by the GOG

Encourage agricultural associations to make information on finca health programs available through their journals and through national and regional meetings. This could be done through informal contacts by the Ministry of Public Health and Social Assistance and by having material prepared on various programs and made available to associations.

An additional activity is to have demonstration trips taken to fincas with innovative health programs. These trips could be arranged, again, through informal contacts with finca owners and association representatives. No additional allocation of funds is needed to carry out these activities.

Recommended Actions by AID/G

None.

Recommendation 2.

It is recommended that the Government give priority to public health education programs in the areas of nutrition, and sanitation in those departamentos that provide the majority of the migrant labor force. These departamentos would include Sololá, Quetzaltenango, Totonicapán, Quiché and Huehuetenango.

Rationale

This recommendation is important if health services for migrant workers on fincas are going to have much impact. If ideas and living patterns are not set for those who will migrate in the communities from where they originate, the health system on fincas can accomplish

much less, particularly if workers are only under contract for 30 days. If the highland departments from where migrants come have organized health programs, possibly through the use of health promoters, the ideas and practices that are developed at home can be extended to the fincas. It might even be worthwhile to consider including a health promoter with a cuadrilla if the majority of the workers are from a given community. The essence of this recommendation is that the health program for migrant workers on fincas should be an extension of the types of health services of their home communities.

The nature of the health system in the altiplano should be outreach, through the combined effort of the public health system and private voluntary organizations. The Behrhorst Clinic in Chimaltenango serves as an excellent model for the type of program needed. The program should be directed at preventive health services, in particular improving the level of knowledge and practice in the areas of nutrition and sanitation.

Recommended Actions by the GOG

To carry out this program the Government should undertake initiatives in several program areas. First, to extend to the altiplano, through the public health system a health services delivery model that emphasizes preventive and outreach programs. This could be done by extending the effort to use rural health technicians and rural health promoters in areas that are sources of migrant laborers. These teams could work out of health posts and health centers that already exist.

Secondly, the Government should provide encouragement to private voluntary organizations (PVOs) to increase their efforts in these priority areas in the altiplano. The Government could carry out this function by initiating the following recommendations set forth in the PVO study by Keaty (Keaty and Keaty, 1977, pp. 277-278):

1. To establish a Council of Private Voluntary Health Organizations in Guatemala, and
2. To establish a clearing house of information about PVO programs.

Resources to carry out these activities could be provided through additional budget allocations made through the Ministry.

Recommended Actions by AID/G

None.

Recommendation 3.

Initiate in the Ministry of Public Health and Social Assistance a National Direct Program to extend health services to workers and families living on fincas.

This program would have the responsibility for the direct provision of health services to migrant workers and to provide the organizational framework for developing private health programs for colono populations. The direct provision of health services to migrant workers could be carried out by National Program workers present on fincas during the times when migrant workers are present. These workers would supplement the permanent health workers of the finca to provide preventive health services to the migrants. These

services could include physical examinations, treatments for worms, vaccinations and treatments for skin and other diseases as well as education on the use of clean water, washing of hands, use of latrines and nutritional habits. In addition National Program workers could inspect and direct improvements on housing, latrines, and water systems.

The National Direct Program could also serve as the organizational framework for initiating and maintaining permanent health programs on fincas. The National Program should organize an Advising Commission made up of finca owners, bankers and other influentials to give the program technical advice as well as to identify such influentials with the program. This will be important as finca owners are contacted for the purpose of initiating health programs.

Rationale

A National Direct Program is felt to be the most effective means of providing health services to migrant workers. This type of program can have a broad regional coverage and thus include the total area in which migrants work and move. Such a broad coverage is necessary to respond to the migration patterns that exist or that might develop. A program initiated on a finca by finca basis would fail to provide comprehensive and continuous care. The National Direct Program could also be focused in one specific area, for example a crop area, for a specific time. This is also necessary, given the clear migration patterns that exist both in terms of geographic location and time. These two features provide the basic justification for such an approach.

Other advantages of a National Direct Program exist. First, it can be more efficiently managed than the more complex bureaucratic public health system. It is also more flexible in terms of being adapted to different circumstances in different areas. This is important in terms of the variation of crops and fincas. Finally, such a program could have built into it those services that correspond to the types of services that are characteristic of the areas from which the migrant workers originate. The use of health promoters from the migrant group is a possible approach. Through the use of the national program, the health services, to some degree, could thus migrate with the workers. In addition to providing direct services to the migrants, representatives from the national program could work with finca owners and permanent finca health service people to improve living conditions such as latrines, water quality and nutrition.

As the program matures the Government could establish standards for migrant health and conditions of living. This is not recommended as an initial strategy because it puts the program in an inspection and enforcement posture which will inhibit acceptance. Acceptance by finca owners is one of the most important requirements of any finca health program. If a National Direct Program becomes well established it might develop a rating system so that fincas could be classified in terms of their health services and living conditions. One finca owner suggested this as a way of attracting migrants in a labor market that he feels will become very short of workers. He

also felt that this would provide another incentive for finca owners to participate in health programs because none would want it to be known that they had a low rating. This might be true to the degree that the rating became a meaningful symbol to finca owners. The significance to migrant workers as a factor influencing their choice of location is difficult to estimate. On the one hand the labor contractor could greatly neutralize its worth in their attempts to fill contracts. The laborers are not well enough informed or organized to deal with the contractor with regard to any misrepresentations that are made. On the other hand living and working conditions do influence choice of worker location as demonstrated in all studies done on migrant laborers. If the word would spread among workers as to desirable and undesirable fincas, some selection is possible. The key to any effect would be the labor surplus or shortage. Given the probable surplus in the next few years, the impact of such a rating is felt to be minimal.

A National Direct Program is also considered to be a potentially effective organizational framework within which to develop and maintain private health services for permanent workers on fincas. It has the advantage of low governmental visability through the use of volunteer coordinators from each area or zone. These coordinators would be influential people (probably finca owners) who would have the visable program identification. This is felt to be the most effective means of getting cooperation from other finca owners.

The National Direct Program also has the advantage of allowing for the development of privately delivered services to permanent workers of the fincas. The private nature of the actual delivery of care will probably be essential if the program is accepted by finca owners. It is also believed to be the most responsive and effective method of delivering care.

Recommended Actions by the GOG

A National Direct Campaign should be initiated under the Presidential decree of 1976. This office should be established by the Minister of Public Health and Social Assistance and staffed through additional budget appropriations. The staff should include initially a Director of the Program, a technical advisor for each zone (initially one or two) and a clerical staff. Both the Director and technical advisor should be M.D.s. This would be the permanent staff responsible for developing the direct (for migrants) and indirect (for colonos) delivery programs in the zones. When the direct program for migrant health services is initiated it would require the addition of rural health promoters on each finca, possibly coordinated by a rural health technician.

There will be required a considerable amount of technical assistance to implement the delivery programs. This technical assistance could be provided through outside funding agencies. It would require support for a group to come in and work with the finca owners to set up delivery programs.

Recommended Action by AID/G

Technical Assistance

AID/G should support the development of a National Direct Program for finca health services by providing support for technical assistance to the project.

This assistance should include a full time director-coordinator of the project to work with the Ministry and the Advisory Commission, in developing the organization of the program in the Ministry and the development of the actual delivery programs. In addition, a full time advisor should be provided for each zone that is defined, to work with the technical advisor from the Ministry in each zone to organize the delivery programs. This activity would include the recruitment and supervision of health workers, and interacting with finca owners to make suggested changes in water systems, etc. In addition the technical adivisors would make contact (using the Advisory Council) with finca owners who have not yet initiated health systems to encourange them to do so.

In addition to a director-coordinator and technical advisors, AID support should include twelve man-months of technical assistance, a half-time secretary and three (assuming two technical advisors) 4-wheel drive vehicles and drivers.

It is recommended that AID/G, working with Government identify an organization that can provide extensive in-country service for a period of at least three years. This organization would have to be private and non-profit preferable one already in existence, and preferably one that is based in Guatemala. H.O.P.E. is a possibility, although it does not meet the last condition.

Revolving Loan Fund

There should be made available to finca owners preferred loans for the purpose of installing pure water systems and for improving housing for the worker population. It is recommended that a revolving fund be established from which finca owners can draw to invest in water system and housing projects with a five year repayment plan. These loans should be at two to three percent below the market rate. Before approval of a loan, it would have to be assessed and approved by a central bank. Additional approvals would include a technical approval by an engineering firm, possibly by AGUA del Pueblo and by the National Program office of the Ministry to verify that the finca owner was participating in the program to extend health services to migrant and permanent workers and their families.

The goal of the program is to extend water service, latrine, and housing projects to at least 35 percent of those fincas over 900 hectares, and a population of about 250,000 to 300,000 workers and dependents. In addition, water, housing and latrine projects will be extended to 250 farms under 900 hectares. This would reach roughly an additional 12,000 workers and 60,000 total population. These programs in six years, would reach a total of about 25 percent of the total population living on fincas.

The objective of the program would be to initiate on fincas of over 900 hectares five housing and five water projects the first year and progressively thereafter, 15 of each type of project the second year, 20 each the third, 30 each in the fourth and 40 in the fifth and sixth years, and each year thereafter. The average cost of a water project is estimated to be $17,000 and of a housing project $8,000. In seven years this revolving fund could become self supporting and maintained as a continuing governmental program. For fincas under 900 hectares, the goal would be to initiate five projects the first year, 15 the second, 30 the third, 50 the fourth, 70 the fifth and 80 the sixth. The average cost of a water project is estimated to cost $2,000 and each housing project $2,000.

The purpose of this recommendation is two-fold, first to provide a financial incentive to finca owners to undertake rather large capital investments to improve the living conditions on fincas. Because these investments will add to the value of the property it is felt that these loans will have some attraction. The second purpose of this recommendation is to provide an incentive for the development of a broader range of health services to both migrant and permanent populations. The approval of a low interest loan for capital investment would be contingent on the owners' willingness to initiate an acceptable program of health services as discussed above.

Recommendation 4.

Modify the organization of the National Vaccination Campaign so that it, 1) identifies those working on fincas who need vaccinations and, 2) provides vaccination services to reach at least 80 percent of all farm workers on large farms that use migrant labor or that have over ten families of permanent workers.

Rationale

The rationale for this recommendation is based on the fact that vaccinations are an effective measure for preventing illness, and that these services are not how being effectively delivered to farm worker populations. It is estimated that maybe 10 percent of farm workers and families have received at least two vaccinations of the four provided through the direct campaigns.

Recommended Action by the GOG

The most effective way to carry out the above recommendation is to develop the proposed National Direct Program for Finca Workers. With such a system in place the delivery mechanism on the fincas for migrant and permanent workers can be contacted and utilized to vaccinate the worker population.

Until such time as a finca health program is developed, the National Vaccination Campaign should organize teams to go onto each finca at a time and to those areas where services will be accessible to the workers as well as their families. A key to the success of such a program is to have a campaign worker organize

the visit prior to the team's arriving. Contact should be made with the finca owner, the administrator and any health programs that exist on the finca. Sufficient lead time should be given so that information on the campaign can be disseminated to the workers and families. Information on the number of workers and dependents should be obtained and the campaign objective set to reach at least 90 percent of the population on those fincas visited. The use of color-coded cards to indicate which vaccinations have been received has not been effective due to the loss of the cards by individuals. There is probably no good solution to this problem except the conversion to the use of one card with punch marks made for vaccinations received. At a minimum it would be less cards to lose.

Recommended Action by AID/G

None.

Recommendation 5.

A national program for the training of health promoters should be intensified and expanded in the Ministry of Public Health and Social Assistance.

Rationale

The effectiveness of the program to extend health services to farm workers will depend on the availability and use of health promoters and rural health technicians. Without these team members, programs will be more limited, both in terms of the farms that are reached and the people that are reached on each farm. Currently there does

not exist sufficient rural health promoters or a sufficient number of programs to train them. There are also insufficient rural health technicians but there will be a need for fewer number of these and programs exist that can be expanded to provide this resource. Sufficient promoter training programs do not exist and need to be developed.

Currently there exists a national program to standardize the training and use of rural health promoters but this program is not being carried out effectively in the training sites. There is a need to provide a more direct involvement and supervision of such programs to see that the Ministry objectives are in fact being carried out. Variation could be made on the training and use of promoters in different localities but should be made from a well thought out and well defined program and not result from the absence of one. If such action is not taken the increased interest in the use of promoters will result in the proliferation of training programs, each having to undergo its own development. As a result there will evolve a wide range of concepts and quality in the preparation and use of promoters.

Recommended Action of the GOG

The Ministry should intensify its efforts to gather information and ideas on the training and use of health promoters from those who are currently involved in such programs. This activity should be carried out by the division of the Ministry

involved in resource planning and training.

The Ministry should then develop a concept for the training and use of promoters and identify those training programs in existence that meet the standards identified. The Ministry should organize training programs and material and carry out training programs in those areas where the need is greatest. Instructors for the programs should be carefully chosen and prepared in a special course held in the Ministry.

The course of instruction should include some demonstrations and some practical work. Although the format might vary from area to area, it is generally thought that a course of about two weeks should be adequate, with classes one day a week and the course extended over two months or 10 weeks. The course should include training in the detection and treatment of common simple illnesses and the study of practices to improve poor nutrition and sanitation. Steps in the detection and treatment of simple diseases could be set forth in a checklist type of format so that the promoter can conduct a type of programmed diagnosis and treatment. Such checklists have been used in Colombia and might be worthwhile to secure and use in the design of the program.

The resources needed for the initiation of this program are a full time staff person in the Ministry to direct the development of the program and funds to recruit (initially) one or two instructors.

Some short-term technical assistance would be needed on a part-time basis. When the program of instruction is initiated, space and material would have to be made available for the course of instruction.

Recommended Actions for AID/G

AID should support the development of a national health promoter program through the provision of technical assistance to the project. It is recommended that AID provide two man-months or consultant's time to work with the Ministry to develop the program.

Technical assistance will be needed to develop the concept and the program of health promoter training and use in the country. This program and activity are consistent with AID/G objectives.

Annex 5.7

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NUMBER OF FARM EMPLOYEES AND DEPENDENTS

Data describing the population employed as workers on fincas are not routinely collected and reported, making accurate estimates difficult. Estimates of number of workers and their families have been made using a number of data sources. The best data come from the Ministry of Labor which receives annually a report from each farmer (Informes Patronales) that employees either part-time or full time laborers during the year. These reports contain the name of each worker, sex, age, permanent address, type of labor, days worked, and pay. Information on each finca includes the name and address of the owner, the major crop or crops produced, the number of workers covered by IGSS benefits, if the workers were unionized, whether they were employed under contract plus other information. Totals derives from these reports include some multiple counting of workers in that migrants frequently move from one employer to another. The extent of this is not known but can be estimated from known migration patterns. There is also some under reporting due to failure to report workers, particularly part-time workers including migrants as well as part-time workers who are member of families of full-time workers. While these two errors offset each other it is felt that there is probably an overall under-reporting of between five and 15 percent.

The major problem encountered using the Ministry of Labor data is that it has not been aggregated and analyzed since 1965. Prior to

that year, it was put on computer and could be analyzed by region, by crop, and by IGSS coverage with great ease. Since 1965 the reports have been collected but the aggregation of data is limited and is running several years behind. There is currently no analysis done of the data but reports of total numbers are made to the National Bank. It would be useful if these data were again put on computer and adjusted so that information on labor patterns, including migration patterns, could be made readily available.

Data gathered from the Informes Patronales of the Ministry of Labor show a total work force of farm laborers in 1964 of 246,350, increasing to 413,560 in 1974, an average annual increase of .04 percent. If this rate of increase continued until 1977 this would result in an estimate of 463,000. This figure is used as the low estimate of workers population. If it is adjusted upward for under reporting of 15 percent the worker population would be 532,000. This is the most likely range for the number of workers, with a midrange of about 500,000.

Using the figure of 500,000 laborers who work part time or full time at some time during the year, an estimate can be made of the total population dependent on farm laborers. It is assumed that an average family size of five exists for this population groups but that in some families more than one family member works and is also reported as a laborer. It is estimated that on the average, at least two or three members of a family are employed sometime during the year but, it is most likely that a second or third member will go unreported.

A more realistic figure to deflate total workers to total families would be 1.2 based on the number of family members actually reported as laborers. This adjustment would give an estimate of total population dependent on farm workers of 2,083,000, or about 36 percent of the total Guatemalan population. Estimates based on various assumption are provided below.

	Employees	Dependent Population (in thousands)	Reported workers/family
		2,233	1.2
		2,083	1.2
high estimate	536,000	1,929	1.2
		1,786	1.5
mid range	500,000	1,666	1.5
		1,543	1.5
		1,340	2.0
low estimate	463,000	1,250	2.0
		1,157	2.0

Total Population Dependent on Farm Employees

It must be remembered that probably 80 percent of this population is dependent on migrant laborers who are not engaged full time as farm employees, but work the majority of the time on their own farm plots.

Other estimates of the farm employee population have been made and are useful forcomparative purposes. Fletcher et al. quoted estimates made in 1969 of a farm employee population of up to 100,000 full time employees and

over 400,000 migrants (Fletcher, Agricultural Development Policy in Guatemala, p.56). There was no basis given for the estimates (the 1964 census identified 50,000 full time workers) and they should be considered somewhat high for that year and that these figures are only being reached now.

Data from the Social Security Institute (IGSS) are also useful in arriving at some very general figures on farm employee population. In 1974 there were 271,000 affiliate workers covered by IGSS classified as rural, of whom 90 percent (243,000) are considered farm employees. To be eligible for IGSS coverage you have to be an employee of a farm that employs at least five workers. Part-time as well as full-time workers are covered by IGSS. It is not known how many eligible farm workers are not paying into IGSS, either due to the lack of coverage or to non-reporting of earning by owners, but it is known to be considerable. Most agree that it could easily be 40 to 50 percent. This would put the total worker population in the range of the estimate based on Ministry of Labor data.

In a special study of migrants in 1967 Schmidt estimated the total to be between 200,000 and 250,000. These figures are very consistent with the number of laborers reported that year by the Ministry of Labor. If one can assume that the 246,350 people reported in 1964 were 80 percent migrant and that there was 10 percent under reporting, the estimated migrant labor force based on Ministry data would be 216,000. This figure is close to Schmidt's for almost the same year and serves to provide support for their data.

REGIONAL ECONOMIC SUMMARIES

SOUTH COASTAL LOWLANDS - (Region IV)

1. General

This area is located in the South Coast of the country, from the Mexican border to the Salvadoran border. It includes the following areas by department:

Department	Percentage of Area
San Marcos	20.39
Quetzaltenango	31.06
Retalhuleu	92.02
Suchitepéquez	67.97
Escuintla	81.20
San Rosa	88.63
Jutiapa	21.37

Source: Direction General of Statistics, Population Census of 1973.

The indicated percentages by department cover an area of 11,660 square kilometers, equivalent to 10.71 per cent of the total area of the country. In Chart 1, the municipalities included by department, their population, area and population density are indicated.

1.1 Geographical.

A. Climacteric Factors.

1) Altitude: It varies in the south west from 0 to 300 msnm; in the south center and south east, from 0 to 300 msnm in the coastal plains, and from 300 to 1,500 for the highlands

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(Department of Santa Rosa).

CHART 1.

AREA AND POPULATION DENSITY BY MUNICIPALITY AND DEPARTMENT.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
San Marcos		70,148	773	90.75
	Malacatán	28,923	204	141.78
	Catarina	13,493	76	177.54
	Ayutla	9,477	204	46.46
	Ocós	10,429	205	50.87
	Pajapita	7,826	84	93.17
Quetzaltenango		61,546	606	101.56
	Coatepeque	44,859	372	120.59
	Génova	16,687	234	71.31
Retalhuleu		89,348	1,708	52.31
	Retalhuleu	38,207	796	48.00
	Sta. Cruz Muluá	4,982	128	38.92
	Sn.Andrés Villa Seca	21,618	256	84.44
	Champerico	12,866	416	30.93
	El Asintal	11,675	112	104.24
Suchitpéquez		156,307	1,706	91.62
	Cuyotenango	20,814	238	87.45
	Mazatenango	36,987	356	103.90
	San Bernardino	3,869	32	120.91
	San José El Idolo	4,389	88	49.88
	Sto. Domingo Such.	17,219	242	71.15
	San Lorenzo	4,874	60	81.23
	San Antonio Such.	17,122	64	267.53

Cont. Chart 1.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
	San Miguel Panán	3,255	40	81.38
	San Gabriel	1,655	16	103.44
	Chicacao	22,444	216	103.91
	Río Bravo	7,961	22	361.86
	Patulul	15,718	332	23.98
Escuintla		188,762	3,560	53.02
	Sta. Lucía Cotzumalguapa	35,170	432	81.41
	La Democracia	11,835	320	36.98
	Masagua	18,312	448	40.88
	Tiquisate	67,555	892	75.73
	La Gomera	24,069	640	37.61
	Guanagazapa	6,720	220	30.55
	San José	19,662	280	70.22
	Iztapa	5,439	328	16.58
Santa Rosa		144,788	2,619	55.28
	Cuilapa	14,127	365	38.70
	Barberena	21,420	294	72.86
	Sta. Rosa de Lima	8,197	67	122.34
	Oratorio	11,773	214	55.01
	San Juan Tecuaco	3,634	80	45.43
	Chiquimulilla	29,057	499	58.23
	Taxisco	16,339	428	38.18
	Sta. María Ixhuatán	13,061	113	115.58
	Guazacapán	8,141	172	47.33
	Sta. Cruz Naranjo	6,157	97	63.47

Cont. Chart 1.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
	Pueblo Nuevo Viñas	12,882	290	44.42
Jutiapa		29,788	688	43.30
	Moyuta	23,618	380	62.15
	Pasaco	6,170	308	20.03

SOURCE: Direction General of Statistics, Population Census of 1973.

2) Temperature: It comprises annual temperatures from 26°to 28°C, diminishing in the highlands to averages from 19°to 26°C.

3) Pluvial Precipitation: Variations have been observed from 1,000 - 2,000 - 3,000 mm. in the South West and from 1,000 - 1,500 - 2,500 in the South Center and the South East.

B. Soils

It comprises the group of soils developed on recent fluvio-volcanic material at medium heights; soils developed on volcanic ash at medium heights for the high regions of the zone; a group of soils developed on recent fluvio-marine-volcanic material at low heights, placed towards sea level.

C. Hydrology.

It comprises the low part of the following basins: Suchiate, Naranjo, Ocosito, Samalá. Ixcán Nahualate, Madre Vieja, Acomé, Achiguate, María Linda, Paso Hondo, Esclavos y Paz, all of the Pacific Slope.

2 Economic

A. Present use of the land.

Chart 2. shows the cultivated area for each one of the crops of the region.

CHART 2.

TYPE OF CROP AND SURFACE IN HECTARES.

Crop	HECTARES	PERCENTAGE
Corn	81,242.70	16.00
Beans	817.90	0.16
Rice	3,803.51	0.75
Wheat	36.20	0.01
Cotton	82,216.60	16.19
Tomatoes	44.30	0.01
Bananas	1,733.59	0.34
Plantain	2,449.60	0.48
Caca-	1,130.50	0.22
Sug ane	16,567.09	3.26
Tea	5,698.70	1.12
Pineapple	1,603.60	0.32
Oranges	770.08	0.15
Potatoes	93.40	0.02
Sesame Seed	516.81	0.10
Coffee	40,320.80	7.94
Tobacco	70.00	0.01
Pears	4.20	0.00
Pastures	268,646.03	52.91
T O T A L	507.765.61	100.00

Source: Guatemalan Ag. Regionalization, IICA-BID, 1971; Direction General of Statistics, Agro-Cattle Census, 1964.

B. Land Distribution according to the area.

Taking into account the generalized criterion that, in farms which are larger than 35 hectares, there appears a relationship employer-employee, an interest group has been established for this study. Farms larger than 22.4 hectares, divided into area strata, are determined in Chart 3.

CHART 3.

LAND DISTRIBUTION ACCORDING TO STRATUM

Stratum (Hectares)	Farms No.	Farms %	Surface Has.	Surface %
From 22.4 to less than 44.8	1,008	29.48	34,729.28	4.53
From 44.8 to less than 448	2,008	58.75	266,607.58	34.75
From 448 to less than 896	233	6.82	143,703.29	18.73
From 896 to less than 2240	135	3.95	173,787.28	22.64
From 2,240 to less than 4480	19	0.56	42,689.52	5.56
From 4,480 to less than 8960	12	0.35	72,554.78	9.46
From 8,960 on	3	0.09	33,209.92	4.33
	3,418	100.00	767,277.65	100.00

SOURCE: Guatemalan Agricultural Regionalization, 1971; Agro-Cattle Census, 1964.

C. Agricultural Workers

Information in this regard, is only available at the departmental level. In order to estimate the number of agricultural workers corresponding to a portion of one department that covers a zone, the total population of the department was taken into account. From that total, the percentage representing municipal population

included in the portion of the Department was determined. This percentage was applied to the total agricultural workers of the Department, as it shows in Chart 4.

CHART 4.

AGRICULTURAL WORKERS BY DEPARTMENTAL AREA INCLUDED IN THE ZONE.

Department	Total Departmental Population	Population within the zone 1/	% 2/	Departmental Total Agricultural workers	Ag. Workers in the Zone
San Marcos	389,760	70,148	18.0	47,917	8,625
Quetzaltenango	312,787	61,546	19.7	30,574	6,023
Retalhuleu	127,235	89,348	70.2	14,054	9,866
Suchitepéquez	202,253	156,307	77.3	29,515	22,815
Escuintla	277,031	188,762	68.1	35,978	24,501
Santa Rosa	177,159	144,788	81.7	21,989	17,965
Jutiapa	233,232	29,788	12.8	-19,622	2,512
T O T A L	1,719,457	740,687		199,649	92,307

SOURCE: Direction General of Statistics, Population Census, 1973.

NOTES: 1/ Sum of municipalities included.

2/ Population within the zone divided by total departmental population.

According to the above information, we arrive at a total of 92,307 agricultural workers in the study zone, located mainly in cotton, sugar cane and other exploitations.

D. Workers' income and expenditures.

D.1 Income.

The study zone is identified because of the

large extensions cultivated with cotton, sugar cane, cattle and others of lesser importance.

According to investigations of the Institute of Economic and Social Studies of the San Carlos University of Guatemala, 1966, and according to the respective zones, Chart 5 contains information on income.

CHART 5

ANNUAL PER CAPITA AND FAMILY INCOME ACCORDING TO ZONE

Kind of Income and Zone	Mean Income per Family Q.	Per Capita Income Q.
CASH AND IN-KIND		
Cotton	665.61	133.51
Sugar Cane	589.14	106.47
Cattle	490.48	85.96
CASH		
Cotton	564.99	113.33
Sugar Cane	439.83	79.48
Cattle	300.82	52.72
IN-KIND		
Cotton	100.62	20.18
Sugar Cane	149.30	26.98
Cattle	189.66	33.23

SOURCE: Institute of Economic and Social Studies, USAC, Income and Expenditures of the Agricultural Employee, 1966.

Cash and in-kind income was quantified through the calculation

of the variables specified as follows:

a) Cash Income.

a.1) Agricultural salaries in the Farm.

Net income for ordinary salaries (deducting payments to the Guatemalan Institute for Social Security, dues to Unions, etc.) was included in this category, that was earned in agricultural activities proper, at the farm where the head of household was working.

a.2) Other Agricultural Salaries.

This line comprised the net income for ordinary salaries received as compensation to agricultural jobs, rendered at other places of work.

a.3) Overtime.

Income derived for overtime worked in agro-cattle activities, were included here, if and when same came from the condition of employee.

a.4) Salaries for other Tasks.

In this line, the net ordinary salaries obtained in tasks foreign to agriculture and cattle were included.

a.5) Sale of Crops.

This line represents the net income of the family for the sale of crops obtained in land operated by same, independently of ownership.

a.6) Sale of Cattle, Fowls and Agro-Cattle Products.

As in the previous case, income from the sale of cattle, fowl and agro-cattle products (eggs, milk, cream, butter, etc.) that was available after covering the necessary expenses for their production, was included here.

a.7) Self-Employement.

This includes the net income obtained for work or services rendered to others, by the head of household and other members of the family, not considered in previous lines, nor in the following. Such cases as a carpentry job done by the head of household or when the wife or daughter washed or sewed somebody else's clothes at their house.

a.8) Home Industry.

Net income obtained in home industries, such as the elaboration of tamales, candy, chocolate, toasted peanuts, etc.

a.9) Sale of Food

Net income obtained when the family prepared food for its sale to the public.

a.10) Commercial Income

Included net income obtained by the head of household and other members of the family, through commercial activities such as those derived from retail grocery stores, sales of beer and soda pops, the sale of liquor, or bread, etc.

The net income derived from home industries were excluded from this line, as they were included in the previous line.

a.11) Rents

Included the net income (after expenses had been deducted) obtained during the year, derived from the lease of land, houses, etc., owned by the family and from similar sources.

a.12) Pensions and Retirement Funds.

When the head of household or some member of the family received a pension of retirement fund (from the government or an employer) the corresponding income was added to this line.

a.13) Social Security Benefits.

All those benefits derived from the social security system, such as compensations, invalid pensions, etc.

a.14) Christmas Bonus.

This line included the amounts received at the end of the year, for Christmas Bonuses.

a.15)Gifts.

This paragraph includes cash gifts obtained by the family, in the manner of cash relief, tips, etc.

a.16) Sale of Property.

The net value received for the sale of chattels or real estate, owned by the head of household or other members of the family, such as land, houses, furniture, vehicles, job-related tools, etc., was included here.

a.17) Other Income.

In this line, any other type of income was included. This income that, due to its extraordinary character, was not considered specifically in any of the previous categories, such as lottery prizes, bingoes, inheritances, raffles, etc.

The total of the amounts written in each one of the previous groups, gave the "cash income" for the family.

b. In-Kind Income.

Cash income of the head of household and other members of the family has to be increased by all other income. While this other income is in-kind, it contributes to the fact that the family can support an expenditure level higher than what other groups of similar cash income could support, if these groups did not have such additional income. Such is the case of such families that dwell in their own

house or in a free house as part of their working conditions. It is logical that in order to be able to compare the life level of families that rent a dwelling with those that own it or get it for free, this latter one must receive a value. Such value becomes part of the total income and must be considered at the same time as an expense in the line of "Dwelling".

Due to the complexity of value considerations to in-kind income, the results obtained in this part of the study, must be taken as simple estimations and not with the precision demanded by numerical information.

In general, in-kind income was integrated by four lines: benefits; crops owned by the family and consumed by same, or given as payment for use of lands; cattle, fowl and cattle products that belong to the family and are consumed by same; and the rent of self-owned dwelling or a dwelling received for free.

b.1) Benefits.

The socio-economic situation of the workers is fundamentally determined by the salary, the obligatory benefits for seen in the Labor Code, and by all those benefits of an economic nature which are received additionally by the workers. These additional benefits may be contemplated in a colective pact of working conditions, in private negotiations between the workers and their employer, or simply came about because the employers decided to grant them.

According to Guatemalan legislation, salaries must be paid exclusively in cash (legal currency). Nevertheless, rural workers that work in agricultural or cattle operations, may receive the payment of their salary up to 30.0 per cent maximum in food or

other similar articles destined to their immediate personal use and that of their families, that live and depend economically with and from him, if and when the employer provides same at cost or at a lesser value. Furthermore, economic advantages, of any nature, granted to the workers in general, for their services, except when agreed to the contrary, constitute 30.0 per cent of the total amount of the salary earned.

Under the term "benefit" any service granted by the farms to rural families at no cost, such as: house, food, dress, rations, fuel, use of land, medical assistance, medicines, school, job-related tools, seeds and fertilizer, presents, as well as other various benefits has been included. The main lines of "Benefits" are detailed in the respective tabulations.

Everything that is related to benefits has chief importance for the study of family income, as in all reality, benefits granted to farmers constitute income. Both those of legal type and additional benefits, have the effect of diminishing the cost of living of workers.

b.2) Crops owned by the family and consumed by same.

Another in-kind income received by rural families, is the estimated value for all crops cultivated in land operated by the head of household or any of its members, independent of the fact that the land is the family property, has been ceded, leased, given in use or in any other form of possession.

Because of this reason, the total value of the crops obtained in the agricultural year 1965-1966, was estimated, quantifying

separately, the part that was destined to family use, the part that was given to other people as compensation for the use of land, and the part that was sold.

b.3) Crops owned by the family given as payment for the use of land.

This is an estimation of the value that corresponds to the part of family-owned crops that were given to third parties as payment for land use.

b.4) Cattle, fowl and cattle products owned by the family and consumed by same.

As in the case of crops, the value of cattle, fowl and all of those cattle products that, being owned by the family, were consumed by the family group during agricultural year 1965-1966,was estimated.

Actually, this valuation tried to obtain a general idea of the value that would have had to be covered in local markets, for the purchase of these articles, in case they would have had to be bought.

Under the term "cattle and fowl" beef, swine, goats, etc, as well as game used by the family (rabbits, deer, etc.) and fowl (chickens, hens, turkeys, etc.) were comprised; among cattle products, milk, butter, cheese, eggs, and others, were considered.

b.5) Rent of self-owned or ceded dwelling.

As part of the in-kind income, the estimation of the amount that the family would have had to pay to the farm owner,

when they lived in a self-owned or ceded house, for a dwelling similar to the one used, was considered.

After the criteria used in fundamenting the quantifying of cash and in-kind income have been explained, Charts 6 and 7 show the integration of same in percentages according to the lines indicated.

Chart 6.

PERCENTAGE INTEGRATION OF THE MEAN CASH ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income	Cotton	Sugar Cane	Cattle
Agricultural salaries at the farm	24.61	33.39	19.31
Other ag. salaries	6.71	9.00	10.84
Overtime	3.12	3.70	2.17
Sale of crops	3.78	1.58	4.54
Sale of cattle, fowl and other cattle products	1.34	1.88	3.80
Salaries in other work	4.72	10.05	10.22
Self-employment	1.49	0.61	8.66
Home Industries	2.61	17.38	4.41
Sale of Food	5.63	--	5.61
Commercial Income	11.21	9.00	7.08
Rents	7.35	3.93	--
Interests	1.16	---	4.57
Pensions and Retirement Funds	--	7.43	8.61
IGSS Benefits	2.11	0.98	0.93
Gifts	0.88	--	0.73

Cont. Chart 6.

Source of Income	Cotton	Sugar Cane	Cattle
Sale of property	19.70	---	7.54
Christmas Bonuses	0.83	1.07	0.80
Others	2.75	---	0.18
T O T A L	100.00	100.00	100.00

SOURCE: Economic and Social Studies Institute, USAC, Income and Expenses of the Agricultural Employee, 1966.

CHART 7.

PERCENTAGE INTEGRATION OF THE MEAN IN-KIND ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income	Cotton	Sugar Cane	Cattle
1. Benefits	59.09	56.41	66.14
House	12.82	16.38	7.83
Food	8.54	--	19.11
Clothing	1.90	2.19	1.97
Rations	9.97	8.21	12.36
Fuel	6.85	8.85	6.17
Use of Land	2.26	2.72	3.81
Medical Assistance	3.64	3.75	1.99
Medicines	1.69	2.52	2.12
School	4.54	5.18	3.60
Tools	1.55	2.40	1.72
Seeds and fertilizers	--	--	2.15
Gifts	2.49	1.34	1.83
Others	2.84	2.88	1.48
2. Self-Owned Crops	16.80	15.90	18.14
Consumed by the family	10.74	12.32	12.71
Given as payment for land use	6.06	3.57	5.43
3. Cattle, Fowl and Cattle Products consumed by the family	11.81	7.83	8.30

Cont. Cart 7.

Source of Income	Cotton	Sugar Cane	Cattle
4. Rent of self-owned or ceded Dwellings	12.30	19.86	7.42
T O T A L	100.00	100.00	100.00

SOURCE: Economic and Social Studies Institute, USAC, Income and Expenses of the Agricultural Employee, 1966.

D.2 Expenditures.

According to the mentioned source, expenditures of the workers are framed in Chart 8.

CHART 8.

ANNUAL FAMILY AND PER-CAPITA EXPENDITURES BY ZONES

Zones	Mean Family Expenditures Q.	Per-Capita Expenditures Q.
Cotton	697.09	139.83
Sugar Cane	555.64	100.42
Cattle	511.47	89.64

Source: Social and Economic Studies Institute, USAC, Income and Expenses of the Agricultural Employee, 1966.

Integration of the previous expenditures was made pursuant with the quantification of the following variables.

1) Food and Drink.

This section registered the consumption of food and beverages

on the part of the various family groups, as well as information on food habits . From these data it was deemed that there definitely is certain regularity in this aspect.

In view of the complexity presented by the consumption of food among rural families, it was necessary to establish a diferentiation of the various articles, for reasons of their procedence, thus:

a) Food and drink bought by the family (cash or credit), valued at purchase price;

b) Food and drink self-consumed by the family (produced and consumed by the family group), whose value was estimated according to the cost price in the more immediate market in which they should have been bought;

c) Food and drink received as a benefit, valued in a manner similar to the previous group.

Food and drink taken at home, as well as those consumed outside of same, were included here.

2) Fuel and Light.

Separately from dwelling expenses proper, the amount of value of fuels was requested, as well as that of electricity. Among fuels, the following were considered: kindling wood, torch-pine, coal, kerosene, propane gas, gasoline, burning alcohol, matches, candles, and others.

Such amounts correspond to what was consumed by the family group, be it to cook their food or to obtain light.

When some fuels (such as kindling, torch-pine, etc.) were re-

ceived free of charge from the farms, same were valued at the prices that should have been paid in the closer local market.

Likewise, if electricity was received free of charge from the farm's plant, it was valued at the price the family should have paid, if they would have had to buy it.

3) Dwelling.

For the case of dwellings rented he farmers, the monthly rent was asked.

When the families lived in their own houses, or they received it free of charge from third parties, the chargeable rent (estimated per family) was consigned. This amount, as is natural, also had its corresponding entry in the chapter of income.

This line item also includes amounts spent in maintenance and repair of the dwelling (such as repairs, paint jobs, etc.).

4) Medicines, recreation, personal care, transportation, education and tobacco.

This section includes an estimation for expenses incurred in medicines, recreation, personal care, transportation, education, tobacco and other expenses such as dues to churches, taxes paid to the central government and to the municipality.

5) Clothing.

When dealing with clothing and shoes, the study got the amount of annual expenses in the different types of garments, divided in several sections: one to note the materials for confection of garments when such is the family's custom; the second one for men's and children's

(older than two years); the third one, for women's and girls' (older than two years of age) garments; and the last, for boys' and girl's (younger than two years of age) clothes.

In this line item only the clothes and shoes bought by the family for their own use or for another member of same were considered. The purchase of clothes to give to persons different than the consumer group, were not taken into account. Nevertheless, the value of the pieces received as a gift from people outside of the family were included. Used clothes bought were also noted in the same section, as well as pieces of material and the confection of clothes when the family used to make their own clothes or use a tailor.

6) Benefits.

This section comprises the house, clothes, medical assistance, medicines, school, tools, and others, The line "land use" is stated separately, fuels were taken within the line "fuel and light", as well as the value of "rations" and "food" which are in the chapter of "Food and Drink".

It is natural that the life style of a family not only depends upon their current income, but that there are other factors, such as use superior to the one another family with equal cash income, but without such advantages, could lead. These advantages, logically and especially in the rural sector, must be considered to achieve a global view of family budgets. For example, the families that receive "dwelling" or "fuels", can naturally support an expenditure level higher than what could be supported by other consumer groups

of equal cash income, that do not have such benefits. Consequently, to be able to compare the life level of the families that rent a house with those who receive it as a benefit from the farms where they work, this latter must receive a value.

7) Land Use.

As in the previous case, this line also represents the annual counter-entry of the line that appears on the side of "income" and is nothing more than the value of the rent that would have had to be paid, in other circumstances, for the use of lands that, in this case, belong to the farm, and are received as a benefit to be worked on the worker's own account.

8) Other Expenditures.

Finally, this section contains the annual value of every other expense line not contemplated in any of the previous sections. In the particular case of the rural employee families, these were considered to have a secondary importance, as compared with the urban consumer groups, such as furniture, clothing household goods, cooking utensils, tableware and other home articles. Furthermore, because of the lack of a specific chapter, expenditures derived from the purchase of tools, seeds, fertilizers and insecticides, and that of cattle and fowl property of informant families, were included.

As far as the expenditure distribution is concerned, Chart 9 is presented, where the amounts and percentages may be observed, according to the several expense lines.

CHART 9.

DISTRIBUTION OF THE FAMILY EXPENDITURES ACCORDING TO LINE AND ZONE.

Line	Cotton		Sugar Cane		Cattle	
	Q.	%	Q.	%	Q.	%
Food	53,316	56.1	26,909	53.9	93,424	56.6
Fuel and Light	6,430	6.8	4,213	8.4	12,965	7.8
Dwelling	3,661	0.4	186	0.4	3.527	2.1
Medicines, recreation, personal care, transportation, education and tobacco.	12,311	13.0	4,909	9.8	17,635	10.7
Clothing	11,724	12.4	5,562	11.1	18,365	11.1
Benefits	6,781	7.2	6,369	12.7	13,434	8.1
Land Use	300	0.3	35	0.1	423	0.2
Other	3,576	3.8	1,825	3.6	5,433	3.3
T O T A L	94,804	100.0	50,008	100.0	165,206	100.0

SOURCE: Economic and Social Studies Institute, USAC, Income and Expenses of the Agricultural Employee, 1966.

COASTAL HIGHLANDS - (Region III)

This area is formed by a strip of land that divides the coastal plains and the Center-West Highlands. It divides the Departments of San Marcos, and Quetzaltenango in the middle, and cuts through the higher part of Retalhuleu and Suchitepéquez, also including part of Sololá, Chimaltenango, Sacatepéquez and Escuintla. It includes the following percentages of Departments:

Department	Percentage of Area
San Marcos	27.25
Quetzaltenango	25.06
Retalhuleu	7.98
Suchitepéquez	32.03
Sololá	53.72
Chimaltenango	28.25
Sacatepéquez	20.43
Escuintla	18.80

SOURCE: Direction General of Statistics, Population Census, of 1973.

The indicated percentages by Department cover a total area of 4,522 Kms.^{2}, equivalent to 4.15 per cent of the total area of the country.

Chart 1 indicates the area, population and density for each one of the municipalities included.

CHART 1.

AREA AND POPULATION DENSITY BY MUNICIPALITY AND DEPARTMENT.

Department	MUNICIPALITY	POPULATION	Kms.^{2}	Density Inhab./Km.^{2}
San Marcos		124,732	1,033	120.75
	Tajumulco	18,927	300	63.09
	San Rafael Pié de la Cuesta	8,254	60	137.57
	Nuevo Progreso	16,114	140	115.10
	El Tumbador	26,013	84	309.68
	El Rodeo	8,854	81	109.31
	San Pablo	16,458	124	132.73
	El Quetzal	11,672	88	132.64
	San Cristóbal Cucho	6,867	56	122.63
	La Reforma	11,573	100	115.73
Quetzaltenango		57,227	489	117.03
	Zunil	5,741	92	62.40
	Colomba	29,535	212	139.32
	El Palmar	13,339	149	89.52
	Flores Costa Cuca	8,612	36	239.22
Retalhuleu		37,887	148	256.00
	San Sebastián	9,738	28	347.79
	San Martín Zapotitlán	2,456	24	102.33
	San Felipe	9,843	32	307.59
	Nuevo San Carlos	15,850	64	247.66
Sololá		48,829	570	85.66
	Santa Catarina Ixtahuacán	16,111	121	133.15
	San Lucas Tolimán	8,362	116	72.09

Cont. Chart 1.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
	San Juan La Laguna	3,074	36	85.39
	San Pedro La Laguna	4,726	24	196.92
	Santiago Atitlán	16,556	136	121.74
	(Lake Surface)		137	
Chimaltenango		30,726	559	54.97
	Pochuta	10,161	170	59.77
	Acatenango	10,108	172	58.77
	Yepocapa	10,457	217	48.19
Escuintla		82,539	824	100.17
	Escuintla	64,851	332	195.33
	Siquinalá	8,005	168	47.65
	San Vicente Pacaya	5,730	236	24.28
	Palín	9,683	88	110.03
Sacatepéquez				
	Alotenango	7,371	95	77.59
Suchitepéquez		45,946	804	57.15
	San Francisco Sapotitlán	8,545	60	142.42
	Samayac	7,720	16	482.50
	San Pablo Jocopilas	6,551	68	96.34
	Santa Bárbara	11,912	448	26.59
	San Juan	2,173	52	41.79
	Santo Tomás La Unión	4,087	80	51.09
	Zunilito	1,932	56	34.50
	Pueblo Nuevo	3,026	24	126.08

SOURCE: Direction General of Statistics, Population Census, 1973.

1.1 Geographical.

A. Climacteric Factors.

1) Altitude: This zone is limited altitudewise from 300 msnm. to 2,100 msnm.

2) Temperature: All the zone is within limit temperatures that vary from 16°C at 300 msnm. to 26°C at 2,100 msnm.

3) Pluvial Precipitation: Rain in this zone has registered variation from 3,500 to 5,000 mm. per annum.

B. Soils.

It comprises the group of soils developed on recent fluvio-volcanic material at medium heights and the group of soils developed on volcanic ash at higher altitudes and the group of soils developed on recent pluvio-volcanic material at medium heights.

C. Hydrology.

It comprises the central part of the basins Suchiate, Naranjo, higher part of the Ocosito Basin and medium part of the Salamá, Nahualate, Madre Vieja, Coyolate, Achiguate Basins, and lower part of the Atitlán Basin, all of the Pacific Slope.

1.2 Economic.

A. Present Use of the land.

Chart 2 shows the cultivated area for each one of the crops.

CHART 2.

TYPE OF CROP AND SURFACE IN HECTARES.

Crop	Hectares	Percentage
Corn	21,294.10	12.24
Beans	952.35	0.55
Rice	321.81	0.19
Wheat	419.90	0.24
Cotton	159.60	0.09
Tomatoes	9.80	0.01
Banana	94.45	0.05
Plantain	146.10	0.08
Cacao	23.10	0.01
Sugar Cane	12,517.40	7.20
Tea	1,289.40	0.74
Pears	6.60	0.00
Pineapple	74.20	0.04
Oranges	881.30	0.51
Potatoes	65.10	0.04
Sesame Seed	17.50	0.01
Coffee	73,799.00	42.44
Pastures	61,836.69	35.56
T O T A L	173,908.40	100.00

SOURCE: Direction General of Statistics. Agro-Cattle Census, 1964.

B. Land Distribution according to the area.

Taking into the account the mentioned criterion, that in farms which are larger than 35 hectares, there appears a relationship employer-employee, Chart 3 shows the land distribution in the region, from the point of view of farm area.

CHART 3.

LAND DISTRIBUTION ACCORDING TO STRATUM

Stratum (Hectares	Farms No.	Farms %	Surface HAs.	Surface %
From 22.4 to less than 44.8	246	24.09	1,008.00	29.49
From 44.8 to less than 448	661	64.74	2,008.00	58.75
From 448 to less than 896	71	6.95	233.00	6.82
From 896 to less than 2240	37	3.63	135.00	3.95
From 2240 to less than 4480	5	0.49	19.00	0.56
From 4480 to less than 8960	1	0.10	12.00	0.34
From 8960 on	-	--	3.00	0.09
T O T A L	1,021	100.00	3,418.00	100.00

SOURCE: Guatemalan Agricultural Regionalization, IICA-BID, 1971. Direction General of Statistics, Agro-Cattle Census, 1964.

C. Agricultural Workers.

Pursuant with the criterion maintained for the determination of this line item in the southern region, the amounts specified in Chart 4 were determined.

CHART 4

AGRICULTURAL WORKERS BY DEPARTMENTAL AREA INCLUDED IN THE ZONE.

Department	Total Departmental Population	Population within the zone 1/	% 2/	Total Departmental agricultural workers.	Ag.workers in the zone.
San Marcos	389,760	18,927	4.86	49,917	2,426
Quetzaltenango	312,787	57,227	18.30	30,574	5,595
Retlahuleu	127,235	37,887	29.78	14,054	4,185
Suchitepéquez	202,253	45,946	22 72	29,515	6,706
Sololá	127,268	48,829	38.37	13,922	5,342
Chimaltenango	194,735	30,726	15.78	21,434	3,382
Sacatepéquez	99,988	7,371	7.37	9,399	6,927
Escuintla	277,031	82,539	29.79	35,978	10,718
T O T A L	1,731,057	329,452	--	204,793	45,281

SOURCE: Direction General of Statistics, Population Census, 1973.

NOTES: 1/ Sum of municipalities included.

2/ Population within the zone divided by total departmental population.

The previous information determines a total of 45,281 agricultural workers, in the study zone, located mainly in coffee operations.

D. Workers' income and expenditures.

D.1 Income

The zone under study is characterized because of the large extensions of land cultivated with coffee and other products of lesser importance.

Chart 5 includes information related with workers' income, as identified with the above.

CHART 5

ANNUAL PER CAPITA AND FAMILY INCOME ACCORDING TO ZONE

Kind of Income and Zone	Mean Income per Family Q.	Per Capita Income Q.
CASH AND IN-KIND		
Coffee	392.66	72.04
CASH		
Coffee	266.87	48.96
IN-KIND		
Coffee	125.79	23.07

SOURCE: Institute of Social and Economic Studies, USAC, Income and Expenses of the Agricultural Employee, 1966.

a) Cash Income and In-Kind Income.

The individual valuation of each one of the mentioned types of income was done based on the criteria described for the first region that was analyzed (South Coastal Lowlands).

The interpretation of income according to specific line items, is written in Charts 6 and 7.

CHART 6

PERCENTAGE INTEGRATION OF THE MEAN CASH ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income	Coffee
Agricultural salaries at the farm	28.79
Other agricultural salaries	8.96

Cont. Chart 6.

Source of Income	Coffee
Overtime	2.43
Sale of Crops	3.99
Sale of cattle, fowl and other cattle products	2.06
Salaries in other work	11.07
Self-Employment	3.57
Home Industries	3.45
Sale of Food	2.67
Commercial Income	8.98
Pensions and Retirement Funds	10.79
IGSS Benefits	1.20
Gifts	2.89
Sale of Property	4.54
Christmas Bonuses	1.03
Others	3.58
T O T A L	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

CHART 7

PERCENTAGE INTEGRATION OF THE MEAN IN-KIND ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND Zone.

(In Percentages)

Source of Income	Coffee
1. Benefits	66.28
House	8.02
Food	25.89

Cont. Chart 7.

Source of Income	Coffee
Clothing	1.89
Rations	9.91
Fuel	6.50
Use of Land	3.91
Medical Assistance	1.83
Medicines	1.14
School	2.36
Tools	1.03
Seeds and fertilizer	0.30
Gifts	1.87
Others	1.63
2. Self-Owned Crops	17.55
Consumed by the family	14.70
Given as payment for land use	2.85
3. Cattle, Fowl and Cattle Products consumed by the Family	7.89
4. Rent of self-owned or ceded Dwellings.	8.28
T O T A L	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

D. 2 Expenditures.

Expenditures for the workers of this zone have been considered to be represented by the conditions that exist in coffee production farms, where a mean family expense of Q.430.58 was

determined, and per-capita expenses of Q.79.00.

To value the different line items in which expenditures were distributed, the criteria analyzed in the first zone (South Coastal Lowlands) were taken into account. The following chart shows the amounts and percentages by line.

CHART 8.

DISTRIBUTION OF THE FAMILY EXPENDITURES ACCORDING TO LINE ITEM AND ZONE.

Line Item	Coffee Q.	%
Food	183,534	60.2
Fuel and Light	23,530	7.7
Dwelling	2,838	1.0
Medine, Recreation, Personal Care, Transportation, Education and Tobacco	27,564	9.0
Clothing	33,078	10.8
Benefits	24,108	8.0
Use of Land	455	0.1
Others	9,747	3.2
T O T A L	304,854	100.0

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

CENTRAL - WESTERN HIGHLANDS. - (Region I)

1. General

This area comprises the so-called "cold land" of the country, including the following areas by Department:

Department	Percentage of Area
Quetzaltenango	43.87
Sololá	46.28
Totonicapán	100.00
San Marcos	52.36
Huehuetenango	76.97
Chimaltenango	71.75
Quiché	21.39
Sacatepéquez	79.57

SOURCE: Direction General of Statistics, Population Census of 1973.

The indicated percentages are the equivalent to an area of 13,653 square kilometers, which represents 12.54 per cent of the total area of the country.

Chart 1 shows the characteristics of population and density for each municipality and department included.

CHART 1

AREA AND POPULATION DENSITY BY MUNICIPALITY AND DEPARTMENT.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Quetzaltenango		191,641	856	223.87
	Quetzaltenango	65,526	120	546.05
	Salcajá	8,046	12	670.50
	Olintepeque	10,394	36	288.72
	San Carlos	16,242	148	109.74
	Sibilia	4,908	28	175.29
	Cabricán	7,364	60	122.73
	Cajolá	5,434	36	150.94
	San Miguel Sigüilá	2,373	28	84.75
	Ostuncalco	18,549	44	421.57
	San Mateo	1,275	20	63.75
	Concepción Chiquirichapa	6,404	48	133.42
	San Martín Sacatepéquez	8,187	100	81.87
	Almolonga	7,261	20	363.05
	Cantel	13,872	28	495.43
	Huitán	3,671	16	229.44
	San Francisco La Unión	4079	32	127.47
	La Esperanza	4,016	32	125.50
	Palestina de los Altos	6,413	48	133.60
Sololá		78,439	491	159.75
	Sololá	25,819	94	274.67
	San José Chacayá	652	44	14.82

Cont. Chart 1.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Sololá	Santa María Visitación	824	12	68.67
	Santa Lucía Utatlán	7,784	44	176.91
	Nahualá	21,874	97	225.51
	Santa Clara La Laguna	2,767	12	230.58
	Concepción	1,498	40	37.45
	San Andrés Semetabaj	3,524	48	73.42
	Panajachel	3,531	22	160.50
	Sta. Catarina Palopó	1,036	8	129.50
	San Antonio Palopó	4,709	34	138.50
	Sta. Cruz la Laguna	1,545	12	128.75
	San Pablo La Laguna	2,040	12	170.0
	San Marcos la Laguna	836	12	69.67
Totonicapán		166,809	1,061	157.22
	Totonicapán	52,688	328	160.63
	San Cristóbal Toto.	16,623	36	461.75
	San Francisco el Alto	19,329	132	146.43
	San Andrés Xecul	9,104	17	535.53
	Momostenango	43,398	305	142.29
	Sta. María Chiquimula	15,161	80	189.51
	Sta. Lucía la Reforma	5,895	136	43.35
	San Bartolo	4,611	27	170.78

Cont. Chart 1.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
San Marcos		194,850	1,967	99.06
	San Marcos	15,862	121	131.09
	San Pedro Sacatepéquez	31323	235	133.29
	San Antonio Sacatepéquez	6,443	79	81.56
	Comitancillo	18,619	113	164.77
	San Miguel Ixtahuacán	13071	184	71.04
	Concepción	21,469	176	121.98
	Tacaná	34,215	302	113.29
	Sibinal	6,636	176	37.70
	Tejutla	14,495	142	102.08
	Ixchiguán	7,917	183	43.26
	San José Ojetenán	8,725	37	235.81
	Sipacapa	5,345	152	35.16
	Esquilupas Palo Gordo	3,763	21	179.19
	Río Blanco	2,750	21	130.95
	San Lorenzo	4,217	25	168.68
Huehuetenango		307,353	5,696	53.96
	Huehuetenango	30,402	204	149.03
	Malacantancito	7,486	268	27.93
	Cuilco	19,999	592	33.78
	Ixtahuacán	13,745	184	74.70
	Santa Bárbara	6,526	132	49.44
	Colotenango	9,458	71	133.21
	Tectitán	3,144	68	46.24
	San Rafael Petzal	2,749	18	152.72

Cont. Chart 1.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
	San Gaspar Ixchil	3,085	31	99.52
	Chiantla	26,737	536	49.88
	Nentón	12,613	787	16.03
	San Pedro Necta	11,371	119	95.55
	Jacaltenango	15,802	212	74.53
	Soloma	15,304	140	109.31
	La Libertad	14,756	104	141.88
	La Democracia	14,099	136	103.67
	San Miguel Acatán	15,011	152	98.76
	San Rafael la Independencia	5,900	64	92.19
	Todos Santos Cuchumatán	10,613	300	35.38
	San Juan Atitán	7,938	64	124.03
	San Mateo Ixtatán	15,632	560	27.91
	San Sebastián Huehue.	7,824	108	72.44
	Concepción	8,107	136	59.61
	San Juan Ixcoy	8,032	224	35.86
	San Antonio Huista	5,680	156	36.41
	San Sebastián Coatán	7,316	168	43.55
	Santiago Chimaltenango	3,269	17	192.29
	Santa Ana Huista	4,755	145	32,79
Chimaltenango		164,009	1,4[illegible]	115.50
	Chimaltenango	20,194	212	95.25

Cont. Chart 1.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Chimaltenango	San José Poaquil	9,795	100	97.95
	San Martín Jilotepeque	33,066	251	131.74
	Comalapa	18,163	76	238.99
	Santa Apolonia	4,182	96	43.56
	Tecpán, Guatemala	24,181	201	120.30
	Patzún	18,900	124	152.42
	Patzicía	10,585	44	240.57
	Santa Cruz Balanyá	2,903	40	72.58
	San Andrés Itzapa	8,447	60	140.78
	Parramos	3,237	16	202.31
	Zaragoza	7,317	56	130.66
	El Tejar	3,039	144	21.10
Quiché		126,459	1 792	70.57
	Santa Cruz del Quiché	35,147	128	244.08
	Chiníque	4,353	64	68.02
	Chichicastenango	45,733	400	114.33
	Patzité	2,324	64	36.31
	San Antonio Ilotenango	7,124	80	89.05
	San Pedro Jocopilas	11,431	576	19.85
	Sacapulas	16,458	213	77.27
	San Bartolomé Jocotenango	3,889	123	31.62
	Chiché	10,974	144	76.21

Cont, Chart 1 .

Department	Municipality	Population	Kms.^{2}	Density Inhab /Km.^{2}
Sacatepéquez		92,017	370	250.32
	Antigua Guatemala	26,945	78	345.45
	Jocotenango	3,426	9	380.67
	Pastores	4,592	19	241.68
	Sumpango	10,232	5	2,046.40
	Santo Domingo Xenacoj	2,759	37	74.57
	Santiago Sacatepéquez	7,943	15	529.53
	San Bartolomé Milpas Altas	1,513	7	216.14
	San Lucas Sacatepéquez	4,344	5	868.80
	Santa Lucía Milpas Altas	2,649	19	139.42
	Magdalena Milpas Altas	2921	8	365.13
	Santa María de Jesús	7,144	34	210.12
	Ciudad Vieja	8,922	51	174.94
	San Miguel Dueñas	4,215	35	120.43
	San Antonio Aguas Calientes	3,866	17	227.41
	Santa Catarina Barahona	1,146	31	36.97

SOURCE: Direction General of Statistics, Population Census, 1973.

1.1 Geographical.

A. Climacteric Factors.

1) Altitude: The lower parts of the area average altitudes of 900 msnm. This includes the Cuchumatanes area, that is the higher part of the country, with altitudes above 3,600 msnm.

Averages of 1,500, 2,100 and 2,700 msnm. prevail.

2) Temperature: Given the altitudinal variation, temperatures range from 3 to 21°C, with annual averages of 12 to 16°C.

3) Pluvial Precipitation: The rain regimes vary from 1,000 to 2,000 mm. per year inthe dry parts, and from 3,000 to 4,000 mm. in the humid sectors.

B. Soils.

It comprises soil groups developed on volcanic ash at high altitudes; soils developed on calcareous rock at medium heights; soils developed on calcareous rocks at high altitudes that include a small group of alpine soils that correspond to the higher areas of the Cuchumatanes.

C. Hydrology.

It comprises the hydrographic basin of Coatán, the high part of the Achiguate, Cojolate, Madre Vieja, Atitlán, Nahualate, Samalá, Naranjo, Ocosito watersheds, all from the Pacific Slope. The sub-basins Cuilco, Selegua, Salinas, Nentón, Ixcán and Pajam from the Mexican Gulf Slope. The sub-basin Motagua from the Caribbean Sea Slope.

1.2 Economic.

A. Presente Use of the Land.

Chart 2 specifies the area cultivated by type of crop in the area.

CHART 2

TYPE OF CROP AND SURFACE IN HECTARES

CROP	HECTARES	PERCENTAGE
Corn	123,484.25	52.94
Beans	6,566.94	2.82
Rice	81.90	0.04
Wheat	20,177.50	8.65
Tobacco	5.60	0.00
Tomatoes	20.33	0.01
Bananas	173.90	0.07
Plantain	38.40	0.02
Sugar Cane	1,453.88	0.62
Tea	21.70	0.01
Pears	187.30	0.08
Pineapple	7.55	0.00
Oranges	99.35	0.04
Potatoes	1,907.68	0.82
Sesame Seed	38.90	0.02
Coffee	17,083.27	7.32
Pastures	61,892.75	26.54
T O T A L	233,241.20	100.00

SOURCE: Agricultural Regionalization of Guatemala, IICA-BID, 1971.
Direction General of Statistics, Agro-Cattle Census, 1964.

B. Land Distribution according to the area.

According to the principles that were established for this line item in the South Coastal Lowlands area, Chart No. 3 shows

information that determines the situation existing in the study area.

CHART 3.

LAND DISTRIBUTION ACCORDING TO STRATUM

Stratum (Hectares	Farms No.	%	Surface Has.	%
From 22.4 to less than 44.8	1,607	62.02	48,017.81	24.48
From 44.8 to less than 448	933	36.00	87,606.61	44.66
From 448 to less than 896	29	1.12	15,695.61	8.00
From 896 to less than 2,240	17	0.66	26,778.31	13.65
From 2,240 to less than 4,480	3	0.12	6,345.71	3.23
From 4,480 to less than 8,960	2	0.08	11,728.01	5.98
From 8,960 on	--	--	--	--
T O T A L	2,591	100.00	196,172.06	100.00

SOURCE: Guatemalan Agricultural Regionalization, IICA-BID, 1971, Direction General of Statistics, Agro-Cattle Census , 1964.

C. Agricultural Workers.

Pursuant with the respect analysis, and the sources mentioned, a total of 127,299 agricultural workers was established for the area, represented fundamentally by the relationships established in wheat operations, as the representative crop.

CHART 4.

AGRICULTURAL WORKERS BY DEPARTMENTAL AREA INCLUDED IN THE ZONE.

Department	Total Departmental Population	Population within the zone 1/	%2/	Departmental Total Agricultural workers	Ag. Workers in the zone.
Quetzaltenango	312,787	191,641	61.27	30,574	18,733
Sololá	127,268	78,439	61.63	13,922	8,580
Totonicapán	166,809	166,809	100.00	7,849	7,849
San Marcos	389,760	194,850	49.99	47,917	23,954
Huehuetenango	368,567	307,353	83.39	35,730	29,837
Chimaltenango	194,735	164,009	84.22	21,434	18,052
Quiché	298,686	126,459	42.34	27,370	11,588
Sacatepéquez	99,988	92,617	92.63	9,399	8,706
T O T A L	1,763,865	1,322,177		194,245	127,299

SOURCE: Direction General of Statistics, Population Census, 1973.

NOTES: 1/ Sum of Municipalities included.

2/ Population within the zone divided by total departmental population.

D. Workers' income and expenditures.

D.1. Income.

Cash and in-kind income of the workers were quantified according to the criteria established (South Coastal Lowlands; Chart 5 contains the respective information.

CHART 5

ANNUAL PER CAPITA AND FAMILY INCOME ACCORDING TO ZONE

Kind of Income and Zone	Mean Income per Family Q.	Per Capita Income Q.
CASH AND IN-KIND		
Wheat	313.01	55.84
CASH		
Wheat	198.47	35.40
IN-KIND		
Wheat	114.53	20.43

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

Charts 6 and 7 are included to observe the integration by income line-item, both cash and in-kind, in an objective manner.

CHART 7

PERCENTAGE INTEGRATION OF THE MEAN IN-KIND ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income		Wheat
1.	Benefits	61.78
	House	9.09
	Food	19.22
	Clothing	0.54
	Rations	7.69
	Fuel	9.29
	Use of Land	3.08
	Medical Assistance	2.02
	Medicines	0.83
	School	
	Tools	1.60
	Seed and fertilizer	0.43
	Gifts	2.56
	Others	5.43
2.	Self-Owned Crops	23.46
	Consumed by the family	18.83
	Given as payment for land use	4.63
3.	Cattle, Fowl and Cattle Products consumed by the family	5.93
4.	Rent of self-owned or ceded dwellings.	8.83
	T O T A L	100.00

SOURCE: Institute for Economic and Social Studies, USAC, Income and Expenses of the Agricultural Worker, 1966.

D.2 Expenditures

The family expenditures established for this type of agricultural workers was Q.376.97, and per-capita expenditures were Q.67.22.

Chart 8, determines the distribution of same by type of expenditure.

CHART 8

DISTRIBUTION OF FAMILY EXPENDITURES PER LINE AND ZONE.

Line Item	Wheat Q.	%
Food	75,816	61.5
Fuels and Light	11,732	9.5
Dwelling	7,406	6.0
Medicines, recreation, personal care, transportation, education and tobacco	8,956	7.3
Clothing	10,427	8.5
Benefits	2,188	1.8
Use of Land	273	0.2
Others	6,411	5.2
T O T A L	123,209	100.0

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

NORTHERN HIGHLANDS - (Region II)

1. General.

This area is located in the lower North of the Republic, including the better part of the "Transversal Strip", comprising the following Departments:

Department	Percentage
Huehuetenango	23.03
Quiché	70.97
Alta Verapaz	91.56

SOURCE: Direction General of Statistics, Population Census, 1973.

The area of the departments included, total 15,603 square kilometers, equivalent to 14.33 per cent of the total area of the country.

The description by municipality, as far as population and density, is observed in Chart 1.

CHART 1

AREA AND POPULATION DENSITY BY MUNICIPALITY AND DEPARTMENT.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Huehuetenango		61,214	1,704	35.92
	Santa Eulalia	14,459	292	49.52
	Barillas	28,263	1,112	25.42
	Aguacatán	18,492	300	61.64
Quiché		117,161	5,946	19.70
	Chajul	18,092	1,524	11.87
	Cunén	9,762	160	61.01
	San Juan Cotzal	12,698	182	69.77
	Nebaj	27,259	608	44.83
	San Andrés Sajcabajá	9,524	476	20.01
	Uspantán	35,000	2,896	12.09
	Canillá	4,826	100	48.26
Alta Verapaz		255,263	7,953	32.10
	Cobán	43,505	2,132	20.41
	Sta.Cruz Verapaz	5,508	48	114.75
	Sn.Cristóbal Verapaz	19,340	192	100.73
	Tactic	9,369	85	110.22
	Tamahú	4,991	112	44.56
	Tucurú	13,005	96	135.47
	Senahú	25,349	336	75.44
	San Pedro Carchá	57,487	1,082	53.13
	San Juan Chamelco	17,529	80	219.11

Cont, Chart 2.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Alta Verapaz	Lanquín	8,003	208	38.48
	Cahabón	36,910	1,422	25.96
	Chisec	8,728	1,488	5.87
	Chahal	5,539	672	8.24

SOURCE: Direction General of Statistics, Population Census, 1973.

1.1 Gographical.

A. Climacteric Factors.

1) Altitude: The lower portions of the area, with a - verages between 150 - 300 msnm of altitutde, and the high parts, with averages between 900 and 2,700 msnm.

2) Temperature: Temperature varies from 5 to 18°C in the higher regions and averages 19 - 23 - 29°C for the lower regions.

B. Soils.

Groups of soils developed on calcareous rocks are observed at medium heights; areas of soils developed on calcareous stones at high altitudes, and at low heights can be observed.

C. Hydrology.

This area includes the sub-basin Xalbal, higher portion of the sub-basin Ixcán, east portion of the sub-basin Pajam, west part of the sub-basin Salinas, lower part of the sub-basin Pasión, all from the Mexican Gulf Slope. Furthermore, it also includes the

northwest part of the sub-basin Polochic, of the Caribbean Sea Slope; the central-west part of the sub-basin Salinas, Mexican Gulf slope.

1.2 Economic

A. Present use of the land.

According to the figures shown in the Agro-Cattle Census of 1964, land distribution of land in use, by type of crop and area, is shown in Chart 2.

CHART 2

TYPE OF CROP AND SURFACE IN HECTARES.

Crop	Hectares	Percentage
Corn	93,910.95	63.00
Beans	3,207.30	2.15
Rice	129.60	0.09
Wheat	875.10	0.59
Tobacco	10.20	0.01
Tomatoes	9.32	0.01
Bananas	217.70	0.15
Plantain	161.22	0.11
Cacao	114.70	0.08
Sugar Cane	1,135.30	0.76
Tea	2.10	0.00
Pineapple	85.26	0.06
Oranges	176.67	0.12
Potatoes	220.05	0.15
Sesame Seed	1.00	0.00

Cont. Chart 2

Crop	Hectares	Percentage
Coffee	19,655.60	13.18
Pastures	29,145.58	19.54
T O T A L	149,057.65	100.00

SOURCE: Guatemalan Agricultural Regionalization, IICA-BID, 1971.
Direction General of Statistics, Agro-Cattle Census, 1964.

B. Land Distribution according to the area.

Taking into account the criteria used for this line item, land distribution by area, is described in Chart 3.

CHART 3.

LAND DISTRIBUTION ACCORDING TO STRATUM

Stratum (Hectares)	Farms No.		Surface Has.	
From 22.4 to less than 44.8	895	47.58	29,679.47	7.71
From 44.8 to less than 448	824	43.81	86,686.68	22.51
From 448 to less than 896	91	4.84	53,345.08	13.85
From 896 to less than 2,240	43	2.29	52,526.38	13.64
From 2,240 to less than 4,480	17	0.90	51,134.18	13.28
From 4,480 to less than 8,960	10	0.53	68,421.30	17.77
From 8,960 on	1	0.05	43,293.38	11.24
T O T A L	1,881	100.00	385,086.47	100.00

SOURCE: Guatemalan Agricultural Regionalization, IICA-BID, 1971.
Direction General of Statistics, Agro-Cattle Census, 1964.

C. Agricultural Workers.

For this area, it was considered convenient to identify the agricultural workers in coffee and cattle operations. An average of 48,329 workers was totaled, according to the following analysis (Chart 4).

CHART 4.

AGRICULTURAL WORKERS BY DEPARTMENTAL AREA INCLUDED IN THE ZONE.

Department	Total Departmental Population	Population within the zone 1/	%2/	Departmental Total Agricultural workers	Ag. workers in the zone
Huehuetenango	368,567	61,214	16.61	35,780	5,943
Quiché	298,686	117,161	39.23	27,370	8,000
Alta Verapaz	280,524	255,263	91.00	37,787	34,386
T O T A L	947,777	433,638	–	100,937	48,329

SOURCE: Direction General of Statistics, Population Census, 1973.

NOTES: 1/ Sum of municipalities included.

2/ Population within the zone divided by total departmental population.

D. Workers' Income and expenditures.

D.1 Income.

Chart 5 shows the average income determined for agricultural workers.

CHART 5

ANNUAL PER CAPITA AND FAMILY INCOME ACCORDING TO ZONE

Kind of Income and Zone	Mean Income per Family Q.	Per capita income Q.
CASH AND IN-KIND		
Coffee	392.66	72.04
Cattle	490.48	85.96
CASH		
Coffee	266.87	48.96
Cattle	300.82	52.72
IN-KIND		
Coffee	125.79	23.07
Cattle	189.66	33.23

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

Cash and in-kind income was quantified taking into account the variables mentioned completely for the South Coastal Lowlands area. Charts 6 and 7 explain the integration of same by specific source.

CHART 6

PERCENTAGE INTEGRATION OF THE MEAN CASH ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income	Coffee	Cattle
Agricultural salaries at the farm	28.79	19.31
Other ag. salaries	8.96	10.84
Overtime	2.43	2.17
Sale of crops	3.99	4.54
Sale of cattle, fowl and other cattle products	2.06	3.80
Salaries in other work	11.07	10.22
Self-Employment	3.57	8.66
Home Industry	3.45	4.41
Sale of food	2.67	5.61
Commercial Income	8.98	7.08
Rents	--	--
Interests	--	4.57
Pensions and Retirement Funds	10.79	8.61
IGSS Benefits	1.20	0.93
Gifts	2.89	0.73
Sale of Property	4.54	7.54
Christmas Bonuses	1.03	0.80
Others	3.58	0.18
T O T A L	100.00	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

CHART 7.

PERCENTAGE INTEGRATION OF THE MEAN IN-KIND ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income	Coffe	Cattle
1. Benefits	66.28	66.14
House	8.02	7.83
Food	25.89	19.11
Clothing	1.89	1.97
Rations	9.91	12.36
Fuel	6.50	6.17
Use of Land	3.91	3.81
Medical Assistance	1.83	1.99
Medicines	1.14	2.12
School	2.36	3.60
Tools	1.03	1.72
Seeds and fertilizer	0.30	2.15
Gifts	1.87	1.83
Others	1.63	1.48
2. Self-Owned Crops	17.55	18.14
Consumed by the family	14.70	12.71
Given as payment for land use	2.85	5.43
3. Cattle, Fowl and cattle products consumed by the family	7.89	8.30
4. Rent of self-owned or ceded dwellings	8.28	7.42
T O T A L	100.00	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

D. 2 Expenditures

Pursuant with the source consulted, estimated family and per-capita expenditures, are shown in Chart 8.

CHART 8.

ANNUAL FAMILY AND PER CAPITA EXPENDITURES BY ZONES.

Zone	Mean Family Expenditures Q.	Per Capita Expenditures Q.
Coffee	430.58	79.00
Cattle	511.47	89.64

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

An itemized analysis by expense line item appears in Chart 9.

CHART 9

DISTRIBUTION OF THE FAMILY EXPENDITURES ACCORDING TO LINE AND ZONE

Line Item	Coffee Q.	Coffee %	Cattle Q.	Cattle %
Food	183,534	60.2	93,424	56.6
Fuel and Light	23,530	7.7	12,965	7.8
Dwelling	2,838	1.0	3,527	2.1
Medicines, recreation, personal care, transportation, education and tobacco	27,564	9.0	17,635	10.7
Clothing	33,078	10.8	18,365	11.1
Benefits	24,108	8.0	13,434	8.1
Use of Land	455	0.1	423	0.2
Others	9,747	3.2	5,433	3.3
T O T A L	304,854	100.0	165,206	100.0

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the AGricultural Employee, 1966.

CENTRAL HIGHLANDS - (Region V)

1. General

This area is located fundamentally in the highlands of the central portion of the country, including the following areas by department:

Department	Percentage of Area
Guatemala	100.00
Baja Verapaz	100.00
Quiché	7.64
El Progreso	100.00
Zacapa	100.00

Source. Direction General of Statistics, Population Census, 1973

The percentage areas indicated by department make a total equivalent to 10,502 square kilometers, or 9.64 per cent of the total area of the country.

Chart 1 shows the municipalities included in each department of the area, its population, area and population density.

CHART 1

AREA AND POPULATION DENSITY BY MUNICIPALITY AND DEPARTMENT

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Guatemala		1,108,186	2,126	521.25
	Guatemala	700,501	184	3,807.10
	Sta. Catarina Pinula	12,934	51	253.61
	San José Pinula	13,297	220	60.44
	San José del Golfo	3,329	84	39.63
	Palencia	18,932	196	96.50
	Chinautla	32,763	80	409.54
	Sn.Pedro Ayampuç	10,481	73	143.58
	Mixco	129,878	132	2,705.79
	Sn.Pedro Sacatepéquez	10,714	48	223.21
	Sn.Juan Sacatepéquez	43,116	242	178.17
	San Raymundo	9,225	114	80.92
	Chuarrancho	6,985	98	71.28
	Fraijanes	7,682	96	80.02
	Amatitlán	26,412	204	129.47
	Villa Nueva	42,082	11	369.14
	Villa Canales	31,774	160	198.59
	Petapa	8,078	30	269.27
Baja Verapaz		106,957	3,124	34.24
	Salamá	21,913	776	28.24
	San Miguel Chicaj	8,895	300	29.65
	Rabinal	20,393	504	40.46

Cont. Chart 1.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Baja Verapaz	Cubulco	20,374	444	45.89
	Granados	8,326	248	33.57
	El Chol	5,363	140	38.31
	San Jerónimo	7,142	464	15.39
	Purulhá	14,551	248	58.67
Quiché		44,092	640	68.89
	Zacualpa	11,958	336	35.59
	Joyabaj	32,134	304	105.70
El Progreso		73,122	1,922	38.04
	El Progreso	11,048	262	42.17
	Morazán	7,080	329	21.52
	Sn.Agustín Acasaguastlán	17,344	358	48.45
	El Jícaro	6,197	249	24.89
	Sansare	6,559	118	55.58
	Sanarate	15,253	273	55.87
	Sn.Antonio la Paz	6,517	209	31.18
	Sn.Cristóbal Acasaguastlán	3,124	124	25.19
Zacapa		105,739	2,690	39.31
	Zacapa	34,703	517	67.12
	Estanzuela	4,417	66	66.92
	Río Hondo	9,637	422	22.84
	Gualán	23,375	696	33.58
	Teculután	5,933	273	21.73
	Usumatlán	3,761	257	14.63

Cont. Chart 1.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
	Cabañas	5,817	49	118.71
	San Diego	3,459	112	30.88
	La Unión	10,696	211	50.69
	Huité	3,941	87	45.30

SOURCE: Direction General of Statistics, Population Census, 1973.

1.1 Geographical.

A. Climacteric Factors.

1) Altitude: Average altitudes registered in all the area, that range from 300 to 2,100 msnm. Significant mean heights of 900, 1,500 and 2,000 msnm. exist in the region.

2) Temperature: Given the wide variety of altitudes that this area presents, temperature varies from 16°C to 26°C, with intermediate important temperatures of 23° and 24°C.

3) Pluvial Precipitation: Areas are identified with annual rains of 1,000 - 1,500 and 2,000 -m.,This regime shows variations according to location.

B. Soils.

It comprises groups of soils developed on schists at medium heights, volcanic ash at medium heights, serpentines and rocks associated to medium heights.

C. Hydrology.

It comprises the lower and central part of the Motagua

basin, Caribbean Sea Slope, and the utmost southeastern part of the sub-basin Salina of the Mexican Gulf.

1.2 Economic

A. Present Use of the land.

The cultivated area for each one of the crops of the area is observed in Chart 2.

CHART 2.

TYPE OF CROP AND SURFACE IN HECTARES

Crop	Hectares	Percentage
Corn	119,027.00	54.36
Beans	14,967.30	6.84
Rice	267.50	0.12
Wheat	57.60	0.03
Cotton	18.00	0.01
Tobacco	2,154.40	0.98
Tomatoes	4,215.30	1.92
Bananas	1,053.30	0.48
Plantain	262.20	0.12
Cacao	34.20	0.02
Sugar Cane	12,493.48	5.71
Tea	407.40	0.19
Pears	77.70	0.04
Pineapple	2,742.20	1.25
Oranges	2,272.50	1.04
Potatoes	1,310.40	0.60
Sesame Seed	21.00	0.01
Coffee	10,484.60	4.78
Pastures	47,101.44	21.50
T O T A L	218,967.52	100.00

SOURCE: Direction General of Statistics, Agro-Cattle Census, 1964.

B. Land distribution according to the area.

According to the criteria established for this situation in the first area specified (South Coastal Lowlands), the information included in Chart 3 was derived.

CHART 3.

LAND DISTRIBUTION ACCORDING TO STRATUM

Stratum (Hectares)	Farms		Surface	
	No.	%	Has.	%
From 22.4 to less than 44.8	1,414	42.44	44,557.00	12.68
From 44.8 to less than 448	1,798	53.96	187,170 00	53.25
From 448 to less than 896	74	2.22	44,327.00	12.61
From 896 to less than 2,240	38	1.14	49,994.00	14.22
From 2,240 to less than 4,480	8	0.24	25,446.00	7.24
From 4,480 to less than 8,960	--	--	--	--
From 8,960 on	--	--	--	--
T O T A L	3,332	100.00	351,494.00	100.00

SOURCE: Guatemalan Agricultural Regionalization, IICA-BID, 1971.
Direction General of Statistics, Agro-Cattle Census, 1964.

C. Agricultural Workers.

The quantification of the agricultural workers of the area, was done according to the criteria utilized in the South Coastal Lowlands area, arriving thus at the information contained in Chart 4.

CHART 4

AGRICULTURAL WORKERS BY DEPARTMENTAL AREA INCLUDED IN THE ZONE.

Department	Total Departmental Population	Population within the zone 1/	%2/	Departmental Total Ag.workers.	Ag.Workers in the zone.
Guatemala	1,108,186	1,108,186	100.00	23,255	23,255
Baja Verapaz	106,957	106,957	100.00	10,644	10,644
Quiché	298,686	44,092	14.76	27,370	4,040
El Progreso	73,122	73,122	100.00	5,912	5,912
Zacapa	105,739	105,739	100.00	8,339	8,339
T O T A L	1,692,690	1,438,096		75,520	52,190

SOURCE: Direction General of Statistics, Population Census, 1973.

NOTES: 1/ Sum of municipalities included.

2/ Population within the zone divided by total departmental population.

A total of 52,190 agricultural workers is estimated, fundamentaly located in horticultural and bean operations, as representative of the basic crops.

D. Workers Income and Expenditures.

D.1 Income.

According to the operations that identify this area, income is quantified as per the information presented in Chart 5.

CHART 5.

ANNUAL PER CAPITA AND FAMILY INCOME ACCORDING TO ZONE

Kind of Income and Zone	Mean Income per Family Q.	Per Capita Income Q.
CASH AND IN-KIND		
Beans	370.71	66.69
Vegetables	539.58	97.48
CASH		
Beans	214.01	40.23
Vegetables	381.47	68.91
IN-KIND		
Beans	156.69	29.46
Vegetables	158.11	28.56

SOURCE: Institute for Economic and Social Studies, USAC- Income and Expenses of the Agricultural Worker, 1966.

Cash and in-kind income that were outlined in the South Coastal Lowlands area study were used also in the area now being studied.

The percentage integration by source of each one of the groups of income written, is specified in Charts 6 and 7.

CHART 6

PERCENTAGE INTEGRATION OF THE MEAN CASH ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income	Beans	Vegetables
Agricultural salaries at the farm	26.04	23.43
Other agricultural salaries	13.20	13.88
Overtime	1.27	4.31
Sale of Crops	13.02	17.62
Sale of cattle, fowl, cattle products	3.38	2.23
Salaries in other work	18.07	11.14
Self-Employment	2.23	4.59
Home Industry	7.58	--
Sale of Food	--	6.93
Commercial income	8.17	9.55
Rents	3.28	--
Interests	--	--
Pensions and Retirement Funds	--	--
IGSS Benefits	--	1.07
Gifts	--	4.03
Sale of Property	2.72	--
Christmas Bonuses	1.04	1.22
Others	--	--
T O T A L	100.00	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

CHART 7

PERCENTAGE INTEGRATION OF THE MEAN IN-KIND ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income		Beans	Vegetables
1.	Benefits	68.53	46.86
	House	8.18	5.22
	Food	33.55	16.01
	Clothing	---	---
	Rations	5.28	9.85
	Fuel	6.24	5.29
	Use of Land	5.45	3.00
	Medical Assistance	1.17	--
	Medicines	2.83	0.85
	School	--	0.28
	Tools	--	1.19
	Seeds and Fertilizer	3.63	1.62
	Gifts	1.62	0.96
	Others	0.58	2.59
2.	Self-Owned Crops	19.94	39.97
	Consumed by the family	15.36	6.69
	Given as payment for land use	4.58	33.28
3.	Cattle, Fowl and Cattle products consumed by the family	5.35	5.63
4.	Rent of self-owned or ceded dwellings.	6.18	7.54
	T O T A L	100.00	100.00

SOURCE: Institute for Economic and Social Studies, USAC, Income and expenses of the Agricultural employee, 1966.

D.2 Expenditures

According to the mentioned source, expenditures of the agricultural workers are framed in Chart 8.

CHART 8.

ANNUAL FAMILY AND PER-CAPITA EXPENDITURES BY ZONE.

Zones	Mean Family Expenditures Q.	Per-Capita Expenditures Q.
Beans	376.04	70.70
Vegetables	495.56	89.53

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Worker. 1966.

The above quantification of expenditures took in consideration the criteria established for this effect in the South Coastal Lowlands area study.

The distribution of expenditures for type of expense is described in Chart 9.

CHART 9

DISTRIBUTION OF THE FAMILY EXPENDITURES ACCORDING

TO LINE AND ZONE

LINE ITEM	Beans Q.	Beans %	Vegetables Q	Vegetables %
Food	13,646	52.6	19,979	56.7
Fuel and Ligh	2,492	9.6	2,981	8.5
Dwelling	622	2.4	2,012	5.7
Medicine, recreation, personal care, transportation, education and tobacco	2,746	10.6	4,313	12.3
Clothing	2,948	11.4	3,583	10.2
Benefits	2,473	9.5	800	2.3
Use of Land	186	0.7	80	0.2
Others	834	3.2	1,437	4.1
T O T A L	25,947	100.00	35,185	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

EASTERN HIGHLANDS - (Region VI)

1. General

This area is located in the Eastern part of the country, towards the border with Salvador and Honduras. It includes the departmental areas that are identified as follows:

Department	Percentage of Area
Chiquimula	100.00
Santa Rosa	11.37
Jutiapa	78.63

SOURCE: Direction General of Statistics, Population Census, 1973.

The departmental areas mentioned, cover an extension of 7,306 square kilometers, or 6.71 per cent of the total area of the country. Chart 1 shows information related to the total population, density and area.

CHART 1

AREA AND POPULATION DENSITY BY MUNICIPALITY AND DEPARTMENT

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Chiquimula		158,177	2,376	66.57
	Chiquimula	38,872	372	104.49
	San José La Arada	5,172	160	32.33
	San Juan Ermita	6,013	92	65.36

Cont. Chart 1

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Chiquimula	Jocotán	22,054	148	149.00
	Camotán	17,129	232	73.83
	Olopa	8,258	156	52.93
	Esquipulas	19,304	532	36.29
	Concepción las Minas	7,899	160	49.37
	Quezaltepeque	14,505	236	61.46
	San Jacinto	5,851	60	97.52
	Ipala	13,120	228	57.54
Santa Rosa		32,371	336	96.34
	Casillas	11,187	185	60.47
	San Rafael las Flores	4,297	84	51.15
	Nueva Santa Rosa	16,887	67	252.04
Jutiapa		121,621	2,531	48.05
	Jutiapa	54,680	620	88.19
	El Progreso	11,325	68	166.54
	Sta.Catarina Mita	15,818	132	119.83
	Agua Blanca	12,126	340	35.66
	Asunción Mita	29,071	476	61.07
	Yupiltepeque	7,273	36	202.03
	Atescatempa	10,232	68	150.47
	Jerez	3,448	60	57.47
	El Adelanto	3,867	31	124.74
	Zapotitlán	4,982	84	59.31
	Comapa	12,494	132	94.65
	Jalpatagua	13,449	204	65.93
	Conguaco	8,577	128	67.01

Cont. Chart 1

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Jutiapa	San José Acatempa	6,893	68	101.37
	Quezada	9,209	84	109.63
Jalapa		118,074	2,063	57.23
	Jalapa	45,425	544	83.50
	San Pedro Pinula	23,846	376	63.42
	San Luis Jilotepeque	12,396	296	41.88
	San Manuel Chaparrón	4,951	123	40.25
	San Carlos Alzatate	4,480	181	24.25
	Monjas	10,831	256	42.31
	Mataquescuintla	16,145	287	56.25

SOURCE: Direction General of Statistics, Population Census, 1973.

1.1 Geographical.

A. Climacteric Factors.

1) Altitude: The lowlands, with height averages of 600 msnm; and the highlands up to 2,000 msnm.

2) Temperature: High: 16 - 19°C; low: 22 - 24°C. Registered temperatures range from 24°C in the lowlands up to 16°C in the high regions.

3) Pluvial Precipitation: For all the area, average precipitation of 1,000 - 1,500 and 2,000 mm. of annual rain have been observed.

B. Soils: The great majority corresponds to soil groups

developed on volcanic ash at medium heights, and a small central area formed by soils developed on volcanic ash at high altitudes.

C. Hydrology.

It comprises the higher part of the Paz basin, Pacific Slope; all the area of the Lempa basin, formed by the Sub-basin Ostúa-Güija and Olopa, Pacific Slope; southern part of the sub-basin Motagua, Caribbean Sea slope; the south-central part of the sub-basin Río Grande from Zacapa, Caribbean Sea Slope.

1.2 Economic.

A. Present Use of the land.

Chart 2 identifies the cultivated area in hectares, for each one of the main crops of the area.

CHART 2.

TYPE OF CROP AND SUFACE IN HECTARES

Crop	Hectares	Percentage
Corn	70,645.30	33.34
Beans	9,835.70	4.64
Rice	2,879.20	1.36
Wheat	244.10	0.12
Cotton	51.60	0.02
Tobacco	1,441.60	0.68
Tomatoes	235.20	0.11
Bananas	513.80	0.24
Plantain	43.70	0.02
Cacao	5.90	0.00

Cont. Chart 2

Crop	Hectares	Percentage
Sugar Cane	4,602.10	2.17
Tea	2.80	0.00
Pears	12.80	0.01
Pineapple	37,01	0.02
Oranges	45.00	0.02
Potatoes	437.50	0.21
Sesame seed	14.26	0.01
Coffee	5,625.60	2.65
Pastures	115,243.32	54.38
T O T A L	211,916.49	100.00

SOURCE: Direction General of Statistics, Agro-Cattle Census, 1964.

B. Land Distribution according to the area.

Based on the criteria used in the first area that was analyzed, the distribution of land by area by number of farms and size was determined in Chart 3.

CHART 3.

LAND DISTRIBUTION ACCORDING TO STRATUM

Stratum (Hectares	Farms No.	Farms %	Surface Has.	
From 22.4 to less than 44.8	1,277	45.77	38,844.49	17.39
From 44.8 to less than 448	1,461	52.36	146,458.59	65.58
From 448 to less than 896	46	1.65	28,938.39	12.97
From 896 to less than 2,240	5	0.18	5,813.89	2.60
From 2,240 to less than 4,480	1	0.04	3,271.49	1.46

Cont. Chart 3.

Stratum (Hectares	Farms No.	%	Surface Has.	
From 4,480 to less than 8,960	--	--	--	--
From 8,960 on	--	--	--	--
T O T A L	2,790	100.0	223,326.85	100.00

SOURCE: Guatemalan Agricultural Regionalization IICA-BID, 1971; Direction GEneral of Statistics, Agro-Cattle Census, 1964.

C. Agricultural Workers.

Cattle operations, according to the source consulted, signify a relationship employer-employee, established with the norms used in the South Coastal Lowlands area study, a final figure of 24,785 workers (See Chart 4).

CHART 4.

AGRICULTURAL WORKERS BY DEPARTMENTAL AREA INCLUDED IN THE ZONE.

Department	Total Departmental Population	Population within the zone 1/	%2/	Departmental Total Ag.workers.	Ag. Workers in the Zone
Chiquimula	158,177	158,177	100.00	13,885	13,885
Santa Tosa	177,159	32,371	18.27	21,989	4,017
Jutiapa	233,232	81,823	35.08	19,622	6,883
T O T A L	568,368	272,371		55,496	24,785

SOURCE: Direction General of Statistics, Population Census, 1973.

NOTES: 1/ Sum of municipalities included.

2/ Population within the zone divided by total departmental population.

D. Workers' Income and Expenditures

D.1. Income

Family and per-capita income observed in the operations mentioned for the study area can be seen in Chart 5.

CHART 5

ANNUAL PER CAPITA AND FAMILY INCOME ACCORDING TO ZONE

Kind of Income and Zone	Mean Income per Family Q.	Per Capita Income Q.
CASH AND IN-KIND		
Cattle	490.48	85.96
CASH		
Cattle	300.82	52.72
IN-KIND		
Cattle	189.66	33.23

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

Cash and in-kind income were quantified according to the criteria established (South Coastal Lowlands). Charts 6 and 7 describe the manner of their integration by specific line item.

CHART 6.

PERCENTAGE INTEGRATION OF THE MEAN CASH ANNUAL FAMILY INCOME ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income	Cattle
Agricultural salaries at the farm	19.31
Other agricultural salaries	10.84
Overtime	2.17
Sale of crops	4.54
Sale of cattle, fowl and other cattle products	3.80
Salaries in other work	10.22
Self-Employment	8.66
Home Industry	4.41
Sale of Food	5.61
Commercial Income	7.08
Rents	--
Interests	4.57
Pensions and retirement funds	8.61
IGSS Benefits	0.93
Gifts	0.73
Sale of Property	7.54
Christmas Bonuses	0.80
Others	0.18
T O T A L	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

CHART 7

PERCENTAGE INTEGRATION OF THE MEAN IN-KIND ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income		Cattle
1.	Benefits	66.14
	House	7.83
	Food	19.11
	Clothing	1.97
	Rations	12.36
	Fuels	6.17
	Use of Land	3.81
	Medical Assistance	1.99
	Medicines	2.12
	School	3.60
	Tools	1.72
	Seed and fertilizer	2.15
	Gifts	1.83
	Others	1.48
2.	Self-Owned Crops	18.14
	Consumed by the family	12.71
	Given as payment for land use	5.43
3.	Cattle, Fowl and Cattle Products consumed by the family	8.30
4.	Rent of self-owned or ceded dwellings	7.42
	T O T A L	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the AGricultural Employee, 1966.

D.2 Expenditures.

For the specified agricultural worker group, a family and per-capita expenditure of Q.511.47 and Q.89.64, respectively, was determined. The expenses by line item of expenditures are shown in Chart 9, calculated according to the criteria already described.

CHART 9

DISTRIBUTION OF THE FAMILY EXPENDITURES ACCORDING TO LINE ITEM AND ZONE.

Line Item	Cattle Q.	%
Food	93,424.00	56.6
Fuel and Light	12,965.00	7.8
Dwelling	3,527.00	2.1
Medicines, recreation, personal care, transportation, education and tobacco	17,635.00	10.7
Clothing	18,365.00	11.1
Benefits	13,434.00	8.1
Use of Land	423.00	0.2
Others	5,433.00	3.3
T O T A L	165,206.00	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Worker. 1966.

NORTH COASTAL HIGHLANDS AND VALLEYS - (Region VII)

1. General

This area is located in the northeast of the country and comprises the coastal region towards the Atlantic Ocean. It is formed by the following areas by department.

Department	Percentage of Area
Izabal	100.00
Alta Verapaz	8.97

SOURCE: Direction General of Statistics, Population Census of 1973.

The departments included total an extension of 9,771 square kilometers, that correspond to 8.97 per cent ot the total area of the country. Its integration may be seen in Chart 1.

CHART 1.

AREA AND POPULATION DENSITY BY MUNICIPALITY AND DEPARTMENT

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Izabal		169,818	9,038	18.79
	Puerto Barrios	38,903	1,292	30.11
	Livingston	18,701	1,940	9.64
	El Estor	14,000	2,896	4.83
	Morales	52,677	1,295	40.68
	Los Amates	45,537	1,615	28.20

Cont. Chart 1.

Department	Municipality	Population	Kms.^{2}	Density Inhab./Km.^{2}
Alta Verapaz		25,261	733	34.46
	Panzós	25,261	733	34.46

SOURCE: Direction General of Statistics, Population Census, 1973.

1.1 Geographical.

A. Climacteric Factors.

1) Altitude: The lowlands represent an altitude of up to 600 msnm above sea level, and the mountanous highlands have heights comprised between 600 to 1,500 msnm.

2) Temperature: Temperatures of 24°to 29°C are registered for the lowlands, and from 20 to 24°C for the mountain areas, estimating for all the area a temperature of 20 to 29°C.

3) Pluvial Precipitation: This is a rainy area, with precipitations of 4,000 to 5,000 mm. in the lake basin towards the west; and the eastern tip with precipitations of 2,000 to 3,000 mm.

B. Soils

The northeast region of the area is represented by a group of soils developed on serpentine and rocks associated with medium heights. The southern end by soil groups developed on volcanic ash at medium heights.

C. Hydrology.

This area includes the southern end of the Sarstún basin; the complete area of sub-basin Izabal, Río Dulce, the central

east part of the sub-basin Polochic, and the higher part of the sub-basin Motagua, all of the Caribbean Sea Slope.

1.2 Economic

A. Present use of the land.

According co the figures written in Chart 2, the distribution of the cultiv ated area can be observed by type of crop.

CHART 2.

TYPE OF CROP AND SURFACE IN HECTARES

CROP	Hectares	Percentage
Corn	22,900.00	44.41
Beans	1,818.00	3.53
Rice	94.00	0.18
Wheat	16.00	0.03
Tomatoes	2.10	0.00
Banana	3,538.00	6.86
Plantain	546.52	1.06
Cacao	113.40	0.22
Sugar Cane	7.00	0.01
Tea	0.70	0.00
Pineapple	17.40	0.03
Oranges	31.80	0.06
Straw	3.46	0.01
Sesame Seed	14.26	0.03
Coffee	1,303.00	2.53
Pastures	21,155.10	41.04
T O T A L	51,560.74	100.00

SOURCE: Guatemalan Agricultural Regionalization, IICA-BID, 1971.
Direction General of Statistics, Agro-Cattle Census, 1964.

B. Land distribution according to the area.

According to the criterion established in the South Coastal Lowlands area study, for this section of the study, land is distributed in the manner shown in Chart 3.

CHART 3.

LAND DISTRIBUTION ACCORDING TO STRATUM

Stratum (Hectares)	Farms No.	Farms %	Surface Has.	Surface %
From 22.4 to less than 44.8	161	46.53	4,635.40	3.21
From 44.8 to less than 448	150	43.35	21,989.80	15.23
From 448 to less than 896	16	4.62	9,907.80	6.86
From 896 to less than 2,240	10	2.89	13,354.60	9.25
From 2,240 to less than 4,480	4	1.16	12,868.10	8.91
From 4,480 to less than 8,960	3	0.87	17,175.20	11.90
From 8,960 on	2	0.58	64,442.70	44.64
TOTAL	346	100.00	144,373.60	100.00

SOURCE: Guatemalan Agricultural REgionalization, IICA-BID, 1971.
Direction General of Statistics, Agro-Cattle Census, 1964.

C. Agricultural Workers.

According to the figures investigated, a total of 15,278 agricultural workers was established for the area, pursuant with the criterion utilized in the study of previous areas. According to the source study, workers are identified in banana operations.

CHART 4

AGRICULTURAL WORKERS BY DEPARTMENTAL AREA INCLUDED IN THE ZONE.

Department	Total Departmental Population	Population within the zone 1/	%2/	Departmental Ag.Workers Total	Ag. Workers in th Zone
Izabal	169,818	169,818	100.00	11,877	11,877
Alta Verapaz	280,524	25,261	9.00	37,787	3,401
T O T A L	450,342	195,079		49,664	15,278

SOURCE: Direction General of Statistics, Population Census, 1973.

NOTES: 1/ Sum of municipalities included

2/ Population within the zone divided by total departmental population.

D. Workers' income and expenditures.

D.1 Income

In banana operations, that identify the workers' activity, the following figures are specified. These quantify income.

CHART 5

ANNUAL PER CAPITA AND FAMILY INCOME ACCORDING TO ZONE

Kind of Income and Zone	Mean Income per Family Q.	Per Capita Income Q.
CASH AND IN-KIND		
Banana	1,035.29	178.49
CASH		
Banana	921.76	158.92
IN-KIND		
Banana	113.53	19.57

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

The criteria outlined in the South Coastal Lowlands study area were used to quantify cash and in-kind income that are described in the above chart. Charts 6 and 7 show the integration of same by specific line item.

CHART 6.

PERCENTAGE INTEGRATION OF THE MEAN CASH ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE.

(In Percentages)

Source of Income	Banana
Agricultural salaries at the farm	45.43
Other agricultural salaries	1.10
Overtime	3.70
Sale of crops	1.73
Sale of cattle, fowl and other cattle products	0.91
Salaries in other work	8.78
Self-Employment	--
Home Industry	--
Sale of Food	16.46
Commercial Income	18.00
Rents	--
Interests	--
Pensions and retirement funds	--
IGSS benefits	0.77
Gifts	1.38
Sale of Property	--
Christmas Bonuses	1.74
Others	--
T O T A L	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

CHART 7.

PERCENTAGE INTEGRATION OF THE MEAN IN-KIND ANNUAL FAMILY INCOME, ACCORDING TO SOURCE AND ZONE

(In Percentages)

Source of Income		Banana
1.	Benefits	47.55
	House	14.70
	Food	--
	Clothing	--
	Rations	3.71
	Fuel	5.40
	Use of Land	4.22
	Medical Assistance	3.97
	Medicines	3.20
	School	2.35
	Tools	3.46
	Seeds and Fertilizer	--
	Gifts	--
	Others	6.50
2.	Self-Owned Crops	23.58
	Consumed by the family	11,58
	Given as payment for land use	12.00
3.	Cattle, Fowl and Cattle Products consumed by the family	10.92
4.	Rent of self-owned or ceded dwellings	17.99
	T O T A L	100.00

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the AGricultural Employee, 1966.

D.2 Expenditures

The average family expenditures and the annual per-capita expense, were estimated in Q.877.17 and Q.151.24, respectively. These expenditures were quantified pursuant with the criterion established in the South Coastal Lowlands area study.

Expenditure distributions are shown in Chart 8.

CHART 8.

DISTRIBUTION OF THE FAMILY EXPENDITURES ACCORDING TO LINE ITEM AND ZONE.

Line Item	Banana Q.	%
Food	16,407	53.5
Fuels and light	2,637	8.6
Dwelling	60	0.2
Medicines, recre ation, personal care, transportation, education and tobacco	3,780	12.3
Clothing	3,503	11.4
Benefits	2,642	8.6
Use of Land	40	0.1
Others	1,632	5.3
T O T A L	30,701	100.0

SOURCE: Institute for Economic and Social Studies, USAC. Income and Expenses of the Agricultural Employee, 1966.

NATIONAL AND REGIONAL AGRICULTURAL ASSOCIATIONS OF GUATEMALA

Asociación Nacional del Café (ANACAFE)
15 calle 15-33, zona 13

Algodonera Guatemalteca, S.A.
24 avenida 30-39, zona 12

Consejo Nacional del Algodón
Ave. Las Américas 13-08, zona 13

Algodonera Retalteca
3a. avenida 11-18, zona 1

Asociación General de Agricultores
9a. calle 3-43, zona 1

Asociación Nacional de Cañeros
6a. avenida 1-31, zona 9

Gremial de Paneleros
6a. avenida 6-00, zona 4

Gremial de Trigueros
14 avenida 3-62, zona 1

Asociación de Azucareros de Guatemala
12 calle "A" 2-41, zona 1

Asociación de Exportadores de Café
Plazuela España, Edificio Etisa, zona 9

Gremial de Huleros de Guatemala
10 calle 6-37, zona 1
Oficina 301 - 3er Piso

GUATEMALA: POPULATION, EDUCATION, HOUSING, AND SANITARY CONDITIONS IN COTTON FARMS IN THE DEPARTMENTS OF ESCUINTLA AND SANTA ROSA, 1974

	No.	%
I. POPULATION		
Age Group:		
Less than one year	124	2.60
From 1 to 4 years	349	7.06
From 5 to 6 years	213	4.44
From 7 to 15 years	522	10.88
Over 15 years	3,589	75.02
TOTAL	4,797	100.00
Education:		
Literate from 7 to 15 years	119	2.89
Illiterate from 7 to 15 years	403	9.80
Literate adults	445	10.55
Illiterate adults	3,144	76.76
TOTAL	4,111	100.00
II. HOUSING		
Ownership Conditions:		
Owners	77	2.73
Tenants	252	97.27
Buildings not examined	0	0.00
Total buildings	259	100.00
Building use:		
Exclusively for living	240	91.67
For food handling	10	3.86
Commercial	5	1.93
Other uses	4	1.54
Buildings not examined	0	0.00
Total Buildings	259	100.00

	No.	%
Floor Material:		
Cement tiles	78	30.10
Clay tiles	1	0.38
Wooden floors	56	21.61
Earth floors	124	47.91
Buildings not examined	0	0.00
Total buildings	259	100.00
Wall Materials:		
Masonry walls	18	6.94
Wooden walls	149	58.55
Wooden walls and others	45	16.37
Buildings not examined	0	0.00
Total buildings	259	100.00
Ceiling Materials:		
Wooden ceilings	12	4.63
Blanket ceilings	0	0.00
Other ceilings	3	1.15
Without ceiling	244	94.22
Buildings not examined	0	0.00
Total buildings	259	100.00
Roof Materials:		
Concrete roofs	0	0.00
Zinc sheet roofs	219	84.56
Clay tile roofs	0	0.00
Straw roofs and others	40	15.44
Buildings not examined	0	0.00
Total buildings	259	100.00
General Conditions of Buildings:		
In good conditions	29	11.19
In regular conditions	148	57.16
In poor conditions	82	31.65
Buildings not examined	0	0.00
Total buildings	259	100.00
Total number of bedrooms	289	

	No.	%
Kitchens:		
Buildings with independent kitchen	201	77.58
Building without independent kitchen	54	20.88
Building without kitchen	4	1.54
Buildings not examined	0	0.00
Total buildings	259	100.00
Bathrooms:		
Buildings with bathrooms	60	23.96
Buildings without bathrooms	199	76.04
Buildings not examined	0	0.00
Total buildings	259	100.00

III. BASIC SANITATION

Water Supply:		
Buildings with running water	69	25.63
Buildings with sanitary well	52	20.07
Buildings with unsanitary well	93	36.95
Buildings supplied w/municipal water	4	1.54
Buildings supplied with spring water	28	10.80
Buildings supplied by other waters	13	5.01
Buildings not examined	0	0.00
Total buildings	259	100.00
Excretion Disposal:		
Buildings with toilet	19	7.33
Buildings with flushing toilet	36	13.89
Buildings with septic toilets	5	1.93
Buildings with non septic toilets	50	19.30
Buildings without excretion disposal	149	57.55
Buildings not examined	0	0.00
Total buildings	259	100.00
Drainages:		
Buildings without drainages	204	79.77
Buildings with drainages in public network	10	3.86
Buildings with cesspool drainage of F.S.	45	16.37
Buildings not examined	0	0.00
Total buildings	259	100.00

	No.	%
Garbages:		
Buildings with sanitary deposits	0	0.00
Buildings with unsanitary deposits	1	0.38
Buildings without deposits for garbage	258	99.62
Buildings with garbage collection	0	0.00
Buildings not examined	0	0.00
Buildings with free disposal	259	100.00
Total buildings	259	100.00
Animals:		
Buildings with animals	214	82.60
Buildings with rodents	222	85.69
Buildings with pigs	17	5.56
Buildings with cows and horses	11	4.24
Buildings with dogs	71	27.40
IV. TYPE OF ESTABLISHMENTS		
1. General and grocery stores	13	5.01
2. Restaurants, eating places, cafeterias	4	1.54
3. Bars	0	
4. Butcher shops	0	
5. Foodstuffs, beverages, factories	0	
6. Candies, stores, factories	0	
7. Ice, icecreams, factories	0	
8. Hotels, boarding houses, rooming houses		
9. Dairy shops	0	
10. Corn cooking and cereal meals	2	0.77
11. Bread stores, cake shops, pastry shops	0	
12. Small and large slaughter houses	0	
13. Fowl slaughter houses	0	
14. Tortilla shops	1	0.38
Business:		
1. Barber shops and beauty parlors	0	
2. Warehouses	0	
3. Movie houses and theaters	0	
4. Companies	0	
5. Hardware stores	0	

		No.	%
6.	Haberdasheries	0	
7.	Workshops	0	
8.	Funeral parlors	0	

Agricultural Industries:

1.	Pigsties	0	
2.	Hencoops	0	
3.	Vegetables	0	

Public Offices:

1.	Post Offices	0	
2.	School (La Montañesa)	1	0.38
3.	Churches	0	
4.	Municipal Buildings	0	
5.	National Buildings (specify)	0	

SUMMARY

Total number of inhabitants	4,797
Total number of buildings examined	259
Total number of buildings not examined	0
Total number of buildings	259
Total number of empty lots	0

Source: "An Environmental and Economic Study of the Consequences of Pesticide use in Central American Cotton Production", Instituto Centroamericano de Investigación y Tecnología Industrial, January 1977, pp. 92-96.