

AGRICULTURAL RESOURCES AND FOOD SUPPLY IN
EL SALVADOR

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JOHN F. ANNEGERS
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EL SALVADOR

By

John F. Annegers

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CHAPTER I

NATURAL SETTING AND RESOURCE BASE

NATURAL SETTING

Nature endowed El Salvador with potentially productive but easily imbalanced topographic, climatic, and pedological conditions. The New Jersey sized country is characterized by three major topographic regions--the northern and eastern highlands, the central meseta, and the coastal plain. The northern and eastern highlands, by far the greater of the three regions, are well weathered tertiary mountains, bisected by a few river basins. Elevations vary from 200 to 2000 meters while soils are predominantly shallow and rocky, interspersed with small areas of alluvial lowlands. The central meseta, formed by recent volcanic activity, runs through the country, but is broken by a few river basins. The generally rolling topography of the central meseta ranges from 600 to 2000 meters in elevation and possesses rich volcanic soils. The Pacific coastal plain varies in width from a few miles to ten to twenty miles along river basins. Most of El Salvador is dominated by rolling hills to quite mountainous topography excepting a few inter-mountain basins, flood plains, and parts of the Pacific coast.

Since only few mountain peaks reach over 1800 meters, virtually all of El Salvador lies within the tierra caliente. In San Salvador the monthly temperature varies only three degrees around a mean of 23.1°C (73.6°F). The major climatic factor is the nation's monsoon-like seasonal rainfall distribution. The onshore winds from the Pacific bring moist air from the end of May to November. During this period the country receives

nearly all of its 1800 mm. annual rainfall. During the dry season, late November to May, the northerly winds bring practically no rain. Such distinct wet and dry seasons have profound influences upon the uses of El Salvador's agricultural resources.

RESOURCE BASE

El Salvador's midyear 1966 population estimates of 3,156,000 and the total country's area of 21,393 square kilometers yield an overall population density of 155 persons per square kilometer. This raw figure, however, gives only a general picture of the agricultural resource base. The 1961 agricultural census of El Salvador classified 58.7% of the country as in agricultural production, which was distributed in the following manner:

TABLE 1. RESOURCE BASE

Arable Land	cultivos permanentes	160,000
	tierra de labranza	488,000
Pastures	naturales	503,000
	sembrados	101,000
	Total	1,252,000

^aAll figures in hectares

^bMinisterio De Economia, Segundo Censo Agropecuario-1961, Datos Preliminares, San Salvador, 1963.

Each of these four classifications of agricultural land use is the result of the natural landscape, past, and present land use. In addition, the present classifications are still in a state of flux and have significant variations within themselves. A short appraisal of the natural setting and the historical evolution of El Salvador's agricultural land is now in order.

Before the Spanish conquest, nearly the entire area was a tropical wet-dry season forest. It is estimated that about 130,000 Indians lived within the present boundaries of El Salvador on the eve of the Spanish conquest.¹ It is now assumed that this small indigenous Indian population of shifting cultivators maintained a neat ecological balance with the natural vegetation.² Their practices of controlled dry season burning, short term cultivation--one to three years, and lengthy period of soil rest out of cultivation--ten to thirty years or more--allowed the natural vegetation to reassert itself. The Spanish intrusion brought about a drastic decline of population, to 60,000 in 1552, through the introduction of Old World diseases and forced labor. El Salvador's population did not reach its pre-colonial level until 1770.³ During this interim of two and a half centuries, the Spanish profoundly altered the natural vegetation through the introduction of livestock. The Spanish adopted the Indian practices of dry season burning to produce lands suitable for grazing cattle. Unlike the Indian techniques, burning was practiced on a grand scale and on a yearly basis. This technique and livestock grazing did not allow the forest to reestablish itself. The result, compounded by constant grazing and deforestation, has been a wet-dry season brush savanna which is now classified as pastos naturales. This pasture is adequate for wet season grazing, but of little value during the dry season. The 1961 agricultural census classified 40% of El Salvador's farmland as pastos naturales.

¹Rudolfo Castro, La Poblacion de El Salvador, Midrid, 1942, p. 553.

²Wilhelm Lauer, Vegetation, Landnutzung und Agrarpotential in El Salvador, Kiel, 1956, p. 36.

³Rudolfo Castro, op. cit., p. 552.

Of El Salvador's total land area of 2,139,300 hectares, 700,000 hectares were not included in the agricultural land census. This area is partly built-on land, recent lava flows, and other wastelands, but is largely scrub forest. Most of this area has suffered a fate similar to that of the pastos naturales but is now so denuded, eroded, or inaccessible that it can no longer be used for commercially productive pastures or forests. Today Salvador's forests can only supply firewood for limited home use. Most of the country's structural timber and all of its pulp and paper are imported. Vogt (1946), Feuerlein (1954), and Lauer (1956) all strongly advocate an extensive reforestation program in order to control silting and to restore the water table. Apparently little has been done in this sphere.

The second agricultural land classification is permanent crops. This classification includes 160,000 hectares, most of which is under coffee cultivation, along with some citrus, cocoa, and other tree crops. Unlike the natural pastures, these crops have replaced the natural forest vegetation but have not destroyed the potential of the land. This area of cultivos permanentes is mostly over 600 meters in elevation, with the landscape being, in general, rolling hills. Today the cultivos permanentes is Salvador's most productive land in dollar return per hectare and is, of course, based overwhelmingly upon an export economy.

The pastos sembrados, consisting of 101,000 hectares, may be classified as improved pasture. Most of the area has been recently developed through clearing of the Pacific coast, tropical forests, and irrigated river valleys in the north. The sembrados has not suffered soil erosion as severely as the pastos naturales. The area is either potential arable or milpa land. The fact is evident by its declining area between

the 1950 and 1960 censuses: 175,000 hectares to 101,000 in 1961. This decrease is the result of the expansion of crops onto these pastures. The nature and effects of this phenomena will be discussed later.

The remaining agricultural area, consisting of 324,000 hectares, is devoted to annual crops. This area comprises a wide variety of land uses and is well distributed throughout the country. The more level and fertile areas are used for export and industrial crops, chiefly cotton, but also sugar and domestic foodstuffs--maize, sorghums, rice, and beans. The quality of this land varies greatly. It includes a small area of irrigated grains along the Rio Lempa. The larger part, however, is located in the Central Meseta, where coffee cannot be grown profitably. A significant part of the tierra de labranza, at least 40,000 hectares, perhaps even 80,000 hectares, are in shifting milpa plots within the pastos naturales. The nature of agriculture in the tierra de labranza will also be discussed in detail in other sections of this paper.

FEEDING BURDEN

The above classifications and variances present the agricultural base upon which El Salvador's domestic food staple production and export agricultural depend. El Salvador has an overall population density of 155 persons per square kilometer. This method of determining population pressure is unsatisfactory. A more exacting method is the commonly used units of arable land per person. In El Salvador, however, one must first determine what can be considered arable land. The potential arable land includes the presently cultivated tierra de labranza and the cultivos permanentes and also the sembrados. Therefore, El Salvador seemingly possesses 749,000 hectares of tillable land. This total gives Salvador

a man/land ratio of 24 ares per capita. If only land presently under crops is used, the ratio becomes 20.5 ares per person. If the area under perennial crops is excluded, e.g., omitting coffee, the figure becomes 15.5; and if only the area used to produce crops for domestic consumption is considered, the ratio drops to about 12.6 ares per capita. Even this figure does not represent the full extent of population pressure in El Salvador. The Salvadoran agricultural census compiles the total area of the tierra de labranza by summing the areas of the individual annual crops. This total greatly exaggerates the areal extent of the tierra de labranza because in agricultural production of annual crops, intraplanting and double cropping are widely practiced. Thus the areal extent of the tierra de labranza--488,000 hectares, some 164,000 hectares are counted twice in the census. When this factor is considered, the land area of permanent crops becomes 324,000 hectares and the area in domestic food crops is reduced to 271,500 hectares. The corresponding man/land ratio drops to only 8.6 ares per capita. This incredibly low resource base is the result of two processes: demographic pressure and an agricultural export economy. Presently El Salvador's limited resource base is being further taxed by an increasingly rapid continuation of the present processes. These processes rest upon the given social, economic, and political aspects of the country, which are leading the way to their own destruction.

TABLE 2. VITAL STATISTICS 1901-1963

Year	Birth Rate	Death Rate	Natural Increase	Infant Mortality
1901/05	52.5	28.3	22.0	
1906/10	49.7	27.3	24.0	
1911/15	48.9	27.0	22.2	
1916/20	44.8	30.8	14.0	
1921/25	46.1	24.4	21.7	
1926/30	46.0	24.4	21.6	
1931/35	41.8	23.6	18.2	140.0
1936/40	41.6	19.0	22.6	121.0
1941/45				109.7
1946/50	44.4	17.0	27.4	101.8
1951/55	45.4	15.2	33.2	81.8
1956/60	47.4	13.2	34.2	80.4
1961/63	49.1	11.9	38.2	67.5

^aFigures are per 1000

^bRudolfo Castro, op. cit.

More important has been the declining death rate of the last forty years. This decline, at least that since 1930, can be attributed almost entirely to the decrease of infant mortality. Death rates of those 15 and over have probably changed little during the past century. The present low death rate of 11.0 deaths per 1000 per year--9.4 in the United States--is due largely to the extremely young population of El Salvador--48% of the population is under 15 years old. The present rate of population increase in El Salvador has considerable room for expansion through a further decrease of the country's high infant mortality rate. Salvador's infant mortality rate of 69.8 is still quite high, compared to 41.9 in Puerto Rico and 25.8 in the United States.

Like the rest of the agricultural nations of Central America, El Salvador's people are predominantly rural. The 1961 census gives an

urban population of 973,069 or 38.5% of the total. However, the urban definition of the census includes each of 264 municipio seats, most of which are agricultural villages of only a few hundred residents. Only 622,746 or 24.6% of the total population lived in urban areas of over 5000. Over half of these, 314,850, live in or near the capital city of San Salvador. Thus, of the total population of the 13 departments outside of San Salvador, only 15% live in urban centers of over 5000.

A second important characteristic of rural-urban differences in El Salvador is the inability of urban centers to drain off a significant amount of El Salvador's rural population growth. The 1930 census reported that 61.7% of the country's population was rural. In 1950 the census reported a seemingly unlikely increase to 63.59% rural. Richard N. Adams offered three possibilities to explain this development.⁵ First, the definition of rural and urban may have changed since the 1930 census. The 1930 census was not published until 1942, and it is not known what was meant by urban or rural. Also, other findings of the 1930 census shed doubts on its credibility. Secondly, Adams believes that food shortages during the depression may have caused the necessary urban to rural migration. Thirdly, Adams cites rural-urban fertility differences as a possible explanation for the slower growth of the urban population. There is no information on the comparative vital statistics of the population; however, the 1950 census reported an average rural family size of 5.25 and of 4.78 for urban. Thus rates of population increases may have been a partial explanation for the slow growth of the urban population.

⁵Richard N. Adams, Cultural Surveys of Panama, Honduras, El Salvador, and Guatemala, Pan American Union, Washington, D.C., 1954, p. 423.

The 1961 census reported a reversal of the possible 1930-50 trend. The rural defined population had dropped to 61.5% of the total population. However, in 1950 the rural population numbered 1,176,000; by 1961 it had grown to 1,553,111. This large net growth of the rural population reflects the inability of Salvador's urban centers to absorb more than a small part of the country's rural population growth. In fourteen of El Salvador's thirty-eight political districts, the rural percentage of the population increased between 1950 and 1961. Most of the remaining districts reported little change of the rural-urban distribution, Sal Salvador being the major exception. Thus the rapid growth of Salvador's urban centers is mainly the result of the cities' own natural increase, while rural-urban migration is a relatively minor factor.

Another aspect of El Salvador's population distribution is the high population densities which prevail throughout the country. In 1961, the average density was 126.6 persons per square kilometer. The important facet of this high density is that it prevailed throughout most of the country. Only two of the thirty-eight districts had a density of less than fifty persons per square kilometer. The two exceptions had forty and forty-four persons per square kilometer. Both of these are northern districts with rugged terrain and mostly scrub forest or pastos naturales vegetation. Twenty-four of the thirty-eight districts had densities of over 100 persons per square kilometer. The accompanying map should give a clear view of Salvador's high rural population density. El Salvador's high rural population density and continued rapid rural population growth

has concentrated a higher number of agricultural workers per unit of arable land.

El Salvador's rural-urban population variables are opposite to those of the traditional demographic concepts devised in the developed Western nations. The following table consists of averages of the 1961-63 vital statistics.

TABLE 3. URBAN/RURAL VITAL STATISTICS

	Birth Rate	Death Rate	Natural Increase	Infant Mortality
Urban	52.8	13.6	39.2	80.0
Rural	46.8	9.2	37.6	59.0
Total	49.1	10.9	38.2	67.5

^aMinisterio de Economía, Anuario Estadístico, San Salvador, 1964.

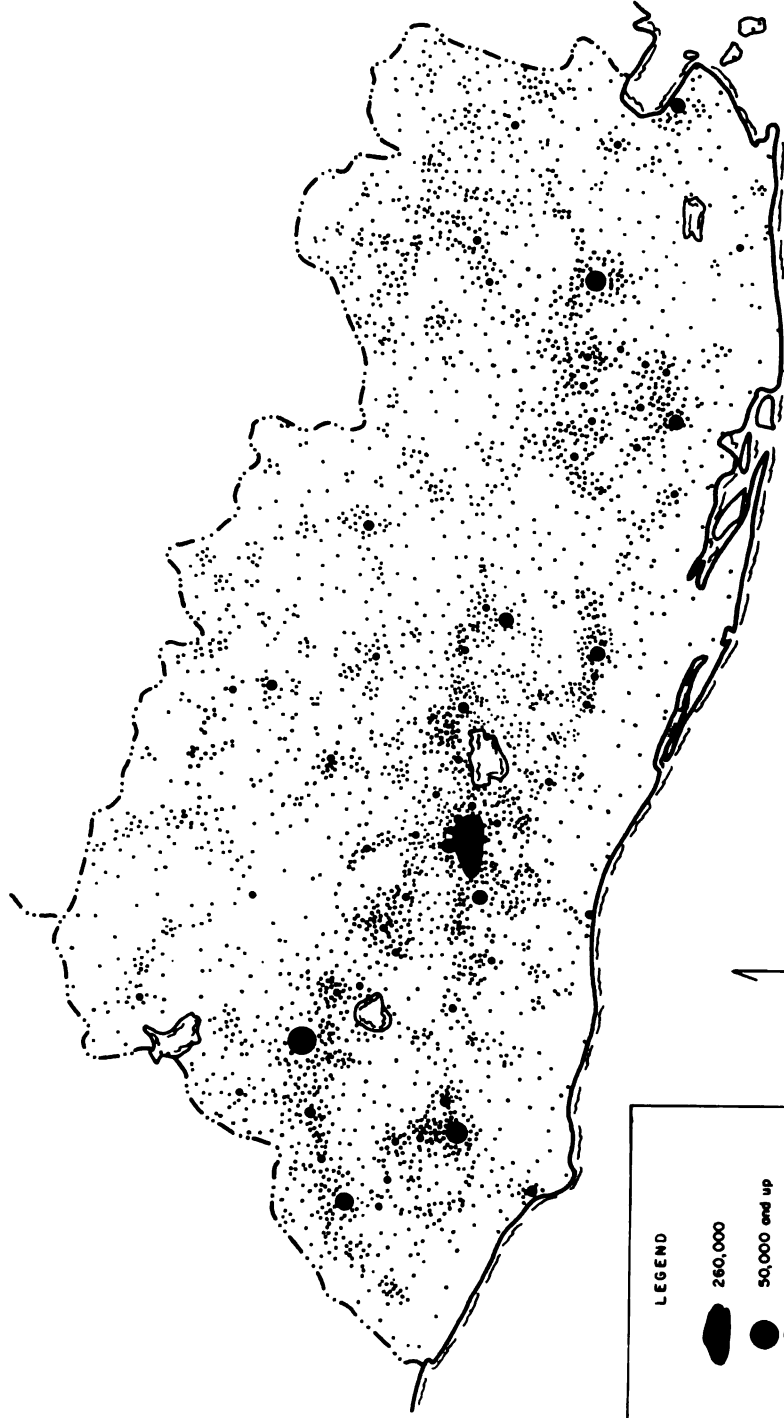
If the rural population statistics are not an under-enumeration, an interesting development is exhibited. The rural sector would have significantly lower birth and death rates and a much lower infant mortality rate. If this is the case, an explanation must lie in a tremendous urban class dichotomy--greater than that of rural El Salvador--between a few wealthy people, or landowners, or something, and a large class of poverty-stricken proletariat and seasonally employed agricultural workers. In addition, the 5% higher natural increase rate of the urban population, if these differences did exist throughout 1950 to 1961, would normally account for about half of the relative urban growth.

A final facet of Salvador's population is that it is not the commonly asserted homogenous country. Both Baron Castro and Richard Adams estimate the Indian population at 20%. Adams believes that Salvadorans

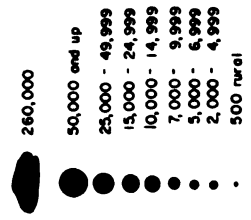
will generally agree that there are Indians with a distinct culture still living in their country.⁶ However, today the important trait of digging-stick agriculture is shared by Indians and Ladinos alike.

⁶Ibid., p. 485.

EL SALVADOR - POPULATION - 1961



LEGEND



Source: Tercer Censo Nacional Poblacion

Between 1930 and 1946 the low prices of the depression and loss of the continental market by the war discouraged new plantings. The producing area remained around 100,000 hectares and production ranged between 48,000 and 67,000 metric tons. In the post-war era production was greatly stimulated as the price of coffee rose rapidly until 1954. After that date production continued to rise, as the price of coffee declined. The following table gives the fortune of El Salvador's coffee from 1928-1960. Since 1960 production has reached 100,000 metric tons, but the total return has remained at the 1959-1960 level.

From this table it can be seen that the value of coffee exports is more dependent upon a highly fluctuating price than on a fairly consistent level of production. Export tonnage in 1954 was less than any year since 1948, yet dollar returns were the highest in the nation's history. The gross per capita returns are of great significance in that they represent a sizable portion of the per capita income and influence other sectors of the nation's economy. This index, by taking into consideration the country's rapid population growth, illustrates an inevitable feature of an agricultural export economy. It becomes obvious that El Salvador cannot improve its economic situation through coffee exportation alone.

Outside of being extremely vulnerable to economic conditions in the developed countries, the price of coffee also fluctuates with the built-in features of that commodity's production--an economic circumstance known as the coffee cycle. Coffee entrepreneurs generally expand production during times of high prices, since the ability and impetus is greatest to do so. However, it takes three to four years for a new tree to become productive. In addition, highest productivity is not reached until eight

TABLE 4. THE COFFEE EXPORT ECONOMY

Year	Coffee, Exports in 1000's of MT	Cents per Kg, deflated (1947-49 100)	Value, US in millions of \$, deflated (1947-49 100)	Population, 1000's	Gross return per capita dollars
1928	58.5	93.5	54.7	1375	39.90
1929	46.8	83.4	38.2	1400	27.26
1930	58.6	51.7	30.3	1435	21.13
1931	54.6	40.8	22.3	1465	15.25
1932	36.7	50.9	20.5	1484	13.82
1933	56.2	47.1	26.5	1502	17.62
1934	49.9	50.4	25.2	1522	16.59
1935	50.1	37.7	18.8	1541	12.23
1936	49.4	39.9	19.7	1561	12.60
1937	67.6	43.5	29.4	1581	18.62
1938	53.8	33.7	18.1	1601	11.31
1939	55.8	33.0	18.4	1622	11.35
1940	56.5	31.0	17.5	1643	10.67
1941	41.8	45.3	18.5	1664	11.10
1942	53.1	46.1	24.4	1686	14.48
1943	56.4	41.7	24.8	1708	14.53
1944	63.1	43.7	27.5	1730	15.89
1945	57.7	43.3	25.1	1753	14.34
1946	48.2	51.3	25.2	1776	14.21
1947	62.6	60.2	37.7	1799	20.98
1948	60.3	57.4	34.5	1823	18.92
1949	74.6	69.0	52.7	1847	28.52
1950	69.3	107.8	74.7	1889	39.55
1951	65.9	103.7	68.4	1954	35.02
1952	66.9	106.5	71.2	2020	35.26
1953	65.9	116.0	76.3	2088	36.56
1954	62.2	158.4	97.7	2158	45.28
1955	71.8	113.5	81.5	2232	36.52
1956	64.5	111.8	72.0	2308	31.23
1957	83.2	106.4	88.6	2391	37.05
1958	80.5	89.2	71.9	2475	29.05
1959	83.0	68.2	56.6	2520	22.46
1960	89.5	67.4	60.3	2612	23.07

^aUnited Nations, Coffee in Latin America--Productivity Problems and Future Prospects.

or ten years and production usually continues until the tree is 25 to 30 years old. Therefore production cannot be regulated on a short term basis unless coffee is left on the trees or destroyed--both of which have

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud. The document also notes that accurate records are necessary for the preparation of financial statements and for the calculation of taxes.

Date		Description		Amount	
1/1/20		Opening Balance		100.00	
1/5/20		Deposit		50.00	
1/10/20		Withdrawal		25.00	
1/15/20		Deposit		75.00	
1/20/20		Withdrawal		30.00	
1/25/20		Deposit		60.00	
1/30/20		Withdrawal		40.00	
2/5/20		Deposit		80.00	
2/10/20		Withdrawal		50.00	
2/15/20		Deposit		90.00	
2/20/20		Withdrawal		60.00	
2/25/20		Deposit		100.00	
2/30/20		Withdrawal		70.00	
3/5/20		Deposit		110.00	
3/10/20		Withdrawal		80.00	
3/15/20		Deposit		120.00	
3/20/20		Withdrawal		90.00	
3/25/20		Deposit		130.00	
3/30/20		Withdrawal		100.00	
4/5/20		Deposit		140.00	
4/10/20		Withdrawal		110.00	
4/15/20		Deposit		150.00	
4/20/20		Withdrawal		120.00	
4/25/20		Deposit		160.00	
4/30/20		Withdrawal		130.00	
5/5/20		Deposit		170.00	
5/10/20		Withdrawal		140.00	
5/15/20		Deposit		180.00	
5/20/20		Withdrawal		150.00	
5/25/20		Deposit		190.00	
5/30/20		Withdrawal		160.00	
6/5/20		Deposit		200.00	
6/10/20		Withdrawal		170.00	
6/15/20		Deposit		210.00	
6/20/20		Withdrawal		180.00	
6/25/20		Deposit		220.00	
6/30/20		Withdrawal		190.00	
7/5/20		Deposit		230.00	
7/10/20		Withdrawal		200.00	
7/15/20		Deposit		240.00	
7/20/20		Withdrawal		210.00	
7/25/20		Deposit		250.00	
7/30/20		Withdrawal		220.00	
8/5/20		Deposit		260.00	
8/10/20		Withdrawal		230.00	
8/15/20		Deposit		270.00	
8/20/20		Withdrawal		240.00	
8/25/20		Deposit		280.00	
8/30/20		Withdrawal		250.00	
9/5/20		Deposit		290.00	
9/10/20		Withdrawal		260.00	
9/15/20		Deposit		300.00	
9/20/20		Withdrawal		270.00	
9/25/20		Deposit		310.00	
9/30/20		Withdrawal		280.00	
10/5/20		Deposit		320.00	
10/10/20		Withdrawal		290.00	
10/15/20		Deposit		330.00	
10/20/20		Withdrawal		300.00	
10/25/20		Deposit		340.00	
10/30/20		Withdrawal		310.00	
11/5/20		Deposit		350.00	
11/10/20		Withdrawal		320.00	
11/15/20		Deposit		360.00	
11/20/20		Withdrawal		330.00	
11/25/20		Deposit		370.00	
11/30/20		Withdrawal		340.00	
12/5/20		Deposit		380.00	
12/10/20		Withdrawal		350.00	
12/15/20		Deposit		390.00	
12/20/20		Withdrawal		360.00	
12/25/20		Deposit		400.00	
12/30/20		Withdrawal		370.00	
1/5/21		Deposit		410.00	
1/10/21		Withdrawal		380.00	
1/15/21		Deposit		420.00	
1/20/21		Withdrawal		390.00	
1/25/21		Deposit		430.00	
1/30/21		Withdrawal		400.00	
2/5/21		Deposit		440.00	
2/10/21		Withdrawal		410.00	
2/15/21		Deposit		450.00	
2/20/21		Withdrawal		420.00	
2/25/21		Deposit		460.00	
2/30/21		Withdrawal		430.00	
3/5/21		Deposit		470.00	
3/10/21		Withdrawal		440.00	
3/15/21		Deposit		480.00	
3/20/21		Withdrawal		450.00	
3/25/21		Deposit		490.00	
3/30/21		Withdrawal		460.00	
4/5/21		Deposit		500.00	
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4/20/21		Withdrawal		480.00	
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4/30/21		Withdrawal		490.00	
5/5/21		Deposit		530.00	
5/10/21		Withdrawal		500.00	
5/15/21		Deposit		540.00	
5/20/21		Withdrawal		510.00	
5/25/21		Deposit		550.00	
5/30/21		Withdrawal		520.00	
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6/10/21		Withdrawal		530.00	
6/15/21		Deposit		570.00	
6/20/21		Withdrawal		540.00	
6/25/21		Deposit		580.00	
6/30/21		Withdrawal		550.00	
7/5/21		Deposit		590.00	
7/10/21		Withdrawal		560.00	
7/15/21		Deposit		600.00	
7/20/21		Withdrawal		570.00	
7/25/21		Deposit		610.00	
7/30/21		Withdrawal		580.00	
8/5/21		Deposit		620.00	
8/10/21		Withdrawal		590.00	
8/15/21		Deposit		630.00	
8/20/21		Withdrawal		600.00	
8/25/21		Deposit		640.00	
8/30/21		Withdrawal		610.00	
9/5/21		Deposit		650.00	
9/10/21		Withdrawal		620.00	
9/15/21		Deposit		660.00	
9/20/21		Withdrawal		630.00	
9/25/21		Deposit		670.00	
9/30/21		Withdrawal		640.00	
10/5/21		Deposit		680.00	
10/10/21		Withdrawal		650.00	
10/15/21		Deposit		690.00	
10/20/21		Withdrawal		660.00	
10/25/21		Deposit		700.00	
10/30/21		Withdrawal		670.00	
11/5/21		Deposit		710.00	
11/10/21		Withdrawal		680.00	
11/15/21		Deposit		720.00	
11/20/21		Withdrawal		690.00	
11/25/21		Deposit		730.00	
11/30/21		Withdrawal		700.00	
12/5/21		Deposit		740.00	
12/10/21		Withdrawal		710.00	
12/15/21		Deposit		750.00	
12/20/21		Withdrawal		720.00	
12/25/21		Deposit		760.00	
12/30/21		Withdrawal		730.00	
1/5/22		Deposit		770.00	
1/10/22		Withdrawal		740.00	
1/15/22		Deposit		780.00	
1/20/22		Withdrawal		750.00	
1/25/22		Deposit		790.00	
1/30/22		Withdrawal		760.00	
2/5/22		Deposit		800.00	
2/10/22		Withdrawal		770.00	
2/15/22		Deposit		810.00	
2/20/22		Withdrawal		780.00	
2/25/22		Deposit		820.00	
2/30/22		Withdrawal		790.00	
3/5/22		Deposit		830.00	
3/10/22		Withdrawal		800.00	
3/15/22		Deposit		840.00	
3/20/22		Withdrawal		810.00	
3/25/22		Deposit		850.00	
3/30/22		Withdrawal		820.00	
4/5/22		Deposit		860.00	
4/10/22		Withdrawal		830.00	
4/15/22		Deposit		870.00	
4/20/22		Withdrawal		840.00	
4/25/22		Deposit		880.00	
4/30/22		Withdrawal		850.00	
5/5/22		Deposit		890.00	
5/10/22		Withdrawal		860.00	
5/15/22		Deposit		900.00	
5/20/22		Withdrawal		870.00	
5/25/22		Deposit		910.00	
5/30/22		Withdrawal		880.00	
6/5/22		Deposit		920.00	
6/10/22		Withdrawal		890.00	
6/15/22		Deposit		930.00	
6/20/22		Withdrawal		900.00	
6/25/22		Deposit		940.00	
6/30/22		Withdrawal		910.00	
7/5/22		Deposit		950.00	
7/10/22		Withdrawal		920.00	
7/15/22		Deposit		960.00	
7/20/22		Withdrawal		930.00	
7/25/22		Deposit		970.00	
7/30/22		Withdrawal		940.00	
8/5/22		Deposit		980.00	
8/10/22		Withdrawal		950.00	
8/15/22		Deposit		990.00	
8/20/22		Withdrawal		960.00	
8/25/22		Deposit		1000.00	
8/30/22		Withdrawal		970.00	
9/5/22		Deposit		1010.00	
9/10/22		Withdrawal		980.00	
9/15/22		Deposit		1020.00	
9/20/22		Withdrawal		990.00	
9/25/22		Deposit		1030.00	
9/30/22		Withdrawal		1000.00	
10/5/22		Deposit		1040.00	
10/10/22		Withdrawal		1010.00	
10/15/22		Deposit		1050.00	
10/20/22		Withdrawal		1020.00	
10/25/22		Deposit		1060.00	
10/30/22		Withdrawal		1030.00	
11/5/22		Deposit		1070.00	
11/10/22		Withdrawal		1040.00	
11/15/22		Deposit		1080.00	
11/20/22		Withdrawal		1050.00	
11/25/22		Deposit		1090.00	
11/30/22		Withdrawal		1060.00	
12/5/22		Deposit		1100.00	
12/10/22		Withdrawal		1070.00	
12/15/22		Deposit		1110.00	
12/20/22		Withdrawal		1080.00	
12/25/22		Deposit		1120.00	
12/30/22		Withdrawal		1090.00	
1/5/23		Deposit		1130.00	
1/10/23		Withdrawal		1100.00	
1/15/23		Deposit		1140.00	
1/20/23		Withdrawal		1110.00	
1/25/23		Deposit		1150.00	
1/30/23		Withdrawal		1120.00	
2/5/23		Deposit		1160.00	
2/10/23		Withdrawal		1130.00	
2/15/23		Deposit		1170.00	
2/20/23		Withdrawal		1140.00	
2/25/23		Deposit		1180.00	
2/30/23		Withdrawal		1150.00	
3/5/23		Deposit		1190.00	
3/10/23		Withdrawal		1160.00	
3/15/23		Deposit		1200.00	
3/20/23		Withdrawal		1170.00	
3/25/23		Deposit		1210.00	
3/30/23		Withdrawal		1180.00	
4/5/23		Deposit		1220.00	
4/10/23		Withdrawal		1190.00	
4/15/23		Deposit		1230.00	
4/20/23		Withdrawal		1200.00	
4/25/23		Deposit		1240.00	
4/30/23		Withdrawal		1210.00	
5/5/23		Deposit		1250.00	
5/10/23		Withdrawal		1220.00	
5/15/23		Deposit		1260.00	
5/20/23		Withdrawal		1230.00	
5/25/23		Deposit		1270.00	
5/30/23		Withdrawal		1240.00	
6/5/23		Deposit		1280.00	
6/10/23		Withdrawal		1250.00	
6/15/23		Deposit		1290.00	
6/20/23		Withdrawal		1260.00	
6/25/23		Deposit		1300.00	
6/30/23		Withdrawal		1270.00	
7/5/23		Deposit		1310.00	
7/10/23		Withdrawal		1280.00	
7/15/23		Deposit		1320.00	
7/20/23		Withdrawal		1290.00	
7/25/23		Deposit		1330.00	
7/30/23		Withdrawal		1300.00	
8/5/23		Deposit		1340.00	
8/10/23		Withdrawal		1310.00	
8/15/23		Deposit		1350.00	
8/20/23		Withdrawal		1320.00	
8/25/23		Deposit		1360.00	
8/30/23		Withdrawal		1330.00	
9/5/23		Deposit		1370.00	
9/10/23					

been resorted to during hard times. 1954 was the peak of such a cycle. After that date, production increased in anticipation of a maintenance of the high price from plantings made in 1954 and earlier. Although production increased, the glut on the market caused a more rapid decline in prices resulting in greater production costs on the one hand and less gross revenue on the other. The uncertainty of a one crop export economy, the apparent inability of coffee exports to keep up with population, and the failure of a definite price upswing since 1945 has led El Salvador's public and private interests to look for additional sources of foreign exchange.

The postwar expansion of coffee production is partly the result of extended acreage but largely due to increased yields. Areal increases have been made in lower areas--under 600 meters--which have proven to be less favorable in both yields and quality of coffee. However, of greater significance has been the intensification of Salvador's coffee industry. From 1935 to 1946, the average coffee yield per hectare of producing trees was 598 kilograms. By 1961 this figure had risen to 810 kg./ha., while the overall yield--including unproductive trees--was 670 kilograms per hectare.⁹ The increase was accomplished despite the fact that 30,000 hectares of generally less unsuitable land was brought under cultivation between 1946 and 1961. El Salvador's yields are now the highest of any major producer in the world. Brazil's coffee yields averaged 429 kg./ha. between 1961 and 1963, while that of Honduras during the same period was 250 kg./ha. El Salvador's high yields are only partly the result of favorable natural conditions and better application of technology; the

⁹Jorge A. Vivo Escoto, Estudio Geografico Economico De La America Central, Institute Panamericano de Geografic e Historia, Publicacion Num. 205, Mexico City, 1956, p. 14

major factor appears to have been the country's large, cheap, agricultural labor force. During the peak harvest season, November to January, about a quarter of the labor force is engaged directly in coffee production. Many others are employed in related occupations--transportation of both coffee and seasonal labor, coffee processing, and the henequen and coffee sack industries. Coffee yields were reported to be generally far above optimum per man hour by the United Nations.¹⁰

The production of coffee in El Salvador is characterized by a very skewed distribution of land holdings. The table below gives the distribution of farms, their average production, yields, and gross dollar returns.

TABLE 5. COFFEE PRODUCTION BY LAND HOLDING

Total farm size (hectares)	Number of farms	Total hectares in coffee	Total production in MT	Average yield in kg./ha.	Average gross returns at 1962 coffee prices in \$
1	11,987	2,430	1,230	506	91
1-2	5,825	2,880	1,440	500	218
2-3	4,204	3,200	1,438	459	303
3-4	1,961	2,300	1,212	483	502
4-5	1,852	2,370	1,148	484	546
5-10	3,887	7,070	3,390	479	771
10-20	2,735	12,600	7,160	568	2,310
20-50	2,232	26,100	17,490	669	6,920
50-100	604	21,100	16,150	766	23,700
100-200	362	20,000	16,920	847	41,400
200-500	264	22,700	19,700	868	65,900
500-1000	68	9,000	7,380	820	96,800
1000-2000	40	7,040	5,950	845	131,500
2000	14	2,700	2,820	1,045	178,000

^aMinisterio De Economia, Segundo Censo Agropecuario, 1961, p. 69.

¹⁰United Nations, Coffee in Latin America--Productivity Problems and Future Prospects, Vol. II, Colombia and El Salvador.

1925-26 when worms--Gusano--destroyed 90 per cent of the crop.¹³ The founding of a domestic textile industry in the 1930's supported a small cotton industry oriented towards domestic supply. Only 1,144 hectares were under cultivation in 1935,¹⁴ which is apparently the approximate acreage until after World War II.

Since the Second World War, malaria and yellow fever control, cotton pesticides, and highway construction have opened up the Pacific Coast Lowlands of Central America to cotton and beef production. El Salvador's possession of a large area suitable for rainfall cotton production and cheap labor supply have allowed her to develop an important cotton industry in a relatively short time. Area under cultivation increased from 21,000 hectares in 1948-53 to 72,000 hectares in 1962-65. Production during the same period increased from 8,000 metric tons to 65,000 metric tons.¹⁵ Production went from primarily a domestic supplier to overwhelmingly an export industry. In 1948-50 only 2,800 metric tons were exported per year,¹⁶ while in 1962-63, 61,877 metric tons were exported compared to 9,444 used domestically.¹⁷ The significance of this cotton expansion in terms of domestic food supply is evident when it is realized that between 1950 and 1964, 71,200 hectares of arable land were put into this new export crop.

¹³Lauer, op. cit., p. 60.

¹⁴Ministerio De Economia, Anuario Estadistico, 1935, p. 17.

¹⁵United Nations, Food and Agricultural Organization, Production Yearbook, 1963, p. 140.

¹⁶United Nations, Food and Agricultural Organization, Trade Yearbook, 1954.

¹⁷Ministerio De Economia, Anuario Estadistico, 1963, p. 179.

How was this tremendous expansion accomplished in a country with such seemingly limited resources? First, the opening up of the Pacific Lowlands of El Salvador, especially the lower Lempa Basin, has brought new agricultural land under production and intensified the use of other areas. Second, the application of insecticides, which makes up 40 to 45 per cent of the total direct costs of production,¹⁸ has controlled the pests which have destroyed cotton schemes in the past. Although the Pacific coast has an annual rainfall of 60 inches, which is generally considered too high for cotton, the seasonal concentration of rainfall, good absorption, and drainage have made this area ideal for cotton. Only about 2,000 hectares of El Salvador's cotton is irrigated,¹⁹ yet yields are extremely high. In recent years cotton yields per hectare have averaged between 710 and 770 kilograms per hectare, or about twice that of dry land cotton yields in the United States and well above our national average. El Salvador's cotton yields are comparable to those of the other Central American Republics, excluding Costa Rica, which produces very little. Today Central American yields surpass those of any other producer in the world except Israel's small acreage of irrigated cotton.²⁰

In addition to lint cotton, a very important product of El Salvador's cotton fields is cottonseed. Production of this commodity has increased

¹⁸James J. Parsons, "Cotton and Cattle in the Pacific Lowlands of Central America," Journal of Inter-American Studies, April, 1965, Vol. VII, No. 2, p. 150.

¹⁹J. H. Stevenson, "Cotton Production in Central America," USDA, Foreign Agricultural Service, Washington, Nov. 1963, p. 14

²⁰United Nations, Food and Agriculture Organization, Production Yearbook, 1963, pp. 140, 141.

The future of El Salvador's cotton depends upon the world price of that commodity and the control of cotton pests. If the price remains high and insect pests are satisfactorily controlled, further expansion seems imminent. The present Rio Lempa Dam project, if successful, will make more land available for cotton production and allow intensification of areas already under production through irrigation. If the world price of cotton drops, a decline in production will probably follow--remembering that only about 10 percent of the cotton and perhaps 50 percent of the oil seed products are used domestically. Two American organizations have suggested that if cotton production becomes unprofitable, the logical development would be the development of a beef export industry.^{26, 27} They suggest, or infer, that since the vast majority of Salvador's population cannot afford beef products, an export industry of that commodity is the only economically feasible solution.

The other threat to Salvador's cotton industry is the insect pests which have destroyed cotton crops in the past. Sprays are now applied 40 to 50 times a year in order to keep the pests in check. These powerful insecticides not only wipe out cotton pests, but also all but the microscopic parasites and birds which hold the insect population in check. The result is an entirely artificial environment which is difficult to maintain. Corn is often used as a rotation crop within Salvador's cotton producing areas. However, one dangerous cotton pest, the white fly, survives in the maize fields without damaging the corn crop, but will destroy nearby cotton fields. The solution will apparently necessitate

²⁶Stevenson, op. cit., p. 19.

²⁷Committee for Economic Development, Economic Development in Central America, New York, November, 1964, p. 111.

the growing of cotton over large areas without the benefits of rotation crops. If, as seems probable, this practice is realized, El Salvador's prime alluvial lands of the Pacific Coast will endure continuous cotton cultivation. Consequently, much of the nation's best food staple producing resources may suffer a drastic reduction in soil fertility.

OTHER EXPORT COMMODITIES

Although other export crops are of much lesser significance than cotton and coffee in El Salvador today, they deserve mention here. Today sugar is a distant third among Salvador's agricultural exports and has had an inconsistent history. Being a high cost producer, El Salvador has only been able to export sugar during periods of high prices or when the country has been granted preferential trade rights. The former occurred during the extremely high sugar prices of the early twenties. Exports reached a peak of 6,135 metric tons in 1923 and 1924,²⁸ but quickly fell off as the world price dropped. Recently El Salvador's exports have been revived as the result of the reallocation of Cuba's sugar quota. Exports reached 19,400 metric tons in 1962, or an areal equivalent of 1,935 hectares. The development of the present export industry, which constitutes 1.7 percent of the country's exports, or 2.3 million dollars, has been the result of intensified use of present producing areas, not of increased areal expansion. Between 1948-53 and 1960-63, area under sugar can remained relatively constant at 12,000 to 14,000 hectares. Meanwhile, production increased from 49,000 metric tons to 74,400 metric tons annually. Today Salvador's sugar yields are among the world's highest; they also

²⁸Ministerio De Economia, Anuario Estadístico, 1927, p. 127.

illustrate the prevailing emphasis upon export crops. Yields for the partly exported centrifugal sugar were 7.18 metric tons per hectare in 1960-63, in contrast to about 3 metric tons per hectare for Cuba. Non-centrifugal sugar, or panela, consumed largely by the rural lower classes, registered a significantly lower average yield for the same period of 4.77 metric tons per hectare.²⁹ Since areal expansion of sugar has not occurred, it may be deduced that this crop has reached its maximum spacial extent.

Although fishing does not directly utilize a nation's agricultural resources, it may influence the allocation of its agricultural base by supplementing the country's food supply. In El Salvador per capita fish consumption was only 1.5 kilograms per person per year, but this food is mainly a luxury of the upper urban classes. The per capita fish supply is comparable to that of most of the rest of Latin America, but low compared to Europe and the Far East.³⁰ El Salvador's fish producing is partly freshwater, but the major source is now the Pacific Ocean. Eighty to ninety percent of the oceanic catch is now shrimp, virtually all of which is exported.

In 1957 John Thompson reported that the nascent shrimp industry of El Salvador had potential for growth. Because of American consumption habits, shrimp commands a high price on the world market, a price far out of reach for the average Central American. Further development of Salvador's shrimp fisheries had to orient itself to the United States. In 1957 Thompson reported that Salvadorian officials believed the optimum

²⁹Ministerio de Economia, Anuario Estadistico, 1963, Vol. II., pp. 177, 178.

³⁰United Nations, Food and Agricultural Organization, Production Yearbook, 1963, pp. 249, 250.

sustained shrimp yield to be 864 metric tons per year.³¹ Since that time, the industry has expanded at a fantastic rate as is indicated below.

TABLE 7. SHRIMP INDUSTRY

Year	Catch ^b	Total ^b Exports	Exports ^c to U.S.
1957	100		30
1958	300		514
1959	700		836
1960	4,100	3,998	3,050
1961	4,300	4,277	3,680
1962	3,800	4,022	3,260
1963	3,600		
1964	3,400		

^aall values in metric tons

^bUnited Nations, Food and Agricultural organization, Yearbooks of Fisheries and Trade, 1962 and 1963.

^cUnited States Department of Commerce, "Basic Data on the Economy of El Salvador," Overseas Business Reports, No. 63-145, Dec. 1963, p. 19.

Thompson realized the potential of the shrimp industry but warned against possible overfishing. Unless reserves have been proven to be much larger than believed in 1957, the industry has definitely overfished since 1960. The declining catch since 1960 may be an indication of such an event. The destination of shrimp has been altered by increased supplies. In 1957 the industry apparently supplied El Salvador's shrimp consuming classes and those of Honduras and Guatemala. Forty-two percent of the country's exports went to Guatemala, 26 percent to Honduras, and 31 percent to the United States.³² Recently, as the table indicates, the vast majority of El Salvador's shrimp exports have gone to the United States.

³¹John Thompson, "The Fisheries Industry of El Salvador," Journal of Inter-American Studies, 1960, pp. 436-446.

³²John Thompson, op. cit., p. 438.

As the above descriptions infer, El Salvador has successfully diversified its exports. From 1880 to 1950 El Salvador relied on coffee for 80 to 97 percent of its foreign exchange. Since 1950 the country has developed or expanded export commodities at the expense of its domestic food supply.

TABLE 8. EXPORTS BY VALUE IN 1000'S OF \$ (UNDEFLATED)

	<u>1947-49</u>		<u>1962</u>	
	Value	%	Value	%
Coffee	56,900	86.5	75,660	55.5
Cotton	1,900	3.8	31,670	26.3
Cottonseed			3,298	2.4
Shrimp			5,601	4.1
Sugar	1,120	1.7	2,300	1.7
Sesame	1,520	2.4	341	.2
Total	64,600	100.0	136,300	100.0

^aUnited Kingdom, Her Majesty's Secretarial Office, Overseas Economic Surveys, El Salvador, 1954.

^bUnited States Department of Commerce, Thomas K. Brewer, "Basic Data on the Economy of El Salvador, Overseas Business Reports, No. 63-145, Dec. 1963.

Although the postwar expansions of El Salvador's agricultural export economy have reaped apparent economic benefits, it has greatly taxed the country's ability to produce domestic food staples. A second means of analyzing the growth of the export economy is in terms of areal equivalent of exported commodities. This figure is computed as the total area required to produce an export crop, given the exports and yields of specific crops.

TABLE 9. AREAL EQUIVALENT OF EXPORT CROPS

	1934/38	1948/53	1961/64
Coffee	103,000	106,700	139,100
Cotton		13,250	71,200
Sugar		1,305	3,940
Sesame		4,470	1,640
Henequen	1,000	667	281
Total	104,000	114,382	212,161
Arable Land		443,000	483,713
Percent in Exported Crops		25.7%	44.9%

^aUnited Nations, Food and Agricultural Organization, Yearbooks of Production and Trade, 1954 and 1964.

The above table illustrates the rapid areal expansion of El Salvador's export agriculture. These export crops now utilize approximately 45 percent of Salvador's arable land. See map II, for the areal extent of Salvador's export crops. In addition, the nation's fisheries have become almost entirely oriented to the export economy. The other side of this development has been the increasing importations of cheap food staples--grains, pulses and dried milk. These imports, however, have hardly been sufficient to meet the needs of a rapidly growing population and a declining domestic agriculture. As a result, the country's nutritional balance has been at best static during the last decade. This topic will be covered at length in subsequent chapters.

CHAPTER IV

DOMESTIC FOOD PRODUCTION AND SUPPLY

In addition to supplying most of El Salvador's foreign exchange, its agriculture produces most of the country's domestic food supply. If production of domestic foodstuffs lags, Salvador is forced to divert a portion of its valuable foreign exchange to imported foodstuffs or suffer a decline of per capita food intake. During the past generation the slow growth of domestic food production has apparently resulted in both increased food importations and a lower per capita food intake for the vast majority of Salvadorans. This chapter will examine the characteristics of this critical deficiency--with special attention to the productivity of the food staple agriculture--and review future prospects.

Domestic food production in El Salvador has faced detrimental pressures from the processes described in the first sections. These burdens include, (1) an accelerated rate of population growth, (2) competition from an expanding export economy, (3) destruction of the country's limited natural resources. Although domestic food production has failed to keep pace with population growth, when all is considered, this overlooked sector of the economy has been remarkably efficient.

Grains are the chief foodstaples of El Salvador. This dollar-and-land-shy country can afford to use only a very small portion of its grain supply for animal food. Thus, total grain outputs are almost entirely directed to human consumption. The traditional grain, maize, has declined

greatly in relative importance. Today, maize accounts for 54.3% of El Salvador's grain intake. El Salvador is the only Latin American country in which a sorghum is an important source of human food. This sorghum, maicillo, has been of increasing importance as poorer lands are brought into production or as existing lands wear out. Today this hardy sorghum constitutes 29% of El Salvador's total grain supply. Like maize, maicillo is eaten by El Salvador's lower class. Domestic and imported rice comprise 6.2% of the grain supply, while imported wheat accounts for 10.5%. Both of these grains are prestigious foods, consumed almost exclusively by the upper sectors of the urban population. The following table presents a summary of grain production, importation, and per capita grain supply.

TABLE 10. GRAIN AVAILABILITY

	1935	1948/53	1961/64
Production (Metric Tons)	280,054	332,000	320,000
Kg/person/year	181.5	175.8	116.6
Imports (Metric Tons)	9,400-3.4%	26,800-7.5%	60,500-15.9%
Total Supply	289,400	358,800	380,500
Kg/person/year	187.2	189.5	138.2

^aMinisterio De Economia, Anuario Estadístico, 1935.

^bUnited Nations, Food and Agricultural Organization, Yearbook of Production and Trade, 1954.

^cUnited Nations, Food and Agricultural Organization, Yearbook of Production and Trade, 1964.

This table should make a number of trends readily noticeable. From 1935 to 1948/53, production fell slightly behind population growth. Through an increased dependence upon importation--from 3.4% of the total supply to 7.5%, per capita availability remained at approximately the same level. Between 1948/53 and 1961/64 production fell 3% in absolute terms and 34% on a per capita basis. Although importation more than doubled during the same period, per capita availability fell drastically to 138.2 kilograms per person per year.

El Salvador's per capita grain availability of 138.2 kg. per capita per year is much lower than that of the developed countries. That of the United States and the Soviet Union has been 762 and 582 kilograms per capita per annum in recent years. Salvador's grain availability is significantly lower than most of Latin America's population. In 1960/63, Mexico's per capita availability was 216 kilograms and that of Brazil was 245 kilograms. Some Latin American countries, however, do have lower rates of grain consumption. These include Colombia, Ecuador, Paraguay, the Dominican Republic, and Haiti. The tremendous variability of national grain balances existing in the world are one index of vast differences of world food consumption.

Despite the adoption of the techniques of modern agriculture to a modest extent, El Salvador's yields of basic foodstuffs have suffered significant declines during the past few decades. Table 11 lists the area, production, and yields of El Salvador's basic food staples. In addition to grains, Salvador's major protein supplement, beans, has been included.

It should be obvious that Salvador's increased food staple production between 1935 and 1948/53 was brought about by areal expansion.

TABLE 11. FOOD STAPLE PRODUCTION 1935-1964									
1935				1948/53			1961/64		
	Area	Prod.	Yield	Area	Prod.	Yield	Area	Prod.	Yield
Maize	159,219	188,095	1,181	170,500	191,000	1,120	175,700	188,000	1,070
Sorghum	55,408	75,153	1,365	95,800	115,000	1,200	105,000	11,000	1,050
Beans	23,580	21,580	905	36,900	31,000	840	29,500	16,000	550
Rice	12,852	16,743	1,303	15,470	26,000	1,680	9,490	22,000	2,320

^aArea in hectares, production in metric tons, and yield in kilograms per hectare.

^bMinisterio De Economia, Anuario Estadístico, 1935.

^cUnited Nations, Food and Agricultural Organization, Yearbook of Production and Trade, 1954.

^dUnited Nations, Food and Agricultural Organization, Yearbook of Production and Trade, 1964.

Yields of maize, sorghum, and beans all dropped. From 1948/53 to 1961/64, maize and sorghum production decreased despite increased acreage in both crops. Beans fell in acreage as well as yield, resulting in a drastic decline of production. Only rice was able to buck the general trend. Both yields and acreage climbed between 1935 and 1948/53. During the second period, further increased rice yields were more than offset by acreage reduction.

The general decline of Salvador's food crop yields, although some technical improvements have been made, is the result of competition with export crops and soil depletion. As discussed in Chapter III, export crops predominate over food production because of their economic advantages.

The large expansions of coffee and cotton acreages have had a direct effect on the production of basic food crops. Although much of the increased cotton area was taken from the pastos sembrados, a significant proportion was former prime maize lands of the Pacific Coast.

At this point a feature of tropical agriculture, and of special meaning in El Salvador, must be pointed out. Regrettably, the acreage and production figures in Table 11 do not give an adequate picture of the resource base or the productivity of El Salvador's domestic agriculture. The phenomena of intraplanting and double cropping are of extreme importance in El Salvador. The Nation's Anuario Estadísticos and the FAO yearbooks present the domestic agriculture situation as they are shown in the table. Thus, actual acreages are over-enumerated and yield statistics should illustrate the degree of double and intraplanting practiced in El Salvador in 1961.

TABLE 12. FOOD STAPLE PRODUCTION-1961

	<u>Area</u>			<u>Production</u>			<u>Yield</u>		
	Total	May	Other Plantings	Total	May	Other Plantings	Total	May	Other Plantings
Maize Creo Solo	78,700	56,700	22,000	83,300	65,800	19,500	1,088	1,161	887
Maize Hybrid Solo	17,280	16,942	338	46,000	45,400	600	2,660		
Maize-Bean	12,780	10,450	2,330	M-13,300 B- 7,410	11,360 6,200	1,880 1,210	1,047 582	1,087 585	776 515
Maize-Matcillo	107,220	105,400	1,780	M- 90,300 S-114,200	88,400 112,000	2,900 2,200	847 1,062	836 1,060	1,630 1,236
Beans	17,520	9,780	7,740	12,630	6,190	6,440	721	632	832
Matcillo Solo	9,800		9,800	11,620		11,620	1,450		

^aArea in hectares, production in metric tons, yield in kilograms per hectare.

^bOther Plantings represent crops sown at different times of the year. Most of them are second crops, i.e. double cropping, planted in September.

Ministerio de Economía, Segundo Censo Agropecuario, 1961.

When El Salvador's extensive use of intraplanting and double cropping are considered, it must be then realized that the campesino well utilizes the year-round growing season and his abundance of labor per unit of land. The total area planted in basic food crops in 1961 was given by the FAO as 363,559 hectares and included in the nation's total arable land. The actual areal extent of these crops, excluding intraplanting and double cropping, was only 199,272 hectares. In addition, land not cropped during the dry season, some 50,000 hectares, is used as dry season pastures.

The average campesino will either plant maize solo, with sorghum, or with beans for his first crop, depending on the quality of his land and his needs. The best lands, especially where the owner has some capital, will be planted in hybrid corn. On the poor denuded lands of the pastos naturales, maize is usually grown alone. The first harvest of maize or beans occurs in September. A dry season crop can then be sown on better land. When maicillo is grown with maize, the sorghum will be harvested in January or February.

The net area under the three basic food crops increased from 185,000 to 199,272 ha. or 7.5% between 1950 and 1961. During the same period the cropped area by individual crops increased from 287,000 ha. to 363,559 ha., or 26.6%. The greater increase in total crop area was largely the result of more intensive use of the land through extended use of intraplanting and double cropping. At the time, it must be remembered that the quality of the land had been reduced. The most significant change was the **great** increase in maize/maicillo intraplanting, which rose from 70,737 ha. to 107,220 ha.

The higher yields of hybrid corn were significant in preventing greater decreases of maize supplies than had actually occurred. However,

it would be far too optimistic to conclude that maize yields can be doubled through extended use of hybrid seed. Hybrid maize is grown on prime growing areas, which already gave much higher yields than the national average. Virtually all of the hybrid maize is produced by a May solo crop while Creo Maize is usually grown with other crops.

CONSUMPTION AND MARKETING

In contrast to the export crops, most of El Salvador's basic food production is consumed by its rural population. Nearly all of the maize, sorghum and bean crops are used on the farm or in the small towns. The larger towns, and especially San Salvador, depend upon imported wheat, rice, beans, maize, and even some sorghum. There is, however, a large proportion of the domestic rice production entering the urban market. Only when cotton pests are harmful and high corn prices prevail are the large scale entrepreneurs of the Pacific Lowlands interested in large-scale commercial maize production. On the coffee acreage there has been apparently no inducement for food staple production.

Storage facilities for grains are noticeably lacking in El Salvador and are often given as a major cause for low productivity. However, the major reason for few grainaries is that they are not critically needed. First, most of the produce is consumed in rural areas by the campesinos themselves. Second, the year around growing season allows a continuous, although varying, supply of basic foodstuffs in El Salvador.

LAND TENURE

The highly skewed distribution of land holdings exists throughout Central America. In conjunction with this phenomena it should be kept in

mind that 60.2 percent of El Salvador's labor force is engaged in agriculture.³³

The following table only includes farmowners, renters, and sharecroppers. Thus, of the total number of agricultural workers of 413,646, only 174,210 are family heads with agricultural land.³⁴ The remainder, although including a few administrators and technicians, are largely seasonally employed manual laborers.

Between 1950 and 1961 there was little change in distribution of land tenure. The major development was a growth of the agricultural labor force to 436,213. Less than half of them, 224,289, owned or rented farm land. Of those with access to land, 105,685, 47%, held less than one hectare of land. Another 85,286 operators, 38% of the total, farmed more than one but less than five hectares of agricultural land.³⁵ In about the same condition are 57,381 heads of families who are remunitive laborers on the larger estates.³⁶ Those with no or very little land must supplement their income by working on larger estates. It must be kept in mind, however, that there is an average of less than two hectares of cultivated land per agricultural worker in El Salvador.

The question of land reform will not be covered at length here, mainly because it has not really been considered by Salvadorans themselves. Some colonization has been made and a little has been done to

³³Ministerio De Economía, Tercer Censo Nacional Población, 1961, San Salvador, 1966, p. xxx.

³⁴Ibid.

³⁵Ministerio De Economía, Segundo Censo Agropecuario, 1961, p. 39.

³⁶Tercer Censo Nacional de Población, p. 236.

TABLE 13. LAND TENURE - 1950

Size in hectares	Number of farms	Percent of farms	Total area	Percent of land	Average size	Average income in U. S. dollars
1-14.9	160,740	92.3	366,000	23.9	2.3	267.8
15-29.9	6,340	3.6	134,700	8.8	21.2	2,192.4
30-999.9	6,985	4.0	724,800	47.3	103.7	10,966.3
1000+	145	.1	305,100	20.0	2,104.1	80,689.6

^aM. M. Babbar, Los Problemas de Tenencia y Tierra en Los Paises de Centroamerica, San Jose, Costa Rica, 1963, p. 42, 48.

sell rustic properties to more progressive farmers. Although a degree of land reform, and perhaps much more so tax reform, could be helpful to agricultural production, such developments, even if they occurred, would be but a partial solution to rural poverty in El Salvador. No matter how the land is divided, there will be little or nothing for the vast majority of El Salvador's rural population.

OTHER AGRICULTURAL CROPS

Only a small part of El Salvador's arable land is not used for export crops or the four basic food crops. The total acreage of fruit, vegetable and tobacco cultivation was only 25,000 hectares in 1950. More recent data is not available for all of these crops, but there has been no apparent change.

El Salvador is the only Central American country which is not an important exporter of bananas. The country does not possess a large coastal or alluvial plain with high enough rainfall to make large scale

commercial banana production profitable. Nevertheless, bananas and plantains are the major fruit crops and are a significant calorie supplement to the Salvadoran diet. Bananas and plantains are grown on 10,000 to 15,000 hectares³⁷--a few thousand hectares of which are grown as coffee shade trees in the lowest altitudes of coffee production. Other fruit crops in declining order of importance are citrus, pineapple and coconuts. El Salvador is virtually self-sufficient in all of these crops except coconuts. The country must import about half of its coconut oil needs.

Vegetable and root crops, other than fresh corn or beans, have little importance in El Salvador at this time. The four major crops, potatoes, onions, tomatoes and cassava, occupied less than 1,500 hectares in 1957.³⁸ Potatoes and onions are imported in small amounts, but are not important foods in El Salvador. Of particular interest will be the future of cassava in El Salvador. This high-yielding starchy root has become an important source of calories in the more densely populated parts of tropical America. The critical drawback of cassava is that it is less than one percent protein. Therefore, it cannot be used as a major source of calories unless it is supplemented by higher pulse and animal protein consumption, without drastic protein malnutrition. Presently some 7,000 metric tons of cassava are produced on some 800 hectares in El Salvador.³⁹ It remains to be seen whether the peasants of El Salvador will have to resort to this crop in order to survive.

³⁷Babbar, op. cit., p. 17.

³⁸Thompson, op. cit., 1961, p. 20-21.

³⁹United Nations, Food and Agricultural Organization, Production Yearbook, 1964, p. 81.

LIVESTOCK

Livestock grazing, as in most of Latin America, has long been an economic and cultural institution in El Salvador. Perhaps to a greater extent than other areas of domestic agriculture, El Salvador's livestock industries are tied to traditional values and methods of production.

Cattle grazing began shortly after the Spanish conquest, but has always been oriented towards the domestic market. The destruction of much of El Salvador's forest vegetation was largely a result of the need for cattle grazing land. Four hundred years of deforestation and grazing has destroyed the productivity of much of El Salvador, especially in areas of shallow rocky soils and steep slopes. In recent years, since World War II, El Salvador's grazing industries have had to yield much of the best pasture to cotton. These pressures, in conjunction with the causalness of the large landowners, who produce most of the country's commercial cattle, has led to a sorry state of the industry.

The cattle population of El Salvador is approximately 900,000 today, having grown from 600,000 in 1935.⁴⁰ During the wet season, the pastos naturales and sembrados are able to support the herd. However, the dry season takes its toll even though areas of the tierra de labranza, which are not double cropped, are used as dry season pastures. Survivors of the dry season are often reduced by 25% of their weight. Calf mortality is reported to be 35 to 40%.⁴¹

The amount and quality of both the natural and improved pastures has declined in recent years. Between 1950 and 1960 the area of the pastos

⁴⁰Ministerio De Economia, Anuario Estadistico, 1935, p. 22.

⁴¹Thompson, op. cit., 1964, p. 33.

naturales has dropped by five percent. More significant was the drop in the pastos sembrados from 175,000 hectares in 1950 to 101,000 in 1961. Thus the country lost 42.2% of its best pasture. This loss, which has apparently increased another 30,00 to 50,000 hectares between 1961 and 1964, was due largely to expansion of cotton on the Pacific Coast. Cotton was not, however, the only cause. In each of fourteen departments, the area of the pastos sembrados declined although cotton expansion was only a factor in seven departments. Other factors were no doubt an expansion of food crops and coffee. In the northern departments, where soil erosion is worst, the statistics reveal an apparent reclassification of parts of the sembrados to pastos naturales.⁴²

The ownership of cattle, to a greater degree than land, is a matter of prestige as well as an economic asset. The owners of large herds usually possess profitable coffee or cotton acreage. On these lands they practice quite intensive modern agriculture, and obtain very high yields per unit area--note coffee yields by farm size on Table 5. Livestock production, however, is often very traditional on the same estates.

The production of meat and dairy products is neglected. Breeding, health of the herd, and feeding are pointed out by Thompson as serious drawbacks to respectable levels of domestic meat supply. However, there are two other underlying causes which have hindered El Salvador's cattle industry. First is the limited food reserve discussed above. In addition to shrinking pastures, El Salvador's declining per capita grain supply has made the feeding of grain to cattle negligible. The only feed reserve

⁴²Ministerio De Economia, Segundo Censo Agropecuario, 1961, p. 14.

that has been brought into play has been cotton seed. Although some cottonseed meal is used as a feeding supplement, the bulk of it is exported either as cotton seed or meal after processing in El Salvador.

In 1964 the quantities of grain and cottonseed meal used in the manufacture of animal feeds were as follows: maize--9,778 tons, sorghum-- 4,767 tons, and cottonseed meal--5,745 tons.⁴³ The above figures represent less than five percent of El Salvador's grain production and about ten percent of the nation's oil seed protein production.

The second factor which will probably hinder a great increase of domestic meat availability in the future is the limited number of persons able to purchase meat. If a rapid rise of beef production were possible through breeding, more irrigated pastures and greater use of feeding supplements, domestic beef consumption would, in all probability, remain static. One case in point is El Salvador's shrimp industry, discussed under the Export Economy. A tremendous rise of production had little effect on domestic consumption. This expensive food could be sold to the rich nations where the same high price may be secured. Guatemala, Honduras, Nicaragua, and Costa Rica have all begun large scale beef export operations during the last decade. Domestic consumption, however, has not risen significantly in any of the countries.

There is much room for controversy over the amount of beef produced in El Salvador. The official statistics give the number of livestock slaughtered but not carcass weights. A reasonable estimate for the average weight of meat derived from cattle and calves is considered 100

⁴³Ministerio De Economia, Anuario Estadistico, 1964, p. 301.

kilograms.⁴⁴ A second area of speculation is the extent of illegal slaughterings. The colonial mesta placed strict regulations on the slaughter and shipment of meat. The most significant legacy today is that each of the country's 261 municipios are required to process their own meat supply within the municipio. Livestock may be driven across municipio boundaries for slaughter in another part of the country, but the shipment of meat over municipio lines is generally forbidden. Since the ability to purchase meat is heavily concentrated in San Salvador and a few other urban centers, illicit slaughter and shipment of meat is common in El Salvador. The amount appears to run as high as 30 percent in San Salvador. Some of this meat is illegally slaughtered and some is included in the official statistics, but illegally shipped. Illicit slaughterings, therefore, must be well under one third of total production. A liberal estimate of beef production can be computed as 100 kilograms times the number of cattle officially slaughtered plus one third--allowing for illicit slaughter. Using this method for 1959/61 a high estimate of beef production is 14,000 metric tons. Per capita consumption, by the same calculations, is at most 5.7 kilograms per year.

Presently, slightly over 100,000 cattle are slaughtered yearly in El Salvador. Exact statistics which are comparable over decades are not available in El Salvador. In the early 1960's yearly beef production probably ranged from 13,000-15,000 metric tons. Per capita beef consumption can be estimated at four and one half kilograms per person per year.⁴⁵ This consumption figure, of course, is far from evenly distributed. The

⁴⁴Thompson, op. cit., 1961, p. 57.

⁴⁵Thompson, op. cit., 1961, p. 43.

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consumption of beef is highly concentrated in favor of the upper urban class. Just for the sake of speculation, suppose that the upper five percent of El Salvador's population consumed 45 kilograms per capita per year--that is a level below that of the United States. Then this five percent would consume half of El Salvador's beef, leaving an average of 2.30 kilograms per year for the other 95% of the population. Whatever be the case, beef is a rare luxury for the vast majority of Salvadorans.

DAIRY PRODUCTS

Dairy production in El Salvador faces the same setbacks of the beef industry. The traditional aspect is emphasized by the fact that over 85 percent of the country's milking stock are low yielding criollo stock, over ten percent are mixed mestizo varieties, and only one percent are of purebred stock.⁴⁶ Average production is only 500 kilograms per year per head. El Salvador's seasonal precipitation has an adverse effect on milk production. During the wet season the milking herd averages 198,000 and production 1.9 liters per cow. The feeding difficulties of the dry season reduces the number of lactating cows to 129,090 and average production to 1.5 liters.⁴⁷ The loss of much of the pastos sembrados to cotton has apparently had a depressing effect on milk production. In 1954 milk production was given at 193,000 tons⁴⁸ while the 1959/61 output dropped to 121,000 tons.⁴⁹

⁴⁶Thompson, op. cit., 1961, p. 44.

⁴⁷Thompson, op. cit., 1961, p. 45.

⁴⁸United Nations, Food and Agricultural Organization, Production Year-book, 1963, p. 217.

⁴⁹United States Department of Agriculture, Foreign Regional Analysis Division, Economic Research Service, No. 86, Food Balances for 24 Countries of the Western Hemisphere, 1959-61, p. 16.

PORK PRODUCTION

In contrast to cattle grazing, El Salvador's pigs are raised by peasants with small land holdings. These animals are mainly scavengers, receiving only small amounts of grain. As an apparent result of the declining grain availability, El Salvador's swine population has dropped since 1935. The deficiency has been partially made up through imports.

TABLE 14. SWINE

	Number	Imports	Amount Slaughtered
1935	424,808 ^a	2,200 ^d	193,000 (est.)
1944-48	371,812 ^b	13,876 ^b	183,238 ^b
1953-57	291,836 ^b	39,664 ^b	187,125 ^b
1959-62	324,000 ^c	47,125 ^d	176,178 ^e

^aMinisterio De Economia, Anuario Estadistico, 1935, p. 24.

^bThompson, op. cit., 1961, p. 61.

^cMinisterio De Economia, Segundo Censo Agropecuario, 1961, p. 167.

^dUnited Nations, Food and Agricultural Organization, Yearbooks of Trade, 1954 and 1963.

^eMinisterio De Economia, Anuario Estadistico, 1964.

Pork consumption is about two kilograms per capita per year. Given the numbers slaughtered and the growth of El Salvador's population since 1935, it can be safely assumed that per capita pork consumption has dropped drastically. Since pork consumption is more evenly distributed among the population, such a drop seriously effects the animal protein balance of the country's lower classes.

It should be noted, however, that part of the effect of decreased pork production has been nullified. Lard has long been used to fry beans

and plantains, and made up the chief source of fats in the Salvadoran diet. Although domestic and imported lard are still important, cottonseed oil has gradually replaced animal fats as the major source of fat.

The processes of a weakened agricultural base, rapidly rising population, and an expanding agricultural export economy have forced El Salvador (1) to rely upon increasingly larger amounts of imported foodstuffs, (2) suffer a slight decline in an already low per capita food supply, and (3) face a difficult future.

IMPORTED FOODSTUFFS

The deficiencies of Salvador's domestic agriculture and, to be sure, funds derived from an expanded export economy, have prompted and allowed El Salvador to rely upon imported foodstuffs for an increasingly larger proportion of the country's food balance. The following table presents the net trade of El Salvador's major food imports.

TABLE 15. IMPORTED FOODSTUFFS (IN METRIC TONS)			
	1934-38	1948-53	1961-64
Wheat	9,600	19,040	40,300
Maize	800	9,700	17,300
Rice	-1,000	-100	1,500
Beans	300	2,850	14,259
Lard	30	1,250	1,213
Tallow		982	4,890
Milk-Condensed		100	550
Dry			3,630

^a(-) denotes export

^bUnited Nations, Food and Agricultural Organization, Yearbooks of Trade, 1954 and 1964.

In the latter period El Salvador imported 15% of its total grain supply, 14,259 metric tons of beans while producing 16,000, and one fourth of its slaughtered hogs. The country's former five-year plan, estimated that 4.3% of its caloric intake was imported since 1950, but the figure had risen to 12.2% in 1962. The same source estimated that 6.9% of the country's protein supply was imported in 1950 and that the same increased to 18.6 percent in 1962.⁵⁰ These imports are not only costly in terms of foreign exchange, but also represent an increasing dependence, which may eventually be that of survival for many, upon imported food. The question now becomes, what additions to El Salvador's agriculture base would be required to produce these imported foodstuffs.

The quantification of the areal extent of imported agricultural commodities is more complex than the spatial extent of the export economy. Any realistic calculations must account for the effect of inter-planting and double cropping upon the productivity of El Salvador's agricultural land under its present utilization. Crops which are not grown in El Salvador must be compared with alternative crops. The following table gives the areal equivalent of imported vegetable foods during 1961/64 in terms of the tierra de labranza.

TABLE 16. IMPORTED VEGETABLE FOODS

	Imports-tons	Yield-kg./ha.	Areal eq.
Wheat	40,300	1,900	21,050
Maize	17,300	1,047	16,550
Beans	14,259	582	(24,500)
Rice	1,500	2,320	1,545
Potatoes	2,280	2,500	91
Onions	1,114	2,000	57

^aUnited Nations, Food and Agricultural Organization, Yearbook of Trade, 1960.

⁵⁰ Ministerio de Economia, Plan Quinquenal del El Salvador, San Salvador, 1965.

Wheat has been substituted with the average yields of maize/sorghum interplanting. The 24,500 hectares needed to produce El Salvador's bean imports are assumed to be available through intra-planting with the maize acreage and double cropping on some of the maize/sorghum area. By these computations, El Salvador dependence on trade represents one seventh of the country's land in annual crops. It would be feasible, however, to produce the above crops and substitutes through a 58 percent reduction of the 1961/64 cotton area.

The conversion of trade in animal products into units of El Salvador's land presents certain difficulties, but reasonable estimates can be made. El Salvador's improved pastures, pastos sembrados, support one milk cow per one or two hectares. The average milk cow produces 500 kilograms of milk per hectare. This represents 7 1/2 to 12 1/2 kilograms of protein per hectare through the most efficient method of production. The actual productivity of the sembrados is positively affected by the fact that some of the milk cows which are included in the national average graze on the much poorer pastos naturales. The use of cattle feeds which are not produced by the sembrados is a negating factor of lesser significance. A protein yield of 15 kilograms per hectare will be considered a good, if slightly favorable, estimate of the productivity of the sembrados. This figure is used in the following trade acreage table.

El Salvador has an animal product deficiency of the production capacity of 104,142 hectares of pastos sembrados. The 1961 Salvadoran agricultural census reported the total area of the sembrados at 101,000 hectares! Thus a doubling of the areal extent of the shrinking sembrados, a two-fold increase of productivity, or a partial combination of both would be required to produce the average annual imports of animal proteins between 1961/64.

TABLE 17. TRADE ACREAGE OF ANIMAL PRODUCTS

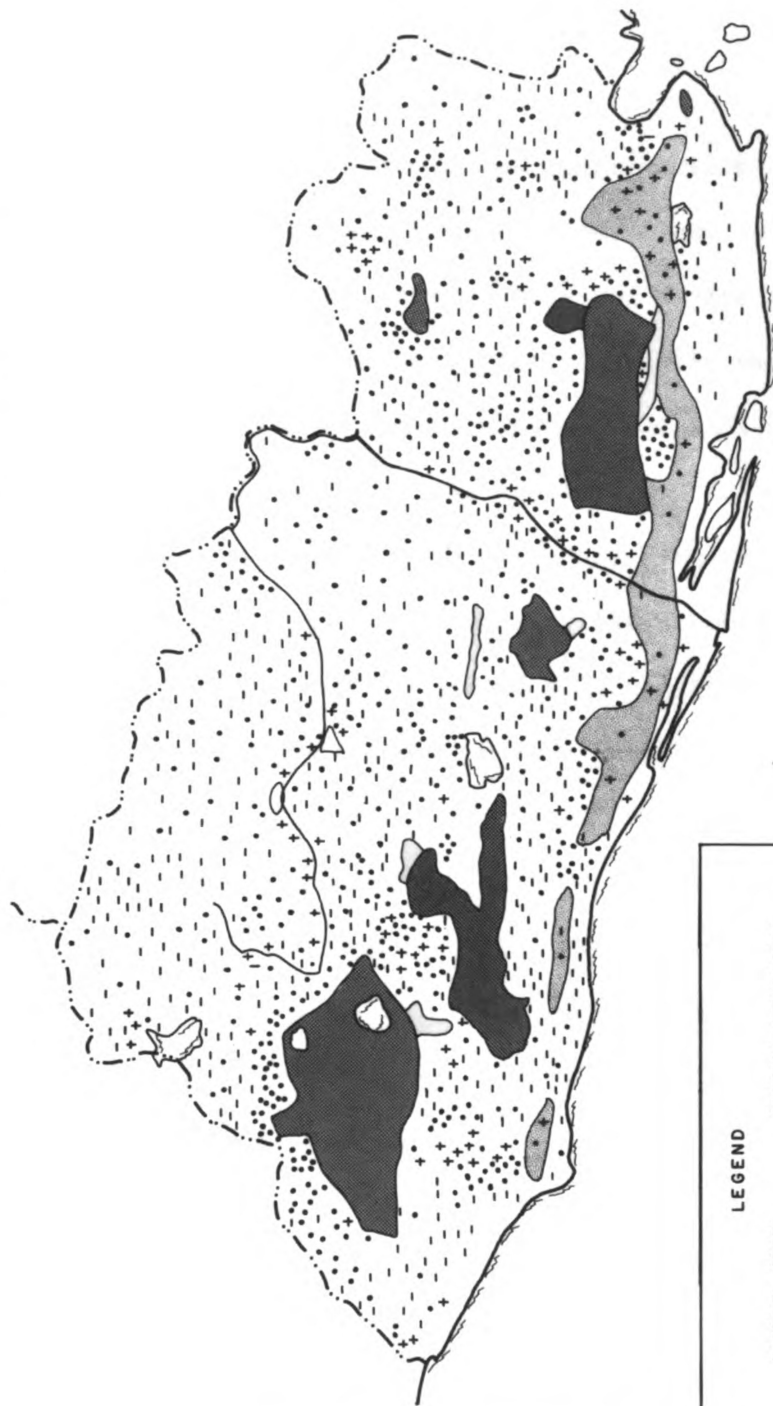
	<u>1961/64 Averages</u>		
	Metric Tons	Yield	Ha. Eq.
Hogs	59,900	287 head/ha.	18,400
Beef	18	13.50 ha/MT	245
Poultry	12	10.00 ha/MT	120
Prepared Meats	297	11.25 ha/MT	3,340
Lard	1,213	4.00 ha/MT	4,852
Tallow	4,890	6.00 ha/MT	29,340
Evaporated Milk	550	5.24 ha/MT	2,880
Dried Milk	3,630	20.00 ha/MT	73,260
Butter	33	5.73 ha/MT	(189)
Cheese	500	11.47 ha/MT	5,740
Eggs	21	7.50 ha/MT	157

^aHogs in number.

^bUnited Nations, Food and Agricultural Organization, Yearbook of Trade, 1964.

Although El Salvador's fisheries have become primarily orientated to the export economy, local and imported seafoods play a minor role in El Salvador's food supply. Total domestic fish consumption runs around 2,000 metric tons per year. On a per capita basis fish intake is low at 800 grams per year. The contribution of fish to the Salvadoran agricultural base is accordingly small. An equivalent amount of animal protein could be produced on 17,000 hectares of the pastos sembrados under its present degree of utilization.

AGRICULTURAL LAND USE - EL SALVADOR - 1961



LEGEND

EXPORTS CROPS	DOMESTIC AGRICULTURE
COFFEE	• 500 METRIC TONS OF GRAIN
COTTON	+ 1,000 HA. IMPROVED PASTURE
SUGAR	- 1,000 HA. NATURAL PASTURE
HENEQUEN	

Sources: Segundo Censo Agropecuario - 1961
 Lauer, Wilhelm, Vegetation Landnutzung
 und Agropotential in El Salvador,
 Kiel, 1956.

CHAPTER V

NUTRITIONAL LEVEL

Regrettably, there have not been enough comprehensive surveys of the nutritional intake of El Salvador's population. Food balance data which calculate total national food availability and divide that figure by the population are available. Such studies reveal the average per capita intake of the population with some accuracy but fail to show the distribution of food consumption among the population. Table 18 shows three such surveys. That of the USDA (1959-61) has been revised through recalculations of meat consumption discussed earlier. Other aspects of the same survey appear to be in order. Since only caloric and total protein intake were given in the Salvadoran Five Year Plan estimates, it is not known what production statistics were used for given commodities. Both figures are therefore questionable. They appear somewhat high in view of the USDA survey and food availability data. The cause of the disparity between the 1959/61 and 1962 estimates is probably both in the methods of calculation and the fact that 1962 was an exceptionally good year for domestic agricultural production.

An average of 1962/65 levels would probably produce nutritional levels much closer to those of the 1959/61 estimates. Both maize and sorghum production reached an all time high in 1962. The 1965 maize crop was still seven percent below that of 1962, although population had grown by ten percent.

TABLE 18. DAILY PER CAPITA CONSUMPTION

	<u>Requirements</u>		<u>Intake</u>	
	Number Calories	Protein (in gr.)	Number Calories	Protein (in gr.)
1950 ^a	2,362	58	2,253	67.7
1959/61 ^b	2,450	60	2,000	53.8
1962 ^a	2,307	57	2,254	64.0

^a Ministerio De Economia, Plan Quinquenal del El Salvador, 1965.

^b United States Department of Agriculture, Economic Research Service, Foreign Regional Analysis Division, Food Balances in 24 Countries of the Western Hemisphere, 1949-61, pp. 4-21. (Revised)

Although the evidence is a bit incomplete, there is little reason to doubt that the per capita nutritional level of El Salvador has fallen during the past few decades. This judgment rests largely upon the rapid fall of per capita grain availability from 189.5 kilograms in 1948/53 to 138.2 kilograms in 1961/64. These methods of collecting data may have varied, illicit grain imports from Honduras may have increased, but it is extremely doubtful that such factors could have more than a slight influence upon the 50 kilogram per capita decline. A second factor is declining availability of El Salvador's important protein staple, the bean. Total bean supply--production plus imports-- dropped from 33,850 metric tons in 1948/53 to 30,259 metric tons in 1961/64. This was an absolute drop in the face of a 36 percent gain of population! Finally, there is little reason to believe that meat consumption or distribution of meat consumption altered appreciably between the two periods.

A final consideration may be the question of the resource base required to raise El Salvador's nutritional level to a more respectable level. A valid comparison would be the average Mexican and Salvadoran diets. The two countries have similar age-sex structures, cultures, and consume more or less the same foods. There is, however, a wide gap in both the amount and quality of food intake.

TABLE 19. AVERAGE DAILY PER CAPITA FOOD CONSUMPTION COMPARISON

	Calories	1959/61		Total Protein
		Animal	Pulse	
El Salvador	2,000	12.8	5.5	53.8
Mexico	2,580	17.2	12.5	67.5
United States	3,190	63.8	4.8	95.3

^aUnited States Department of Agriculture, Economic Research Service, Foreign Regional Analysis Division, Food Balances in 24 Countries of the Western Hemisphere, 1959-61, p. 16.

One may ask, what increases of El Salvador's agriculture base would be required to raise that country's nutritional level to that of Mexico? An American standard, with its over abundant animal protein intake, as will be seen, is entirely out of the question. In order to raise El Salvador's animal and pulse protein consumption averages to those of Mexico, an additional 5.6 grams of animal protein and 7.0 grams of pulse protein would be required per person per day. In 1961 such an increase would require an additional production or importation of 18,000 tons of dried milk and 28,000 tons of beans. If El Salvador were to produce these protein foods locally, an additional 360,000 hectares of improved pasture

and some 35,000 hectares of beans would be needed. These products with their corresponding fats and carbohydrates would still not raise Salvador's caloric intake to that of Mexico's. The additional resource base that would be required to bring Salvador's protein intake levels to that of Mexico is indeed staggering. The country would have to double the productivity of pastures--both natural and improved. If this feat could be accomplished, which would be no short run undertaking, increased agricultural productivity must also cope with El Salvador's presently incrementing population.

FUTURE DEMOGRAPHIC PRESSURE

At the country's present rate of population growth and degree of dependence upon food imports, El Salvador's domestic agriculture must increase production by four percent per year if the country is not to increase its dependence upon food imports or suffer declines in food intakes. Crop production requirements will increase at 3.75 percent per year. This may be partially accomplished through intensification of present cropland, but, as has been discussed earlier, the already intensive use of the lands must not be underestimated. A more likely solution would be a decrease of export crops, but this solution may be even less fruitful. As in the past decade, El Salvador may revert to increasing grain and bean importation to supplement the slow growth of domestic agricultural production. For animal products the situation is more severe since El Salvador now relies on relatively larger importations of animal products. If imports and per capita consumption are to remain at their present levels, animal product production will have to increase at about 4.5 percent per year. In addition crop production

increases which may be required for more "intensive" use of pasturelands have not been included in the above calculations. On the other hand animal product production could be slightly supplemented through expanded fisheries.

Such gains in agricultural production, requiring rapid intensification and/or reduction of the agricultural exports, present El Salvador with a formidable task. The processes of destructive land use, demographic pressure, a growing export economy, and traditional attitudes, has limited the per capita resource base of El Salvador to the point where the country can not feed itself. To be sure, foreign exchange from export crops has allowed El Salvador to buy more food from abroad, but these importations have not completely made for declines in per capita nutrition.

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