

UNICA



CARACTERISTICAS POBLACIONALES, PRODUCCION AGRICOLA,  
PLANIFICACION Y PROYECCIONES EN LA REPUBLICA DOMINICANA

Aporte de la Universidad Na-  
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COMPILED INFORMATION ABOUT THE DOMINICAN REPUBLIC

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Agronomy Mimeo 72-18

THE AGRICULTURE OF THE DOMINICAN REPUBLIC  
COMPILED INFORMATION

by

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## HISTORICAL NOTES OF THE DOMINICAN REPUBLIC

The recorded history of the island of Hispaniola began with its discovery by Columbus in 1492. It was and still is a physically attractive island with mountains, valleys, and beautiful beaches.

The island was slowly populated by Spaniards and Africans during a long colonial period. Growth and development was discouraged, however, by outlaws and enemies of Spain. Spain too was more interested in mineral riches further west than the development of Hispaniola. Thus, Hispaniola served as a stepping stone for Spanish expansion to the continent.

The Spanish colony of Santo Domingo, now called the Dominican Republic, was constantly threatened by pirates and national enemies of Spain. They frequently plundered settlements and towns causing considerable destruction. Most notable of these was the seizure and destruction of most of the city of Santo Domingo by Sir Francis Drake in 1586. The Spaniards were so pressed in the western third of the island that they withdrew from it entirely in the early seventeenth century. Later the French settled the western part of Hispaniola and in 1697 Spain formally recognized France's title to western Hispaniola or Haiti. A slave uprising in Haiti resulted in the independence of Haiti in 1804 and the virtual elimination of all whites in that part of the island. Haiti conquered Santo Domingo in 1822 and held it until 1844. Haiti was in a disorganized state at this time and provided an excellent opportunity for Juan Pablo Duarte to lead a movement which drove out the Haitians and established the Dominican Republic as an independent state. The Dominicans voluntarily returned to Spanish rule for the period 1861-1865. Independence was restored, however, in 1865.

Years of financial trouble and fears of European intervention resulted in United State occupation from 1916 - 1924. The occupation ended when a freely elected Dominican government took office.

"In 1930 Rafael L. Trujillo, who had come to prominence as commander of the army, took power and had himself elected President. Trujillo established a strong dictatorship and remained in absolute political control of the country until his assassination on May 30, 1961.

In August of the previous year the Organization of American States (OAS) had imposed diplomatic and limited economic sanctions against the Dominican Republic as a result of Trujillo's complicity in an attempt to assassinate President Romulo Betancourt of Venezuela. These sanctions remained in force after Trujillo's death, as the dictator's family sought to stay in power. President Joaquin Balaguer, Trujillo's successor, undertook a series of measures to liberalize gradually the political and economic life of the nation, but these did not satisfy a large number of Dominicans who demanded complete freedom from all vestiges of the hated Trujillo dictatorship. Opposition groups emerged, and in November 1961 the Trujillo family, after a vain attempt to maintain control, was forced to leave the country.

In December 1961 President Balaguer agreed to permit the moderate opposition to participate in the Government in the form of a Council of State that had legislative and executive powers. The Council of State was installed on January 1, 1962, and the OAS sanctions were lifted on January 4. On January 16 President Balaguer resigned and, after the failure of an attempt by military elements to assume control, the Council of State became the effective Dominican Government.

The Council of State under President Rafael F. Bonnelly remained in effect as the Provisional Government of the Dominican Republic until

February 27, 1963, surviving repeated threats from the extreme right and the extreme left.

On December 20, 1962, the Dominican people chose their first freely elected Government in 38 years in an election which was free of violence and fraud. The winning candidate, Juan Bosch, was inaugurated as President on February 27, 1963." <sup>1/</sup>

Civil conflicts occurred between 1963 and 1965. General elections held June 1, 1966 resulted in Joaquin Balaguer winning 57% of the total vote and defeating Juan Bosch. The present government has continued the earlier social, economic and political reforms and has remained stable.

#### GEOGRAPHY

The Dominican Republic, which has an area of 48,442.23 square kilometers (two-thirds of the island), is located in the eastern part of the Hispaniola island, the second largest island of the Caribbean. It is located between the Atlantic Ocean to the north and the Caribbean Sea to the south. Haiti is its western boundary and La Mona Canal its eastern.

The maximum length of the country from east to west is 384 Km and its maximum width 272 Km from north to south. The coastline of the country is more than 1600 Km long.

The island of Hispaniola is located between 17° to 20° north latitude and 68° to 74° west longitude.

The capital city of the country is Santo Domingo, which has a population of 671,402 inhabitants. Other important cities are Santiago, San Francisco de Macoris and San Pedro de Macoris.

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<sup>1/</sup> Dominican Republic. Background notes, U. S. Department of State. October, 1970.

## GOVERNMENT

The government of the country is a representative democracy with three independent branches; executive (president and vice-president), legislative and judicial.

The country is politically divided into 26 provinces and the national district (Santo Domingo). Each province has a governor appointed by the president. Municipal and city administrators are elected by the local inhabitants.

The legislative branch is the senate which has 27 members (one for each province and the national district). The Chamber of Deputies is composed of 47 members, one for each 50,000 inhabitants.

Congressional and presidential elections are held every four years. Municipal elections are held every two years.

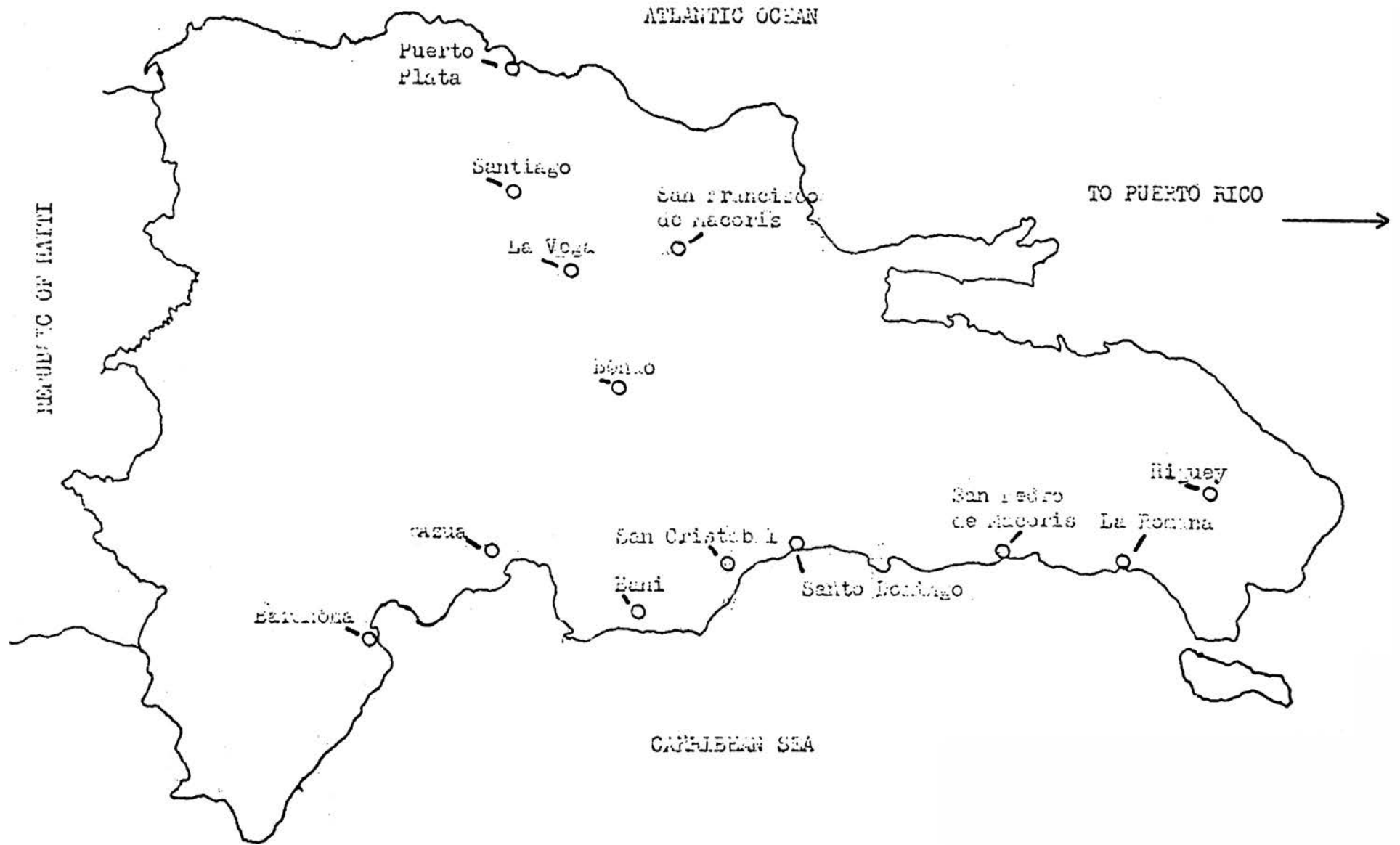
## POPULATION

The population of the Dominican Republic is composed of 70 percent mixed, 15 percent caucasians and 15 percent negro. As in other developing countries, a large percent of the population is concentrated in urban areas. Of the total population of the country, which is 4,011,587 inhabitants, forty percent (1,603,937) live in urban areas whereas 60 percent (2,407,652) live in rural areas. For a developed country where agriculture is highly mechanized, these figures do not represent a hazardous condition. In the case of the Dominican Republic this is an unbalanced situation since it creates a two sided problem; a lack of hand labor in the countryside and a heavy load upon the availability of employment in the urban areas.

Table J represents the population in some of the largest cities of the country. From this table, it can be noticed that almost 25 percent



Map 2: Some of the most important cities of the Dominican Republic.



of the population is concentrated in the five largest cities.

Table I: Population in some of the most important cities of the Dominican Republic (National Census, 1970).

<u>City</u>	<u>Population</u>
Santo Domingo .....	671,402.0
Santiago .....	155,151.0
San Francisco de Macoris .....	43,941.0
San Pedro de Macoris .....	42,473.0
Barahona .....	37,889.0
La Romana .....	36,722.0
Puerto Plata .....	32,181.0
La Vega .....	31,085.0
San Cristobal .....	25,829.0
Bani .....	23,716.0

During the last 50 years the population of the Dominican Republic has increased 4.5 times. The growth rate has been 3.4 percent for the period between 1920 to 1935, 2.4 for the 1935 to 1950 period, 3.6 percent for the 1950 to 1960 period and 3.0 for the 1969 to 1970 period. Table 2 gives some values for the population and population density during the period 1920 to 1970.

Table II: Population and population density in the Dominican Republic during the period 1920 to 1970.

<u>Year</u>	<u>Population</u>	<u>Inhabitants per square kilometers</u>
1920	894,665	18.5
1950	2,135,872	30.5
1960	3,047,070	62.9
1970	4,011,589	82.8

The human resources of a country can be estimated by the number of people that fall into different age and sex groups. Table gives you a breakdown of the 1970 population of the Dominican Republic into 6 age groups for both sexes.

Table 3. Age and sex groups of the Dominican Republic's population during 1970. (Figures expressed as thousands).

Sex groups	Age groups (years)					
	10	10-20	20-30	30-40	40-50	50
Males	696	443	294	214	-	-
Females	680	451	323	231	-	-
<u>Total</u>	1376	894	617	445	293	385

### CLIMATE

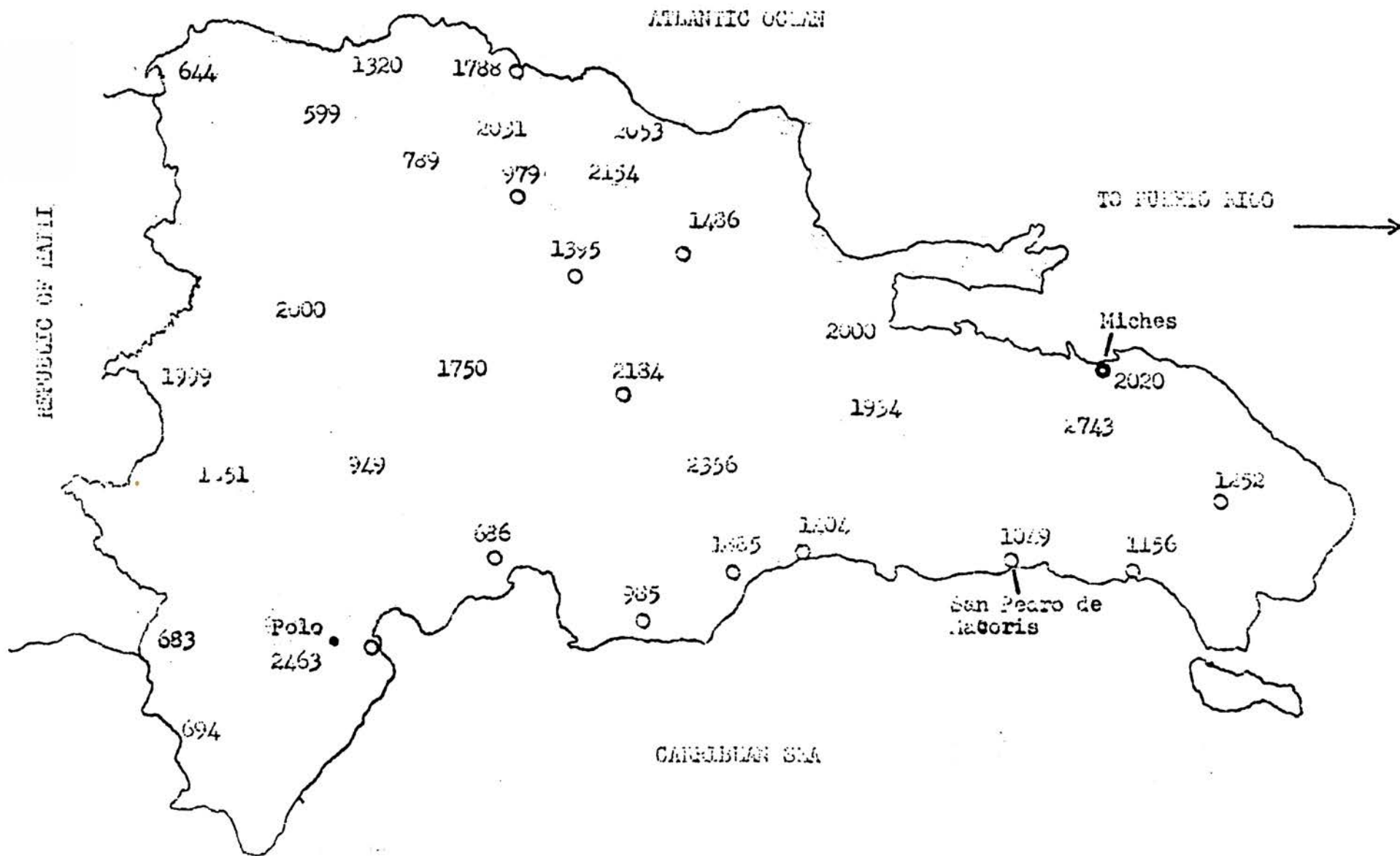
The Dominican Republic has a tropical marine climate, but there is a wide range of variations within the country. These variations are especially marked in the rainfall distribution.

The northeast trade winds constitute the main factor controlling the different climatic patterns of the country. These winds blow from the northeast and are forced upward by hills and mountains. Thus, their effect is locally modified by the topography of the country. As a general rule the windward side of all Dominican mountain ranges have a high mean annual precipitation. Whereas, leeward sides receive relative low amounts of rainfall (see maps 3 and 4).

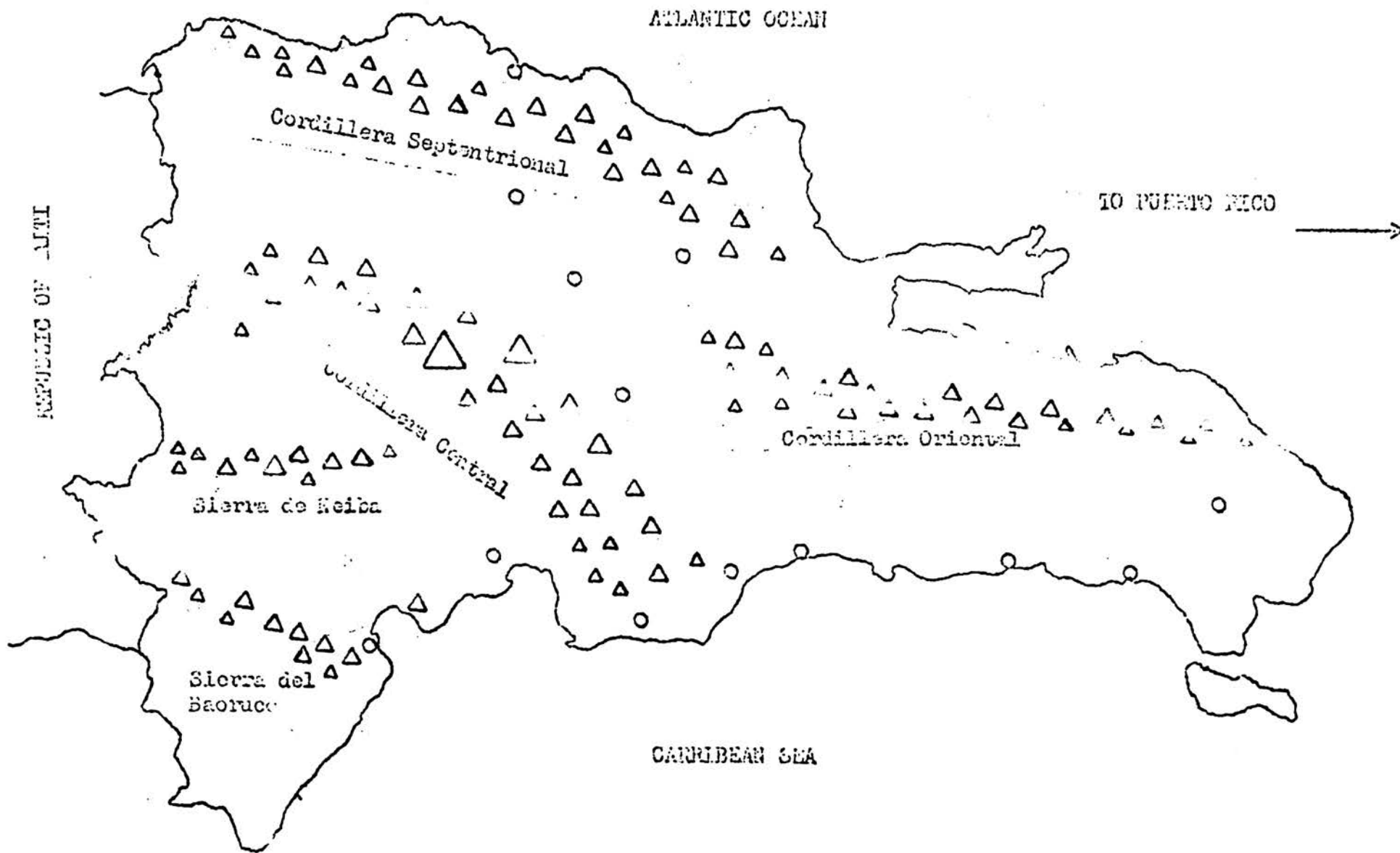
In the eastern part of the country the rainfall is highest at the Cordillera Oriental (2743 mm., Mean Annual Precipitation), decreasing as you move westward along the northern coast (e.g. Miches, 2020 mm.), and to the south coast (e.g. San Pedro de Macoris, 1049 mm.).

In the central and western parts of the country this pattern is more complicated because the several mountain ranges cross those areas with an east to west orientation approximately perpendicular to the direction of the trade winds (see maps 3 and 4).

Map 3: Mean Annual Precipitation of some selected points in the Dominican Republic (expressed as mm.).



Map 4: Important mountain ranges of the Dominican Republic



Map 3 shows the rainfall intensity at some selected points in the Dominican Republic. It includes the point of highest recorded precipitation in the country (Polo, 2463 mm.), and some of the driest areas of the country. These dry areas are located in the north western corner of the country near the city of Azua on the southern coast.

The distribution of rainfall in the country can be divided into two types; the first in which the rainy season occurs during the months of December to March (Mediterranean type of climate), and the second in which the rainy season is during the months of April to June.

Part of the northwestern coast of the country (e.g. near Puerto Plata) is a good example of the mediterranean type climate. Most of the country falls in the second type of distribution pattern. When the rainy season occurs during the summer months, it is divided mostly into two wet periods; from April to June and from September to November. The dry period (from December to March) is a drought spell usually very strongly expressed especially in the eastern part of the Caribbean coastal plain.

The August temperature in the Dominican Republic is between 26 and 28 degrees centigrades for most of the country. The temperature in the coolest month of the year, January, is usually around 21 to 24 degrees centigrade. At some higher elevations, however, the temperature is somewhat lower.

The country in general is frost free except for some points at high elevations where occasional temperatures below 15 degrees centigrade have been recorded. Table 4 shows the temperature of the two months where the temperature reaches its maximum and minimum values for some selected sites.

Table 4: Precipitation and, maximum and minimum temperatures for some selected points in the Dominican Republic.

City	Precipitation (mm)	Temperature (Centigrades)	
		August	January
Azua	686.0	28.5	25.0
Bonao	2,184.0	27.3	22.7
Constanza	1,070.0	19.2	15.5
La Romana	1,156.0	27.7	24.0
Polo	2,463.0	23.0	19.5
Santo Domingo	1,404.0	27.1	24.0
Santiago	979.0	28.3	23.5
Puerto Plata	1,788.0	26.7	22.4

In the Dominican Republic, as is true of the tropics, day length is not too variable, being about 12 hours.

Table 5 shows the mean value for the day length at the 19 degrees latitude north in the Dominican Republic.

Table 5: Mean value for the day length at the 19 degrees latitude north in the Dominican Republic (hours).

J	F	M	A	M	J	J	A	S	O	N	D
11.1	11.5	12.0	12.6	13.0	13.3	13.2	12.8	12.2	11.7	11.2	11.0

#### GEOMORPHOLOGY AND GEOLOGY

Four mountain ranges cross the Dominican Republic in an east to west direction (see map 4). Besides these main topographical bodies, there are some mountain chains (Sierras) of minor importance.

This mountain system divides the country into several geomorphic regions. These regions include; large depositional valleys, small inter-mountain valleys, and coastal plains (see map 5). As will be seen later, agricultural patterns in the country are related to these geomorphic regions.

Geologically the country is formed from a very old central core, several limestone areas and coastal plains and recent lacustrine and alluvial deposits

The central core is formed from andesitic, basaltic and metamorphic rocks of volcanic origin. The oldest part of this central core is located along the Cordillera central. It is formed mainly from the above mentioned rocks of an age unknown but older than the Mesozoic period (see map 6)

A younger area is that along the Cordillera Oriental which is mainly formed by volcanic tuffs of the early Mesozoic (see map 6).

The Cordillera Septentrional (northerly mountain range) is made up of a mixture of rocks which range from volcanic and calcareous sandstone from the Mesozoic period to calcareous sandstone, shale and limestone from the Oligocene period (Tertiary) (see map 6).

The Baoruco and Neiba sierras are formed of limestone rocks from Oligocene and Eocene periods.

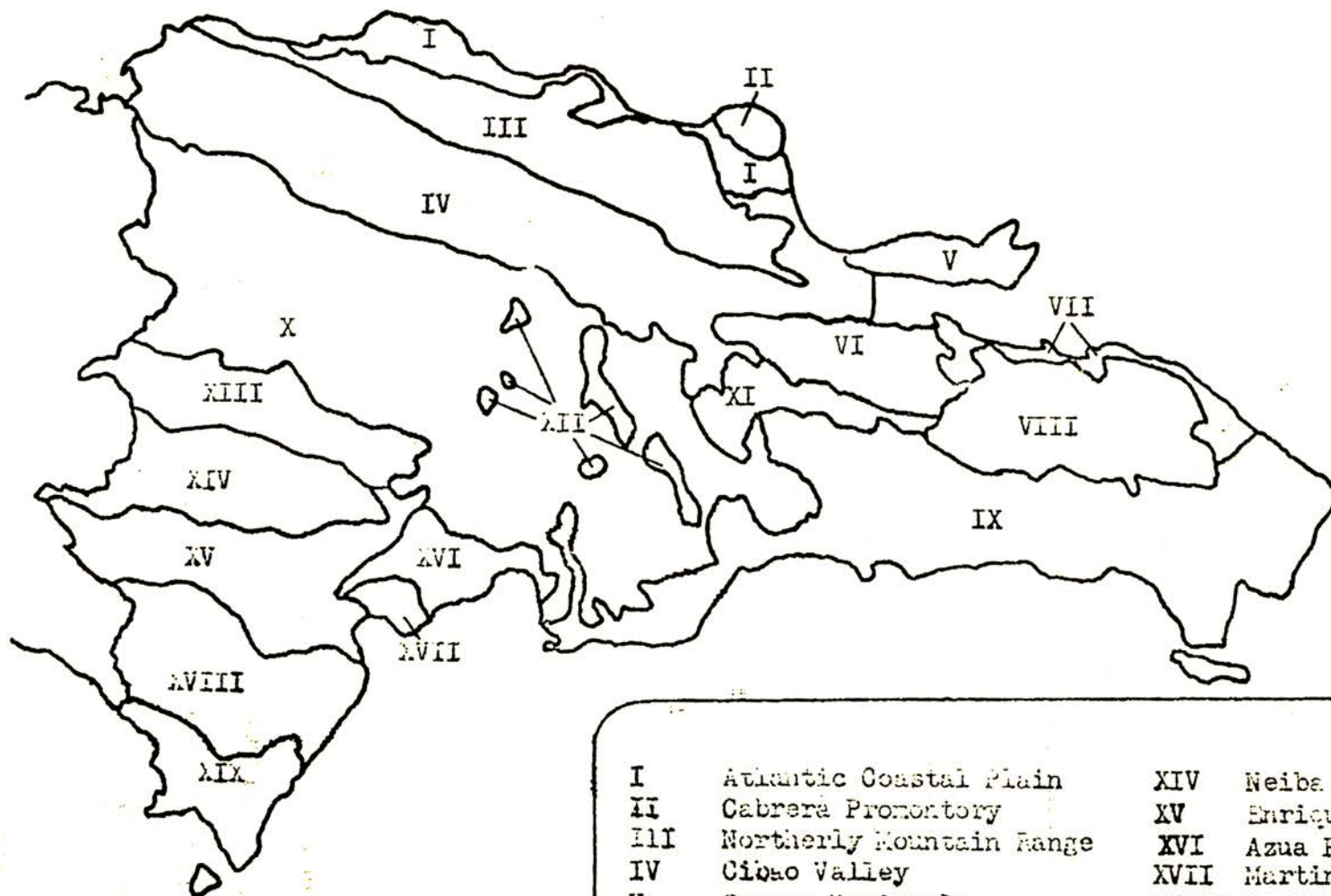
The rock formations of the small intermountain valleys in the country are dominated by those of the surrounding mountains. The large valleys, however, are formed mainly from lacustrine deposits from the Pleistocene period (Quaternary). These lacustrine deposits are in most cases characterized by the presence of gravel. In some areas, especially in the San Juan valley and the Enriquillo basin, there are some deposition terraces in which very old soils can be found. These terraces also occur on the sides of those valleys which have been formed by the force of moving waters. Some of these terraces are also of marine origin.

The Caribbean coastal plain is a reef limestone deposit from the Pleistocene period. It extends from the eastern end of the country to the coast of San Cristóbal. It can also be noted in some spots along the coast of Barahona, the Atlantic coast and the eastern tip of the Samana Peninsula. (see map 6).

Los Haitises (see map 5) is a large area formed from karstic limestone from the Miocene (Tertiary) period. This material can also be found in some



Map 5: Geomorphic Regions of the Dominican Republic



I	Atlantic Coastal Plain	XIV	Neiba Sierra
II	Cabrera Promontory	XV	Enriquillo Basin
III	Northerly Mountain Range	XVI	Azua Plain
IV	Cibao Valley	XVII	Martin Garcia Sierra
V	Samana Peninsula	XVIII	Baoruco Sierra
VI	Los Haitises (Calcic area)	XIX	Barahona Peninsula
VII	Samana and Miches Coastal Plains		
VIII	Oriental Mountain Range		
IX	Caribbean Coastal Plain		
X	Central Mountain Range		
XI	Yamasá Sierra		
XII	Intermountain Valleys		
XIII	San Juan Valley		

areas of the Cordillera Septentrional and in the Samana peninsula (see maps 5 and 6).

### SOILS

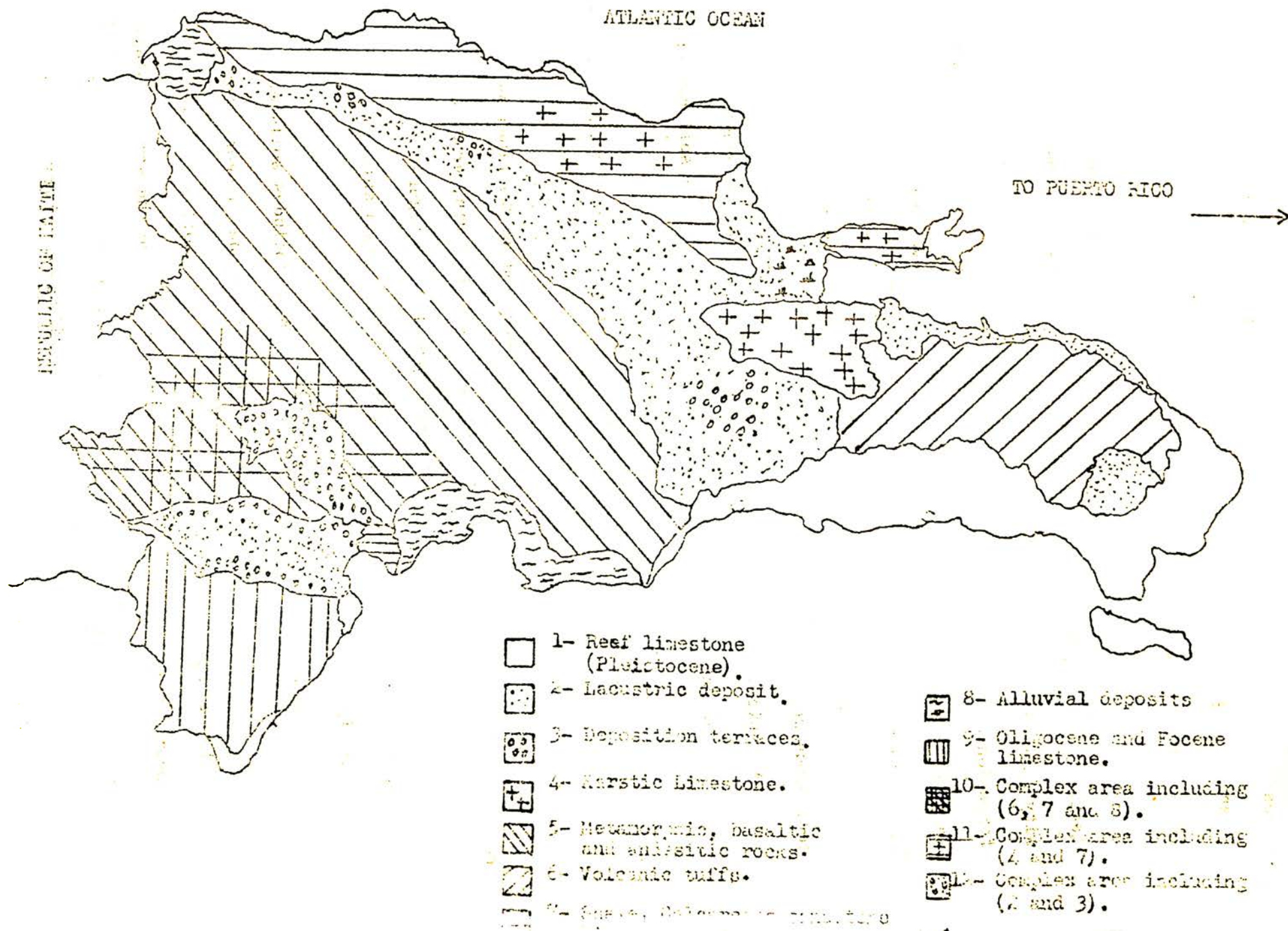
Soil formation in the Dominican Republic is mainly controlled by two factors; topography (which create a continuity factor) and weather (intensity factor). Because of the mountainous topography of the country, soil formation can not be considered as a generalized pattern. Under strong weathering conditions, several types of soils can develop depending upon the stability of the landscape. Hence, strong weathering will only be conducive to highly weathered soils when the stability of the landscape allows for continuous weathering in place.

A typical feature of most Carribean islands is the transport and deposition of materials from one place to another making the soil patterns rather complex. These movements have been mainly by debris and rock avalanches, volcanic eruptions in the lesser antilles and by natural erosion and river deposition in the larger antilles.

The physiographic features of these islands can be described as formed from a central mountainous core, usually of volcanic origin, grading to calcareous coastal plains. This type of topographic configuration leads to three broad groups of soils; mountain soils, coastal plain soils and inter-mountain valley soils.

The taxonomic system of the Dominican Republic includes soils of these three main groups. This taxonomic system is based on one category; the soil series. This category should not be confused with the soil series of the Soil Taxonomy of the United States since they do not have the same meaning. There are 162 series in the taxonomic system of the Dominican Republic. These series have been named using the town, village, river, etc. nearest the major occurrence of the series. In some cases, as with the Matanzas

Map 6: Geological regions of the Dominican Republic



and Nipes series, the name of similar soils previously described in the Caribbean area is used.

These soil series are put together into Associations. These associations are a combination of two or more soil series occurring intermixed in a given region of the country. A soil series can be found in several parts of the country. Whereas, associations are usually characteristics of a given region.

Because of the lack of a better source of information, the discussion of the soils of the Dominican Republic in this report will be based in their occurrence in the different physiographic regions of the country (see map 5).

#### Coastal plain soils

The coastal plains of the Dominican Republic are made up of the Atlantic coastal plain, El Promontorio de Cabrera, the coastal plains of Sabana de la Mar and Miches, and the Caribe coastal plain (see map 5). The parent material of the soils in these coastal plains can be of several origins; ruff limestone weathered in place, colluvial material from erosion of the central mountains and alluvial deposits which usually occur along river valley and as larger deposits (alluvial fans). This area is present in map 5 as (c). It can be noticed that it is not continuous along the coast line, but broken up at different places by high mountains occurring at the sea shore.

#### The Atlantic Coastal plain

This area is located in a longitudinal strip running with an east to west orientation. This strip is limited in the south by the northern footslope of the Cordillera Septentrional and to the north by the coast line. It is located in the north western part of the country. The mean annual precipitation of the area ranges from 2373 mm in the eastern end to 644 mm in the western end.

The soils in this coastal plain can be divided as follows:

- a- Deep residual soils formed from deposited calcareous material.
- b- Shallow, residual soils formed from the reef limestone of the local deposit.
- c- Alluvial soils of recent origin. Usually very fertile but of limited extension.
- d- Residual soils formed from transported acidic clays.
- e- Residual soils formed from deposited andesitic tuff.

#### El Promontorio de Cabrera

This part can be considered as a continuation of the Atlantic coastal plain. The area has a semi-circular shape with a relief formed by terraces which reach an elevation of 400 meters in the north in foot slopes of the Cordillera Septentrional and grading toward the coast line (see maps 5 and 7).

Most of the soils in this area can be considered as shallow lateritic soils formed by the weathering in situ of the reef limestone forming the promontorio.

#### Sabana de la Mar and Miches Coastal Plains.

This is a longitudinal strip running east to west along the northeastern coast of the country. The mean annual precipitation in this area is very high ranging from 2000 to 2500 mm, being lower along the coast and gradually increasing toward the northern flank of the Cordillera Oriental (see maps 5 and 7).

The soils occurring in this area are similar to those of the Atlantic coastal plain. However, in this area there are some hydromorphic and saline soils.

#### Caribbean Coastal Plain

This is the most extensive coastal plain of the country (240 Km long). It occupies the southeastern coast of the country. The width of the longitudinal strip is variable but usually narrower to the western part (see map 5).

The rainfall of the area is usually higher at the central part of the

plain decreasing toward its eastern and western ends, being less than 600 mm in the western end and 1100 mm in the eastern end. The eastern end of the plain, however, is drier than the western end.

The soils in the eastern part are formed mainly from transported calcareous material (alluvial and colluvial).

The soils of the western half of the plain are more developed than those in the eastern half. Near the sea coast (in the western part) one can find shallow latosolic soils which have been developed from the weathering in situ of the reef limestone of the plain. In the interior part of the plain we find deeper latosolic soils which can have different parent materials; the reef limestone forming the core of the plain or transported material from the central part of the island.

In general we can say that soils of the coastal plains in the Dominican Republic range from oxisols (e.g. Matanzas clay) to inceptisols and entisols of recent origin in alluvial fans.

### Mountain Soils

There has not been a very extensive study of the soils in the mountain regions of the Dominican Republic. However, we will use the limited information available to give you an idea of the soils that one can expect to find in the mountainous regions.

#### Cordillera Septentrional

Soil formation in this mountain range has proceeded under very unstable topographic conditions with a rather limited amount of precipitation. Some of the soils that have been observed in this area are characterized by a shallow depth and a high degree of stoniness. The parent material of the soil observed in the area has been described as limestone, serpentine and conglomerates.

### Peninsula de Samana

Soil formation in this area has also occurred under unstable landscape conditions but under a higher moisture regime. Some of the soils reported in the area are characterized by a shallow depth and a very unstable position in the landscape. At the top of the hills forming this peninsula there are some soils which have been formed from acid clays deposited by water in surface depressions. The parent material in the area is mainly limestone to the eastern and western end and schist in the central part of the peninsula.

### Cordillera Oriental

Soil formation in this mountain range has been under a more stable type of condition and under higher rainfall. Some soils have been found in this area which seem to have originated from highly weathered andesitic tuffs and other volcanic rocks.

### Cordillera Central

Soils and parent material of this mountain range are characterized by a rather complex mixture of rocks and minerals which result in very complex soil patterns. The existence of volcanic, metamorphic and sedimentary rocks intermixed with very recent deposits have been found in the Cordillera Central.

### Sierra de Yamasa

Soils in this area have developed under more stable landscape conditions and rather intensive rainfall. Among the minerals and rocks present in the area, there are basalt, andesitic tuff, quartz diorite, and some volcanic rocks.

### Valley Soils

There are two main valleys in the Dominican Republic; Cibao and San Juan, and some small intermountain valleys such as the Altigracia valley and the Bonao Valley. We will be visiting most of these valleys since

agriculture in the country is concentrated in them to a very large extent.

The soils in the valleys are very fertile, especially when they are located at the bottom part, because of recent depositions of alluvial materials deposited by the rivers forming the hydrologic system of the valleys. Most of the soils in the valley bottoms are of these types, but we also find some soils formed from water deposited materials in land depressions.

At the side of the valleys there are terraces which could be of low or high fertility depending upon the conditions under which they have been developed and their age.

#### Azua Plain Soils

This area is formed from what can be considered as an intergrade between the soils of the Caribbean Coastal plain, the mountain soils and soils of the more arid region to the west (Enriquillo Basin). The topography in this area is mostly flat, interrupted in some places by limestone hills. The area is crossed by several rivers. (Tabara, Jura and Via rivers).

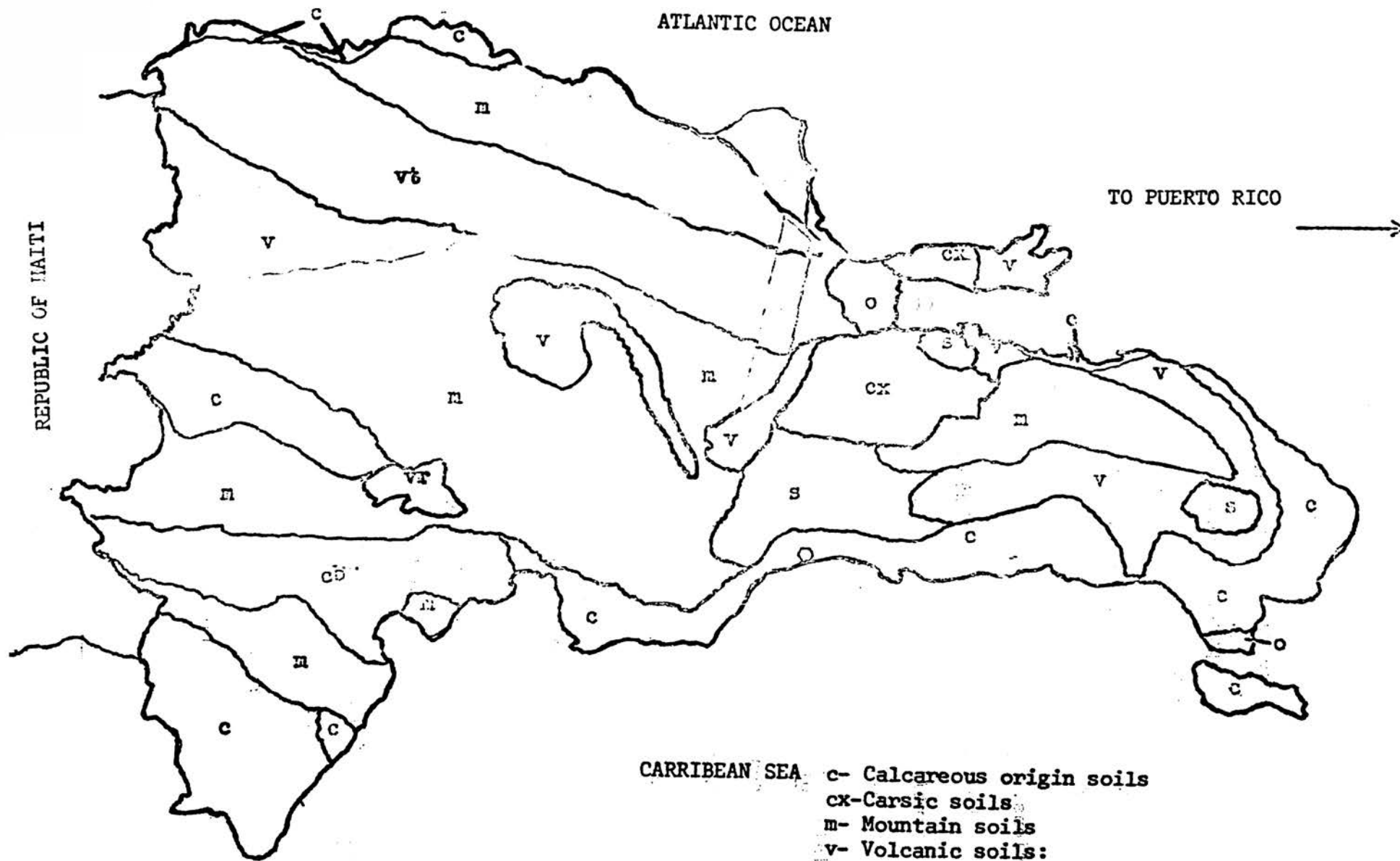
Because of the presence of these water ways, the area is characterized by the presence of alluvial soils. However, the arid condition of the area has not permitted a more complete development of soils. Most soils of the plain are characterized by being very shallow in depth and a high degree of stoniness. These characteristics of the soils together with the arid conditions of the plain impose some limitations on the use of this area for crop productions.

#### Land Use in the Dominican Republic

The total land area of the country is 2,257,699 hectares. The breakdown of land use includes 188,544 hectares under sugar cane plantations.



Map: Generalized soil map of the Dominican Republic



- CARRIBEAN SEA
- c- Calcareous origin soils
  - cx-Carsic soils
  - m- Mountain soils
  - v- Volcanic soils:
  - s- Savanna soils
  - vt-Cibao Valley soils
  - vr-San Juan Juan Valley soils
  - cb-Enriquillo Basin soils
  - o-Organic soils

Most of the cultivable area of the country is under natural or cultivated pastures. Table 6 presents the distribution of land use in the country in 1960.

Table 6: Land use in the Dominican Republic (1960 census).

Use	Hectars	% of total
Temporary crops	279,711	12.4
Fallows	335,988	14.9
Permanent Crops	451,578	20.0
Pastures and Ranges	866,760	38.4
Forest Regions	286,418	12.7
Others	37,244	1.8
<b>Total</b>	<b>2,257,699</b>	<b>100.0</b>

Land ownership patterns in the Dominican Republic is characterized by a very bad distribution. That is, there is a large number of very small farms which do not allow for a normal standard of living for their owners. On the other side, there is a very small number of large farms whose owners are responsible for most of the national agriculture production.

Table 7: Land distribution and size of farms in the Dominican Republic

Size of Farms (Hectars)	Number	% of Total Number	Total area (Hectars)	Percentage of Total Area
Less than 5	65,600	14.7	10,042	0.4
5-10	60,501	13.5	25,567	1.1
10-15	72,100	16.1	49,157	2.2
15-20	34,400	7.7	34,227	1.5
20-30	57,700	12.9	81,359	3.6
30-40	32,480	7.3	65,137	2.9
40-50	22,070	4.9	57,964	2.6
More than 50	102,247	22.9	1,934,246	85.7
<b>Total</b>	<b>447,098</b>	<b>100.0</b>	<b>2,257,699</b>	<b>100.0</b>

## AGRICULTURE

Agriculture in the Dominican Republic is characterized by a mixture of traditional and modern agricultural patterns.

Some of the traditional systems that can be found in the country include shifting cultivation and subsistence agriculture. Among the modern we find good examples of plantation agriculture (sugar cane industry) and large scale farming which, in most cases, are run as a co-op system between an official agency of the National Government (usually the land reform program), settled farms and the technical help from some other country or an international agency (e.g. AID). The Sisal Project, which is an integrated program for commercial production of tomatoes under irrigation is a good example of this co-op system. It is a program between the National Office of Land Reform a given number of settled farmers and the technical help of the government of Israel. During the field trip we will be visiting this project which is located in Azua in the southwestern part of the country.

By far, sugar cane production is the main agricultural industry of the Dominican Republic. By 1970, there were 150,510 hectares of land under sugar cane production in the country with an average production of 63.3 tons of cane per hectare. The cane in the Dominican Republic has an average sugar content of 11.7%. In 1970, the Dominican Republic produced 1,117,815 tons of sugar and 63,603,385 gallons of molasses.

Table 8: Some information about the sugar cane industry in the Dominican Republic (1940 to 1970).

Year	Land used (hectars)	Sugar produced tons/ha	Sugar in can
1940	70,700	56.1	10.0
1945	53,200	58.0	10.5
1950	74,100	56.2	10.9
1955	99,100	59.0	10.9
1960	145,200	77.9	10.9
1965	72,437	84.4	10.5
1970	150,510	63.3	10.7

Table 9: Sugar cane and molasses production in the Dominican Republic (1905 to 1970).

Year	Sugar produced Tons	Molasses produced Am. Gallons
1905	52,986	3,386,407
1910	104,133	6,309,254
1915	121,258	7,062,341
1920	196,824	11,333,211
1925	348,622	18,266,454
1930	415,496	17,820,100
1935	439,312	19,622,451
1940	516,409	23,283,921
1945	420,159	14,722,631
1950	539,578	21,155,818
1955	697,018	30,723,332
1960	1,225,373	63,599,320
1965	642,514	39,555,851
1970	1,117,615	63,603,385

There are 16 sugar cane mills in the Dominican Republic. Twelve of these belong to the National Sugar Cane Corporation (NSCC), three to particular (national) owners and one to the Gulf and Western Company.

Table 10: Sugar mills of the Dominican Republic.

Name	Owner	Milling capacity Tons/day
Romana	Gulf and Western	15,000
Rio Haina	NSCC	11,500
Consuelo	"	3,000
Barahona	"	3,000
Porvenir	"	3,200
Ozama	"	3,200
Santa Fe	"	3,000
Quisqueya	"	2,400
Monte Llano	"	2,400
Cael	Private owner	2,300
Catarey	NSCC	2,200
Boca Chica	"	2,000
Angelina	Private owner	1,800
Cristobal Color	"	1,750
Esperanza	NSCC	1,300
Amistad	"	500

Two-thirds of the total land under sugar cane is used annually. Sugar cane can be planted year round as long as there is a good water supply.

There are two planting systems in the country; spring planting where the cane is planted from April to June and harvested 12 months later, and July to September which is harvested after 16 months.

The varieties of sugar cane used in the country can be divided as follows:

- a- Early varieties (harvested 12 months old) B-4362, N-336 CP 5243 and CR6101.
- b- Intermediate varieties (harvested from 13 to 16 months old) PR-980, B-328560 and B-52321.
- c- Late varieties (harvested between 18 and 24 months old) POJ2878 and CR44105.

The harvesting of the sugar cane in the country is done by hand.

Ratoon crops are harvested for a period of 5 years.

Besides sugar cane other important agricultural crops of the country can be classified as follows: cereals (rice), commercial crops (tobacco, coffee, cocoa and plantains), oil crops (peanuts), legumes (beans, ganduls), root crops (sweet potatoes, cassava, yams and taniars), tropical fruits (bananas, oranges, avocados and coconuts), and vegetables (tomatoes and peppers).

Table 11: Production and yield of main agricultural crops of the Dominican Republic (sugar cane excluded).

Crop Name	Area cultivated (hectares)	Total production (metric tons)	Yield Kg/ha
Rice	83,517.9	210,000	2,530
Plantains	111,006.3	580,000	-
Bananas	20,570.3	275,000	-
Taniars	2,879.2	32,000	11,568
Tomatoes	1,597.5	52,000	32,535
Tobacco	15,988.4	22,500	1,157
Peanuts	55,000.0	71,000	1,446
Coffee	156,006.3	44,400	361
Cocoa	9,182.4	39,200	578
S. potatoes	9,402.5	87,000	9,399

In the country there are many more crops which will not be considered because of their limited importance and the lack of data. Some of the most important agronomic practices of some of these crops will be considered.

Rice is the main cereal crop in the country. It is the main staple food of all Dominican people. There are a large number of rice varieties used in the country, some of which have been produced in the country at the Rice Experiment Station in Juma (Bonao). These varieties fall in three main groups; short, medium and long growing season and their use in a given region of the country is based upon local conditions.

Rice is usually planted in the country from January to August depending on the variety and conditions of the growing area. Almost all the rice grown in the country is under flooded conditions (paddy rice). Transplanting is the usual form of sowing this crop. National consumers prefer the long grain type of rice (indica), hence it is the variety most commonly grown in the country.

Besides sugar cane, tobacco, cocoa and plantains are the most important commercial crops in the country.

There are several tobacco varieties grown in the country some of which have been produced in the country and some brought from Cuba. This crop is usually planted by transplanting, the seedlings are planted in the field at the beginning of the rainy season. The harvested leaves are air dried under a shelter built from palm leaves.

Cocoa is usually grown at high elevations in places with a high precipitation. The crop is grown under shade and the usual plant used for the early shade are plantains, which are later substituted by perennial trees.

Planting date for cocoa in the country is divided into two periods; from May to June and September to December. These planting periods are chosen depending on the local conditions. The harvesting is made by hand

twice a year. The processing of cocoa in the Dominican Republic does not include fermentation.

There are several oil crops in the country. However, peanuts are the principal source of edible oils for national consumption. There are two varieties of peanuts grown in the country; Valencia and Star. These two varieties are of the erect type of plants with a growing season of 90 to 100 days and 100 to 110 days, respectively.

Root crops in the Dominican Republic are usually grown as a component of the agricultural mixture in subsistence farming, or in shifting cultivation. Plantations of root crops in the country are not very extensive, and their numbers are not of large importance. Sweet potatoes are usually planted from August to November and harvested 4 to 6 months later. Whereas taniars are planted at the beginning of the summer or late spring and harvested one year later. Cassava is usually planted 6 to 8 weeks after the start of the rainy season and harvested any time from 6 months to two years after planting.

#### Agricultural Patterns in the Country

Agricultural patterns in the Dominican Republic are distributed according to many factors (topography, soils, climate and population).

Plantation agriculture, e.g. sugar cane, is located mostly in areas of very good accessibility. The sugar cane industry of the country, which is the main plantation crop, is located mainly along the eastern and central part of the Caribbean Coastal Plain. This facilitates the shipment of the final product. Another important factor in this area is the rainfall pattern which is characterized by a very marked dry season from November to March. This is the time when hand harvesting of cane takes place.

The second largest area of plantation agriculture in the country is located in the Cibao valley. Here, most of the food crops of the country are produced. This area has some favorable characteristics for the

production of crops. The soils of the area are very fertile, and there is a very good supply of water in the area provided by the different rivers and streams crossing it. A similar condition can be found in some of the small intermountain valleys of the country but to a smaller degree.

There is a large number of mixed (subsistence) agricultural units in the country. These are usually located in areas of more adverse topography, but can also be found in areas where a more productive type of agriculture can be developed. The crops usually produced in subsistence agriculture in the Dominican Republic are root crops (cassava, yams or taniars) which are mixed with ganduls, corn or beans. The mixture usually includes some tropical fruits (commonly papayas). Vegetables, except for tomatoes, are rarely found in subsistence agriculture in the country. Under wetter conditions the farmer usually has a small cocoa or coffee plantation to be used as a source of monetary income.

The country also has some patterns of shifting cultivation. These are more abundant in the mountain areas of the central part of the country. The crops planted under shifting cultivations are usually corn and root crops.

Vegetable production in the Dominican Republic has been traditionally located in circular areas around the major cities. Rather recently, the national government has started a program of intensive production of tomatoes under irrigation. This agricultural enterprise is located near the city of Azua.

#### Livestock Industry

The beef cattle population of the country is mostly concentrated in a belt that goes from the eastern part of the country to the central part of the northern coast (see map 9).



A large part of the dairy farms of the country are concentrated around Santo Domingo and other large cities.

Table 12: Population of the different livestock groups in the Dominican Republic.

Animal Group	Population (1968)
Cattle	804,000
Swine	483,000
Goats	98,000
Sheeps	25,000
Horses	198,000
Burros (donkeys)	84,000

Map 9: Provinces of highest beef cattle population in the Dominican Republic

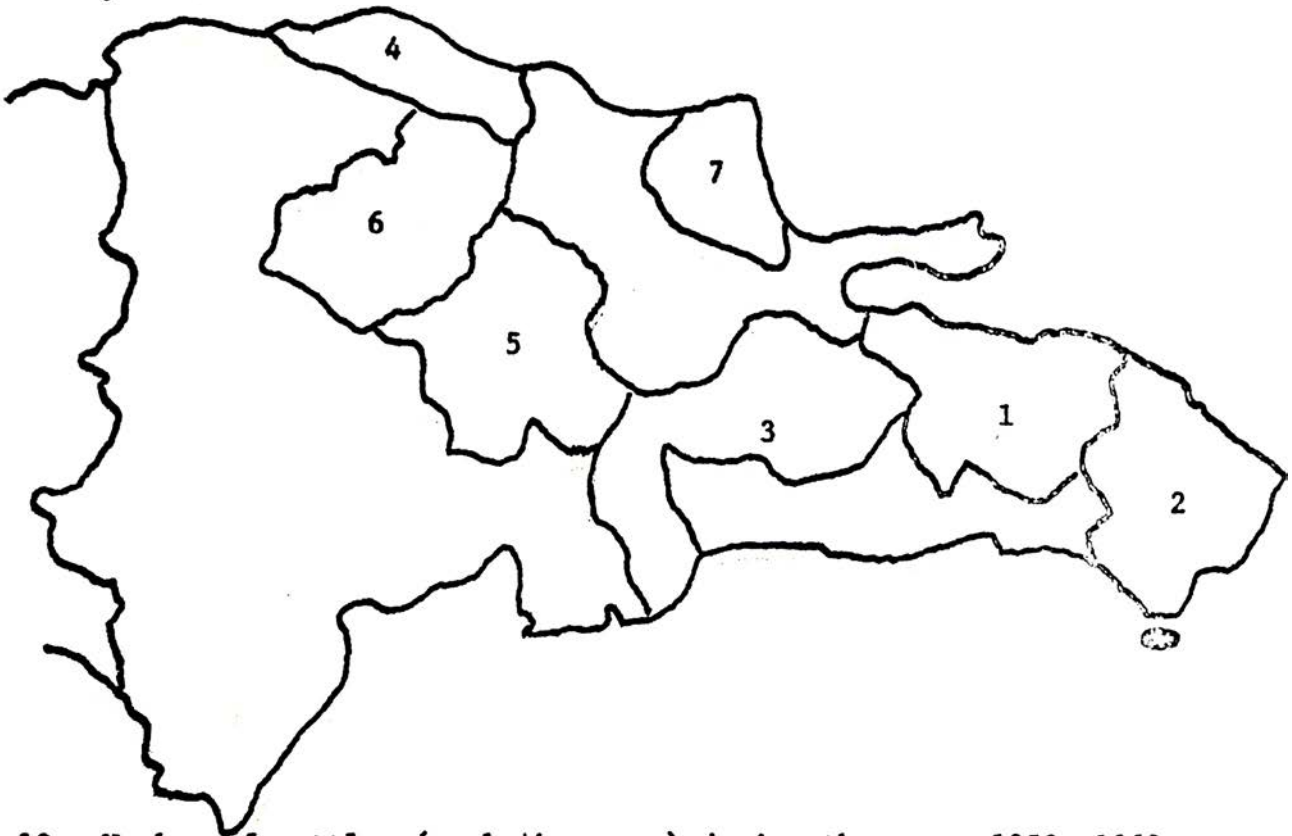


Table 13: Number of cattles (excluding oxes) during the years 1950, 1960 and 1971 in some provinces of the Dominican Republic (see map 9).

Province	1950	1960	1971
1- El Seybo	99,734	82,253	235,369
2- La Altagracia	66,117	56,272	128,036
3- San Cristobal	57,725	71,597	99,351
4- Puerto Plata	80,910	71,950	89,296
5- La Vesa	58,289	54,975	88,314
6- Santiago	54,235	38,555	70,950
7- Maria Trinidad Sanchez	24,973	33,073	67,737
All others	373,574	344,266	541,737
<b>TOTAL</b>	<b>815,357</b>	<b>752,941</b>	<b>1,338,962</b>

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