

# AGRICULTURE IN LATIN AMERICA ITS DEVELOPMENT AND OUTLOOKS

Two Reports of the  
Second Regional Meeting  
on Food and Agricultural  
Programs and Outlooks  
Montevideo, Uruguay, December, 1950

Food and Agricultural Organization  
of the United Nations

Washington, U.S.A.

February, 1951

3 3:63  
( .03)  
( 63)  
F 73  
1 g.ed.  
cop.2

*227*  
*227*

# AGRICULTURE IN LATIN AMERICA ITS DEVELOPMENT AND OUTLOOKS

Two Reports of the  
Second Regional Meeting  
on Food and Agricultural  
Programs and Outlooks  
Montevideo, Uruguay, December, 1950

Food and Agricultural Organization  
of the United Nations

Washington, U.S.A.

February, 1951

**AGRICULTURE IN LATIN AMERICA:  
CURRENT DEVELOPMENT AND PROSPECTS**

**Two Reports of the  
Second Regional Meeting  
on Food and Agricultural  
Programs and Outlook  
in Latin America  
Montevideo, Uruguay, December 1950**

**Food and Agriculture Organization  
of the United Nations**

**Washington, U.S.A.    February 1951**



## FOREWORD

The meeting on Food and Agricultural Programs and Outlook in Latin America, held in Montevideo in December 1950, was the second of a series of regional meetings. The first was held in Quito in 1949, and represented the beginning of a program undertaken by FAO to submit to periodical review by representatives of Member Governments the changing situation of food and agriculture in the region, the progress and significance of national programs in these fields and the outlook for the following period. These reviews provide a guide for the orientation of further national programs and international action, as well as for programming the activities of FAO in the region. The starting point for such a review is documentation prepared by the FAO secretariat on the basis of information supplied by Member Governments.

The work of the Second Latin American Regional Meeting, while continuing that initiated by the first, was broader in scope and deeper in substance. At the Quito meeting, emphasis had been given primarily to an analysis of the outlook for Latin American foreign trade in agricultural products, although there had been some consideration of nutritional questions, capital investment, and agricultural programming. In Montevideo these matters were studied more thoroughly, with special attention to the rate of development of Latin American agriculture and its relationship to economic development in other fields. The first resolution in the Report of the Montevideo meeting recommends principles for the regional development of agriculture as a part of general economic development in Latin America.

It was possible in 1950 to prepare the basic documentation more thoroughly than in the previous year. Governments, in the light of the experience at Quito, provided more precise and comprehensive information on the food and agriculture situation in their countries, and the Secretariat made an intensive effort to analyze and present this information in useful form.

The principal document prepared for the meeting is reproduced as the first section of the present publication. This paper opens with a summary of the main findings and then proceeds, through analysis, to illuminate the major obstacles to further agricultural development. Striking among the findings are the facts that the increase in agricultural production has failed to keep pace with the increase of population, and that in spite of considerable expenditures for research and in the adaptation of improved techniques in agriculture, average unit yields of the major crops have not increased over the last 17 years in Latin America.

The second section of this publication is the official Report of the Montevideo Meeting. This report recommends specific measures to be taken for overcoming the obstacles to development, whether by national or international action or through action by the FAO Secretariat.

The Montevideo Meeting recommended that a third Regional Meeting on Food and Agricultural Programs and Outlook be held in Latin America before the Seventh regular Session of the Conference, now tentatively scheduled for 1953. This third meeting should continue the work of the first two, but it was considered that emphasis should now be placed on an evaluation of the overall agricultural potential of the Latin American region,



and to this end the Governments should undertake to assess as precisely as possible, with such technical assistance from FAO as may be necessary, the agricultural production resources of their countries. An inventory of these resources would make it possible to construct realistic food and agricultural development programs on a longer-term basis. This, however, should not take the place of current programming activities on the basis of knowledge already at hand, and Governments were urged to continue reporting as fully as possible to the FAO Secretariat on the development of their national programs, so that the outlook in food and agriculture may be even more accurately outlined in the documentation of the third regional meeting. The usefulness of current program-building as a guide for efficient utilization of technical assistance was also emphasized.

The delegates to the Montevideo meeting recommended also that in order to bring about a greater degree of general understanding of the importance of national program planning in food and agriculture, Governments should disseminate information on the background material and results of the meeting, both at the technical and policy level among national officers working in these and related fields, and to the public in general. The present publication is issued primarily with this purpose in mind.

I am personally very greatly encouraged by the work done at the Montevideo meeting. I trust that its results, as published here, will not only be useful immediately to Governments in the conduct of their present programs and in planning those for the next agricultural year, but that the Montevideo meeting, as did the Quito meeting before it, will have served to prepare an even more fruitful Third Regional Meeting on Food and Agricultural Programs and Outlook in Latin America.

Norris E. Dodd  
Director General

PART I

CURRENT DEVELOPMENT OF  
AND PROSPECTS FOR  
AGRICULTURE IN LATIN AMERICA

Principal Background Document Used  
at the Second Regional Meeting on  
Food and Agricultural Programs and  
Outlook

---

Montevideo, Uruguay, December 1950

## INTRODUCTION

The diversity of conditions in Latin America always makes generalization difficult. Even so, some very important conclusions, always subject to the exceptions made in the report, may be drawn from the analysis. One is the need for a more comprehensive planning of agricultural development. The adoption of generalized agricultural policies and inauguration of partial programs are not sufficient. The need is for over-all plans which establish as quantitative targets the objectives to be achieved. To help in this objective, FAO is ready to make every contribution within its power, both through continuation of its regular activities and under the Expanded Technical Assistance Program, either by providing technicians or by establishing training centers on development of integrated agricultural development plans.

The need for giving a greater impulse to agricultural development is testified by the figures in this study. In 1949/50 per caput production of agricultural commodities in the region was only 87 percent of the prewar level and if current expectation are fulfilled, it will still be only 95 percent in 1952/53. Even excluding Argentina, where crop area per person has declined substantially, the ratio of crop area to population has made no progress. More significant is the fact that, with some minor exceptions, yields per hectare of the basic crops are still the same as 15 years ago.

Latin America is a region where little fertilizer is used and where tractors in operation approximate only one for each 740 hectares of crop land. In many areas sizes of holdings are too small, and farmers do not possess more than a hoe and a machete, or a foot plow, to help them perform their tasks.

Nutritional levels continue to be deficient in most Latin American countries. Slight increases in the food supplies available for human consumption in 1952/53 are expected in some countries and these will be accompanied by some improvement in the quality of the diet. Nevertheless, further substantial developments are necessary in order that levels of food consumption, satisfactory as regards both quantity and quality, may be reached.

Latin America still has large untapped agricultural resources, and in areas now under cultivation there are many possibilities for increasing production and improving the well-being of producers. No more than 5 percent of its total territorial expanse has been brought under cultivation, and only two-thirds of this is under crops any one year.

However, the obstacles are many, and to overcome them great efforts are being made by the governments. Furthermore investment capital, not always available to governments, is needed both for development of new areas and improvements in areas already in use. The utilization of vast areas must await technological developments in tropical agriculture, improvement of living conditions in tropical areas, migration, and the solution of many other technical, economic and financial problems. A much larger number of professional workers must be trained, many more research centers established and, particularly, more advisory services put in operation to reach the farmers and bring to them the knowledge of improved farm techniques.



Not only is there need to increase food supplies available for domestic consumption, but also to produce agricultural commodities for export to help in developing other economic activities. Unless the agricultural output is improved, industrial expansion will be hampered. Only agriculture can provide the food that is essential to industrial workers, and, in many countries, much of the exports to pay for the importation of industrial capital goods.

Demand for agricultural products continues strong, both domestically and in international markets. The recent FAO publication "World Outlook and State of Food and Agriculture, 1950" shows good foreign market prospects in the near future for Latin American exports, such as grains in general, sugar, coffee, cacao, bananas, cotton, hard fibers, meat, wool, and other livestock products.

As the title indicates this paper is concerned with agricultural development. The first chapter discusses the broad geographical and historical conditions which have moulded and continue to mould the development of agriculture in Latin America. The second and third chapters then review the efforts currently being made to improve these conditions. These chapters are concerned only to describe these programs and do not attempt to suggest ways in which they might be speeded up or improved. Proposals for technical action by Latin American governments, related to some aspects of the programs, are contained in the papers prepared by FAO for consideration by the Fourth Inter-American Conference on Agriculture.

In the fourth chapter is found an assessment of where these development programs and economic trends may lead over the next two years, i.e. by 1952/53, in production, trade and consumption of the main agricultural commodities. For the most part these forward estimates have been supplied to FAO by Governments but where necessary the Secretariat has made tentative estimates, as a basis for discussion at the meeting. These estimates provide a basis whereby the countries of Latin America can see their agricultural development as a whole and judge the rate and direction in which their agriculture is moving. They provide a basis for formulation or reformulation of agricultural policies and programs.

Appraisal of the 1952/53 estimates and of the programs for expansion of area and improvement of yields is made in chapters V, VI and VII from the points of view of nutritional implications and possibilities for expansion of production and trade.

This report does not discuss certain subjects related to agricultural development, such as transportation, preservation of foods in storage and processing of agricultural products. Some of these subjects have been considered in previous FAO meetings or in meetings of other inter-American organizations, or are in the Agenda of the present Inter-American Conference on Agriculture. Regarding development of fisheries resources, a separate paper has been prepared for the Montevideo Meeting, while forestry problems were to be discussed in the FAO forestry meeting in December in Santiago, Chile.

# CURRENT DEVELOPMENT OF AND PROSPECTS FOR AGRICULTURE IN LATIN AMERICA

## CHAPTER I

### MAJOR FACTORS AFFECTING AGRICULTURAL DEVELOPMENT IN THE REGION

#### 1. The Environmental Contrasts

Latin America is a region of great contrasts. An appraisal of any phase of the general economic or agricultural development in this area must be based on this fundamental consideration. Whenever it has been omitted, generalizations lacking substance, even under superficial analysis, have resulted. Furthermore, in referring to Latin America as a region of contrasts, not only the basic differences among various countries are implied, but also the divergencies within a single country in geography, climate, sociological conditions, and technological development of agriculture.

Considering this region from the geographical standpoint, for example, it will be seen that most of it is in the subtropical or tropical zone, mainly in the latter. Despite this, a geographical phenomenon such as high mountain ranges (cordilleras) makes not only a large portion of this area extremely rugged but also gives rise to extreme variations of climate. This first contrast between geographical location and climatic conditions makes it possible to pass, in a few hours travel even within a single country, whether it be Mexico, Colombia, Ecuador, Peru, Bolivia, Chile or Argentina from extremely hot to extremely cold zones, or even to zones of perpetual snow. Moreover, this difference in altitudes is reflected in the configuration of air currents and in variations in precipitation which in turn give rise to the paradox of deserts within a very short distance of luxuriant vegetation.

In South America, the high summits of the Andes, for example, constitute a virtually insurmountable barrier to the cloud formations blown inland from the Atlantic Ocean by the trade-winds, which upon striking the mountain tops discharge their water on the Cordillera, and, with the lack of evaporation caused by the cold Humboldt Current, make desert the coast of Peru and a great part of Chile; whereas in the eastern basin of the Andes, excessive precipitation has given rise to the largest river in the world. And whereas the rivers on the east side of South America flow slowly toward the Atlantic Ocean across broad plains, those arising in the western slopes of the Central Andes descend into the waters of the Pacific Ocean, rushing down precipitously from altitudes of over five thousand meters above sea level.

To these topographical and climatic contrasts should be added those arising from the historical and social background of the entire continent and of each of the Latin American countries. At the time of the Spanish Conquest of Mexico, Central America and the West Coast of South America, comparatively advanced civilizations were already occupying those areas, while other vast regions were found to be entirely uninhabited or populated by small nuclei of primitive tribes. In the first instance the result was a juxtaposition of civilizations, both cultural and ethnical. In the second, there was merely an incorporation of new areas into the civilization, habits and customs of Western Europe.

In the first mentioned case had there occurred a complete transformation of the native social, economic or cultural structure to conform to European patterns, the composite picture of the various countries would have been homogenous. However, such was not the case and not only do certain countries such as Ecuador and Argentina, Peru and Cuba, Guatemala and Costa Rica, Bolivia and Brazil afford extreme contrasts but the evolution of certain regions within a country causes them to differ greatly. Thus, in some of the countries of Western South America, from the coast to the Amazon basin exist regions with an economic structure ranging from capitalism, to semi-feudalism, adjacent to areas where vestiges of a primitive communistic type of life still exists, and finally to areas inhabited by savage or semi-savage tribes.

The original demographic pattern of densely populated regions along with uninhabited areas still exists in some Latin American states. Agricultural areas which have been intensively cultivated in some places since time immemorial border upon enormous expanses of land which still await the touch of human hands. The reasons there has been no migration from the first areas to the second belong to history, but the most important factor which formerly governed population distribution is probably the climatic barrier which even today denies access to certain parts of Latin America. For this reason and until very recently, the populations and even cultures of Mexico, Guatemala, Colombia, Venezuela, Ecuador, Peru and Bolivia have been confined mainly to the temperate or cold regions of the cordilleras or to the coastal regions where the climate is less extreme.

Social progress and political factors have also produced acute contrasts in the distribution of landholdings and in methods of land exploitation. In this connection also such differences appear not only between countries but also between separate areas within a country. In some countries all forms of landownership and tenancy and all types of land exploitation are found. Large landed estates which are being cultivated according to the most modern methods developed by the capitalist system exist beside large semi-feudal estates or are where the minifundia prevails. Along with communal holdings which are a heritage of primitive civilizations, are the modern production co-operatives and, in Mexico especially, some cooperatives where land is owned and farmed collectively. These systems of property-holdings are intimately related to the cultural development of the rural population which is dedicated to farming - from the most progressive, modern type of farmer to the illiterate peasant cultivating his own plot of ground with no other tools than his own labor power and lacking even the most essential technical knowledge. Whether this has been the cause or the effect of the political, economic and social development of the various Latin American countries, this phenomenon of different types of land ownership and use within a single territorial area is a fundamental, crucial factor in the development of the agriculture and livestock industries of the region.

## 2. Factors Dominating Agricultural Development in Individual Countries

The environmental factors summarized above, together with other factors, particularly those of an economic nature, have combined to produce current characteristics of agriculture in each of the Latin American countries. Gradually in this report, a better idea of characteristics peculiar to each country will emerge. But since some useful generalizations need to be made it is well to review here some of the characteristics, particularly those which may be regarded as dominant in determining each country's agricultural development. This will serve, in turn, to point out some of the most important problems, the solution of which underlies the agricultural policies in the various countries.



For instance, in Cuba, climate, ecology and geographical position have favored the growing of sugar cane to such an extent that this has become not only the dominant factor in agricultural development but also the all pervasive element in the economy of the country. Any rise in price inducing the expansion of sugar cane plantations will immediately cause this sector of industry to absorb a greater share of the means of production - capital, land, and labor - and will also have a similar effect upon transportation facilities. The need for the diversification of crops has been discussed for a long time in Cuba, yet for several years a substantial rise in the price of sugar has adversely affected crop diversification plans, acting as a barrier difficult to surmount.

The redistribution of land holdings in Mexico started approximately a third of a century ago, reached its maximum intensity at the close of the thirties, and is still the axis around which revolves the agricultural development of that country. As a consequence of this redistribution various phenomena have arisen, the main one being the establishment of large clusters of small farmers in the so-called "ejidal" system, many of them in collective farming enterprises, as well as thousands of medium sized land holdings (from 150 to 300 hectares) in the midst of these communities of small land owners. The history of the development of Mexican agriculture since the land reform began, is essentially the story of the evolution of agriculture under each of these various land-holding systems. Among the most important consequences of agrarian reform, is the establishment of subsistence level farming in most of the "ejidal" communities, and the rapid capitalist development in the so-called medium-sized holdings and in the collective "ejidos". In other words, whereas the technical development of agriculture has been going on at an accelerated pace in the two last-mentioned types of property holdings, on the contrary, the process has slowed down or been obstructed in areas where the large landed estates have been divided among smaller farmers. The general result has been however a rapid increase in the purchasing power of the farmer class, which gave a great impetus to the economic development of Mexico. Other important consequences were the diversification of agriculture to a certain extent, irrigation development, the organization of cooperatives and the establishment of credit system (both state and private), to supply the new land-owners with the necessary capital for farming. Even though the process of redistribution of land holdings has been slowed down during the past few years, it still has a predominant influence, not only on what might be called the normal growth of these industries, but also upon any government program related to agriculture. For instance, if it is desirable to promote the mechanization of agriculture, the low purchasing power of the majority of small farmers must be considered. Furthermore, the speed with which land distribution was carried out raises difficulties in any plan for extending farm loans or land credits due to the lack of property titles definitely accrediting the owners with titles of possession.

In Venezuela the orientation of the agricultural economy is guided by a factor entirely extraneous to agriculture proper, namely the petroleum industry. The existence of this tremendous source of wealth has dominated its economic development to such an extent that for many years agriculture was relegated to a very slow process of development. Petroleum brought in so much foreign exchange that Venezuela found it simpler merely to import a large portion of the agricultural commodities required for domestic consumption without concerning itself further with the development of its own production of these products. However, during the past few years, there has been a powerful trend in government circles to apply this basic slogan "sow petroleum", which means to employ the tremendous income from the exploitation of this fuel to develop local agriculture. Since petroleum production and all those general economic activities which are fostered by its income have absorbed so much of the labor force, Venezuela actually lacks in many instances sufficient manpower to meet the demand of its agriculture. On the other hand, the growth of this non-agricultural industry has also considerably increased the purchasing power of the people. The combination of these two factors has prompted agricultural

development through mechanization, both because agriculture has become a good business and because its development is not possible without the use of machinery. Venezuela now has the highest index for the entire region in the number of tractors per hectare of cultivated land. The petroleum economy will surely continue to exert the above-mentioned governing and regulatory function for a long time yet because obviously any decrease in income from the petroleum industry, by diminishing the purchasing power of the population, may simultaneously evoke a serious crisis in agricultural production.

There are other countries in Latin America in which agricultural development is hampered by the limited farmlands available for use. Such limitation is due in some instances as in the case of Uruguay, to the fact that the geographical limits have practically been reached so that almost the entire potential farming area is already in use. On the other hand, Uruguay's small size makes that country extremely susceptible to climatic phenomena, aggravated by unusual weather conditions, with regard to which local technicians say that "the normal is the abnormal". In consequence, national supplies of agricultural products vary widely from year to year because inclement weather usually affects the entire territory.

By contrast, the progress of Brazilian agriculture is not conditioned by a shortage of land, but rather by its abundance. Unlike the rugged mountainous areas of the Central Andes of South America where the farmers have been cultivating the same land year after year, in Brazil a migratory type of agriculture developed. The history of the most important crops of Brazil tells of their continuous displacement across the vast territories of that country, with little stability in any one area. For example, coffee-growing which was introduced into the northern part from French Guiana, has moved along the coast to the State of Sao Paulo, toward the interior of that State to cross over finally into the State of Paraná which is currently expanding its coffee production. Somewhat the same thing happened with cotton, in the State of Sao Paulo, where old fields have been abandoned continuously in favor of new ones until cotton growing has reached its present location in the interior of that State. Other crops, such as maize and beans, have also shifted in much the same way and wherever maize went the swine industry followed. Nevertheless, with an increasing population and the difficulty of utilizing the extensive tropical areas of the Amazon Basin, people in Brazil are now beginning to understand that land is not unlimited and that this type of agriculture will necessarily have to change.

In Argentina, agricultural development has been subject to some factors similar to those which have determined the progress of agriculture in the United States. It also has enormous expanses of easily tillable land adaptable to cereal cultivation and livestock-raising with no native population, which has been brought under cultivation as the influx of immigrants from Europe settled this area. Practically the only limitation upon the agricultural development of this immense country, has been the availability of labor and machinery. This fact, which was evident before industrialization began has become even more accentuated due to the current absorption of the working population by urban centers. Therefore the present progress of agriculture in Argentina is dominated to a large extent by the availability of agricultural machinery to replace the rural labor force which has moved to the cities.

In other countries of this region, Chile for example, the course of agriculture has long been determined to a large extent by the need of equilibrium in the balance-of-payments. Chile is not exceptionally favored as an exporting country except for copper and nitrates. Therefore, it was necessary to instigate a protectionist policy and a strict control over foreign exchange. Consequently the history of Chilean agriculture for over twenty years has been that of a continuous attempt to attain self-sufficiency, by producing wheat, meat, rice, vegetable oils and other products required for domestic consumption.

Since conditions in Chile do not favor the cultivation of sugar cane, it is now seriously considering the need for encouraging the cultivation of sugar beets, while the Nutrition Institute is recommending a reduction in the average per capita consumption of sugar.

The predominance of one or of a small number of factors is not so evident in other Latin American countries as the above mentioned cases. In the countries of the Central Andes in South America, Ecuador, Peru, and Bolivia, agriculture has been dominated by extraordinarily complex factors definitely rooted in the history, sociology and topography of the region. The greater part of the agricultural areas of these countries is located in the Andean valleys and plateaus where the altitude conditions both climate and crops. On the other hand, it is in this area where the greatest native population concentrations are found and where there are surpluses of population; here agriculture is essentially on a subsistence level since an average of no more than 0.4 hectares of farmland is available per farmer. Consequently, the pressure of population on the land resources is very great. On the Andean plateaus there are also large farms on which the landowners, with few exceptions, are more interested in obtaining high rentals for their underdeveloped land than in making a profit on capital investment in machinery, structures, livestock or soil improvement.

Doubtless, considered separately, the countries of this region differ greatly in certain aspects. The coastal desert of Peru, for example, is unique, and agriculture there depends upon water supply for irrigation, proximity to the ocean, and a continuous supply of guano obtained from the coastal islands. Farming is highly technical yet the expansion of this area depends upon the water supply which is the limiting factor. Along the coast of Ecuador, on the other hand, no such limitation exists, and agriculture is tropical. Peru, Bolivia, and Ecuador, on the other hand, have vast areas included in the Amazon Basin, where the situation is similar to that in the northern part of Brazil.

Colombia is a country with an enormous agricultural potential which has been scarcely touched. Until the beginning of this century, due to its small population, no serious problems had arisen in the normal development of its agricultural industries. Since then however its population has increased considerably and the need for expansion, especially of food crops, has become acute. At present, this development is affected by certain basic factors such as the need for considerable improvement in land transportation facilities, agricultural techniques and land use. Colombia presents a paradoxical case in that much of the best agricultural land is being used for extensive livestock-raising, whereas crop production is confined mainly to small farms on steep, sloping hillsides, where soil is exposed to great danger of loss. As in other parts of Latin America, the landowners of the vast plain area are more interested in obtaining a high rental for their land in its present condition than in augmenting the real wealth which can be derived from it.

Paraguay is a typical case of a country having a population thinly dispersed on rich, abundant land. In some localities the characteristics found in Brazil reappear, but the difference is that Paraguay is a land-locked country. Enclosed in the interior of the Continent, the natural outlet of the country is its Parana River which flows into the Rio de la Plata. Due to this circumstance, its general economic and agricultural development has tended to gravitate toward the strong center of economic attraction, the rich Republic of Argentina. The quebracho-industry, livestock-raising, and the cultivation of export crops such as cotton, tobacco, and yerba mate are controlled to a large extent by foreign capital, while the production of foods is mainly on a subsistence level.

Despite the limited geographical area of Central America, the countries present a variety of agricultural characteristics, and of factors which govern the development of their agricultural industries. In Panama for example influences somewhat similar to



those affecting Venezuela are present, since the economic activity of this Republic is dominated by the Panama Canal and the consequent intense commercial activities of its two largest cities. This has resulted in the neglect of farming, and the country has been obliged to import a high proportion of agricultural products required for domestic consumption. As for agriculture itself, it resembles that of Brazil, being of the semi-nomadic type. On the other hand, Panama's tropical climate and the generally low technological level of its agriculture, cause its farmers to become engaged in a perpetual struggle against the luxuriant natural vegetation, except in the dry Pacific coast.

In the neighboring countries, Costa Rica, Nicaragua, and Honduras, agriculture is dominated by certain export crops, namely coffee and bananas, which play a decisive role and impart a certain rigidity to the over-all economy of these countries. Population increases have generally not been counter-balanced by a parallel increase in food production and during the past few years foodstuffs have been imported more and more. Nevertheless, the potential agricultural resources of these countries are comparatively great even though much of them is mountainous. In Costa Rica, only 8 percent of the land is being farmed, in Nicaragua, 3.4 percent, and in Honduras, 3 percent.

By contrast, El Salvador faces problems which differ considerably from those of the three last mentioned countries. The agricultural development of this nation has been determined first by the high density of population. Almost the entire farming area of El Salvador is being cultivated and, generally speaking, the country is self-sufficient in agricultural commodities for domestic consumption. On the other hand, land use is seriously affected by problems of property ownership, soil fertility and erosion.

In Guatemala, the agriculture is dominated by physiographical and sociological factors which resemble conditions on the Mexican plateau. The substantial difference is the land problem, which has only recently been brought under study and therefore the general agricultural picture resembles that of the Andean countries of South America.

Regarding the Caribbean countries which have not been previously mentioned, certain dominating factors make their respective agricultural economies considerably different. Puerto Rico is an extreme case of a country with a very dense population where about 45 per cent of the total area of the island is under cultivation. Its over-all agricultural economy is dominated to a large extent, by sugar-cane cultivation as is the case in Cuba, but it differs from that of Cuba because it is a dependent territory of the United States and there is a natural interchange of agricultural and livestock products with that country.

The dominant factors in Haiti's agriculture are the excessive density of population, the extreme subdivision of land, and the resulting soil erosion. Across the frontier the Dominican Republic has no problem of excessive population and a diversified agriculture prospers. The agricultural economy of the Dominican Republic is however governed by one basic factor, namely, the lack of ready markets for its products, due to the trade commitments of the neighboring islands. This greatly hampers the full development of its agricultural potential which is still considerable.

### 3. Use of Land Resources

Latin America is a region where the cultivated area is small in proportion to its territorial size. According to available information, not more than 5 percent of the total 2,058 million hectares is crop land and only 3.1 percent of this total is cultivated annually. This 5 percent compares unfavorably with 10 percent for the world, and 30 percent for Europe (excluding U.S.S.R.).

The following diagram shows very clearly that in Latin America most of the land is still covered with forests and woods with a high percentage of waste land and large areas of natural pasture. In this aspect of the utilization of agricultural resources, there are marked differences between the various countries of the region, as can be seen from the next table in which countries are classified according to the percentage of land farmed annually. The differences are tremendous, ranging from 0.2 percent in the Guianas to 45 percent in Puerto Rico, an exceptional case. From the standpoint of sub-regions, the Caribbean has the highest index - 16.6 percent, followed by Mexico and Central America with 3.6 percent, and South America with 2.9 percent.

Land Distribution in Latin America  
Total = 2,058 million hectares

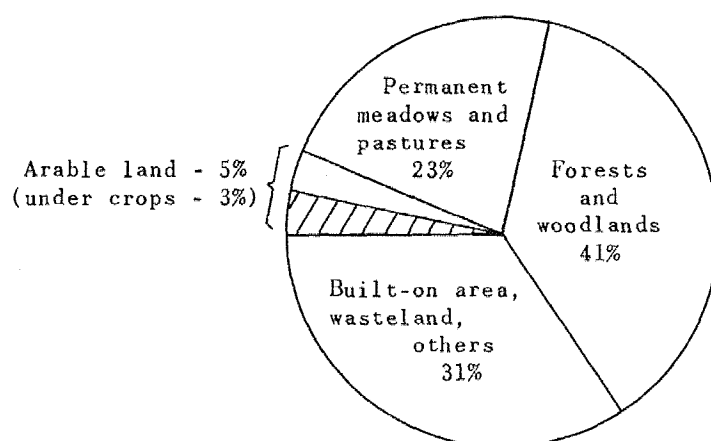


Table No. 1.--Ratio of Cultivated<sup>1</sup> to Total Area in Latin American Countries

Less than 1%	Bolivia, Guianas and Venezuela
1 to 2.9%	Brazil, Chile, British Honduras, Paraguay, Peru
3 to 5.9%	Colombia, Ecuador, Honduras, Dutch West Indies, Mexico, Nicaragua
6 to 11.9%	Argentina, Costa Rica, Guatemala, British West Indies, Panama, Trinidad and Tobago, Uruguay
12 to 17%	Cuba, El Salvador, Haiti, French West Indies, Virgin Islands and the Dominican Republic
Over 17%	Puerto Rico (45%)

<sup>1</sup>Estimates for 1949.

On average there are 1.0 hectares under cultivation per head of farm population and only 0.63 hectares per head of total population. Table No. 2 compares Latin America in these respects with other regions of the world.

In relation to total population, Latin America compares favorably with Europe, Asia and the world; and it is above Asia and the world in relation to rural population. However, if it is pointed out that in Latin America only 60 to 70 percent of the land is under crops any one year, whereas in Europe and Asia almost the total cultivated area is under crops annually, then it is seen that Latin America is below the world average

and only slightly above Asia. This low ratio of crop area to arable area is due to the generally low level of farming techniques, particularly the inadequate use of fertilizers, which necessitates leaving much of the land in fallow for long periods.

Table No. 2.--Cultivated Land in Relation to Population, by Regions

Region	Has. per Inhabitant (Total Population)	Has. per Inhabitant (Rural Population)
Europe	0.39	1.16
U.S.S.R.	1.32	2.32
North America <sup>1</sup>	1.32	6.59
Latin America	0.63	1.00
Asia	0.26	0.38
Africa	0.90	1.21
Oceania	1.50	4.50
World	0.52	0.89

Source: *FAO Statistical Yearbook 1949.*

<sup>1</sup>Excluding Mexico.

As regards the future expansion of agricultural areas, it would be erroneous to believe in view of the above that Latin America's land resources are virtually unlimited. Almost all farm land of easy cultivation has already been put to productive use. In many instances this has caused a considerable rise in property values and a consequent increase in land rent. Much of the uncultivated land cannot readily be put under cultivation by private initiative alone because of the large capital investments required. Consequently, governmental action is becoming increasingly important in the extension of cultivated area in the region.

#### 4. Capital Investment in Agriculture

In Latin America, as everywhere, agricultural development is powerfully affected by the extent and nature of the impact of capital investment. Certain features more or less peculiar to the region deserve special attention here. A basic characteristic of current economic development in Latin America, in respect both to agriculture and the other sectors of the economy, for instance, is the use made of income derived from crop and livestock production. This as will be seen is bound up with the whole agricultural and social structure of a great part of the region.

Since a large proportion of the farms are of the so-called subsistence type with no capacity to produce any surplus over and above the minimum needs of the cultivator and his family, the accumulation of capital in Latin American agriculture has occurred principally on the large-scale farms producing commodities for export. The surplus constantly accumulated on these large-scale farms characteristically seeks investment opportunities in the cities, either in safer or more remunerative enterprises. Among these special mention might be made of real estate, which has drawn so much of the capital which might normally have been expected to be reinvested in agriculture. This point is referred to, for instance, in the Abbink Mission Report on Brazil where it is stated: "The concentration of the Brazilian investment potential in the construction of office buildings and of apartment houses for the relatively small groups of wealthy and moderately well-to-do people -- types of investment which contributes less to a balanced economic development than do many other types of investment -- has been adjudged by



all observers as one of the most serious of the economic distortions experienced during the war." The movement of capital derived from farming towards the cities is greatly facilitated by the close connections which most of the owners of these large-scale farms enjoy with the industrial, commercial or real estate activities of the country.

Thus we see that the surplus income derived from farming often does not get "plowed back" into agriculture to increase its equipment and fixed plant or to improve its methods, but is rather drained off to other sectors of the economy, where it has been one of the principal sources of nourishment for industry and commerce. In Latin America manufacturing industry, instead of emerging out of handicraft trades, tends to be directly rooted in the accumulation of capital from crop and livestock farming. These characteristics of the nascent Latin American industry, particularly its intimate dependence on agriculture, should not be overlooked in any analysis of the economic development of this region.

Another channel through which potential investment capital is diverted from agriculture should be mentioned. Since agriculture is as yet the largest contributor to the national income in most Latin American countries, it constitutes the principal source of revenue for financing public administration. Agriculture benefits very little and mainly indirectly from the expenditure of this source of revenue. On the other hand there is little counter-flow, to compensate for the influx of capital described above and thereby release agriculture from its vicious circle of low productivity and low income. Although there has been a strong influx of foreign capital investment in Latin America, it may be affirmed that agriculture has received very little of its benefit, except for a limited number of export crops such as sugar and bananas. Furthermore, agricultural credit has not developed enough and has often not meant any net addition to capital for investment in farming, since large farmers sometimes request such credits only in order to be able to use their own capital for other safer or more remunerative purposes, as mentioned above.

The limited growth of agriculture in Latin America over the last decade vividly illustrates the argument of this section. If there was ever a period when agriculture might have been expected to expand rapidly it has been since the commencement of World War II. Over a period of ten years continuously high agricultural prices have provided both the incentive for increased production and the opportunity for reinvestment to raise production. Yet for Latin America as a whole the general index of agricultural production increased only 8 percent between the periods 1934-38 and 1945-49.

Interesting illustrative material showing the changes in agricultural output, industrial and building output and agricultural prices in four principal countries is shown in the Appendix.<sup>1</sup> While it is true that general price levels, and therefore farming costs, have also risen greatly, these have been outstripped, as is usual during a period of inflation, by the rise in the price of agricultural products. In Chile, for instance, agricultural prices have risen to 388 percent of 1937 and in Mexico to 284 percent. Prices of export products have risen even more in most cases, e.g. coffee at 612 percent of 1938 in mid-1950 and cotton at 585 percent in the U.S. market. There is every indication that agricultural enterprises have been relatively prosperous over this period. However, as can be seen in the four cases presented, with the exception of Mexico, the response in agricultural production has been extremely limited. In fact, as will be shown later, population in Latin America has increased at a faster rate than crop and livestock production, and in consequence, export capacity decreased, as was shown in the extensive analysis recently prepared by the Economic Commission for Latin America. There have of course been exceptions to the aforementioned slow reaction of agricultural production to

---

<sup>1</sup>See Table I.

the rise in prices of farm commodities, such as cotton in Mexico, sugar in Cuba, rice in Ecuador, Peru, Brazil, Chile and the Dominican Republic. For one reason or another, these countries were prepared to respond rapidly to price inducements for these particular commodities. In many cases, this has been the result of deliberate government policies.

However, these remain exceptions. All in all, farming has failed to respond substantially to a long period of attractive prices and high profits and there is little doubt that the structural and social peculiarities of Latin American economy, with consequent flow of profits made in agriculture to the urban economy, has been a major factor in this inadequate response.

## 5. The Productivity of Farm Labor

Farm labor productivity presents an even more complex situation due to the heterogeneity of rural farming methods and the social conditions in various Latin American countries. There is naturally a different system of work for each type of land use. There are the small farmer and landowner who works his land himself, the proletarian farm laborer who sells his labor power to the large landowner or to the management of industrialized farms, the share-cropper, the peasant on the large semi-feudal estates, and the members of the collective farms.

Agricultural machinery, for instance, is common in Argentina for cereal products and for cotton and sugar cane in Brazil, Cuba and some other countries. While productivity per man in these mechanized farms is comparatively good, yet in the vast majority of farms, where frequently the farmer has no other implement than a machete and hoe as in Haiti, or a foot plow in some areas in the mountains of Ecuador, Peru and Bolivia, the productivity per man is very low. Another cause of the low productivity of farm labor is that the rural population is frequently concentrated, for sociological causes, in certain areas often next to areas which remain underdeveloped. It must also be remembered that poor food supply for the workers and small farmers results in lowered energy output per man and this also contributes to the low productivity. In recent years there has been a notable improvement in rural living conditions, but the process is very slow and the real income and real wages have increased only very slightly.

Due to the above-mentioned low productivity of labor, the number of laborers in agricultural production is extremely high; and whereas in the United States for example, only 20 percent of the population lives in rural areas, the average in Latin America is 63 percent.

## 6. Adoption of Improved Techniques

It is not difficult to understand that in so varied and complex a region as Latin America, technological progress in agriculture is achieved only slowly and unevenly. The new technological advances are being introduced mainly in farming enterprises which furnish raw materials on foodstuffs to other parts of the world, but very seldom on farms devoted to crops for domestic consumption, especially foodstuffs, in which sector of agriculture modern farming techniques have only been assimilated to a relatively minor extent. As has already been mentioned in another report,<sup>1</sup> crops such as maize, which constitute the basic food of the region, are grown without benefit of agricultural requisites such as machinery, fertilizers, and pesticides, and are still produced

<sup>1</sup>*Report on Agricultural Requisites in Latin America by the Joint FAO-ECLA Working Party.*

by backward farming methods. The topics of this report will not be discussed here but the main conclusions may be indicated by the following indices taken from it. Regarding agricultural machinery, the average number of hectares of cultivated land per tractor throughout the region was 967, in 1948, and the total quantity of fertilizers applied to the soil (annual average for the years 1946 and 1947) does not exceed 1.12 kilos of nitrogen, 1.27 kilos of phosphoric acid and 0.44 kilos of potash per hectare. Furthermore, the quantities of pesticides used are generally so insignificant that a great percentage of the crops is lost annually due to damage caused by plagues and plant diseases.

Technological advancement requires the harmonious integration of professional education, experimental research, and extension services, not to mention a removal of economic and social obstacles. Unfortunately the coordination of these three factors is not well-established in most Latin American countries.

#### (a) Professional education and technical personnel

The number of professional men and competent technicians in agriculture, live-stock-raising, and fisheries, is extremely limited on the whole as compared with the requirements of the region. Since the type of education in the schools is usually of general cultural nature, the shortage of specialists is all the more noticeable. The reasons for this are both financial and practical. School centers generally lack funds for specialized instruction, and they also take into consideration the fact that even after they train specialists, these specialists will find very few opportunities to apply their specialized knowledge. This appears paradoxical in countries of such complex structure in which professional specialization seems so essential, and fortunately, this obstacle is being overcome in the more progressive countries and the number of specialized professional men is growing.

Professional education has merited attention in some Latin American countries for a long time. Specialized State schools and the faculties of agronomy at several universities now offer such training. In Argentina, Brazil, Chile, Mexico, Peru, Cuba and Uruguay there are teaching centers which have been dedicated to this work for the past half century. In recent decades schools of agriculture and animal husbandry have been founded in Bolivia, Venezuela, Ecuador, Haiti, Costa Rica, Colombia, and the Dominican Republic.

Latin American Governments are also beginning to offer primary and secondary agricultural education in rural schools and are beginning to train local farm managers or operators at specialized teaching centers. This has been found highly desirable in most countries because, even though the number of such teaching centers is small, they are already contributing greatly to the progress of agriculture in the region.

There are also centers for the training of skilled farm workers such as tractor operators and mechanics, but the shortage of these workers is still great. This fact conspires against the use of agricultural requisites, particularly farm machinery and pesticides. Frequently very expensive farm machinery is placed in the hands of laborers who lack specific knowledge of its proper operation, lowering efficiency and shortening the life of the machines. The lack of skilled farm laborers is, furthermore, a seriously limiting factor in the use of insecticides and fungicides to combat the most serious plant diseases and plagues.

#### (b) Agricultural experimentation

Although there is considerable research in crops and livestock as will be seen in Chapters II and III, it is still inadequate to give the necessary impulse to technical

development. The improvement of farming and livestock methods in Latin America since its beginning has been directed mainly toward the determination of the cultivated plants and livestock species which are best adapted to conditions in this area. But research has been and still is very inadequate as regards farming and livestock-raising methods, fishing techniques, irrigation methods and other important aspects.

Regarding the use of agricultural machinery, for example, only very little experimental work has been or is being done. Actually this is all the more necessary because topographical, climatic, and soil conditions in many cases make it impossible to use or to adapt agricultural machinery manufactured for countries where different conditions prevail. Farmers are therefore at a loss when it comes to using tractors and mechanical sowers or reapers which are inadequate.

More importance has been given in Latin America to experimentation in the use of fertilizers than to research in the use of agricultural machinery. Such investigations will be continued and will certainly lead to important conclusions with regard to the use of fertilizers required for various crops in different types of soils.

A great deal of experimental work has also been done in plant pathology. In most Latin American countries eminent and experienced entomologists and plant pathologists have been working for years. The literature on plant pests and diseases is relatively abundant and the Governments have undertaken to publicize the basic facts of the methods of using the principal pesticides. Noteworthy efforts along these lines have been made in Argentina, Uruguay, El Salvador, and Mexico to face the locust plague, to study the life cycle and habits of this pest, and determine the best means of combating it.

An important role in the experimental work being conducted on the Latin American Continent has been played by agencies established through cooperation between various Governments and the Office of Foreign Agricultural Relations of the U.S. Department of Agriculture, which has set up excellently equipped experiment stations in Peru, Guatemala, Ecuador, and other countries. Other cooperative services which have proven invaluable in creating and strengthening governmental technical services in the application of modern agricultural methods and also in the distribution of high grade seed and breeding stock are those established by governments in cooperation with the Institute of Inter-American Affairs, an agency of the Government of the United States.

The use of good seed or, in other words, the planting of improved varieties especially adapted to the environment has definitely been the main concern of agricultural researchers in many Latin American countries and in many instances excellent results have been obtained. However, the lack of good quality seed has had such negative effects in many parts of the region that this is one subject on which special emphasis should be placed. Not only is the quality of seed poor (with reference to its purity or germinative power), but also the quality of its plasm has important consequences which impede the use of agricultural requisites. For example, the Joint FAO-ECLA Working Party noted the ineffectiveness of the use of fertilizers due to the poor yield of the varieties cultivated. In Central America it was observed that the use of fertilizers produces good financial results only when select high quality seed is sown and not when degenerate varieties of seed or species inadaptable to the environmental conditions are used. The failure to select seed, the lack of uniformity of the seed and the use of unsuitable varieties also constitute an obstacle to the use of agricultural machinery. There are innumerable cases of the planting of varieties whose life cycle favors the occurrence and spread of insect plagues and the outbreak of diseases.

Among the achievements of Latin American farming technology, the Joint Working Party particularly called attention to the work done in Mexico in the planting of good

quality maize seed, as an example worthy of imitation not only by other countries of this region, but throughout the world. Many Latin American countries have official agencies for distributing good quality seed. Some agencies, as in Brazil and Argentina, were established rather recently and have gradually extended their spheres of activity. Others are of even more recent creation - in Cuba, Colombia, Chile, Mexico, Peru, Venezuela and Uruguay - while still other countries have new services or agencies which however are of little economic significance.

### (c) Agricultural extension services

The lack of good agricultural extension services constitutes one of the most serious institutional deficiencies of Latin America. Outstanding as the work of experimental stations may be, it cannot really bear fruit unless it is supplemented by efficient agricultural extension services. Even countries which have excellent professional schools and experiment stations lack adequate facilities to disseminate among farmers the results of the experiments.

Agricultural extension work in Latin America is carried out in several ways, either by demonstration or by directly rendering service to the farmers, the last named method having increased in importance recently. In many countries, in order to stimulate the use of agricultural machinery, the State has established special services to make tractors and other mechanized implements available to farmers, and in some instances, also equipment for the application of pesticides. Valuable facilities of this type are offered by agencies in Chile, Venezuela, Peru, and the Dominican Republic. Distribution of fertilizers to encourage their use is particularly important in Colombia, Venezuela and Mexico. The type of service supplying both pesticides and equipment for their application, even though not highly organized in Latin America are sufficiently active in some countries, for example, Argentina and Uruguay, to help considerably in combating insect plagues and plant diseases affecting fruit orchards.

For some time Latin American Governments have been trying to improve their livestock by cross-breeding and selection, and by extension service work. Such attempts on the part of Argentina and Uruguay are well known, for these countries rank among the most progressive livestock-raising countries of the world. However, in most Latin American countries extension work in fisheries is lacking. Not only are fishing implements generally primitive, but the fishermen lack the necessary education and initiative or outside stimulus to develop the industry. (See Conference paper LA/2/2 on better utilization of fisheries resources.)

In some Latin American countries where there is a large percentage of aboriginal population, the provision of agricultural extension services is rendered extremely difficult by the fact that large segments of the population do not speak the official language, and special extension techniques are therefore required.

## CHAPTER II

### GENERAL PROGRAMS FOR AGRICULTURAL DEVELOPMENT

All governments in Latin America have a wide variety of programs for the development of their agricultural resources and for the improvement of the production, trade and consumption of food and agricultural commodities. In this chapter attention is paid to certain general policy objectives, to price policies and to programs which relate principally to expansion of area and mechanization.

#### 1. General Objectives of Agricultural Policies and Programs

As mentioned in the report submitted to the first FAO Regional Meeting, the increase of food production sufficient to meet domestic requirements appears to be a clearly established objective in all agricultural programs of Latin American governments. This policy persists and in most instances is undoubtedly a result of the rapidly increasing pressure of population upon agricultural resources. Governments are not overlooking the importance of increasing the production of exportable commodities, but in the latter case the emphasis is on the improvement of technology in order to reduce production costs. In general, however, when considering the expansion of the area under cultivation and the increase in the volume of production, it is unquestionable that in recent years food commodities have received the major emphasis in official programs.

In attempting to increase food production, however, there has been no effort made to coordinate the production plans amongst countries for mutual advantage, but rather each country appears to be striving to achieve national self-sufficiency in all these commodities. In the past years governments have adopted a whole series of measures for farm price protectionist policies which are reflected in supports, trade regulations and in some instances the prohibition of exports. As a result of these measures, a conflict has arisen in many countries between old laissez-faire theories of free trade and the theories of protectionism and self-sufficiency. In practice, the trend is toward the latter solution.

Despite a trend in Latin America as a whole to associate nutrition questions with corresponding problems in agricultural production, within countries there are wide variations in the degrees to which nutritionally desirable changes are co-ordinated with the other factors which need to be taken into account when formulating food production programs. In a few countries co-ordination has been made possible by the determination of satisfactory food consumption goals. In any case such instances are few and in these the programs are not always put into action as intended. However, the statistical data for this purpose are lacking in many Latin American countries.

Except for countries like Argentina and Uruguay where the average supply per caput has been adequate in terms of calories, government policies and food supplies for domestic consumption are necessarily still formulated with a view to increasing the total energy supply rather than to improving the quality of the diet, although such improvement can be made, in many instances, at the same time (see Chapter 5).



## 2. Price Policies

Policies designed to affect prices, which before World War II were pursued in only a few Latin American countries, were applied rather generally during the war. The welfare of the consumer was protected by means of price ceilings, consumer subsidies and government control over commercial activities. Under specific local conditions, some governments also considered it their responsibility to provide a certain amount of security to some sections of the agricultural economy by establishing minimum prices.

Until recently Latin American governments have continued their price policies along both these basic lines. Nevertheless, with the return to more normal conditions, the price ceiling systems have been either modified or eliminated entirely, although in some countries this system continues with respect to a few commodities which are in short supply. It is not uncommon that governments still intervene in the regulation or supervision of commerce, or compete in the market.

From the review of the situation in countries for which there is adequate information, it can be seen that price policies and particularly fixed prices for producers have not always been used as a part of programs for increasing agricultural production. However, price policies have been used to stimulate production with respect to one or several commodities in Brazil, Colombia, Costa Rica, Ecuador, Mexico, Uruguay and Venezuela. In other instances, fixed prices for producers have originated from a desire to insulate the domestic economy against external trends - particularly in Argentina - or where there was a need to maintain the income of the farmer and thus protect domestic production in the face of rising domestic costs in relation to export prices. In many cases, the solution to the latter situation has been sought through systems of preferential exchange rates, of which several instances have occurred in Argentina, Chile, Ecuador, Paraguay, Uruguay and Venezuela.

With regard to ceiling prices to consumers, these measures are always the result of a desire to curb inflationary pressures and halt the rise in the cost of living, at least of basic food commodities.

To further illustrate the general nature of price policies in the Latin American countries, the situation as it appears from data available as of the mid-1950 will be briefly described.

In Argentina, the basic features of the price-fixing policy are the establishment of government purchase prices for certain export commodities, the use of differential exchange rates for certain other export commodities and ceiling prices for consumers. In the first case the purpose is to place exports in the hands of the government so that it may absorb all gains or losses involved in such exportation. In this way, domestic prices are insulated against fluctuations on the foreign market. In the second case, the purpose is to favor the exporter of certain commodities including wool, leather goods, vegetable oils, oats, dairy products, fruit and processed pork. As regards consumer prices, Argentina has maintained controls somewhat lessened during 1949, although in September of that year prices were frozen at the then prevailing levels.

Brazil is continuing its price policy in favor of the producer of certain crops, mainly those intended for domestic consumption, by a system of basic guaranteed prices. The objective appears to be to increase food supplies by increasing production. The efficacy of this system for the producer is assured by means of government purchasing in the event of a slackening of effective demand. Consumer price ceilings have recently been confined to meat and rice, all other products being sold on the free market without limitation. In order to effectively maintain ceiling prices, municipal authorities enter into the marketing phase by setting up distribution facilities.

Chile also fixes prices for the benefit of both the producer and the consumer. The same products are involved in both instances and include only domestic food commodities. In connection with consumer prices, the public authorities intervene directly in the importation and internal distribution of wheat. Concerning agricultural exports the government employs a system of differential exchange rates with discriminatory features against certain groups of products. The majority of agricultural commodities exported are included in the most favored group under this multiple rate system.

In Colombia as in Brazil the price-fixing policy applies to specific agricultural commodities the production of which the government is interested in promoting in order to provide larger supplies for domestic consumption. The system works by the establishment of guaranteed purchase prices by the public authorities in the event of a slackening in demand. For the consumer, the policy is applied by the fixing of ceiling prices for some food products, and by official government competition in marketing in order to moderate runaway price tendencies which are not founded on real changes in cost.

In Ecuador prices are guaranteed to the producers of rice and cotton. With the drop in world prices for rice, Ecuadorian production costs appeared to be relatively too high. The government consequently set an official guaranteed price and granted subsidies to producers for exportable surpluses. The price policy for cotton is to stimulate production exclusively for consumption by local industry. As regards consumer prices, ceilings have practically been eliminated, but government marketing activities are continued for regulatory purposes as in Brazil and Colombia.

In order to stimulate production of the main agricultural commodities consumed domestically, Costa Rica has supported prices for such products by official price-fixing in favor of the producer and by government purchases of these commodities whenever necessary.

Mexico officially guarantees prices to producers of maize, beans, wheat and rice under its specific commodity programs. Here again to benefit consumers, prices are controlled for some food commodities, through official competition in marketing. In the case of wheat, the government has an official monopoly on imports and sells imported wheat to the consumer at lower prices in line with prices established for domestically produced wheat.

In Uruguay some price measures apply to the local market and others to export products. Price-fixing for sugar beets and sugar cane, for example, is solely for the purpose of increasing production for domestic consumption and reducing the volume of sugar imports. Prices of meat are fixed irrespective of export prices and are determined by consideration of production costs and prices fair to consumers. At the present time the government is obliged to pay subsidies to meat exporters because export prices are lower than domestic prices. The price paid to producers for wheat on the contrary is established in accordance with prices in the international market rather than consumer prices, but in this case also the government has to absorb heavy losses since consumer prices are below the price paid to producers. The multiple exchange rate system provides for the payment of better prices for export products, such as vegetable oils, leather goods, hides, skins, wool and rice, than would be paid if domestic costs were taken as a criterion.

In Venezuela, domestic production is promoted by price guarantees for certain food articles. At the same time, ceiling prices are set for the consumer. Since domestic prices are generally higher than import prices, the importation of articles which can be produced locally is either prohibited or limited. In the export trade, cocoa and coffee receive the benefit of preferential rates of exchange.

In Peru most price controls were recently removed, and at present only some consumer prices on food commodities are under official regulation. Meat, milk and bread prices are officially fixed, taking into account costs of production. Removal of exchange controls allowed producers of export commodities, particularly sugar cane and cotton, to receive higher prices for their products.

### 3. Increasing the Cultivated Areas

The programs of the Latin American governments include numerous projects for increasing the cultivated area, such as irrigation projects, forest reclamation, and complementary colonization plans. In order to give an idea of the magnitude of the projects, these programs will be briefly reviewed.

#### (a) Irrigation projects

According to available information, during the postwar period Latin American countries have included in their programs the irrigation of approximately 3.6 million hectares. These programs if realized will result in an increase in the irrigated area in Latin America of more than 60 percent. The area covered will amount to slightly more than 5 percent of the area at present cropped annually. Projects vary in size from country to country and, depending upon the workload and budgetary appropriations, were expected to take from two to four, or even up to six years' time. Other projects which may cover from 2 to 3 million hectares are also under study, and it is hoped that these preliminary surveys will be completed soon so that definite plans can be established.

Regarding the 3.6 million hectares which have already been approved and included in government programs, only a little over 425,000 hectares had been irrigated as of December 1949. Of these 379,000 are in Mexico. Also, construction work on projects covering 920,000 hectares in Mexico and another 439,000 hectares in other countries, is now under way. Of the remainder, it is known that so far no work has been started on approved projects aggregating some 145,000 additional hectares, which leaves a total of 1,700,000 hectares about which no information is available. This latter group includes the vast Argentine projects.

The various stages of development of the projects are summarized by countries in Table No. 3.

Mexico. The Secretaria de Recursos Hidraulicos (Department of Water Resources), is continuing its work on large-scale projects. The Aleman Plan, government program of the present administration covering the period 1947-52, envisaged bringing under cultivation by means of irrigation approximately 1.14 million hectares, of which over one million will be new or reclaimed land, and 66,400 hectares is land improved by irrigation. Despite the efforts of this Department to carry out the plan it should be noted that during the first three years the area irrigated, 335,000 hectares, is smaller than was envisaged in the initial program. Nevertheless, it is hoped that in the next three years the irrigation of the entire area contemplated in the program will be completed.

Among the most important works begun by the Federal Government toward bringing more land under cultivation are the Papalcapan and Tepalcatepec projects which visualize the integrated development of these areas. The first will place over 100,000 hectares under irrigation, and the second about 70,000. Both projects envisage the generation of electric power, flood control, and improvement of river navigation, and encompass sanitation and communication projects, education plans, and the development of industry in

those areas. The projects under construction in Papalcapan especially are of such magnitude as to be included among the three largest projects of integrated planning (aside from the Tennessee Valley Project) actually under construction in the world. The area to be developed, that is the Papalcapan River Valley, is 45,000 km<sup>2</sup> in extent and the population of the mountainous area is estimated at 200,000. One of the largest projects to be constructed is the one called the "President Aleman Dan", with a reservoir capacity of 6.3 billion cubic meters. The capacity of this dam will make it the largest in Latin America, and comparable only to the largest dams in North America. According to plan, it is expected to be completed in 1952.

Table No. 3.--Status of Postwar Irrigation Programs in Latin America at beginning of 1950  
(all figures in thousands of hectares)

Country	Area pre-viously irrigated	Planned Projects <sup>a</sup>				Total	Further projects under study <sup>b</sup>
		Completed	Under Construction	Not Begun	Status Unknown		
Argentina	1,000.0	...	...	...	1,500.0	1,500.0 <sup>c</sup>	...
Bolivia	9.0	8.5	3.5	-	39.0	51.0	130.0
Brazil	126.0	6.0	...	...	116.9	122.9	5.0
Chile	1,250.0	1.2	226.2	64.0	-	291.4	447.0
Colombia	...	10.5	29.2	-	-	40.0	500.0
Costa Rica	13.0	...	5.0	-	-	5.0	...
Cuba	60.0	...	...	...	...	...	32.0
Dominican Republic	85.0	...	21.0	54.0	-	75.0	...
Ecuador	...	10.0	40.0	-	-	50.0	64.0
El Salvador	3.0	...	...	...	...	...	3.0
Guatemala	10.0	...	...	...	...	...	16.0
Haiti	40.0	...	6.0	27.0	-	33.0	30.0
Honduras	20.0	...	...	...	...	...	...
Mexico	1,700.0	379.0	(921.0) <sup>d</sup>		-	1,300.0 <sup>e</sup>	...
Nicaragua	2.0	...	...	...	...	...	...
Panama	8.0	...	...	...	...	...	...
Paraguay	12.0	...	...	...	8.0	8.0	55.0
Peru	1,200.0	...	78.0	...	-	78.0	702.0
Uruguay	70.0	...	17.0	...	10.0	27.0	100.0
Venezuela	86.0 <sup>f</sup>	11.0	13.0	-	27.5	51.5	580.0
Total	5,694.0	426.0	(921.0) <sup>d</sup>		1,701.4	3,632.8	

...Information not available.

<sup>a</sup>Included in governmental programs during 1947-49. Excluding projects not yet financed.

<sup>b</sup>Includes both projects under study and projects studied but not included in any current program.

<sup>c</sup>Approximate figures.

<sup>d</sup>Includes both projects under construction and those not yet begun.

<sup>e</sup>Includes projects under the Plan Aleman for 1.14 million hectares and supplementary programs of well-drilling.

<sup>f</sup>Refers only to areas irrigated by national works.

The Banco Nacional de Credito Ejidal and the Banco Nacional de Credito Agricola (National Banks for Farm Credit), in cooperation with the Department of Agriculture, are undertaking supplementary programs of well-drilling for small-scale irrigation. The former plans to dig 1,160 wells in 1950, which will supply water to 116,000 hectares. The latter was responsible for the irrigation of a total of 44,000 hectares in 1947-49.

Venezuela. The Ministry of Development, through its Office of Irrigation Projects, is working toward the completion of projects which have already been started. In 1949 it completed the following projects: Guataparo covering 3,000 hectares and Tayguayguay with 8,000 hectares; it is now about to complete the first stage of El Cenizo which will irrigate 10,000 hectares. It is continuing construction work on the Neveri project covering 3,000 hectares. Among small-scale irrigation projects contemplated, are those for the Bocano and Santo Domingo Rivers, covering a combined area of 16,000 hectares.

Of the projects under study, it is believed that the survey of the Pao River will be terminated in 1951 and that construction can be started by the end of that year. This project also covers the Chinaco and Chirgua Rivers, the total irrigable area amounting to 75,000 hectares. Surveys on the Cojedes River have been practically completed, and construction on this project may be begun at the end of 1950. Among other projects under study are the Barlovento project for 6,000 hectares using the Papayo River, and another 60,000 hectares including the Tuy and Guapo rivers. This project includes the construction of dams for reservoirs and it may be possible to begin it next year. In two more years, studies for the extension, that is for the second stage, of the El Cenizo River Irrigation Project, may also be completed.

As a preliminary step to the implementation of the national irrigation plan, a Statute on Irrigation Projects and the Use of Water Power is now being drafted in final form. In this Statute, all provisions pertaining to irrigation projects, the use of water power, and the creation of necessary agencies to undertake and execute projected irrigation works will be correlated and codified.

Newly under consideration are studies on the integral development of the Tuy River and of the Tocuyo River Basin. The surveying of the latter is expected to be terminated by the close of 1950.

Colombia. The Government is continuing construction work on two irrigation projects with a view to expanding them and increasing the national farming area. The Instituto Nacional de Aprovechamiento de Aguas y Fomento Electrico (National Institute for the Use of Water and of Electrical Power) expects to complete the Rio Bravo Canal, Tolima, which has already been opened partially for service this year and is expected to place under irrigation from 6 to 10,000 hectares. As for the projects being constructed by the Caja de Credito Agrario (Agrarian Credit Bureau), the project on the Saldaña River for the irrigation of about 12,000 hectares will be concluded about the middle of 1951; 10,500 hectares are already under irrigation. The Sisga irrigation works begun in 1948, will be completed in 1951 and will serve 3,500 hectares. It is expected that the Coello project, which will irrigate 15,000 hectares, will be completed in 1952.

Ecuador. The Caja Nacional de Riego (National Irrigation Bureau) is continuing to expand its Irrigation Plan. The main projects contemplated are: the Canal del Pisque, which will irrigate about 16,000 hectares, the Tumbaco Canal already partially in service, which will irrigate 2,000 hectares; the Chimborazo Canal, part of which is already in operation and irrigates 10,000 hectares; the Portoviejo Canal which irrigates 2,000 hectares, and the El Milagro Canal, now under construction, which will irrigate 20,000 hectares. The Bureau also has two projects under study, one for the Salinas-Imbabura Canal covering 4,000 hectares, and the other, the El Oro Canal covering 60,000 hectares. In addition, the Junta de Reconstruccion de El Oro (Reconstruction Board of El Oro) is building two irrigation canals. Previously completed projects have already brought about 10,000 hectares under irrigation.

Peru. The Direccion de Augas e Irrigacion (Office of Water and Irrigation of the Ministry of Public Works) is now trying to complete work on the following projects: one

on the Quiroz River, which will provide water for 20,000 hectares of new land and 30,000 hectares of improved land, and the other on the Choclococha River which will irrigate 5,000 hectares and improve the irrigation of an additional 23,000 hectares. The projects studied and under study cover an area of 500,000 hectares of new land and 280,000 hectares of improved land. No date has been set for starting construction on these projects other than the two specified above.

Chile. Irrigation projects are mainly the concern of the Departamento de Riego (Irrigation Division of the Department of Public Works) which, in 1949, completed a few small irrigation projects totaling 1,200 hectares. Projects under construction at present will irrigate over 290,000 hectares of new and improved lands. The main projects are: Rinconada La Corda, irrigating 800 hectares of new land and 360 hectares of improved lands; Laguna de Planchon, 35,500 hectares of improved land; the San Rafael Canal, 3,000 hectares; the Putagan Canal, 5,000 hectares; the Tutuven Reservoir, 2,500 hectares; Lake Maule, 40,000 hectares of new and 110,000 of improved land, and the Bio-Bio Canal covering 15,000 hectares of new land. Probably all the projected irrigation works listed above will be completed in 1952, except for the Maule Lake Reservoir which will be completed in 1955. Some projects under study for which foreign capital has been requested, such as the reservoirs and canals for the control and regularization of the Rio Grande, the Algarrobal Reservoir for the control of the Elqui River and the Nilahua Irrigation Project, would improve an additional 84,000 hectares.

The Corporacion de Fomento de la Produccion (Chilean Development Corporation) will continue to construct large-scale irrigation projects to make surface and underground waters available for farming by the use of pumps. Among the most important irrigation works using surface waters are those at San Vicente de Tagua-Tagua, covering 2,700 hectares, Bajo Mataquito, 6,350 hectares, and Bio-Bio covering 10,000, the last being under construction.

Argentina. The irrigation program in the five-year plan of Argentina (1947-1951) includes forty-six irrigation projects which will improve one and one-half million hectares of land, at least one million in the Western and Northwestern portion of the country between San Rafael and Jujuy, and 375,000 hectares in the Rio Negro-Rio Colorado region. In addition, there is a drainage and sanitation project which will reclaim another six and one-half million hectares. Lack of data makes it impossible to give greater details on the individual projects or to indicate their location and the present status of construction.

Bolivia. The Direccion General de Riegos has two projects under construction - the Challapatra in the Tacague River to irrigate 3,500 hectares and the Cochabamba in the Sulti River to irrigate 8,500 hectares. At the end of 1948, 8,500 hectares had benefited from work on these two projects. Six other official projects are planned, for the irrigation of 39,000 hectares, but the progress of these projects is unknown. Projects under study contemplate the irrigation of an additional 130,000 hectares.

Uruguay. The irrigation works being constructed by the INCAP will serve an area of about 27,000 hectares, and will include both large and small-scale irrigation works. The most important project of integral land improvement under construction is the one at "El Espinillar" on the Uruguay River which will benefit about 7,000 hectares. The National Institute for Colonization has other small projects under construction or under study.

Paraguay. Official plans contemplate the irrigation of 8,000 hectares, but no detailed information is available.



Brazil. The Departamento Nacional de Obras Contra as Secas (National Department for Drought Control) has completed small irrigation works which will reclaim 6,000 hectares, and it has under construction two small irrigation works called "Aires de Sousa" and "General Sampaio" covering 2,200 hectares, and has under study the "Baixo Assu" project for the irrigation of 5,000 hectares. During the next three years it hopes to complete the following projects: The Jacurici Aqueduct, 1,000 hectares; the Pozo da Cruz Aqueduct, 1,200 hectares; Oros, 30,000 hectares; Aires de Souza (enlargement), 1,000 hectares; General Sampaio (enlargement), 3,500 hectares; and Baixo Assu (enlargement), 10,000 hectares.

The Instituto Riograndense de Arroz (Rio Grande Rice-Growing Institute) has constructed a dam which will supply water for 7,000 hectares, and has two additional projects for the irrigation of another 16,000 hectares. The Rio Grande do Sul State Commission for Irrigation Projects has completed studies for various projects, the first of which will irrigate an area of 45,000 hectares when completed. In Brazil, the main objective of the irrigation policy is to ensure an adequate water supply to certain areas already under cultivation, rather than to extend the farming area. This applies to the "Poligono das Secas", a drought area, which covers 825,000 km<sup>2</sup> and for which large-scale integrated development projects are being planned. In particular, the use of the San Francisco River is contemplated in this plan. Construction has already started and it will be the largest project of its type in South America.

Dominican Republic. Among the main irrigation works now under construction is that of the Yuma River to irrigate 18,000 hectares. Completion of this project is proceeding satisfactorily.

Haiti. Irrigation works now under construction will cover 6,000 hectares; those which are to be built on the Artibonite Plain will place under irrigation an additional 27,000 hectares. Included in this plan are drainage and flood control works, tributary roads and the establishment of a hydroelectric power plant. In addition there are projects under study for another 30,000 hectares.

Cuba. No data concerning the construction of irrigation works in Cuba are available but the Commission de Fomento Nacional (National Development Commission) has studied the possibility of irrigating about 32,000 hectares.

In Central America, Costa Rica is irrigating about 5,000 hectares, in collaboration with the Institute of Inter American Affairs. Guatemala is studying the possibility of irrigating about 16,000 hectares in the La Fragua Plan. Panama and El Salvador also have small projects under study.

(b) Colonization of new areas

Colonization is beginning to extend the limits of the cultivated area of Latin America. Since, as has been said, a large part of the easily cultivable land is under crops, colonization efforts are usually made in densely forested areas, or desert lands. A summary of colonization programs which are not a part of irrigation projects indicates that most of the projects in Central America, including Mexico, are located in the tropical lowlands. Similarly, colonization programs in the western countries of South America are either east of the Andean ranges, as in Bolivia and Peru, or in the coastal lowlands, as in Chile and Ecuador. In the eastern countries of South America, principally Brazil, colonization projects are in virgin lands and extend into the heart of the Amazon basin.

Bearing in mind that colonization programs in Latin American countries are generally supplementary to programs of irrigation, land clearing, land allotment etc., it is

difficult to give concrete information about the amount of new land for farming or the actual numerical achievements in colonization. In some cases the available data includes merely the number and location of colonies planned and omits their size and the number of hectares that have already been put under cultivation. Therefore, in this section only programs which consist of colonization of new areas will be described. No reference will be made to the redistribution of land already under cultivation, which is of considerable importance in many Latin American countries. Such analysis would be valuable from other standpoints but does not precisely apply to the increase of the farming area with which this portion of the FAO report is concerned.

Mexico is making great efforts to obtain new farm land by mixed programs of colonization and land clearing. The agency charged with this work is the Comision Nacional de Colonizacion (National Commission for Colonization), a technical bureau under the Department of Agriculture, which works in collaboration with the National Farm Credit Banks. The scope of the Commission is divided into two areas, the northern and the southern zones, each of which has a separate program of colonization.

In the northern zone work is being done on a program begun in 1947 on an area of 120,000 hectares to be brought under cultivation. The program also includes the following projects under study: Ensenada (Baja California) 60,000 hectares; Baja California Sur 40,000 hectares; Hermosillo (Sonora) 80,000 hectares; Altar (Sonora) 15,000; Jalisco 100,000 hectares; Tamuin (San Luis Potosi) 13,000 making a total of 308,000 hectares.

In the southern part 151,670 hectares are being opened to colonization and the projects under study cover 83,220 hectares. It is important to note that Mexico's colonization plans are based on the use of Mexican farmers drawn from over-populated areas.

Venezuela is continuing its land clearance work at an accelerated pace, this work being done by specialized companies financed with funds obtained from the Corporacion Venezolana de Fomento (Venezuelan Development Corporation) and the Banco Agricola y Pecuario (National Agricultural Bank). It hopes to surpass the original goal of clearing 60,000 hectares in the Minimum Plan for Agricultural Production for 1948-1951. The Venezuelan Basic Economy Corporation and the Instituto Agrario Nacional (National Agrarian Institute) will collaborate with all groups working toward the same purposes. The Instituto Agrario Nacional, which was set up recently and superseded the Instituto Tecnico de Inmigracion y Colonizacion (Technical Institute for Immigration and Colonization) is in charge of the settlement of farm colonies generally composed of European immigrants on State lands, in accordance with the immigration plan formulated in cooperation with the International Refuge Organization. By the close of 1949, the Institute had brought a total of 33,000 hectares of new land under cultivation.

Colombia has established four government agricultural colonies. The oldest was founded eighteen years ago but has been very slow in growth; the one at Caracolicito, established in 1939, is cultivating 3,000 hectares, while the ones at San Juan and Sarare are of very recent origin. There is no data on the total area under cultivation in these four government colonies.

An interesting phenomenon in Colombia is that of "spontaneous colonization". The land given upon request to private individuals amounts to almost 80,000 hectares, but because of great hardships in living conditions and the isolation of these areas probably only a small part of this area has been developed.

The Departamento de Tierras (Land Department of the National Ministry of Economy) and the Instituto de Parcelaciones, Colonizacion y Defensa Forestal (Institute for land Distribution, Colonization and Forest Protection) are devoting their efforts to the development of government-established colonies. They have pointed out the need for a communications network which would be one of the most effective means of accelerating colonization.

Ecuador, after several fruitless attempts at setting up colonies of immigrants, recently saw the flourishing of the colony located in the District of Santo Domingo de los Colorados, settled by individual nationals. In this colony about 20,000 hectares of new lands have been brought under cultivation and a great development of this area is expected because the State is extending communication routes to this area, through which colonists will be able to ship their products to ports.

Peru has made several official attempts at colonization since the beginning of the present century, but although a few were successful to a limited extent, most ended in failure. Recently the colony of Tingo Maria, the best planned of all, was established with a strong farmer nucleus. The area allotted to these settlers is about 70,000 hectares, but the area under cultivation thus far does not exceed 5,000. The good communication facilities of this colony and the highway running through and connecting it with both the Pacific Ocean and the Amazon River Basin, have provided sufficient incentive to private companies which are now attempting to establish several forestry enterprises there.

In Chile, the Development Corporation, has made 3,000 new hectares available for farming in 1948/49 through land clearance, representing a great increase over 1946/47 when only 850 hectares were cleared. To date, the Caja de Colonizacion Agricola (Agricultural Colonization Bureau) has established 82 settlements on a total of 490,842 hectares, but a large portion of this area includes land already under cultivation which has been sub-divided for allocation to small farms. The Ministry of Land and Colonization is now considering a vast plan for reclaiming land in the Aysen region, but these studies are still in the preliminary stage.

Argentina has not paid any special attention recently to the matter of official colonization of new areas, although the present administration is embarked upon a vast program of land redistribution. The Direccion de Tierras y Bosques (Office of Land and Forests of the Ministry of Agriculture) has made several attempts to establish colonies on national land and in the territories, but the results have been rather limited as compared with the vast areas which they hope to populate.

In Brazil, in view of the vast expanses of still virgin territory, the opening of new farmlands by colonization offers tremendous possibilities. This is approached in two ways; first under the system of National Farm Colonies (Colonias Agricolas) on the basis of free distribution of land, and secondly through the settling of colonization nuclear groups (Nucleos Coloniais) based on the sale of land. Twenty-two and one-half million hectares of land have been reserved for National Farm Colonies and over one million hectares for the other, but the area actually being farmed is very small and development is slow. One such colony which stands out is Baixada Fluminonse in the vicinity of Rio de Janeiro, where costly drainage work was done, with the result that in places which were previously only marshlands, there are now thousands of hectares of reclaimed lands. It may be expected that despite natural obstacles parts of even the most forbidding regions, like the States of Amazonas and Para will in the immediate future be brought under cultivation.

Bolivia has made four attempts at colonizing its tropical regions without success. It plans to establish a colony on the banks of the Pilcomayo River, which would bring about 16,000 hectares under cultivation, but this plan seems to have little prospect of being put into effect in the near future.

Paraguay. Attempts at colonization have generally not been very successful, but at the present time two such projects are in full swing, namely the Model Colony located at Piribebuy east of Asuncion on lands already reclaimed, to cover 2,000 hectares, and the Misiones Colony near San Ignacio in the southern area, on new Llanos lands, covering 100,000 hectares. Both projects, although only in the incipient stages, are under the auspices of the supervised credit program which is managed jointly by STICA\* and the Bank of Paraguay. The first-mentioned agency provides all technical assistance and the second finances the projects.

In Uruguay the Instituto Nacional de Colonizacion (National Colonization Institute) coordinates and centralizes all technical management and planning of projects for colonization and redistribution of land, which already cover about 200,000 hectares on large states to be subdivided and improved. The total area surveyed amounts to over one million hectares. Liaison between this agency and the Government is maintained through the Ministry of Agriculture and Animal Husbandry, and credits are provided by the Bank of the Republic and the Mortgage Bank. The credit facilities extended during the two year period 1948-1949 for the purchase of individual farms are adequate to develop an area of 15,000 hectares.

In the Caribbean area, the Dominican Republic has successfully established colonies on recently irrigated land. The total area of colonies organized amounts to 78,000 hectares, of which approximately 50,000 hectares are already under cultivation and preliminary work is being done on the remaining 28,000.

In Central America, Guatemala has established three colonies in almost completely isolated regions of its territory, bordering on Mexico, El Salvador, and British Honduras. These colonies have not shown any tendency to grow and one of them, in Poptun, still has no communication routes other than by air. Nicaragua is continuing its policy of giving free grants of land up to a maximum of 30 hectares of uncultivated land to individuals, or up to 70 hectares to heads of families. There is no data on the area already brought under cultivation by this method.

#### 4. Mechanization of Agriculture

During the past few years the mechanization of agriculture has continued to progress in Latin America. The efforts of governments to expand the mechanization of their agriculture, as desired by a great number of farmers, are evidenced both by the establishment of special services for this purpose, and by facilitating imports and purchases of farm machinery, in spite of serious foreign exchange difficulties.

According to recent estimates, the total number of tractors in use in Latin America increased by about 21,000 between 1948 and 1949. Table No. 4 gives the details of this increase per country, as well as the ratio of the number of tractors in both these years to total cultivated area in 1948.

At present, efforts for mechanization of agriculture are particularly important in the Republic of Argentina as the farm machinery of that country has had very little replacement since before the war and there is actually a severe shortage. It is understood that to recover the 1938 level it would be necessary to import approximately 27,500 tractors and 35,000 harvesters; there is also a shortage of slightly over 500,000 plows and about 200,000 seeders. In an effort to alleviate this shortage, beginning with 1950,

---

\*An agency of the Paraguayan Government for cooperation with the Institute of Inter-American Affairs.

Table No. 4.--Number of tractors in Latin America in 1948 and 1949 and their ratio to cultivated area

Country	Number of tractors in Latin America in 1948 and 1949 and their ratio to cultivated area			
	Estimated number of tractors in use <sup>a</sup>		Estimated hectares per tractor <sup>b</sup>	
	1948	1949	1948	1949
Argentina	18,777	23,910	1,237	972
Bolivia	579	603	690	567
Brazil	4,672	6,189	3,287	2,482
British Guiana	...	170	...	471
Chile	4,143	5,046	493	415
Colombia	2,795	3,214	969	843
Ecuador	549	594	1,333	1,232
Paraguay	5	138	6,072	2,420
Peru	2,343	2,491	647	609
Uruguay	2,890	7,005	512	211
Venezuela	4,403	5,448	180	134
British W. Indies	...	600	...	333
Costa Rica	392	372	1,096	1,156
Cuba	3,515	4,975	560	396
Dominican Republic	297	419	2,289	1,622
El Salvador	298	304	2,594	2,543
Guatemala	631	639	1,572	1,552
Haiti	44	40	9,545	10,500
Honduras	233	279	1,630	1,362
French W. Indies	...	165	...	313
Mexico	17,035	21,964	434	337
Nicaragua	255	315	1,690	1,587
Panama	268	283	455	431
Total	64,174	85,163	967	734

...Not available

<sup>a</sup>Estimated inventories at the beginning of 1948 and 1949. Excludes garden tractors where these can be distinguished. Includes wheel and crawler tractors for all purposes, including, non-agricultural uses.

<sup>b</sup>Estimated ratio of numbers of tractors in use to area cultivated in 1948.

Source: 1948 numbers, Joint ECLA-FAO Working Party Report; 1949 numbers, Progress and Economic Problems in Farm Mechanization, FAO, August 1950.

the Argentine Government set aside in its foreign exchange budget US \$27 million per year; US \$20 million for the purchase of agricultural machinery in the United States and seven million in European countries. In addition, US \$15 million of the US \$125 million Export-Import loan will be used for the purchase of farm machinery. Also, bilateral trade agreements have been signed, specifically with England, France, Italy, and Czechoslovakia, which contain clauses providing for the supply of agricultural machinery.

The Argentine government is paying special attention to the lack of maize harvesters, since the manpower shortage is a severely limiting factor in the production of this cereal. Experiments have been conducted in adapting machines to maize growing conditions in the country. This type of experimental work and the general encouragement of the mechanization of agriculture are fundamentally the responsibility of the Instituto de Ingenieria Rural (Rural Engineering Institute) of the Ministry of Agriculture.

In Brazil, as a consequence of the rapid development of industry and the migration of population to the urban centers the problem of the manpower shortage in that country also has to be solved. Despite foreign exchange difficulties, the Federal Government has tried to extend every possible facility for the importation of farm machinery. The total

tonnage imported in 1949 amounted to 18,132 metric tons, against only 8,965 imported in 1948. According to official statistics, 2,001 tractors entered the country in 1949. In order to train a sufficient number of operators to use farm machinery properly, the Rural Engineering and Tractor Operator Center was established in 1947 at the Ipanema farm in the State of Sao Paulo in cooperation with the United States Department of Agriculture. The main purpose of this center is the training in rural engineering of agronomists who in turn train men in the same center to operate tractors. Using Ipanema as headquarters, they intend to expand this interesting and novel method, establishing two regional centers for the training of tractor operators, 23 centers for the repair of farm machinery and 120 mechanized farms to serve as demonstration centers.

Another program under way, which is also intended to promote the mechanization of agriculture, consists in the organization of the "mechanized patrols". These patrols set up by the agricultural development sections of Rio Grande do Sul, Sao Paulo, Minas Gerais, Bahia, Sergipe and other States are to perform soil preparation work, help with ploughing, planting and other tasks, for which assistance the farmers are required to pay a reasonable rate. For the same purpose of promoting mechanization of agriculture, the Cartera de Credito Agricola e industrial (Agricultural and Industrial Credit Office of the Bank of Brazil) has substantially expanded its loans for the purchase of farm machinery. The number of these loans increased from 64 in 1948 to 498 in 1949 and the amount of the loans rose from 6 million to 52 million cruzeiros.

To meet the farmers' demand for the importation of farm machinery, the Caja de Credito Agrario of Colombia in 1949 contracted a loan for US \$5 million with the International Bank for Reconstruction and Development. The machinery purchased with these funds is already being delivered to farmers but the demand is so great that the entire loan obtained has already been used and applications from farmers considerably exceed the number of machines purchased. In fact, in order to satisfy the demand of the producers an additional US \$5 million will be required in the immediate future, and arrangements are being made with the Export-Import Bank for at least a partial financing. In order to promote farm mechanization, the Caja de Credito Agrario gives credit up to 60 percent of the value of the machinery to farmers for a two-year term. It should be noted that this institution has no farm machinery centers or repair shops because it has followed the policy of leaving the mechanization of agriculture to private enterprise. However the Ministry of Agriculture and Animal Husbandry has set up small centers in connection with the technical-administrative offices of this branch of the government. The total number of machines in these service centers was 230 in 1949, as compared with 143 in 1948. The program for 1950 envisages the purchase of farm machinery up to the amount of one million pesos, with the specific purpose of supplementing equipment already in use.

Programs for mechanization of agriculture in Chile are the special responsibility of the Development Corporation, which maintains two sections for this purpose. The farm machinery section of the Corporation is concerned mainly with the importation of equipment and the financing of purchases abroad. In 1949, the Corporation used a loan of US \$2.5 million made by the International Bank, and a credit of US \$0.9 million granted directly by machinery manufacturers to import the following equipment during the crop year 1949/50: 350 Trailers, 703 Tractors, 105 Harrows, 112 Harvesters, 177 Combines, 152 Hay presses, and 34 Sprayers.

Although this year no international agency has granted any credits to Chile for the purchase of farm machinery, that country is dealing directly with manufacturers to obtain US \$4 million credit. Furthermore, this year 300 tractors with all auxiliary equipment were imported from France, on the basis of a 300 million franc loan by a French bank.



The Servicio de Equipos Agrícolas Mechanizados (Service for Mechanized Farm Equipment) of the Development Corporation is continuing its program of promoting the intensified use of farm machinery. For the crop year 1949/50 this agency has a total of 197 tractors, 180 harvesters and all supplementary equipment for these machines. Eleven machine centers are now operating under this program. This service also performs clearing operations on new land by felling and removing trees, and helps train tractor operators and mechanics who are given instruction for a six-month period at the various training centers established cooperatively with the Army.

One interesting phase of the development of agricultural mechanization in Ecuador is the establishment under official auspices of the enterprise called "Mechanized Agricultural Services, Incorporated", organized by the International Basic Economy Corporation. The capital subscribed for this enterprise by the IBEC amounts to US \$100,000 and the corporation hopes to obtain an additional US \$250,000 credit from the Export-Import Bank of the United States. This company will help farmers prepare their land, with special attention to rice-cultivation on the coast of Ecuador.

Under the auspices of the Economic Cooperation Administration of the United States (ECA), research on the mechanization of rice cultivation has been conducted in British Guiana, supplementing irrigation plans for approximately 33,400 hectares along the coast of this British colony.

The Servicio Cooperativo Interamericano de Produccion de Alimentos in Peru has continued to expand its cooperative farm machinery services in various parts of the country, especially along the coast, where it may be possible to mechanize the entire area of approximately 0.5 million hectares now under construction.

The Dominican Republic is continuing to implement the farm mechanization plan prepared by the Ministry of Agriculture of that country. The agency concerned expects to make available to farmers a total of not less than 300 tractors in a short period.

The mechanization of agriculture in Mexico received a strong impetus from the loan of US \$5 million extended to that country by the Export-Import Bank in 1948. It is specifically the function of the National Farm Credit Banks<sup>1</sup> to implement programs for farm mechanization, apart from the natural expansion in the use of machinery on private farms. It should also be mentioned that for administrative reasons the farm machinery centers which the Banco Nacional de Credito Ejidal (National Bank for Communal Credit) formerly operated have been discontinued and that this centralized type of activity has been transferred to private enterprise, which is actually increasing these activities rapidly. Of course this does not affect credits for the purchase of machinery granted to small farmers by this bank. Due to the rise in the price of gasoline and the devaluation of the currency, the progress in mechanization was slowed down in 1949, the number of tractors imported declining by approximately 23 percent from the record number of 6,844 imported in 1948. An assembly plant built by the International Harvester Company in northern Mexico contributed, to a limited extent, to a counter-balancing of the reduced imports.

According to the 1948 report of the Banco Nacional de Credito Ejidal, the amount of machinery and other equipment made available to the Farm Credit Organizations (Sociedades de Credito) has increased considerably during the past few years. For instance, the number of tractors increased from 1,094 in 1945 to 2,171 in 1948 and the

---

\*An agency of the Peruvian Government for cooperation with the Institute of Inter-American Affairs.

<sup>1</sup>Banco Nacional de Credito Ejidal y Banco Nacional de Credito Agricola y Ganadero.

number of cultivators from 25,553 to 36,743. In 1949 the Banco Ejidal put an additional 555 new machines into operation which made possible the mechanized cultivation of 99,900 hectares. The program for 1949 was financed with US \$1.25 million of a US \$5 million loan from the Export-Import Bank. This represented 64 percent of the total cost of the program (16.2 million Mexican pesos). The remainder was furnished by local Banks and farmers. For 1950 a program is under study which calls for the investment of 50 million pesos. This program would include the purchase of 1,126 units of new equipment making possible the cultivation of approximately 203,000 hectares.

On the other hand, the Banco Nacional de Credito Agricola y Ganadero, which is emphasizing expansion of farm equipment loans, authorized credits of 9 million pesos for the purchase of tractors and about 3 million pesos for other farm machinery and equipment in 1948 a total higher than in 1947. No details are available as to the number of machines actually in operation. There are also no data on the 1949 operations of the Bank in this respect nor on plans for 1950. In 1949 the Banco de Credito Agricola disposed of another fourth of the US \$5 million Export-Import Bank loan. It is worth noting that the remaining US \$2.5 million not used by the two banks mentioned were employed in the purchase of machinery by private individuals through private banking facilities.

The number of tractors in use in Uruguay increased considerably between 1948 and the end of 1949, as is shown in Table No. 4 and it is estimated that at least 8,000 tractors will be in operation by the middle of 1950. Consequently the degree of mechanization changed from one tractor per 512 hectares under cultivation, at the beginning of 1948 to one tractor per 211 hectares in 1949 and 186 in 1950. The Government of Uruguay is interested in aiding farm mechanization and in removing from service approximately 200,000 draft oxen and 100,000 work horses which are still used on farms. Doubtless, since the process of mechanization of commercial farms is well advanced, the main concern of the Government will be to ensure the best use of the types of farm machinery now employed and the intensification of the use of machinery for forage crops.

In Venezuela the mechanization of farming is progressing at an accelerated pace, stimulated by the backing of the Ministry of Agriculture, the Agriculture and Livestock Bank, and the Venezuelan Development Corporation. To illustrate, the Venezuelan Development Corporation in its budget for the fiscal year 1949/50 set aside a sum of 4 million bolivars for loans to private farmers for the purchase of agricultural machinery. The Agricultural Machinery Service of the Ministry of Agriculture believes that the first phase of the mechanization of agriculture, i.e. the popularization of the use of mechanized equipment, has already been accomplished; therefore, it is now concentrating on the improved use of machinery by training tractor operators and mechanics, particularly at the machine center at Boca del Rio. Also important is the work being done by the Rural Welfare Commission set up by the National Agrarian Institute in cooperation with the American International Association. The Rural Welfare Commission has established a few machine centers, the largest of which is at Guacara. The total number of tractors with full equipment available at the Guacara center is 44. At this center, farm machinery operators are being trained with the idea of subsequently giving them their own land to farm. As for the repair shops, the farm equipment service of the Ministry of Agriculture is applying the policy of encouraging private persons to establish workshops to replace the present public ones.

## CHAPTER III

### AGRICULTURAL PROGRAMS AND INCREASED YIELDS

Apart from increasing the area under cultivation, a general increase in production can also be obtained through raising yields. This at the same time depends on the rate of improvement of techniques in agriculture and animal husbandry. Without a complete appraisal on the progress of government programs and their probable effect on production, it is difficult to make an analysis of this matter. Such an analysis would need to be based on a comprehensive survey including official programs regarding the use of improved seeds and breeding stock, fertilizers and other agricultural requisites, and also agricultural research and extension. FAO, at the request of the Latin American Regional Meeting and the FAO Conference in 1949, has been assembling information regarding the use of fertilizers, and a report entitled "Latin American Fertilizers Supplies and Resources for Improving the Supply," dated 5 April 1950, has been prepared and circulated to governments. With respect to other aspects of the problem a brief mention of the work which is being done follows. It should be noted, nevertheless, that because of the lack of the above-mentioned survey this review is not complete and only illustrates the kind of programs being conducted in the region.<sup>1</sup>

#### 1. Production and Use of Commercial Fertilizers

In recent years there has been an upward trend in the production and consumption of fertilizers in Latin America. Nevertheless, the estimated consumption of 262,500 tons of plant nutrients in the form of commercial fertilizers in 1950/51, in the 19 countries of Latin America, is quite inadequate. Much larger tonnages from all available sources, natural organic and commercial fertilizers, are needed if the low average crop yields are to be raised to a more satisfactory level.

Definite progress in larger and more efficient production of plant nutrients from all available sources is being made in many countries in the area. The equivalent of many millions of dollars is being invested. Among the more important enterprises is a plant now under construction in Mexico for the synthesis of ammonia and the production of ammonium sulphate (plant capacity 14,000 metric tons of nitrogen (N) per year). It is expected to start production in 1951. It will utilize the gas from the petroleum wells of Poza Rica. Brazil is investigating the possibility of increasing the production of both nitrogenous fertilizers and phosphatic materials. New plants for the production of superphosphate have been built. Resulting from long continued research, Chile is now carrying out extensive enterprises for the more complete recovery of nitrogen from the original nitrate ores.

---

<sup>1</sup>Not included, for instance, are recent experimental accomplishments of the Inter-American Institute of Agricultural Sciences at Turrialba, the OFAR experiment stations, the Imperial College of Trinidad and also some experiment stations in countries such as Haiti, Jamaica and Puerto Rico. A reference to some of this work is made in the OAS documentation for the Fourth Inter-American Conference on Agriculture.

Much work is also being done in the production of plant nutrients from organic materials. The more efficient production and marketing of guano is being carried out in Peru, Chile, and Ecuador particularly. New mixed fertilizer plants are characteristic of some areas, as, for instance, in Colombia where a new plant with a capacity of 50 tons a day was opened in 1949. A new phosphate plant is also being built in Argentina. Cuba is undertaking the increased manufacture of commercial fertilizers, including ammoniated phosphates.

Increasing the efficient use of commercial fertilizers. In increasing the use of commercial fertilizers the high delivered farm price, relative to the prices the farmer receives for his crops, is often detrimental to their increased use. This is particularly the case with many food crops. Reduction of the delivered prices is an important problem needing to be tackled in most countries in the area where fertilizers are used or should be used. Reduced prices can be expected as volume increases and facilities for credit, transportation, and many other aspects of distribution are studied and solved. These matters are under study in many countries.

Fertilizers are not used very widely in Mexico. On the Meseta Central (Central Plateau), the gross income from a hectare cultivated to maize is estimated to be about 250 pesos. In this case the high cost of fertilizers renders its use prohibitive. Despite this, the public officials, who are most aware of the value of fertilizers, are encouraging their use; first, by making fertilizers available at more reasonable prices, and secondly, by educating farmers as to their value. For the former purpose, the Government has established the official concern "Guanos y Fertilizantes de Mexico S.A." which is now operating several factories manufacturing lime superphosphate with phosphoric rock imported from Florida and sulphuric acid produced locally. The firm does not sell simple fertilizers but elaborates balanced formulae (including nitrogen, phosphorus and potash) according to soil composition and the crop raised.

In promoting the use of fertilizers among farmers, the Ministry of Agriculture has demonstrated some interesting facts concerning the value of the use of fertilizers on various crops, and it is conducting research on the economic use of nitrogenous fertilizers in the rainlands, particularly for maize. For this crop an increase in yield of 400 kilograms per hectare would be required to cover the present cost of the fertilizer and the labor and handling involved. This indicates the need for extreme caution in popularizing the use of fertilizers under such unfavorable conditions, and the need for experimental research to determine conditions under which fertilizers can be profitably used, particularly in view of climatic factors.

In Colombia the task of the Caja de Credito Agrario Industrial y Minero through its Agricultural Supply Office is to promote the use of fertilizers on a commercial scale. The consumption of fertilizers has increased considerably, although 98 percent of these fertilizers is still used only for potato cultivation. In 1945 fertilizers were not in use in Colombia, except in the provinces of Cundinamarca and Boyaca, where between 2,000 and 2,500 tons of fertilizers were used that year for potatoes.

The Soil and Fertilizer Section of the Department of Agriculture is also experimenting with the use of fertilizers, particularly for potatoes, in Medellin. In Palmira some experiments on rice cultivation have been made but without significant results. No definite conclusions can yet be drawn from the research in Medellin on its use for maize production.

The policy of supervised credit, which was put into practice in some parts of Venezuela by the Venezuelan Development Corporation, quickly increased the use of fertilizers, particularly in rice, potatoes, and maize fields; for this purpose the Corporation

has undertaken the importation of large quantities of fertilizers in order to distribute them to local farmers at cost price. At the same time the Ministry of Agriculture, through the Banco Agrícola y Pecuário, is continuing to import fertilizers for sale at cost price to other farmers, especially those engaged in truck gardening; it is calculated that during the year 1949 about 6,000 tons of fertilizers were imported - raw materials such as ammonium sulphate, Chilean nitrate, ammonium phosphate (formula 12-60-0), and various potash salts. The same quantity will be imported this year and a progressive increase is expected.

The Instituto de Economía Agrícola of Chile through its Fertilizer Section has continued its campaign of increasing the extraction of fertilizers from the so-called "covaderas" or guano deposits in the northern portion of the country. The Institute is studying a process discovered by a Chilean chemist to concentrate guano phosphates. For this purpose it is now constructing an experimental factory to operate commercially, at a cost of 2.5 million pesos, to treat 10 tons of guano daily. The Institute is also investigating the possibilities of lowering the operating costs of phosphate fertilizer plants, using bones as raw material.

Promoting the use of fertilizers in Argentina is the special function of the Fertilizer Service of the Instituto de Suelos y Agrotecnica of the Ministry of Agriculture. The programs of this Agency include preparation of the soil map of Argentina. The Institute has drawn up a general plan for a systematic soil survey. Still, government programs do not actively sponsor the increased use of fertilizers, except for the experimental work being done in this connection and the inclusion in a government plant of the present Administration of a project for the manufacture of ammonium fertilizers.

In Uruguay the Experiment Station at La Estanzuela is continuing its research on the use of fertilizers, a problem in which the Office for Soil Classification and Conservation of the Ministry of Agriculture also participates, but apparently there is no well-developed government policy in the matter of fertilizers. The Government exercises strict control over the fertilizer trade, but a draft law on fertilizers is still awaiting legislative approval. Several new fertilizer manufacturing plants are being erected by private concerns and the one nearing completion will have a daily capacity of 150 tons of superphosphate and ammonium phosphate. Since the fertilizer industry has to obtain its supply of raw materials from abroad, the recent discovery of a deposit of low-grade phosphates in the Minas area is of special significance.

In Peru, the major consumer of fertilizers in the region, the Compania Administradora del Guano, reports that in 1949 the record extraction of rich guano from the coastal islands amounted to 191,773 tons. This is a result of the program of protection of the guano-producing birds and the conditioning of certain islands and spots along the coast for preserving the guano-deposits; good climatic conditions were a contributing factor. Nevertheless, since the local supply of fertilizers is still only about 50 percent of the demand, the manufacture of synthetic fertilizers, especially ammonium chloride using as a basis the salt deposits on the Peruvian coasts, is being considered.

The experiment stations of Brazil continue their research which will be used in the programs for promoting the utilization of fertilizers and manures throughout the country. This problem deserves great attention in order to place farming on a more scientific basis in the producer regions and abandon the prevailing systems of shifting cultivation. The importation of fertilizers is expanding rapidly following the reduction of imports in 1948. In 1949 imports totaled 126,731 tons, as compared with 99,177 in 1948.

The great shortage of phosphorus in the soils of Ecuador has brought about a gradual increase in the use of this fertilizer. The official "Foscatol" factory of La Libertad is producing fertilizer which is very useful and highly valued. Several projects to utilize the waste from fish canneries as animal feed and as fertilizers are now under study. The Ministry of Economy and the National Development Institute are charged with implementing programs for the increased use of fertilizers in this country and the Chilean Nitrate Company is collaborating in the research and in the popularization of the use of nitrates.

With respect to increasing the use of commercial fertilizers in other countries, it is important to note that in all of them measures are being taken to encourage their importation and greater use in food production. More complete information on this subject can be obtained from the Report of the FAO/ECLA Joint Working Party on Agricultural Requisites in Latin America.

## 2. Improvement of Crop Varieties.

Work in this field is along several lines, including both experimental research and extension service work. The following paragraphs mention instances of this type of activity and the results achieved in some Latin American countries. As previously indicated, these statements are not a complete survey.

The Department of Agriculture of Columbia is in charge of experimental research for the improvement of the many varieties of cultivated plants. The Experiment Station at La Picota, for example, experiments with the cereals grown in cold climates, particularly wheat. It is also making flour tests to relate the experimental work to bread-making qualities of the wheat varieties being tested.

In order to improve cultivated cereals, the Government recently, (December 1949), signed a contract with the Rockefeller Foundation for that agency to provide specialists on particular crops, especially in the genetics of maize, wheat, and other cereals. These specialists were expected to begin their work in Columbia soon.

In the same agricultural area and as close to Bogota as the Picota Station, the Usme Experiment Station has been set up for work on potatoes. This station is beginning its second year of experimental work. The experiments which are being conducted cover all aspects of potato cultivation, from the selection of improved varieties to the determination of the best farming methods. The research on problems of plant pathology is of particular significance. Although experimentation with potatoes is the main work of this station, it also conducts research on other crops of the high "Los Paramos" zone such as cereals, and garden vegetables.

At the Temperate Climate Station in Medellin, research is being conducted on improved varieties of maize and beans particularly. Research on the crossing of strains and varieties is being done to study the capacity of combination of the cold climate strains. Experiments on the self-pollination of maize to obtain hybrid and synthetic varieties which can be grown in cold climates are also under way; for this purpose laboratory selection of ears of corn is done on the basis of appearance of both the ear and of the kernels and other factors. As for beans, individual selections of commercial varieties are being made, attention being paid to yield and to disease resistance. In fruit orchards, comparisons of commercial varieties of oranges of different plantations are being made; at present eight varieties grafted on lemon are being studied. Similar studies are being made for commercial varieties of tangerines, lemons, and grapefruit. Also under study is the acclimatization of varieties of citrous fruits, for which purpose a collection has been made of 156 citrous species propagated on sour orange and lemon trees.

Table No. 5.--COMMERCIAL FERTILIZERS: NITROGEN - Annual Production and Consumption in Latin America including projections for 1950/51

Country	PRODUCTION			CONSUMPTION		
	1948/49	1949/50	1950/51	1948/49	1949/50	1950/51
	(.....metric tons N.....)					
Costa Rica				820	850*	850*
Cuba				9,090	10,270	14,480
Dominican Republic				790	210	1,400
El Salvador				300	390	400*
Guatemala				540	600*	600*
Honduras				1,620	2,000*	2,000*
Mexico	600	600	10,350	5,750	4,900	6,210
Panama				840	1,000*	1,000*
British Possessions				5,220	5,630	6,170
Total Central America and Mexico	600	600	10,350	24,970	25,850	33,110
Argentina				5,630	6,000*	6,400*
Bolivia				10	20	40
Brazil <sup>a</sup>	860	860	860	6,990	7,330	9,310
Chile	275,270	277,250	289,600	8,140	8,140	8,140
Colombia				1,180	1,500	2,500
Ecuador				140	150	180
Peru	22,210	24,990	26,500	26,380	26,590	31,500
British Possessions				2,230	2,270	2,410
Uruguay				190	250*	300*
Venezuela				1,100	1,200	1,200*
TOTAL LATIN AMERICA	298,940	303,700	327,310	76,960	79,300	95,090

<sup>a</sup>Revised figures.

Source: Commodity Reports, Fertilizers, No. 1, FAO, September 12, 1950.

NOTE: Date transmitted by Governments.

\*Non-official figures derived from commercial sources, etc., which are subject to correction.



Table No. 6.--COMMERCIAL FERTILIZERS: TOTAL PHOSPHORIC ACID<sup>a</sup>  
Annual Production and Consumption in Latin America  
including projections for 1950/51

Country	PRODUCTION			CONSUMPTION		
	1948/49	1949/50	1950/51	1948/49	1949/50	1950/51
	(.....metric tons P <sub>2</sub> O <sub>5</sub> .....)					
Cuba	5,080	3,630	7,240	11,010	10,410	20,210
Dominican Republic				800	240	1,500
El Salvador				220	220*	220*
Guatemala				800	800*	800*
Mexico	4,000	7,800	7,800*	7,200	4,000	7,600
British Possessions				360	360	450
Other Central American countries				500*	500*	500*
Total Central America and Mexico	9,080	11,430	15,040	20,890	16,530	31,280
Argentina	5,000*	5,000*	9,000*	6,500*	6,500*	6,500*
Brazil <sup>b</sup>	5,500	5,500	13,200*	12,360	13,680	22,000*
Chile	14,290	14,330	14,330	22,570	24,730	25,380
Colombia	160	200	300	1,620	3,500	6,000
Ecuador	360	420	420*	550	1,000	1,500
Peru	16,820	19,430	21,290	16,820	19,430	21,340
British Possessions				520	910	610
Uruguay	300	300	300*	1,500*	1,500*	1,500*
Venezuela				450*	450*	450*
TOTAL LATIN AMERICA	51,510	56,610	73,880	93,780	88,230	116,560

<sup>a</sup>Excluding powdered phosphorous.

<sup>b</sup>Revised figures.

Source: Commodity Reports, Fertilizers, No. 1 FAO, September 12, 1950

NOTE: Data transmitted by Governments.

\*Non-official figures derived from commercial sources, etc., which are subject to correction.

In Curacao, Dutch West Indies, the production of phosphorite amounted to 63,500 tons in 1948/49 and in 1949/50, and is expected to reach 90,000 tons in 1950/51.

Table No. 7.--COMMERCIAL FERTILIZERS: POTASH - Annual Production and Consumption in Latin America including projections for 1950/51

Country	PRODUCTION			CONSUMPTION		
	1948/49	1949/50	1950/51	1948/49	1949/50	1950/51
	(.....metric tons K <sub>2</sub> O.....)					
Cuba				6,170	4,590	7,550
Dominican Republic				180	30	230
El Salvador				220	250*	250*
Guatemala				5,000	5,000*	5,000*
Mexico				850	530	1,340
British Possessions				4,210	4,100	4,990
Other Central American Countries				550	600*	600*
Total Central America and Mexico				17,180	15,100	19,960
Argentina				1,600	1,600*	1,600*
Bolivia				20	20	20
Brazil <sup>a</sup>				7,820	10,540	13,000*
Chile	5,360	6,110	6,790	4,830	4,830	4,830
Colombia				2,370	3,000	4,500
Ecuador				190	200	250
Peru	4,280	4,990	5,320	4,500	5,070	5,420
British Possessions				890	800	580
Venezuela				620	650*	650*
TOTAL LATIN AMERICA	9,640	11,100	12,110	40,020	41,810	50,810

<sup>a</sup>Revised figures.

Source: Commodity Reports, Fertilizers, No. 1 FAO, September 12, 1950.

NOTE: Data transmitted by Governments.

\*Non-official figures derived from commercial sources, etc., which are subject to correction.

At the Experimental Farm at Palmira, studies of wide scope on rice, fruit, maize, beans, sugar cane, and other crops are being conducted, in addition to entomological studies, and work in plant pathology, chemistry and soil research. For rice, genetic improvement programs are under way; in fruits, especially citrous plants, comparisons between different varieties of sweet oranges are being made. The output obtained from varieties of sugar cane is being studied by means of individual crosses and subsequent testing of the progeny.

The Agricultural Station of Armero has continued its experimental work on cotton. The Station is interested in evolving a longer staple cotton than that now cultivated. The Station is also working on the growing of double hybrids, synthetic varieties and other types of improved maize. In this connection also, research on the acclimatization of several varieties of sesame are being conducted and fruit studies are also under way.

At the Station of Magdalena, Aracataca, which was established about the middle of last year, experimental work on sesame, cotton, rice, maize and fruits is being done, and entomological research is being conducted.

The experimental work mentioned above has already produced important results, but it is hoped that in the coming years even better results will be obtained. Official estimates for 1952-53 reflect the expected influences of this work on yields of various crops. Improvement of yields as a result of these research programs would not be expected, of course, to have any large effect on the total production of crops in Colombia within such a short period.

The National Institute of Agriculture of Venezuela, which is undertaking experimental work on the improvement of crop varieties, has continued its work relating to maize, sugar cane, rice, sesame, and other commodities. The maize variety called "Sicarigua", appears to be excellent and large-scale experiments will be conducted to compare it with all other varieties selected so far by Experiment Stations. As for sugar cane, ever since the adaptability of the various imported varieties was proved, crosses have been made to evolve new strains.

At the same time, the Service for the Distribution of Seeds, Fertilizers, and Pesticides of the Division of Agriculture is continuing its program to provide farmers with these basic production needs. The Division is continuing to import seed potatoes on a large scale and plans to expand this program to a point where production of potatoes will be adequate for consumption purposes. The Government in its plans for the supervised production of rice has authorized the Development Corporation to purchase 1.2 million kilos of seed for this year's planting alone; 356,000 kilos were imported from Louisiana, mainly the Zenith and Fortuna varieties. The importation of maize seed, sesame seed, cottonseed, etc., is also being continued on an increasing scale to supply the demand. Also under study is the possibility that the Government may authorize special financial backing to private companies under the supervision of the Ministry of Agriculture to promote large-scale seed production, especially rice, maize, sesame and peanut seed. The importation of vegetable seeds through the Ministry of Agriculture will be continued on an increasing scale.

The same policy followed with fertilizers is being followed with respect to insecticides, fungicides, and herbicides. Practically speaking, the insecticides being imported are all of organic origin, DDT being among the foremost. During 1949 it is reported that about 300 tons of DDT and toxaphene were consumed in the country for agricultural use; for 1950, requests for 550 tons of DDT and about 100 tons of other organic insecticides have already been received. As in the case of fertilizers, pesticides and fungicides are sold to farmers at cost price.

The increased yields of various crops, which can be expected from the completion of the programs of the Ministry of Agriculture, have been taken into account by Venezuela in their estimates for 1952-53. These increases are not expected to be very substantial at this stage in the improvement of cultivated varieties.

The Department of Agriculture of Mexico is continuing its program to obtain increased yields per area of the principal crops. For this purpose it has two programs, one being carried out by the Instituto de Investigaciones Agricolas and the other by the Special Research Commission of the Rockefeller Foundation.

The work of both organizations directed toward increasing maize yields is already well-known. The Special Research Commission is working to improve hybrids for adaptation to the four zones in which the farming area of Mexico may be divided, namely: the Tropical Zone with altitudes up to 1,200 meters; the Bajio zone, altitude: 1,200 to 1,800 meters; North Bajio, altitude, 1,800 to 2,100 meters; the Central Plateau, altitude, 2,100 to 2,600 meters.

Also, the Comision Nacional del Maiz is carrying out a program to distribute hybrid maize seed commercially. The success achieved by this Commission is truly remarkable. Maize production has been increasing due to increased yields obtained primarily through the expansion of the area in which both seed of hybrid maize and maize of improved "free pollination" have been sown. In 1949 a total of 2,500 metric tons of improved seed was distributed, of which approximately 75 percent consisted of hybrid maize. This quantity was sufficient to cover about 10 percent of the maize area of the country. For 1952, this percentage is expected to increase to about 15. This would raise the average yield throughout the country by approximately 40 kilos per hectare, an increase which is taken into account in the official production estimates for the year mentioned.

The Comision Nacional del Maiz has an annual budget of four million pesos and operates as a commercial company, although the entire capital is provided by the State. Among its most important recent achievements is the erection of the Gabriel Ramos Millan Plant for the classification of improved maize seed. This ultra-modern plant is located in the town of Cortazar, State of Guanajuato, and its total cost will be about two million Mexican pesos. The plant began operations early in December, 1949. It consists of three main buildings with auxiliary installations, and demonstration fields. The plant capacity is from 35 to 40 metric tons of classified and disinfected seed every sixteen hours. It has sixteen dessication chambers with a capacity of 24 to 26 tons each for drying maize on the cob. The plant will undertake experiments with chile, alfalfa, and garlic seed, and will also be expected to publicize the use of fertilizers as a part of the Agricultural Extension Work of the Comision.

As regards the future activities of the Comision, it is important to note that this agency does not believe that it is possible to speed up its program substantially because complex social and economic factors intervene. The Comision believes that it could double its present efforts if it had an additional four million pesos at its disposal. There is a demand for improved seed in other regions - Yucatan, Vercruz, etc., which the present supply of commercial seed is inadequate to meet. Nevertheless, it has to proceed cautiously to avoid failures and believes that it should continue its work along three basic lines, namely, research, demonstration, and the commercial production of seed.

Other crops on which research is being conducted in Mexico are wheat, beans, rice, sugar cane, potatoes, sesame, cotton, cacao, and other minor crops.

The Departamento de Investigaciones Agrícolas of the Ministry of Agriculture of Chile is continuing experimental research on improved seeds. This year this Department has furnished farmers with a good supply of improved seeds. Among them should be mentioned the Uruguayan wheat called "Litoral Precoz", which produces excellent yields in the central part of the country, hybrid maize No. 4193, and the new species of forage plants which are intended to increase the carrying capacity of the pastures in the extensive dry farming areas of the country.

Chile is also continuing experiments on the cultivation of sugar beets which are successfully used as a forage and in which livestock raisers are interested since it provides an excellent winter forage for the southern part of the country during the season when pasture feed is scarce. The Development Corporation is performing research on the feasibility of producing and using beets for the manufacture of sugar in Chile.

In Brazil improvement of agricultural technique is the responsibility of the Serviço Nacional de Pesquisas of the Ministry of Agriculture. Special emphasis is given to increasing yields, by improvement of crop varieties, combating insect plagues and diseases, discovering improved farming methods and the application of fertilizers and manures. For these purposes, this Service depends on the Regional Agronomical Institutes in various localities of the Republic, which are conducting intensive experimental work through their network of specialized stations. Research on the improvement of cultivated species of cotton, sugar cane, maize, wheat and beans deserves special mention. Among these is a hybrid sugar cane variety, CB-36-24, which has produced higher yields than the renowned POJ-28-78 varieties. Hybrid varieties of maize such as 53-31 have proved better than the well-known Catete variety.

In connection with hybrid maize it should also be mentioned that the Campinas Institute, the long-established experiment station of the State of Sao Paulo, has been doing very important work during the past few years. It is expected that this year at least 25% of the area planted to maize in the State will be sown with hybrid maize and that this percentage will be increased to 50 percent in 1951. The production of hybrid maize has expanded, although very slowly, to other States of the Federation. The Seed Section of the Ministry of Agriculture also plays an important role in this connection. It has established seed fields in the Federal District and the States of Rio, Santa Catarina, Parana and Matto Grosso. The original stock for these hybrids is obtained from the Ipanema Farm in the State of Sao Paulo, which now has cultivated plots covering approximately 300 hectares for the propagation of strains of hybrid maize. The penetration of hybrid maize into other States of the Federation will be slow, however. It should be mentioned that the usual policy in the distribution of seeds by the Ministry of Agriculture is to sell certified seeds at commercial prices in order to prevent their misuse.

In the experimental field, the work of the Campinas Institute in improving cultivated species of cotton should be mentioned. At present, 80 per cent of the cotton area of the State of Sao Paulo will be sown with the fast growing variety, I.A. Campinas-817, developed by this Institute. In Sao Paulo only the state may produce seed for all cotton growers, and the seed is produced in co-operatively cultivated plots established in conjunction with independent growers.

The Experimental Station of La Estanzuela in Uruguay, which has done excellent work in its 38 years of existence, has continued its scientific research in important phases of the improvement of farming methods in that country. Recently, it successfully adapted the Brazilian wheat varieties "Rio Negro" and "Frontana", developed on the basis of Uruguayan material which surpass in yield other varieties produced previously at the same Institute.

This station has also been successful in research on parasitic diseases of cereals, especially black rust, having produced seed resistant to this disease. Similarly, it was successful in the production of the so-called "industrial hybrids" of maize which are of excellent quality and produce high yields, and in the accumulation of genetic stocks of oats which have been used with great success in the experimental institutes of the United States.

Equally important are the experimental work and the conclusions reached on soil fertility, which have led to the discovery of the lack of phosphorus and calcium in many soils in that country. In this connection there was recently discovered the formation of large deposits of phosphorus which had been carried down 3 meters below the surface by water. This observation was the result of research done on water movements in the soil.

In a preeminently livestock country such as Uruguay, research on pastures is also extremely valuable. In this connection, the beneficial effect of the application of phosphorus on alfalfa has been definitely established. By intense fertilization with phosphorus, the life span of a plot of ground sown to lucerne or alfalfa, which is usually difficult to maintain for any length of time in Uruguay, has been increased to 3 or 4 years. Experiments have also been conducted on the association of pasture crops, leguminous plants and gramineous plants, and the effect of such an association on livestock nutrition.

In addition to the work accomplished at La Estanzuela, there is the work being done by the official Seed Distribution Service of the Ministry of Agriculture, which distributes among farmers improved certified seed produced at the Plant Technology Institute.

In Cuba, the Agronomical Experiment Station of Santiago de las Vegas, under the Ministry of Agriculture, is conducting experiments on potatoes, maize, rice, beans, citrus fruits, avocados, peanuts, soybeans, and tung. This Station is also conducting experiments on forage plants.

In rice experimentation, it is working especially with Louisiana varieties, having determined that the "Blue Bonnet" is the variety best adapted to conditions in that country. It has also successfully grown the "Rexoro" and "Nira" varieties which lend themselves to mechanized cultivation and flooding of the land. The "Honduras" variety, which is highly disease-resistant and has given the best yields ever obtained in that country, has one disadvantage - that it has to be reaped by hand. This station is also doing work on hybrid maize varieties, for which it has pure strains, but up until now no noticeable increase in yields has been obtained. It is also studying several potato varieties, the application of fertilizers to potato fields and the control of potato plagues and diseases. The Station is encouraging the cultivation of the forage species "Jaragua" and "Kudzu". This year, it also began distribution to farmers of "Elefante" grass, of which the Station has five hybrid clones.

Furthermore the Office of Agricultural Experimentation of the Ministry of Agriculture has set up four sub-stations to study problems pertaining to coffee and cacao. The Experiment Stations concerned with these crops are especially occupied with improving cultivation methods in general, soil conservation and genetics.

The agricultural experimentation work of greatest significance in Ecuador relates to tropical crops grown both for export and for domestic consumption. The Agricultural Experimental Station of Ecuador, which has been functioning for approximately six years under a cooperative agreement between the Governments of Ecuador and the United States, has developed important research projects on the asexual propagation of cacao varieties which produce high yields and are resistant to pod rot and witches' broom, and is also doing research on rubber, rice, and maize. These experiments are being

conducted at the Central Station at Pichilingue in the Province of Los Rios, and at local sub-stations at various places on the Ecuadorian coast. At present this experiment station, with the financial backing of the Instituto de Fomento de la Produccion, is organizing a large new experimental station in the Valle de Portoviejo, which will be devoted particularly to research on the growing of cotton, coffee, and oil seeds.

The Technical Agricultural Office also maintains several large experimental farms and nurseries for fruit and forest trees, located in various places throughout the country. The most important ones are the Experimental Farm near the National School of Agriculture of Quillan, which is making a special study of garden vegetable crops and the Farm at El Milagro, located in the main rice-producing area of the country, which is experimenting with various methods of cultivating this cereal.

The most important step in the progress of agricultural experiments in Argentina undoubtedly consists of the reorganization effected in various governmental services in compliance with Law 13,254 and Rules and Regulations No. 15,582. Also noteworthy is the establishment of a network of experiment stations as part of this Administration's program of work. By 1951, this network will include 23 regional experiment stations, that is, one for each of the Provinces or territories of the country. Their work will supplement that of the other central or regional stations already established. Since 1946, agricultural research (excluding livestock) has been carried on by the Instituto de Fito-tecnia which now has three main divisions: Vegetable Immunology, Exploration and Introduction of Plants, and Plant Genetics.

Among the agricultural research projects on cereals which deserve particular mention are those on a new wheat variety called "Klein Lucero" which will be sold commercially for the first time this year. Under experimental conditions, this variety has produced very high yields, even better than the "Klein Cometa", which together with the "Inca" variety is grown in most of the wheat areas of the Republic. They have also obtained high-yield hybrid maize of the "flint" variety such as "Santa Fe 3" and of the "dent" variety, "Santa Fe 250" and "300". Unfortunately, due to recent drought and hail destruction, a large quantity of the original material has been destroyed, and these Stations will have to repeat much of the work that had been begun. On the other hand, the Station of Villa Ortuzar has evolved a double hybrid wheat which surpasses the yield of the other types of wheat grown in Argentina by 80 per cent. High-yield sugar cane varieties have been produced at the experiment station of Villa Alberdi, and are being multiplied for distribution among growers. Successful attempts have also been made to evolve improved varieties of sugar beets and promising results have been obtained with certain varieties imported from Holland, such as Klein Warzleben and Svalof Ster, the latter being especially adapted to mechanized cultivation. Regarding cotton cultivation, mention must be made of the important experiments being conducted on the mechanical cotton harvester in the Argentine Chaco region.

With regard to forage crops, which are so important in the agriculture and livestock industries of Argentina, an alfalfa resistant to nematodes has been developed and is being reproduced on a large scale for distribution to farmers. Also of special importance is the selection of a black barley resistant to aphids in pastures sown with oats and the research done by the Institute of Plant Sanitation on insecticides for controlling this aphid which led the Institute to conclude that the most effective insecticide for this purpose is hexachlorocyclohexane applied with sprayers. This Institute has also achieved success in selecting rust-resistant oats. The Plant Technology Institute of Santa Catalina has also developed strains of double hybrid maize resistant to adult locusts.

The Agricultural Experimentation Bureau of the Ministry of Agriculture of Peru with its network of experiment stations, and other private institutes belonging to the

Sociedad Nacional Agraria is trying to improve farming methods in the country. Among recent accomplishments is the development of new strains of cotton. These include SNA-246 which has already been introduced commercially and SNA-247, the seed of which is being placed on sale this year for commercial use. Also of great importance is the achievement of the Genetics Institute of the Sociedad Nacional Agraria in obtaining a fixed synthetically derived variety of maize by the hybridization of strains from various parts of the country, which on the Peruvian coast has produced yields from two to three times greater than ordinary seed.

The Agricultural Experiment Station of La Molina reports that it has successfully adapted sunflower varieties imported from the United States, Argentina and Uruguay. The ones which have proven best for sunflower seed production are the Klein variety and the No. 1 variety of the Faculty of Agronomy of Montevideo, and for the production of forage, the Large California and Gray Striped varieties. As for sorghum, the Northern Agricultural Experiment Station reports on the adaptation and advantages of the Dobbs variety derived from British East Africa.

Of equally great importance are the experiments with fertilizers and manures used in wheat cultivation on the Peruvian Sierra, from which significant conclusions have been drawn. One of their conclusions of particular importance is that applications of organic nitrogen products increase yields considerably whereas the application of phosphates is not deemed advisable from the financial standpoint because it will increase yields only slightly. Applications of potash and calcium have produced no appreciable effect.

Of great significance to the opening of eastern Peru to settlement is the work done by the Central Colonization Station at Tingo Maria in co-operation with the Office of Foreign Agricultural Relations of the United States Department of Agriculture. Crops on which experiments have been done are rubber, maize, rice, oilseeds and garden vegetables and significant results have been obtained in this field.

The Division of Agronomy of the Ministry of Agriculture of Costa Rica is doing important experimental work in improving plant varieties, introducing efficient farming techniques, etc., through its Sections on highland and lowland crops - coffee, sugar cane, tobacco, the soil section and others. It manages eight experimental fields located in various farming areas. As regards maize, research has already gone beyond the experimental stage and the distribution of certified seeds of proven varieties will start shortly. One of the most serious obstacles to the implementation of these plans is the shortage of technicians.

The Costa Rican Government carries on an extension program mainly on coffee, but most of the extension work is being conducted through STICA on the basis of cooperation between the Government and the Institute of Inter-American Affairs.

Research and agricultural extension projects in Bolivia are being executed cooperatively by the Government and the Office of Foreign Agricultural Relations of the United States Department of Agriculture (OFAR). In addition to existing stations, notably that at Cochabamba, three new experiment stations are being set up in Belen, Montana and Santa Cruz to work on a comprehensive plan. At each station, selective testing is done, experiments are conducted on the improvement of the most important regional crops and results obtained with fertilizers are checked. Among the crops on which experiments are being conducted are wheat, potatoes, barley and rye. The experiment station at Belen in the Lake Titicaca region has 120 varieties of wheat under observation, its main object being to find a variety resistant to "Puccinia glumarum". Rapid growth varieties which mature in 100 days in Canada, require 200 in Bolivia.



The Central Office for Irrigation has also conducted some experiments in Tacagua, in the Province of Oruro, which have shown that the wheat varieties best adapted to this region are the "Ciro Menoti" of Argentina and the "Melanopus" of Chile; both mature in about 125 days and give a yield of 2.5 tons per hectare on irrigated land. Some agricultural research is also being conducted by the Faculty of Agronomy of the University of Cochabamba.

### 3. Improvement of Livestock

The improvement of livestock production is a matter of constant concern to Latin American Governments. In the same manner as for other phases of agricultural improvement, mention of instances of important recent work in this field will follow.

The Division of Livestock of the Ministry of Agriculture of Colombia is working on the protection of animal health and improvement of livestock types. Its Pathology Section is continuing its sanitary campaign with a staff of 22 regional veterinarias. In these campaigns, the efforts being made to combat Bang's disease, cholera, rabies and ticks are especially noteworthy.

Programs for breed improvement are under way at the various livestock breeding and zootechnical stations of this branch of the Ministry of Agriculture. These programs include the crossing of imported types such as Brown Swiss, Durham, Aberdeen-Angus, Jersey, Holstein and Guernsey. Also of special significance are the crosses with zebu cattle, especially in the lowland regions where a high rate of impregnation has been attained. It is estimated that approximately 1/8 of the cattle herds of this country have already been crossed with pure imported breeds.

Also of great importance in the experimental work of the Livestock Division are the attempts at improving native "Criollo" types such as Blanco Orejinegro, Rojo Sinuano, Sanmartinero and Costeno con Cuernos. These types are particularly valuable because of their adaptation to local conditions. Research is being conducted with the "Criollo" cattle to develop some breeds for beef and others for milk.

The Division has also set up breeding stations for horses, goats, sheep and swine, where programs for the improvement of these species are being followed, as for example, selection of "criollo" horses and their cross breeding with Arab and English horses, crossing goats with Nubian and Granada species, and improving "criollo" sheep by crossing with Romney Marsh and Southdown. As regards swine, the best breeds are obtained from Duroc-Jersey, Berkshire and Poland-China; the process of selection of "criollo" species such as "Sungu Costeño" and "Congo Santandereano" has also been started.

The Asociacion Colombiana de Ganaderos, a long established society of Colombian livestock owners continues to work for the betterment of this industry and the protection of cattle raisers. It works to improve livestock breeds, for which purpose it holds regular contests and publicizes scientific advances in this industry by lectures, publications and other media. The Association is composed of several affiliated societies each specializing in the promotion of specific breeds.

The Division of Animal Husbandry and Sanitation of Chile, a branch of the Division of Agriculture, is pursuing its plan of work to improve livestock. Its most intensive activity at present is research on the nutritive value of forage crops. These studies have been going on for two years and tables showing the nutritive value of alfalfa and clover are being prepared. As for applied research on livestock-raising, work on the adaptation of breeds in the locality of Cabana and Valdivia region is being done with Brown Swiss

and Clavel Aleman breeds respectively. Also under study is the adaptation of the Hampshire Down breed in the Cautin area.

The co-ordination and centralization of the genealogical herd-books of the best livestock breeds raised by agricultural societies has been started under the supervision of their representatives and of the Ministry of Agriculture. The Bureau is also actively engaged in organizing veterinary services in the dairy co-operatives, for the purpose of controlling infectious diseases and improving dairy products. The price of milk, which is fixed by the government, includes an amount for the co-operatives which enables them to finance these services. This mechanism assists the dairy industry to meet the technological standards set by the Government. Research on feed rations for dairy herds and on herd management standards aimed at reducing the cost of production will be started shortly. On the other hand, the Agricultural Economy Institute is in charge of all activities provided for the Dairy Development by Law No. 8094. The official support given the dairy industry through this law includes subsidies granted to various milk producing organizations and credit extended to private individuals at a 5 per cent annual interest rate for purposes prescribed and regulated by the Institute itself.

The Livestock Bureau is also beginning a program of artificial feeding of heifers. Two years ago, the Government issued a decree to enforce the law prohibiting the slaughtering of cows; compliance with this order will make more heifers available for breeding purposes. Research on artificial insemination, especially of cattle, is also being conducted, but the Department encountered some difficulty when it tried to apply the methods used in countries like the United States and the United Kingdom, due to differences between their system of rural property holdings and that of Chile, where livestock-raising is almost always on a large scale. The great size of these Chilean enterprises makes co-operation among farmers and the manipulation of material difficult. Still, much is expected from this method and no doubt some way will be found to overcome the difficulties. Included in the Plan Agrario are programs for the development of the beef industry; unfortunately, these measures have not been carried out because of financial difficulties.

The Bureau is also continuing its program of improvement of sanitary conditions in livestock herds. This program, outlined five years ago, has been in application for the past two years. Special efforts are made to combat Bruceleosis which causes serious losses. Five provinces have already started a campaign to combat this disease and much enthusiasm has been aroused among producers especially those grouped in co-operatives. The foot-and-mouth disease has already been brought under control, and work is being done constantly to prevent further outbreaks. Another problem with which they are concerned is tuberculosis. The campaign to combat this disease is not very intensive, the most positive phase of it being concerned with the standardization of tuberculin. A campaign is also being conducted against hog cholera which occurred in the country five years ago. For the present, this disease is limited to three provinces only. Research has also been begun to discover methods of combating mastitis of cows and the scab mite attacking sheep which causes serious losses in flocks of ewes.

The Livestock Division of the Ministry of Agriculture of Mexico is also pursuing a policy of improvement of various livestock species, which is summed up in the following slogan "More and better livestock and better-fed". Included as part of the program supervised by the Livestock Division is the importation of pure bred animals of various species for the improvement of the present stocks.

One special project of this office is to create a new cattle breed which would be a cross among the Hereford, Santa Gertrudis, Durham and Aberdeen Angus breeds, to meet the requirements of U.S.A. buyers. It is also devoting special attention to the crossing of "criollo" and zebu types in the tropical regions.

No specific program has been set up for swine. The Division believes that this type of program depends upon the grain production program. Human needs for grain consumption compete with swine requirements, and therefore the problem of obtaining sufficient supplies of edible fats is being solved in Mexico by the use of oilseeds. Formerly, the lard derived from hogs was used extensively while the meat was considered merely a by-product. However the establishment of meat-packing houses is changing this situation by developing the ham and pork industry. It is estimated that one new pork-products factory is erected every three or four months. The pig-raising industry could receive great impetus from a program which would coordinate it with cereal production.

This Office is also concerned with the need for changing the flora of the natural pastures, for which purpose tropical leguminous plants deserve particular consideration. In this tropical area, gramineous plants such as "Para" and "Guinea" have been developed. In the high altitude regions, pasture crops more resistant to drought are needed.

The Livestock Division in cooperation with the Mexican-United States Commission for the Eradication of Foot-and-Mouth Disease has achieved substantial success and it is believed that within two years it will be possible to eradicate this disease entirely.

The Veterinary Service of Costa Rica is charged with permanent inspection of the cattle herds and specifically with the prevention and control of epizootics. The Dairy Herds Section is developing a testing and improvement program. This program was begun about a year ago and is patterned after the one being undertaken by the U.S.A. Dairy Herd Improvement Association. By offering technical assistance and advice in various dairy operations (milking, refrigeration, washing of utensils, milk conservation, and transportation), this program should help improve the quality of milk on the farms. By a process of scientific selection in periodic (monthly) tests, this program also aims at increasing milk production in that country. Technicians believe that results will be evident within three years since up until now the difficulties encountered have been negligible.

The program envisaged by the Beef Herds Section and Dual-purpose Cattle Section, which will begin to function in 1951, includes also extension services. The main object is the genetic improvement of beef cattle and dual purpose cattle at low altitudes by introducing specialized breeds. Two important problems must be solved, namely: increasing the resistance of cattle to adverse natural factors in these areas, and reducing the time required for growth from five years as at present to three years. It is hoped that the development of precocious breeds will result in the increased production of meat. This program is being carried out on two demonstration farms located in different zones of the country. It includes the importation of purebred Aberdeen Angus and Red Polled bulls for crossing with zebu cattle, of which there are already large herds in the country, in order to obtain crosses for distribution among livestock-raisers. The technicians charged with implementing this project have to face the usual obstacles to successful breeding, namely, including reluctance of livestock raisers to accept hybrid animals. Conclusive results are not likely to be known for five years.

The Livestock-Raising and Breeding Service of the Department of Agriculture of the Dominican Republic is continuing its scientific research of acclimatization, crossing, and selection, which has already led to the importation of more purebred cattle and to an increase in the number of breeding posts maintained by the State. At the Experiment Station of Humachon experiments are continuing on crossing the Guernsey, Charolesa, Holstein, Brown Swiss and Zebu using modern methods to breed cattle best suited for work, beef, and milk production. Improving livestock also includes the elimination of cattle unfit for reproduction, the prohibition of slaughtering of cows and heifers or their mutilation or sterilization, placing restrictions on exports of all types of cattle, removal

of import duties on high grade cattle and authorizing cattle breeders to water their animals during drought periods in public canals, aqueducts and at other water sources, without payment of taxes, duties or contributions.

The Government of El Salvador, also, has shown marked interest in breed improvement and increasing livestock herds. For this purpose, it established its first Zootechnical Station and intends to establish others throughout the country.

In Honduras the National Food and Nutrition Commission, which has a Veterinary Section, is pursuing its special mission of teaching farmers methods of prevention and treatment of epizootics. This section also distributes veterinary products among livestock raisers.

The Livestock-Division of the Ministry of Agriculture of Cuba is charged with the carrying out of programs for the improvement of the livestock of that country. In attempting to improve the quality of its livestock rapidly it has met with some difficulty, because cattle are fattened only on pastures in that country and the choice cattle imported often succumb to piroplasmiasis. Milk production is very low, due particularly to the fact that the dairy cows are mainly of the Zebu type. Since in many instances the cattle suffer from the phosphate and calcium deficiencies of the soil, the Ministry of Agriculture is greatly interested in research on the interrelation between soil composition, the feed base, and livestock production.

Livestock authorities are also interested in the establishment of feed reserves for cattle to assure them plentiful fodder during periods of scarcity. Special attention is paid to ensilage since hay preparation is difficult under the climatic conditions of that island. Research on the digestibility of the various local feeds has also been begun in order to establish the respective nutrient coefficients.

The Animal Industry Section of the Livestock Division has conducted several campaigns to combat various diseases affecting livestock, including anthrax blackleg, hemorrhagic septicemia, and piroplasmiasis in imported cattle, as well as brucellosis, hog cholera and others. Foot and-mouth-disease does not exist in Cuba and its introduction into the country is prevented by the sanitary inspection bureaus at the various ports. This Animal Industry Section is also planning a special campaign to eliminate external and internal parasites infesting various livestock species.

The Plan of Work (Plano do Trabalho) of the Ministry of Agriculture of Brazil, outlined what it expected to accomplish in the field of livestock improvement in the period 1947-1950, and according to competent authorities, this program is almost complete.

In order to improve the quality of local livestock the Federal Government has started, and will continue, to purchase pure-bred animals either in the country or abroad for use at its several Zootechnical centers; it will also continue its campaign to protect animal health by combating epizootics. It has already completed its campaign against hog cholera, which is said to be practically under control. Another problem to be solved is how to stop the spreading of rabies among herbivorous animals by bats, which cause damage estimated at about one million cruzeiros annually. The most efficient method known to date for combating this disease is repeated vaccination. In order to carry out the work of sanitary protection of animals more effectively, Law No. 569 of December 21, 1948, was promulgated, establishing the payment of adequate indemnities to livestock breeders when it is necessary to slaughter their animals.

At present the programs of artificial insemination being conducted by the Zootechnical Experiment Station of the Bureau of Animal Production is of special significance. As of early 1950, the work which has been done can be given in tabular form:

Species	Animals Inseminated	Births
	Artificially	
Ewes	152,000	82,000
Cows	6,500	3,000
Mares	1,500	600

The future work of Brazil in the improvement of its livestock will be covered by the recently approved Salte Plan. As regards the livestock industry, this Plan contemplates the solution of problems in the following fields: ecological conditions, beef and by-products; milk and dairy products; sanitary protection of herds; technical assistance to the breeders; purchase of breeding animals; artificial insemination; agrostological problems; breeding of cattle, swine, goats, and sheep; also, agriculture, fisheries, sericulture, warehousing, refrigeration facilities, transportation and the training of specialized personnel.

The most important programs of the Livestock Division of the Ministry of Agriculture of Venezuela now aim at obtaining increased yields per dairy cow and better utilization of pastures. The Office has formulated a five-year plan for crossing of "criollo" cattle with zebu. At present the dressed carcass weight of young bulls or oxen averages about 165 kilos as compared with 230 kilos for such crosses. If this plan is successful, it may be possible within five years to reduce or eliminate entirely the importation of beef, which has been necessary until now to cover the local deficit.

The completion of the above-mentioned project will require an investment of 15 million bolivars (approximately US \$4.5 million) and is based on the replacement of "criollo" bulls by zebu bulls, giving special credit to livestock raisers, on a 5 year loan to make up for the difference in the price of the two types of breeders. This plan is supplemented with another, already under way, for the establishment of so-called "communal pastures" where the herds and flocks of several livestock-raisers will graze together. The Venezuelan Development Corporation is cooperating in these livestock improvement plans with the Ministry of Agriculture by providing funds for the construction of enclosures and for sowing artificial pastures.

As regards milk production, the Ministry of Agriculture has also undertaken a plan for the gradual transformation of the Andean region, devoted to a type of farming now regarded as uneconomic, into livestock pastures. For this purpose it has imported 251 "Brown Swiss" cows and 50 "Jersey" cows, and plans are to import 250 more cows and 20 bulls of each type. The Venezuelan Development Corporation has included in its budget for 1950-51 the sum of 1.7 million bolivars. The Government also faces the immediate task of controlling a serious outbreak of foot-and mouth disease, which was recently introduced into the country.

At present one of the main concerns of the Ministry of Agriculture of Uruguay is to increase over-all livestock production by the proper solution of the problem of feed reserves for periods of scarcity, since it has already greatly improved the quality of various livestock breeds.

As regards beef cattle, the main question is to reduce the age of cattle for slaughter. Due to the shortage of winter pasture, in general beef cattle are not ready for slaughter until the age of four to four and one-half years. In consequence, the average annual rate of slaughter is not over 14 percent. According to preliminary research done particularly this year, it appears that the future programs of the Ministry, as regards livestock-raising propose that adequate supplies of forage be stocked for winter months and that grazing areas be improved; this can be done by introducing new pasture species

or by the more rational use of prairies reducing the size of enclosures. The cultivation of alfalfa especially is envisaged in line with this program.

Increasing dairy production by the most economic operation of the industry is also contemplated particularly in the "Cuenca Lechera de Montevideo" (Montevideo Dairy Area). Other problems are how best to combat brucellosis which, it is estimated, affects some 25 to 30 per cent of the dairy cows. Another problem which requires thorough investigation are the calcium and phosphorus deficiencies of the pastures, resulting in injury to the health of the livestock. Other deficient minerals are cobalt, copper, and iron.

The recently organized Preparatory Commission for Agricultural Planning has formed a working group to formulate in cooperation with foreign specialists definite programs for the improvement of livestock to be implemented in this Republic in the next few years.

For the improvement of sheep, The Comision Nacional de Mejoramiento Ovino began its work in 1935, and has had as one of its objectives the classification of high grade sheep flocks and the listing and classification of ordinary flocks, which will be started soon. As of 1949, the total number of sheep branded with the stamp of the Institute numbered over half a million.

The Ministry of Agriculture of Peru, through its Livestock Division, is carrying out its program for the development of the livestock industry. The work being done includes the improvement of the various livestock species, sanitation campaigns, and the improvement and better use of pastures. Among the outstanding programs at present is the one concerned with the improvement of dairy herds, which will take from seven to ten years. This program consists essentially in the importation of pedigreed bulls and cows, most of them from Holland. Until the beginning of this year, the total number of animals imported from that country was about 4,000. Holando-Argentino cattle will also be imported from Argentina. These pure-bred cattle will be distributed among the dairy establishments around Lima and other localities in various provinces of the Republic. The program in question also includes expansion of the artificial insemination services.

The program for the improvement of sheep, particularly in the southern part of Peru, has been conducted on the Model Farm at Puno where the cross-breeding of fine animals of the Corriedale, Merino, and Karakul breeds is being done, the two first-mentioned breeds being cross-bred on a large scale for distribution among farmers, following demonstration of their fine qualities and adaptability to local conditions.

The efforts to improve the agricultural and livestock industries of Argentina, after having attained the present high levels of quality in livestock, are undoubtedly most significantly evidenced in the campaign to maintain the health of these herds. At present the entire task of research and experimentation is the responsibility of the Direccion General de Investigaciones Ganaderas, and comes under Law 13,254 and Decree 15,582.

The specialized agencies of the Ministry of Agriculture of Argentina are concentrating their joint efforts on a broad sanitation plan. This includes, among other things, a determination of the index of tubercular animals for all herds in the country, dairy cattle, breeding animals, and animals kept in stalls. Another part of the program is concerned with research on the vaccination of heifers with BCG. Another important government campaign is concerned with the eradication of the so-called "mal de caderas" disease, which has created serious problems in the northern coastal area. This campaign also includes the study of vaccines against cattle rabies as well as the systematic destruction of bats of the "Desmodus Rotundus" species which transmit virus diseases.

A vigorous foot-and-mouth disease campaign is also underway, using the most modern vaccination methods and imposing strict control over slaughter-houses to eliminate diseased animals and discover the focal centers of the disease.

Excellent results have also been obtained in combating sheep and goat scabies in the department of Uruguay and Diamante of the Province of Entre Rios; attempts at biological control by means of new anti-scabies products are being continued. The most recent measures deemed necessary were the intensification of the anti-tick campaign in the Province of Entre Rios and the preparation of biologicals with a benzene hexachloride (BHC) base for this purpose. A sanitation campaign against brucellosis is also being conducted in the Province of Buenos Aires and one against hydatidosis (tapeworm) in the national territory of Tierra del Fuego, which will be extended to the Atlantic Coast in the Chubut Province. Data is now being compiled for the nosologic Brucellosis map.

At the beginning of 1950, an agricultural and livestock-raising research program was undertaken jointly by the Faculty of Agronomy and Veterinary Science of the University of Buenos Aires and the Argentine Meat Producers Corporation. Their research will be both theoretical and practical for direct application to the livestock industry. In order to complete this plan, a technical council, composed of six members, will be established, of which three of the members will be teaching professors of Zootechnology at the above-mentioned Faculty, two C.A.P. veterinarians, and one administrative officer.

Continuing its plan of completing the network of Livestock Development Stations, the Ministry of Agriculture in collaboration with the Military Government of Rivadavia, has just established a station for livestock breeding in the Municipality of Sarmiento and has made a gift of pure-bred animals of the Holando-Argentino breed to this Station.

## CHAPTER IV

### PROSPECTS FOR PRODUCTION, TRADE AND CONSUMPTION OF LATIN AMERICAN AGRICULTURAL COMMODITIES IN 1952/53, ACCORDING TO OFFICIAL PROGRAMS AND VISIBLE TRENDS

In order to be able to reach approximate conclusions on agricultural prospects in Latin America, FAO, in compliance with the resolutions of the Annual Conference, requested Governments to provide information on their anticipated production, consumption and trade in the main agricultural commodities for the crop year 1952/53. This information was to be based on the specific goals set forth in agricultural programs or, if no such goals had been defined, on estimates, taking into consideration the general trends and governmental policies relating to agricultural development. Many of the Latin American Governments provided the requested information and on the basis of these data and of those prepared by FAO where official data were lacking, estimates have been made of the prospective output for 1952/53 of twenty-two important agricultural commodities of the region and their possible distribution for domestic consumption and foreign trade. It must therefore be emphasized that the estimates are not fixed goals of production, consumption or trade, but are merely an indication of the situation which may emerge in the year 1952/53; (a) assuming normal weather conditions; (b) providing no unforeseen national or international events cause changes in visible trends or in the policies and programs of the various countries; and (c) providing that where the figures take into account governmental programs these are effectively implemented.

In the following tables, the 1952/53 estimated for the twenty-two crops mentioned are presented for purposes of comparison with the average annual volumes for the prewar period (1934-1938) and postwar period (1946-1949), while the Appendix Tables II to XXVI contain information on each commodity during the same periods, with details for each Latin American country.

As may be seen in Table 8, an expansion of the area under cultivation and increased production of most commodities is anticipated for the crop year 1952/53.

#### 1. Grains

It appears that the downward trend of the past few years in production of the main grains (wheat, rye, barley, oats and maize) will be reversed in the coming years, principally due to Argentina's intention to restore wheat and maize production to earlier levels, and it is estimated that the area and production of these grains in 1952/53 may be approximately 10 percent greater than in the prewar period. Even if this increase in production is achieved net exports are expected to be only about 70 percent of the prewar volume although more than double the 1946-49 levels. With total domestic available supplies approximately one-third higher, per caput supplies would nevertheless be lower than prewar, due to population increase.

The Argentine Government announced at the close of 1949 that the main purpose of its agricultural policy is to raise the low level of wheat and maize production up to prewar



levels. The Government has requested that farmers sow 7 million hectares to wheat and 5 million to maize for the crop year 1950/51, and has fixed attractive purchase prices for these commodities (28 pesos per 100 kilos of wheat and 21 pesos per 100 kilos of maize<sup>a</sup>, representing an increase of 20 percent and 30 percent respectively over the prices paid for the crop of 1949/50).

Owing to the shortage of manpower and lack of agricultural machinery, these goals will not be reached, at least in the case of wheat. In October it was officially announced that the area sown to this crop will exceed the 1949/50 area by approximately one million hectares, still considerably short of the target. However, this is an indication that the new policy is bearing fruit and suggests that the announced goals may well be attained within the succeeding two years. At any rate, the goals give the best indication of the government's policy for the years immediately ahead until such time as higher or lower goals may be set. It is therefore estimated that in Argentina the area under wheat and maize and the output for 1952/53, under normal climatic conditions, will approximate the targets set for 1950/51 (See Appendix Tables II and VI.)

In Mexico wheat production is one of the most serious concerns of the Government because wheat is the commodity in which that country has the greatest deficit. The goal set officially represents the quantity required for increased domestic consumption. The area to be placed under cultivation represents an increase of 50,000 hectares per year and every effort is being made to reach this goal. Yields per hectare have gone up somewhat in the last few years, due mainly to the expansion of the cultivated area in regions where climatic conditions are favorable, - Sonora and Coahuila. It has been estimated that 860 kilos per hectare will be produced in 1952 as compared with 760 and 810 kilos in the periods 1934-38 and 1945-49 respectively. The target anticipated for this year is 30 percent higher than that of 1949 and if achieved would enable imports to be substantially reduced.

For maize, an annual increase of about 100,000 hectares per year up until 1952 is expected by the Government and greater emphasis will be placed on obtaining correspondingly higher yields by better farming methods and the abandonment of marginal lands. If the 3,280,000 tons of maize envisaged for 1952 is actually produced, there may even be small supplies available for export.

Official estimates of the area and production of wheat in Brazil for 1952 based on the goals set in the Salte Plan, indicate an increase of 54 and 58 percent respectively over the record year 1949. If realized, imports could then be reduced some 45 percent. On the contrary, very little expansion is expected for maize by 1952/53.

Chile does not expect any significant increases in the total area planted to grains in 1952/53. However, there has been a constantly rising trend in yields, and Chile hopes that by that time an increase in the over-all volume of production will be achieved, enabling that country to maintain the present per caput consumption levels.

Colombia expects wheat and maize production to increase in the coming years at a pace equal to that of the rate of population increase. Programs underway in that country for the genetic improvement of maize may permit a gradual increase in yield.

In Uruguay it is hoped that the area planted to grains will be maintained at approximately the same level as in 1949/50, a record for the past fifteen years. This country hopes to maintain its position as a wheat exporter and estimates that for 1952/53 it will have an exportable surplus of 40,000 tons.

<sup>a</sup>It was announced in October 1950 that a bonus price of three pesos per 100 kilos of maize would be paid to the actual producer.

Table No. 8.--Area and Production of Principal Crops in Latin America  
(Including Estimates for 1952/53)

Products	AREA HARVESTED				PRODUCTION			
	Annual Averages		Year		Annual Averages		Year	
	1934/35- 1938/39	1945/46- 1948/49	1949/50 Preliminary	1952/53 Estimates	1934/35- 1938/39	1945/46- 1948/49	1949/50 Preliminary	1952/53 Estimates
	(.....1,000 hectares.....)				(.....1,000 metric tons.....)			
<u>Grains</u>								
Wheat	9,060	7,310	7,534	9,900	8,630	7,630	7,724	9,580
Rye	470	690	440	750	280	420	270	450
Maize	14,170	13,300	12,348	15,750	18,070	15,790	12,544	19,700
Oats	1,010	910	816	1,090	920	890	710	1,010
Barley	1,040	1,370	1,153	1,510	920	1,390	1,035	1,520
Total	25,750	23,580	22,291	29,000	28,820	26,120	22,283	32,260
<u>Total excluding Argentina</u>								
Argentina	12,840	14,130	15,490	16,520	12,790	14,250	15,110	16,700
<u>Rice</u>	1,330	2,420	2,700	2,900	2,040	4,050	4,340	4,950
<u>Roots and Tubers</u>								
Potatoes	500	720	800	840	2,610	3,940	4,420	4,540
Sweet Potatoes	310	380	400 <sup>a</sup>	420	1,700	2,320	2,360 <sup>a</sup>	2,400
Cassava	650	1,200	1,260 <sup>a</sup>	1,310	7,400	14,700	16,250 <sup>a</sup>	16,500
<u>Sugar</u>								
Cane	2,070	3,000	3,040	3,360	-	-	-	-
Sugar	-	-	-	-	7,280	10,930	12,100	12,700
Beans	2,070	2,940	3,210	3,650	1,350	1,700	1,910	2,160
Bananas	570	590	630	700	5,500	6,250	6,800	7,210
<u>Oilseeds<sup>b</sup></u>								
Linseed	2,770	1,640	1,330	1,680	1,800	1,000	730	1,140
Sunflower	180	1,500	1,630	1,750	160	970	910	1,310
Groundnuts	170	320	400	380	150	300	310	340
Cotton seed	-	-	-	-	1,240	1,200	1,460	1,500
Sesame and castor-seed	190	410	440	500	180	290	300	360
Total	3,310	3,870	3,800	4,310	-	-	-	-
<u>Other Products</u>								
Cotton	3,040	3,520	3,840	4,180	630	640	790	810
Coffee	4,730	4,050	...	4,400	2,100	1,680	1,800	1,960
Cacao	530	590	590	610	240	220	240	250
Tobacco	250	340	350	360	210	300	320	330
GRAND TOTAL	45,110	47,200	46,971	56,050	-	-	-	-

<sup>a</sup>Year 1948/49.

<sup>b</sup>Excludes some minor producing countries.

Table No. 9.--Net Trade and Gross Domestic Available Supplies of Principal Crops in Latin America  
(Including Estimates for 1952/53)

Commodity	Net Trade		Gross Domestic Available Supplies <sup>a</sup>					
			Total			Per Caput		
	Annual Average		Year		Year	Annual Average		Year
	1934-38	1946-49	1952/53	1946-49		1934-38	1946-49	
			1952/53	1946-49	1952/53	1934-38	1946-49	1952/53
			(.....1,000 metric tons.....)	(.....kilograms.....)				
<u>Cereals</u>								
Wheat	-1,730	+ 290	- 810	7,920	8,770	55.3	51.3	52.0
Rye	- 130	- 190	- 200	150	250	1.2	1.5	1.5
Maize	-6,600	-2,100	-4,760	13,690	14,940	91.9	88.8	88.6
Oats	- 410	- 170	- 210	510	800	4.1	4.7	4.7
Barley	- 390	- 540	- 540	530	980	5.2	5.5	5.8
Total	-9,260	-2,710	-6,520	19,560	25,740	156.7	151.8	152.7
<u>Rice (milled)</u>	+ 380	+ 140	+ 80	1,700	3,280	13.5	18.0	19.4
<u>Roots and Tubers</u>								
Potatoes	+ 180	+ 190	+ 180	4,130	4,720	22.4	26.8	28.0
Sweet Potatoes	-	-	-	1,700	2,400	13.9	15.0	14.5
Manioc	-	-	-	7,400	16,500	59.3	95.0	98.0
Total	+ 180	+ 190	+ 180	11,890	23,620	95.6	136.8	140.5
<u>Sugar</u>	-4,560	-7,130	-8,130	2,720	4,570	21.8	24.7	27.1
Beans	- 40	- 40	- 50	1,350	2,110	10.8	10.8	12.5
Bananas	-1,850	-1,540	-1,860	3,650	6,350	28.9	30.5	21.7
<u>Oilseeds</u>								
Linseed	-1,620	- 520	- 700	170	440	-	-	-
Sunflower	-	- 190	- 300	150	1,010	-	-	-
Groundnuts	+ 20	- 10	-	170	340	-	-	-
Cottonseed	- 140	- 90	- 110	1,100	1,390	-	-	-
Sesame and castor seed	- 110	- 165	- 200	80	160	-	-	-
<u>Other Products</u>								
Cotton (ginned)	- 330	- 380	- 330	300	480	2.4	1.8	2.8
Coffee	-1,370	-1,560	-1,530	730	430	5.8	1.0	2.6
Cacao	- 200	- 170	- 180	40	70	.3	.3	1.3
Tobacco	- 60	- 75	- 80	150	250	1.2	1.5	1.5

Net Imports (+)

Net Exports (-)

<sup>a</sup>Gross domestic available supplies include any quantities going into seed, feed, manufacturing uses and waste; no allowance is made for changes in stocks.

Estimates of area and production of grains for other countries in the region show increases proportionate to the growth of population. The wheat import figures show for deficit and non-wheat producing countries represent quantities required to maintain domestic supplies per inhabitant at a level approximately equal to that for the year 1949/50, but somewhat higher than the annual average for 1946/49.

## 2. Rice

The steady upward trend in rice production in Latin America, which was given a great impetus during World War II, will apparently continue during the next few years. Estimates supplied to FAO by most of the principal producing countries (Table IX) indicate that the area to be harvested in 1952/53 is likely to approximate 3 million hectares, an increase of about 20 percent over the 1946/49 average. On this basis a harvest of five million tons might be expected. This should provide the region with a gross exportable surplus approximating the high levels of the years 1946, 1947, and 1948, but this may be partially offset by probable increases in imports into the deficit countries of the Caribbean area (See Appendix Tables IX and X.)

In Brazil, which produced approximately two-thirds of the total output of the region, the trend indicates a comparatively great increase in output for 1952/53, amounting to a total of over three million tons from 1.9 million hectares. Assuming a moderate increase in the per caput domestic available supplies for that year, there may be an exportable surplus of 200,000 tons of milled rice, which is somewhat higher than the average exports during recent years.

In Venezuela government plans include increasing production of rice to eliminate imports which now are 65 percent of the supply. The area planned to be harvested in 1952/53 will be more than double that for 1949/50 and output is estimated at 40,000 tons as compared with 15,000 tons harvested.

Colombia is another country which is promoting rice production. Until 1948 rice was imported, but in 1949 the harvest was sufficient to more than cover domestic demand, and small amounts were exported. According to official estimates for 1952/53, its production will be about double that of the average annual output for the years 1946-49, and it is likely to have appreciably larger amounts for export.

Ecuador expects to maintain its present area and is putting special emphasis upon lowering production costs through mechanization and increasing yields.

The Government of Paraguay has plans under way for expanding rice production. The long-term goal of these plans is to place 50,000 hectares under cultivation and to have an exportable surplus of 90,000 tons of milled rice. Several U. S. specialists have signed contracts under which they will direct the implementation of these programs. Improved varieties have been imported from the United States and Brazil and experiments on mechanization are underway.

Central American countries expect to increase their rice production to maintain per caput consumption and if possible reduce dependence on imports. In the years 1946-49 deficit countries of this area imported an annual average of 6,000 tons of milled rice, and it is hoped that in 1952/53 this quantity will be reduced to 3,000 tons.

In Mexico notable progress has been achieved in rice cultivation due mainly to the expansion of the area irrigated for rice in the Sonora area. It is estimated that land and water facilities in this region will make it possible to increase rice production by about 5 percent annually over the next 5 to 10 years, provided there is sufficient demand.

The Caribbean Area is the main deficit zone for rice. Despite an expected rise in production, an increase in imports by 1952/53 of about 10 percent over the 1946-49 average will be required to maintain per caput consumption at the present levels.

### 3. Roots and Tubers

Regional production of potatoes, sweet potatoes and cassava has increased at a faster rate than population. It may be noted that whereas increases in consumption of potatoes and sweet potatoes may be nutritionally beneficial, the same is not true for cassava.

The production of cassava in Brazil, which produces approximately 80 percent of the regional total, has been increasing markedly since before the war. Although much of the supply is used as a raw material for starch and the alcohol industry, use of the flour in making bread is compulsory. It is officially estimated that production in 1952/53 will be higher than the record production of 1949.

### 4. Sugar

Practically all Latin American countries, whether they be exporters or importers, are endeavoring to increase their sugar production. However, in the absence of set goals by Cuba, which is capable of changes in output which over-shadow changes in other countries, only the general trend can be discerned with any certainty. Nevertheless, on the basis of the assumptions set out below regarding Cuba, and bearing in mind government policies in many other countries and the world economic situation, it appears that, with average weather, regional production in 1952/53 may approximate 12.7 million tons. In this case, net export availabilities would probably also be several hundred thousand tons higher than in 1946-49. (See Appendix Tables XIV and XV.)

It is very difficult to estimate the volume of sugar production in Cuba for 1952/53 since it depends closely on demand and prices in the international market. Nevertheless, in view of the probability that demand will continue to increase and assuming normal weather conditions, it seems likely that Cuba will produce somewhat more than in 1949 and 1950 and perhaps as much as the record crop of 1948 (5.8 million tons.) It should be mentioned that there appears to have been much more planting of new cane varieties than has been generally recognized.

Official estimates for sugar production in Brazil for 1952/53 indicate a small increase over the record crops for the years 1948 and 1949 with a possible 100,000 tons surplus for export. Internal per caput consumption has increased substantially in the past few years and even larger increase is expected for the year 1952/53.

Under the stimulus of a sure market at profitable prices, guaranteed by the United Kingdom until 1958 for the entire output of the British West Indies, an expansion in sugar production in this area in coming years is expected, and it is possible that the total production of these territories, including British Guiana, will exceed 900,000 tons in 1952/53. (The average annual production for the period 1946-49 was 680,000 tons.)

Production of sugar in Puerto Rico has been steadily increasing in the past few years and a record crop was produced in 1949/50. It was disposed of through additional allotments to the United States and allotments to European countries through ECA, with the result that there will be practically no carryover into the 1950/51 crop, in which case unrestricted production may be allowed. If international demand continues high,

it is likely that Puerto Rico will maintain current levels of production in the immediate years to come.

Production in the Dominican Republic has been more or less stable during the past five years, fluctuating slightly at around 450,000 tons. Recently, however, the Government started an expansion program to increase annual exports to 700,000 tons. Conservative estimates for 1952/53 are that about 500,000 tons will be produced and that the quantity available for export will be about 460,000 tons.

Official estimates of sugar production for 1952/53 in Mexico, Colombia, and Venezuela indicate large increases over present levels of production. Mexico and Colombia, which were importing countries until 1947, have increased both production and consumption and have even obtained small exportable surpluses in more recent years. Their plans are to raise consumption levels even more, and to maintain their positions as net exporters. Venezuela hopes to become self-sufficient in sugar in the near future. In 1952/53, according to official information transmitted to FAO, import requirements are estimated at only 8,000 tons as compared with average annual imports of 50,000 tons for the period 1946/49.

Programs to increase sugar production are also being put into effect in various countries of Central America, in order to raise consumption levels and to obtain a margin for export.

## 5. Pulses

There are many classes of edible pulses cultivated in Latin America, all of which play an important part in the diet of many countries. Due to fragmentary statistical data, it is not possible to give an idea of prospects for total output of pulses. Beans, however, are the most important pulse and may be considered as representative, and therefore indicative of the general trend. The Appendix tables XVI and XVII give the estimates of production, trade, and consumption of beans based on figures provided by the major producing countries. Increases in the past few years for the region as a whole have been sufficient only to maintain approximately the per caput consumption levels of prewar years. However, if the 1952/53 estimates for production and trade are realized, per caput supplies of beans will increase from 10.8 kg. (the average for the years 1946-49) to 12.5 kg.

According to information supplied to FAO, an increase in production of about 17 percent over current levels is expected by 1952/53 in Brazil, the main producer in the region. Compared with prewar, the area which it expects to place under cultivation in 1952/53 is more than double and production may reach 1.4 million tons against 800,000 tons.

In Mexico, the second largest producer in the region, no substantial increase in production is expected over current levels, although the area to be planted in 1952/53 is also to be about double the prewar average.

The production of edible pulses, such as beans, peas, and lentils, is important commercially in Chile, where they are exported. During World War II, due to the closing of European markets, production of pulses dropped sharply, and current levels existed below those of prewar. However, according to official estimates, the production of beans for 1952/53 is expected to be higher than the 1934-38 average, allowing greater exports than in those years, with supplies sufficient to raise the per caput consumption above present levels. In the case of lentils, although a considerable increase is expected,

the production level for that year is estimated to be 35 percent below the high prewar levels.

## 6. Bananas

Increasing demand and relatively high prices on the international markets have contributed, and it is believed will continue to contribute, to the expansion of production and exports of this fruit by all Latin American producing countries. Although it is true that exports for the years 1946-49 were slightly lower than prewar levels, postwar production has been 10 to 15 percent higher than before the war, and a further increase is expected by 1952/53. (See Appendix Table XVIII.)

The largest increase is expected to come from Costa Rica which reports that it hopes to increase production from 160,000 tons in 1949/50 to 500,000 tons by 1952/53. Supplies available for export would rise by about the same amount. Production in other Central American countries, principally Guatemala and Honduras, is not expected to change much. Brazil expects a 10 percent increase in area by 1952/53, but this will not yet be reflected in production. Mexican production is now recovering from the damage caused by the "chamusco" disease and production is expected to recover near to prewar levels by 1952/53, but exports will remain low because domestic consumption is increasing.

The banana industry of Jamaica is gradually being rehabilitated after the serious attacks of "Panama" and other diseases, which together with the restrictions of the last war, caused an abrupt decline in production at the beginning of the last decade. With the introduction and development of new disease-resistant varieties, it is hoped that production will increase to perhaps half the prewar level by 1952/53. The surplus obtainable will be exported entirely to Great Britain in accordance with an agreement signed with that country.

## 7. Fats and Oils

Estimated production of fats and oils in Latin America during postwar years indicates an increase over prewar levels but there have been considerable fluctuations from year to year. The increase for the region would have been greater except for the decrease in the production of linseed in Argentina. The following table indicates the production trend in animal fats and vegetable oils in the main producing countries of Latin America.

Owing to the postwar world fat shortage and international allocations, imports were well below effective demand. With the easing of shortage and the termination of IEFC allocations in February 1949, imports sharply increased, partly to replenish stocks. Latin American foreign trade of oilseeds, oil, and fats in oil equivalent is shown in Table No. 11.

The production of oilseeds and especially of linseed in Argentina is likely to increase within the next two years. The Government of this country has set a goal of 2 million hectares for the cultivation of linseed and has raised the official price to producers from 34 to 41 pesos per 100 kg. for the 1949/50 crop, to 29.50 pesos for the coming harvest. In view of serious problems arising from the lack of agricultural machinery and manpower shortage, the planting goal of 2 million hectares to linseed has not been reached in 1950/51. Unofficial estimates of area sown this year place the figure at about 1.5 million hectares. It is not yet possible to judge how soon this goal will be

Table No. 10.--Estimated Trends in Production of Visible Fats and Oils in Latin America  
(thousand metric tons, oil equivalent)

Country	Prewar Average	1947	1948	1949	1950
<b>A. Vegetable Oils<sup>a</sup></b>					
Mexico	54	98	109	114	122
Argentina	605	514	500	410	442
Brazil	170	210	255	250	225
Uruguay	28	46	51	61	40
Other Countries	103	122	130	140	131
Total	960	990	1,045	975	960
<b>B. Fats of Animal and Fish Origin<sup>b</sup></b>					
Mexico	61	72	81	86	88
Argentina	215	276	260	240	248
Brazil	220	210	215	225	225
Uruguay	37	34	44	39	40
Other Countries	152	168	170	170	169
Total	685	760	770	760	770
Total A and B	1,645	1,750	1,815	1,735	1,730
Total excluding Argentina	795	960	1,060	1,085	1,040

<sup>a</sup>Includes estimates of amount of oil actually produced in the calendar year plus oil equivalent of oil-bearing seeds or nuts exported during the same year. These figures differ from oil-equivalent of reported crop production because of (1) deductions for the disappearance of uncrushed material for planting, livestock feeding, direct human consumption, or as waste; (2) adjustments to allow for carryover.

<sup>b</sup>Includes pure fat equivalent of butter, lard, tallow, other animal greases both edible and inedible, and fish oil, but does not include whale oil.

attained, but if attained by 1952/53, production of linseed in that year, with normal climatic conditions, would approximate 1 million tons as compared with the average of 860,000 tons produced during 1945/46-1948-49. (See Appendix table XIX).

Assuming that Argentina will re-establish its prewar levels of production within the next two years, regional production of the main oilseeds should experience a marked increase by 1952/53. The area to be harvested in that year to linseed, sunflower, groundnuts, castor beans, and sesame, is estimated at 4.3 million hectares for the countries listed in Appendix table XIX, a 12 percent increase of the 1946-49 average.

A second country which is important for its oilseed production is Brazil. According to official estimates, it is expected that the aggregate production for 1952/53 of the three main oilseeds, cottonseed, groundnuts, and castorseed, will increase slightly due principally to the increase in castorseed. A great impetus has been given to the gathering of oiticica, babassu, tung, and other oil bearing seeds and nuts, which are currently two or three times higher than in prewar years.

Mexico's vegetable oil production over the past three years has been double the prewar output. Official estimates for cottonseed, sesame, and peanuts for 1952/53 indicate



Table No. 11.--Exports and Imports of Oilseeds, Oils, and Fats in Latin America  
(thousand metric tons, oil equivalent)

Countries	Prewar (year 1938)	1948	1949	1950 estimate
<b>EXPORTS</b>				
<b>A. Oilseeds and Vegetable Oils</b>				
Argentina	425.1	116.0	94.1	230
Brazil	121.0	121.5	118.3	100
Uruguay	23.9	37.6	47.2	45
Mexico	-	11.7	19.5	10-15
Others	11.0	9.8	12.9	12
Total	581.0	296.6	292.0	400 (say)
<b>B. Other Fats and Oils<sup>a</sup></b>				
Argentina	82.5	85.8	66.6	80
Uruguay	8.0	15.6	...	...
Brazil	13.9	.8	.6	...
Others	2.0	1.0	1.0	...
Total	106.4	103.2	75.0 (est.)	85-90
Total A and B	687.4	399.8	367.0	485
Total excluding Argentina	179.8	198.0	206.3	175
<b>IMPORTS</b>				
<b>A. Oilseeds and Vegetable Oils</b>				
Argentina	21.8 <sup>b</sup>	n e g l i g i b l e		
Cuba	23.2 <sup>c</sup>	13.8	13.2	
Mexico	24.8	3.3	3.4	
Chile	12.4	10.5	11.9	
Others	40.7	22.4	17.0	
Total	122.9	50.0	45.5	35-40
<b>B. Other Fats and Oils<sup>a</sup></b>				
Argentina	-	-	-	
Cuba	21.5 <sup>c</sup>	40.5	68.2	
Mexico	2.8	10.4	16.2	
Chile	-	-	1.7	
Others	42.7	29.5	61.5	
Total	67.0	80.4	147.6	130-150
Total A and B	189.9	130.4	193.1	) 165-180
Total excluding Argentina	168.1	130.4	193.1	)

<sup>a</sup>Included are edible and edible tallow, greases, whale and fish oil, butter, lard, margarine, shortening, and soap.

<sup>b</sup>Includes 18.5 olive oil, the imports of which had been steadily replaced by local seed oil during the later "1930's", the 1929-33 average being 45.2 thousand tons.

<sup>c</sup>The major item in Cuba's imports is normally lard from the U.S.A., but owing to the U.S. lard shortage during most of the 1934-38 period, Cuba imports consisted mainly of vegetable oils, shortening, etc.

a further considerable increase over present volumes. Cottonseed production for that year, it is estimated, will be 350,000 tons as compared with 166,000 tons in 1945/46-1948/49. To overcome the fats and oils shortage, Mexico has tripled sesame production in the past ten years and production will continue to increase although at a slower rate in the future. Through these increases in oilseed production, Mexico has become self-sufficient in vegetable oils.

Chile, like Mexico, has greatly reduced its imports of oil during the past two years. Production of sunflower, the main source of edible oil, has reached a level adequate for domestic requirements. Official estimates of sunflower production for 1952/53 indicate a level equal to the record crop of 1949/50.

Uruguay plans to increase slightly the area and production of sunflower and ground-nuts in 1952/53. The area planted to linseed is expected to be smaller as compared with the high levels for the years 1946 to 1949. Other countries, e.g. Colombia and Venezuela have programs for increasing oilseed production, mainly for the purpose of supplying greater domestic demands and reducing imports.

## 8. Cotton

Total production of cotton in Latin America has shown a notable gain in the past two years, owing mainly to the rapid expansion of cultivation in Mexico and also in Argentina. Some further increase for the region as a whole seems probable, though the rate of expansion is likely to be small in comparison with that of the past two years.

The greater production in Mexico is the result of several factors, the main ones being: more area cultivated under irrigation, the introduction of better farming methods, and well-managed campaigns for the eradication of diseases and pests. Production may be about 225,000 tons in 1952/53, leaving an exportable surplus of about 150,000 tons, while at the same time domestic consumption will be higher.

The upward trend of production in Argentina is expected to be continued in 1952/53. The problem of lack of manpower for farming and harvesting will be solved gradually by the introduction of mechanical equipment. Consequently Argentina may increase its cultivated area by 1952/53 to 30-40 percent above 1946/49 average. Production is expected to have increased over the same period by about 50 percent.

The figures for Brazil in Appendix Tables XXII and XXIII, as supplied by that country, are higher than those used by the International Cotton Advisory Council. Nevertheless, it would appear from both sets of figures that little change either in area or production has been taking place during this period and only slight increases are expected by 1952/53.

Other countries which foresee a marked increase in their production in the coming years include Colombia, where the textile industry has reached an advanced stage of development. Domestic cotton requirements have tripled during the past years as compared with the prewar average, and are mainly derived from imports. This country hopes to supply about 50 percent of its consumption needs for 1952/53, estimated at 27,000 tons.

Land formerly planted to cotton in Peru has been transferred to food crops. In the near future the production levels are not expected to change appreciably, though a moderate increase seems likely.

## 9. Coffee

The rapid rise in the price of coffee on international markets, culminating at the end of 1949, and the present outlook suggesting that quotations will remain comparatively high in the next few years, are providing an incentive to all coffee-growing countries of Latin America to increase their coffee output. Official estimates with respect to the main coffee-producing countries of the region, namely Brazil and Colombia, and Venezuela, Costa Rica and El Salvador, and the unofficial estimates for other countries, suggest that by 1952/53, regional production may amount to about 2 million tons, or only 7 percent below the prewar levels, but 17 percent higher than the average for the period 1946-49. (See Appendix Table XXIV.) However, exportable supplies in 1952/53 on the basis of this production estimate would not be any higher than during 1946-1949, when exports were swelled by stocks accumulated during the war years.

New plantings have increased in Brazil, and it is estimated that the number of non-bearing trees (that is, under four years old) is about 70 percent greater than at the beginning of the past decade. Some of these will certainly be productive in the next five years; however only in the States of Parana and Goias has recent planting been on a scale sufficient to expand production significantly.

A substantial increase in coffee production and exports is expected in Colombia. In Mexico the government is taking measures to ensure the exportation of higher grades of coffee only, and is also beginning a campaign to encourage new plantings and to introduce improved methods of cultivation and processing.

The Coffee Institute was set up in Ecuador in July 1949 as the agency charged with increasing coffee cultivation, and the government has appropriated the necessary funds for its operation.

A large cooperative coffee research and cultivation project, in which specialists of the U.S. Department of Agriculture and of certain Central American countries are participating, has been carried out during the past four years. This project includes Guatemala, El Salvador, and Costa Rica, but the results obtained will serve as a basis for the improvement of coffee cultivation throughout the Central American region. Special emphasis is placed on increasing yields, and it is hoped that as a result the output in this region may ultimately even be doubled.

## 10. Cacao

The production of cacao in Latin America is expected to reach prewar levels by 1952/53. Estimated production would be approximately 10 percent higher than the annual average for the 1946-49 period, during which there was fear of over-production which would bring about low prices such as existed in the thirties. However, increased domestic consumption should lower the quantities to be exported.

It is hoped that increased production will be accompanied by an improvement in the quality of the cacao beans exported. Principal producers are, in fact, concentrating on quality and on disease-resistant varieties. In the State of Bahia, which produces most of Brazil's cacao, the need is recognized for immediate development of extension activities in order to teach farmers better harvesting methods and fermenting and drying processes. If the current price of cacao is sustained on the export markets, cacao producers may expect better credit facilities, which will enable them to improve and enlarge their plantations. Official estimates for Brazil indicate a production for 1952/53 equal to that of prewar years. (See Appendix Table XXV.)

Venezuela envisages record production and exports for 1952/53 while in Colombia, although a slow increase in the number of plantations may occur, higher consumption will necessitate imports at the same rate as in past years. Ecuador is concentrating on the development and distribution of high yielding, disease-resistant varieties. Producers hope to rehabilitate plantations which have been affected by serious diseases for many years and that by 1952/53, output will be even higher than at present. The Ministry of Agriculture of the Dominican Republic has begun important agrological research on the cacao-producing zones of this country, in order to direct development along scientific lines.

## 11. Tobacco

During the past five years, tobacco production in Latin America has increased gradually, and it is probable that this upward trend will continue in the future, due to increased demand both on the domestic and export markets. Estimated production for 1952/53 based on official information from some of the main producer countries of this region, indicates a possible increase of 10 percent over the average production for 1946-1949. Exports on the other hand will remain at approximately the same level as the average annual exports for that postwar period. (See Appendix Table XXVI.)

Official information from Brazil indicates that the areas planted to tobacco and the output for 1952/53 will be slightly higher than the average for the past five years, but it is possible that exportable surpluses will decline slightly due to increased domestic demand. Mexico, like Brazil, expects to increase its production in the next few years, and it is officially estimated that the 1952 harvest will be 41,000 tons, or 15 percent higher than the average for 1946-1949.

No official estimates are available for Cuba, but the high production level of 1949/50 may be maintained in the next three years. In this case export supplies would be greater than during 1946-1949, even though per caput consumption should increase somewhat.

## 12. Meat

On the basis of available information for nine major producing countries of the region, estimated meat production in 1952/53 will probably be about 7 percent greater than the average for the years 1946/48, and 15 percent higher than prewar levels. Exports are expected to follow their downward trend and imports, though small in volume, may increase somewhat in the next two years. Table No. 12 gives the production and foreign trade in meat for nine Latin American countries.

Some increase in meat production in Argentina is expected by 1952/53. It is not likely that the present high level of domestic consumption will increase to any significant extent. As a result an increase in exportable supplies is likely. Canned meat exports from Argentina to the United States, important not in volume but in value, will apparently be maintained or even increased slightly. It is interesting to note that the demand for Argentine meat is increasing in various countries of the region. Argentina in 1949 agreed with Venezuela to exchange meat for petroleum, and with Peru, meat for cotton, petroleum and coal.

Uruguay expects to attain record production in 1952/53, but exports of meat will not recover to prewar levels. It would appear therefore that per caput consumption, which is already very high, may increase even further.

Table No. 12.--Production and Trade in Meat<sup>a</sup> in Nine Latin American countries  
(Including Estimates for 1952/53)

I. Production

Countries	Prewar Average <sup>b</sup>	Average 1946-48	1949 Preliminary Estimates	1952/53 Estimates
(..... 1,000 metric tons .....)				
Cuba	125	176	175*	180*
Mexico	445	527	600*	650*
Argentina	2,226	2,587	2,540*	2,630*
Brazil	1,930	1,847	1,900*	1,950*
Chile	179	230	210	235
Colombia	235	292	315	335
Peru	136	150	160*	175*
Uruguay	365	324	383	406
Venezuela	53	75	81	84
Total for these countries	5,680	6,210	6,365	6,640

II. Net Foreign Trade

Cuba	+ 3	+ 12	+ 9	+ 15*
Mexico	+ 1	- 11	- 55	- 60*
Argentina	-692	-721	-600*	-650*
Brazil	-103	- 77	- 39	- 30*
Chile	- 10	- 9	- 5	- 4
Peru	...	...	+ 10*	+ 15*
Uruguay	-150	+ 84	-115	- 29
Venezuela	+ 1	+ 14	+ 20	+ 16
Total for these countries	-950	-866	-775	-827

\*Unofficial estimates.

-Net exports.

+Net imports.

<sup>a</sup>This includes beef, veal, mutton, lamb, pork and edible offals, but excludes goat meat, poultry and tallow and lard. Production figures are not adjusted to trade in live animals.

<sup>b</sup>In most cases this average refers to the period 1935/39. For Venezuela, only 1939 production is considered.

The problem of meat production in Chile constitutes one of the greatest concerns of the government of that country. Livestock herds have decreased in the past two years, making imports necessary to meet the domestic demand for meat. There is now under consideration a plan for the development of livestock and the establishment of a meat corporation (Corporacion de Carnes) to be financed by the Caja de Credito Agrario, the Development Corporation and the Instituto de Economia Agricola. Through its program to encourage the livestock industry, Chile hopes to increase cattle numbers from 2.3 million in 1949 to 2.5 in 1952/53, and to reduce imports to about 100,000 head of cattle in 1952/53. Official estimates for total meat production for that year show a considerable increase over 1949 figures and are slightly higher than the average for 1946-48, although per caput consumption in 1952/53 is estimated at 38 kilos as compared with 40 kilos for 1945-48.

Meat production in Brazil will probably again reach prewar levels 1952/53. However due to the rapid increase in population, per caput consumption will be about 20 per cent lower than the prewar average. Meat exports have been declining year after year,

and it is possible that this trend will continue in the near future. However, as said before, the Salte Plan includes a comprehensive program for livestock development.

Using official estimates for beef production in Colombia, and adding unofficial estimates for production of mutton, lamb and pork, it appears that in 1952/53 a higher output is expected, which will enable this country to increase its per caput consumption about 29 kilos per year.

The foot-and-mouth disease, which in 1946 forced the closing of Mexico's borders to cattle trade, particularly between Mexico and the United States, appears after all to have served a good purpose in that it also forced the development of the meat industry. Today the gross value of exports of meat exceeds that which was previously obtained from live-animal exports, and livestock by-products are domestically supplied.

### 13. Wool

Production of wool in Latin America is substantially higher than in the prewar period. The high international market price and its prospects of being maintained are a stimulant to increasing sheep numbers and wool production. It seems probable that wool production for 1952/53 will be slightly higher than in the past five years, although exportable supplies will decline in relation to the high volume exported during 1945-48, when stocks accumulated during the war years were exported. Table No. 13 indicates the trend of wool production in the principal producing countries of the region, with an estimate for other small producers.

Table No. 13.--Trends of Production and Exports of Wool, Greasy Basis, in Latin America (Including Estimates for 1952/53)

Country	PRODUCTION <sup>a</sup>				EXPORTS <sup>b</sup>		
	Average 1934/35 1938/39	Average 1945/46 1948/49	1949/50	1952/53 Estimates	Average 1934-38	Average 1945-48	1952/53 Estimates
	(..... thousands of metric tons .....)						
Argentina	170.	218	215	220*	142	194	160*
Brazil	18	21	21	22*	4	5	6*
Chile	15	16	16	17*	11	8	8*
Uruguay	51	74	70	72	45	63	64
Others	19	18	18	19*	3	4	7*
Total	273	347	340	350	205	274	243

\*Unofficial estimates.

<sup>a</sup>Seasons from 1 October to 30 September.

<sup>b</sup>Calendar year.

Domestic consumption of wool during recent years is nearly double that of the prewar period and this tendency is expected to continue. Consumption plus exports have been greater than production due to the previously-mentioned accumulation of stocks.

Sheep numbers in Argentina have declined in recent years due to higher production costs, shortage of farm labor and adverse weather, but at the end of 1949 an increase is apparent, which it is expected will continue.

Table No. 14.--Estimates of Consumption of Wool, Greasy Basis, in Latin America  
(Including Estimates for 1952/53)

Country	Average 1934-38	1948	1949	1953 Estimates
	(..... thousands of metric tons .....)			
Argentina	24	50	55	60*
Brazil	11	13	14	16*
Chile	4	8	8	9*
Uruguay	2	7	7	8
Others	11	12	12	12*
Total	52	90	95	105

\*Unofficial estimates.

Sheep numbers reached record levels in Uruguay in 1949, but it does not seem likely that this high level will be maintained in coming years, since it is reported that overstocking has occurred. It is officially estimated that wool production in 1952/53 will be lower than the 1946-49 average, but still 40 percent higher than in prewar.

## CHAPTER V

### FOOD AND AGRICULTURAL POLICIES AND PROGRAMS IN RELATION TO NUTRITION NEEDS

An attempt is made in this chapter to evaluate in terms of nutritional needs the trends in food supplies for human consumption which emerge from the estimate discussed in the previous chapter.

#### 1. Nutrition and Food Policy

In certain Latin American countries the need to relate food and agricultural policies and programs to nutritional requirements has been recognized. This is encouraging but it is only a beginning and few satisfactory or significant results have as yet been attained. Many countries still pay very little attention to this important aspect of national food policy.

The nutrition workers in this region are generally aware of this matter and its importance. The FAO Conference on Nutrition Problems in Latin America (Montevideo, 1948) called on countries in the region to adopt "programs and measures for the development and orientation of agriculture in relation to production, distribution, and consumption and so obtain better supplies of food for the peoples of this region". The Second Conference on Nutrition Problems in Latin America (Rio de Janeiro, 1950) repeated that "consideration should be given to nutritional principles in planning the production, distribution and marketing of foodstuffs". The FAO Latin American Regional Conference on Food and Agriculture (Quito, 1949) included nutrition in its deliberations. After making some practical recommendations about improvement in nutrition, it pointed out that "the establishment of appropriate food consumption goals by the Governments as part of their production plans is essential to the achievement of the desired objectives".

Improvement in nutrition depends not only on agricultural development but also on increased purchasing power which enables people to afford a good diet. The Rio de Janeiro Nutrition Conference pointed out the obvious fact that "the nutrition of people cannot be improved unless adequate supplies of food within their means are available", the provision of such supplies being "the starting point of any satisfactory nutritional program". The strong influence of price and wage levels on the diets of the population was emphasized. While this Conference did not feel qualified to express views on the economic aspects of this problem, it drew the attention of the bodies concerned with such problems to "the importance of relating economic policy concerned with food production, imports, subsidization and food policies to the nutritional requirements of the population concerned".

#### 2. Nutritional Adequacy of Current Food Supplies

There is considerable evidence to show that typical diets in most countries in the region are unsatisfactory, with consequent ill-effects on health. Malnutrition exists in



most countries but its character and extent vary in accordance with social, economic, geographical and agricultural conditions in individual countries.

More investigations are needed to obtain a clearer picture of the whole situation. It is already known, however, that diets are frequently deficient in certain essential nutrients, especially Vitamin A, riboflavin and calcium, and that shortage of high quality protein exists in many countries of the region.

These deficiencies could be met by the greater consumption of "protective" or nutritious foods, but a substantial and rapid increase in the production of such foods often presents formidable difficulties. Moreover, they are often too costly to be purchased by low income groups in adequate quantities. Considerable increase in the production of vegetable foods of high nutritive value is, however possible in places where, for various reasons, the production of animal foods is not very feasible. More surveys have been reported to be under way during the past year and these are expected to throw more light on the extent of nutritional problems in the region.

Apart from surveys, it is desirable to make an annual study of consumption levels on the basis of food balance sheets, patterned after those made by FAO, as recommended by the Quito Conference last year. The preparation of such food balance sheets requires comprehensive and reasonably accurate data on the production, trade and utilization of different foods in each country. Such information, however, is scanty in many countries. When this is so, the first step should be the organization of suitable machinery for collecting the statistics which are needed in order to formulate sound food policies and adequate programs to implement them.

Tables XXVII and XXVIII in the Appendix summarize information on food supplies available for consumption based on food balance sheets and the estimates discussed in the previous chapter. Table XXVII indicates the per caput annual supplies of foodstuffs available for human consumption at the retail level by the major food groups. Table XXVIII indicates the consumption levels for calories and protein (animal and total). Each table has been divided into two parts. Part A covers those countries for which food balance sheets are available and includes data for prewar and the most recent postwar years, as well as 1952/53 possibilities based on the plans and programs or expectations of the individual governments. Part B, on the other hand, covers those countries for which the data for preparing food balance sheets are inadequate. In these latter countries, the first need is to start the collection of basic data. This must precede any effort to draw up comprehensive food plans. But even without complete data a rough assessment of the improvements which are most needed can be made. This is all the more necessary because the countries which seem to be especially under-nourished are the same as those in which information is lacking.

The tables show that food supplies are inadequate in many countries. Calorie levels are low in most Central and a few South American countries. According to the data available, Argentina, Cuba, Paraguay and Uruguay have a sufficiency; while in Brazil, Chile and Mexico, in which supplies appear to be barely sufficient, a significant increase seems to be taking place. Estimates for the remainder suggest an inadequacy of calories. For some of these countries the data are scanty, but it is probable that more complete information would show that supplies are inadequate or barely sufficient.

In regard to the qualitative deficiencies, supplies of the more nutritious foods are low in almost all countries with the result that diets are deficient in some essential nutrients. This conforms with the results of the few diet and nutrition surveys which have been made.

### 3. The Need for Nutritionally Desirable Goals

After the major defects of the food supplies are known, the next step is to consider ways and means of making them good. Before this can be done effectively however, nutritionally adequate food consumption goals must be set up and changes oriented in the direction of these. It may be objected that the science of nutrition has not yet progressed to a stage at which human requirements of either nutrients or foods can be stated with precision. Nevertheless, sufficient information is available regarding desirable levels of intake for different nutrients and the nutritive value of various foods to enable goals which correspond with "optimum" requirements to be tentatively established. These, however, are more easily established than achieved in practice and for many countries are impossible of achievement in the foreseeable future. It is necessary, therefore, to set up practicable "intermediate" targets the achievement of which in a given period is within the scope of the agricultural, economic and other resources of the country concerned. The FAO Secretariat is now attempting to work out tentative targets for 1960, taking into account the nutritional, agricultural and other relevant factors in different countries in Latin America. It is proposed to discuss these suggested targets with individual delegations at the Conference in the hope that they will be critically examined later by national experts and form the basis of plans and programs affecting food supplies in the period between 1952/53 and 1960.

### 4. Trends and Expected Changes in Food Consumption by 1952/53

Meanwhile it will be useful to consider here some general aspects of the expected 1952/53 supplies which are based on the present plans or expectations of the Governments. Since "enough food takes precedence over the right kind of food" the first consideration should be to increase quickly the calorie levels in countries in which they are too low, preferably by increasing supplies of cereals, fats and especially pulses. Although, as mentioned above, the 1952/53 estimates for Brazil, Chile and Mexico, indicate significant improvement in average calorie supplies, there are other countries in which this is not so, e.g. Peru and Venezuela. Countries in which there is some immediate prospect of raising calorie levels should review their plans so that the expected increases in supplies are in the form of nutritionally more desirable foods. This would apply, for example, to Bolivia and Colombia. In such cases, it would be more desirable to increase the supplies of cereals and pulses rather than those of starchy roots and sugar because the latter are rich only in carbohydrates and poor in most other nutrients. It appears further from the estimates that in some countries there will be an increase in supplies of roots and tubers with a simultaneous reduction in those of cereals and pulses. Such trends are nutritionally undesirable because of the low protein content of starchy roots. Though the basic problem in the region is to increase calorie levels, there is at least one country where the current level is higher than its requirements and the expected 1952/53 level is still higher. Here it would be preferable to improve the quality and variety of the diet rather than to increase the caloric value of the supply any further.

The next most important consideration, after that of minimum calorie needs, is to increase the supplies of foods of special value in improving the national dietary. It should be emphasized in this connection that available supplies of such foods are sometimes not fully utilized either because they are perishable and suitable facilities for distributing them are lacking or because they are not popular articles of diet.

Foods of animal origin are of special importance because they are rich in essential vitamins, minerals and high quality protein. Though the difficulties in providing such foods in adequate quantities for all the people are very real, countries should aim at targets showing as much increases of these as are practicable under the circumstances.

Attention to this aspect appears desirable, for example, in Brazil and Cuba. Where it appears impracticable to effect such increase in animal products, special attention should be given to alternative food groups such as pulses. The first priority among animal foods must be given to milk in view of its exceptional nutritive value and its special importance in child nutrition. It appears, from the data available at this time, that the trend in a number of countries is towards a decrease in milk supplies and an increase in meat supplies. In such countries, plans should be reviewed with due regard to nutritional considerations.

Increased supplies of vegetables and fruits are important because Latin American diets in general contain too little of them. However, in this region, as in most other parts of the world, statistics with respect to these foods are extremely inadequate. It can, however, be assumed that substantial increases in supplies of vegetables and fruits are desirable from the nutritional standpoint. It is therefore highly important that all countries, without exception, include measures for increasing food supplies of these foods in their future plans. There is considerable scope for increasing rapidly the domestic and local production of vegetables, though increasing fruit supplies is often more difficult and slow.

## CHAPTER VI

### GENERAL TRENDS IN AGRICULTURAL PRODUCTION AND POSSIBILITIES FOR EXPANSION

Although exception must be made of some countries, it will be seen from the following analysis that the expansion which may be expected in Latin American agricultural production in the immediate future is not satisfactory for the region as a whole. This is particularly true in the relation between agricultural production and population growth. General trends in the volume of agricultural production and in crop areas per person indicate a low rate of increase in the past few years, and though an accelerated rate is expected in the 1950-53 period, it will still not be sufficient to restore prewar levels. However, due to the large potentialities of this region, there is a great possibility for immediate expansion of agricultural production, as may be seen by a summary examination of (a) effective demand for agricultural products, (b) possibilities of expanding the area under cultivation, (c) increased labor productivity, and (d) increased yields.

#### 1. Trends in Volume of Agricultural and Livestock Production

From available information on 22 principal crops, produced on about 85 percent of the area harvested annually, the following indices have been computed, summarizing the trend of production and available supplies, total and per person, including estimates for 1952/53.

For the region as a whole, agricultural output has been lagging behind population growth, the production per person (Column 3) during 1946-49 being 12 percent below the prewar period. Even if the substantial increases expected in total production (1) by 1952/53 are realized, output per person would still be 5 percent below prewar. The production changes in Argentina, however, have greatly masked the trends in the rest of the region. In Latin America, excluding Argentina (2), there has been a steadier upward trend in production, which is expected to continue through 1952/53, when production per head (4) may again reach prewar levels.

For gross available supplies also, regional trends are masked by Argentina. The regional index of supplies per person (7) during the postwar period is above the index of per caput production. This is due to the much greater proportion of agricultural production retained for domestic consumption in Argentina. On the other hand, in Latin America ex-Argentina available supplies per person (8) immediately after the war had fallen more than production per person, but since then per caput supplies have been rising more rapidly than per caput production. It is expected that by 1952/53 supplies per person will be above prewar, both in the region as a whole and for the region excluding Argentina. This reflects policies and/or expectations of retaining a greater proportion of production than before the war. Finally, it may be noted that total domestic supplies expected in 1952/53 are expected to increase proportionately more for the region excluding Argentina (6) than for the region as a whole (5).

Table No. 15.--Indices of Volume of Production and Available Supplies of 22 Principal Crops<sup>a</sup> in Latin America (Including Estimates for 1952/53) (Base: 1934-38 = 100)

Crop Year	P r o d u c t i o n				Gross Domestic Supplies			
	Total		Per Caput		Total		Per Caput	
	All countries (1)	Excl. Argentina (2)	All countries (3)	Excl. Argentina (4)	All countries (5)	Excl. Argentina (6)	All countries (7)	Excl. Argentina (8)
1945/46	98	108	82	89	104	101	86	83
1946/47	109	115	89	94	120	113	98	92
1947/48	114	120	91	95	126	115	101	91
1948/49	112	126	88	98	129	126	101	98
1949/50	112	128	86	98	...	...	...	...
Average 1945/46- 1948/49	108	117	88	94	120	114	97	91
1952/53	129	137	95	100	144	141	107	104

<sup>a</sup>These index numbers were constructed by applying the FAO uniform price weights which are based upon prices during the 1934-38 base period. The commodities included in these are specified in table No. 12.

Table No. 16 shows the trends in production of individual commodities or groups of commodities included in the previous analysis.

Production of cereals shows great fluctuations during the postwar period, and an average 3 percent decline from the prewar level. These fluctuations are due to the predominant influence of Argentina in cereal production. As may be seen, if Argentina is excluded, there has been a fairly steady upward trend in cereal production. Substantial increases in cereals are expected by 1952/53, both in Argentina and in the rest of the region. The expected increase for the region as a whole is particularly great, due to the Argentine Government's programs for increasing cereal production, along with a continuation of the upward trend in the remainder of the region.

Special note needs also to be taken of oilseeds. Although regional production is about the same as prewar, production outside Argentina has increased some 50 percent. Here again plans for a restoration of prewar levels of linseed production in Argentina, along with expectations of more modest increases elsewhere, indicate that overall production should be much higher by 1952/53, reaching around 23 percent above prewar.

As seen in Chapter IV, a markedly upward trend is evident in the production of roots and tubers, sugar cane, beans, bananas and tobacco. The indices in table No. 16 give the figures for this increase and also show the increases expected by 1952/53. Cotton does not show the same rate of increase and the indices for coffee and cacao production are the lowest for all Latin American crops, although some increases are hoped for by 1952/53, these are not likely to restore the prewar level.

Since information on livestock production is available only for the main producing countries, it is difficult to assess the progress of the region as a whole in this important field. However, changes in livestock numbers - estimated for the entire region - indicate the general trend and prospects for 1952/53. Table No. 17 shows the aggregate

Table No. 16.--Indices of Production of 22 Crops  
(Including Estimates for 1952/53)  
(base 1934/35-1938/39 = 100)

Crop Years	Cereals <sup>a</sup>		Roots and Tubers <sup>b</sup>	Sugar <sup>c</sup>	Beans	Bananas	Oilseeds <sup>d</sup>		Coffee and Cacao	Cotton	Tobacco
	All countries	Excl. Argentina					All countries	Excl. Argentina			
1945/46	86	118	151	122	117	109	102	127	75	101	138
1946/47	101	117	158	156	126	112	97	123	79	96	148
1947/48	107	127	163	163	125	119	108	146	82	97	138
1948/49	97	135	167	160	136	118	100	161	87	115	143
1949/50	88	133	175	165	142	126	96	155	87	126	148
Average 1945/46- 1949/50	97	126	163	153	129	117	101	142	82	108	143
1952/53	121	150	178	173	160	131	123	162	94	129	152

<sup>a</sup>Includes wheat, rye, maize, oats, barley and rice.

<sup>b</sup>Includes potatoes, cassava and sweet potatoes.

<sup>c</sup>Indices of production for raw sugar.

<sup>d</sup>Includes linseed, sunflower seed, cottonseed, groundnuts, sesame and castor beans.

numbers of livestock other than draft animals (cattle, sheep and pigs) in terms of "livestock units", together with trends in livestock units in relation to population.

Table No. 17.--Livestock Units <sup>a</sup>  
(Including 1952/53 Estimates)

Years October-September	Total Units		Index of Livestock per Person
	(thousand)	Index	
Prewar average <sup>b</sup>	119,970	100	100
1945/46	136,360	114	97
1946/47	138,884	116	97
1947/48	143,780	120	99
1948/49	146,069	122	99
Average 1945/46- 1948/49	141,273	118	98
1952/53	156,740	131	100

<sup>a</sup>Based in following ratios: 0.8 for cattle, 0.2 for pigs and 0.1 for sheep.

<sup>b</sup>The prewar figures refer to 1939 for most countries; for others, 1938.

It may be observed that livestock numbers have been increasing at the same rate as the population. With livestock products, as with crop products, increasing demand within the region has often been met, partly by increasing production and partly by decreasing exports (see Table 12, Chapter IV). Consequently, consumption per person is probably slightly higher than in prewar years.

## 2. General trends in crop areas

The postwar area under the 22 principal crops discussed in the previous section has averaged about 5 per cent higher than before the war. However, crop area per person, as measured by these 22 crops, has fallen from 0.36 hectares to 0.3 hectares. Cultivation of some of these crops in Argentina, however, fell substantially over this period and if Argentina were excluded from the total, there would be only a very slight decline in the ratio of crop area to population (0.26 to 0.25 hectares).

Table 18, prepared on the basis of the 22 crops, shows the changes in area for each product or group of products which have taken place from the prewar to the postwar period, and the corresponding estimates for 1952/53. In order to make the picture clearer, figures both including and excluding Argentina are given.

In the prewar period, 60 percent of the area cropped was devoted to cereals, but it declined to 55 percent during the past five years. Again, in the prewar period about half of the total area planted to cereals was in Argentina, but due to an approximate reduction of 4 million hectares in this country during the postwar years, and an increase of 2.5 million hectares in other countries, Argentina's share declined to about one third of the total. This reduction in Argentina, not fully counterbalanced by increases in other parts of the region, has been the main cause, as stated before, of the decline in the regional indices for agricultural production per person and exports. In fact, excluding coffee and cacao, the area planted to all other crops has been increasing in the remainder

Table No. 18.--Area Harvested for 22 Principal Crops in Latin America,  
Including Estimates for 1952/53

Crop Year	Cereals <sup>a</sup>	Roots and Tubers <sup>b</sup>	Sugar	Beans	Bananas	Oil seeds <sup>c</sup>	Coffee and Cacao	Cotton and Cotton- seed	Tobacco	Total	Hectares per Person
(..... Million Hectares .....)											
Average 1934/35- 1938/39	27.1	1.4	2.1	2.0	.57	3.3	5.3	3.0	.25	45.0	0.36
Excluding Argentina	14.1	1.3	1.9	2.0	.57	.5	5.3	2.7	.24	28.6	0.26
1945/46	24.6	2.1	2.8	2.7	.55	3.8	4.6	3.5	.34	45.0	0.30
1946/47	26.8	2.3	3.0	2.9	.58	3.5	4.6	3.5	.35	47.5	0.31
1947/48	25.9	2.4	3.1	2.9	.60	3.8	4.7	3.4	.32	47.1	0.30
1948/49	26.7	2.4	3.1	3.1	.62	4.5	4.7	3.7	.34	49.1	0.31
1949/50	25.0	2.5	3.0	3.2	.63	3.8	4.7	3.8	.35	47.0	0.30
Average 1945/46- 1949/50	25.8	2.3	3.0	2.9	.59	3.9	4.7	3.5	.34	47.2	0.31
Excluding Argentina	16.7	2.1	2.8	2.9	.59	1.0	4.7	3.1	.33	34.2	0.25
1952/53	31.9	2.6	3.4	3.6	.70	4.3	5.0	4.2	.36	55.9	0.33
Excluding Argentina	19.4	2.3	3.1	3.6	.70	1.1	5.0	3.6	.34	39.1	0.26

<sup>a</sup>Includes wheat, rye, maize, oats, barley and rice.

<sup>b</sup>Includes potatoes, yucca and sweet potatoes.

<sup>c</sup>Includes linseed, sunflower seed, peanuts, sesame and castor beans.

of the region. If by 1952/53, as is expected, the past downward trend in area sown to cereals in Argentina will have been reversed, then there is likely to be by that time both increases in area sown to all food crops and also a sharp upward change in the trend of area sown to cereals for the region as a whole. As regards coffee and cacao, the characteristic inelasticity of supplies of these products will prevent any substantial increases from taking place by 1952/53.

### 3. Effective Demand for Latin American Agricultural and Livestock Products

In referring now to the possibility of expanding regional production with respect to effective demand for agricultural products, a very important question arises: In view of present conditions in the economic development of Latin America, is it possible to give new impetus to the agricultural and livestock industries without also speeding up industrial development? The reply to this question is to be sought in the very roots of the economic process, namely the satisfaction of needs which must be met by the agricultural and livestock industries.



As stated before, especially in Chapter V, nutrition levels are too low in most Latin American countries. This is true in both rural and urban areas, and it means that there is still a strong potential demand for foodstuffs. Bearing in mind the rapid increase in population of the region, the need for increase of supplies in the future is still further accentuated. If the dietary deficiencies were limited to the urban population, the improvement of nutritional levels would depend mainly upon an increase in real wages and income derived from industry, and other urban economic activities. However, since in most countries nutritional levels are also inadequate among the rural population, there is still an ample margin for increasing agricultural production to meet the consumption needs of the rural population itself, aside from supplying the demand for farm products of urban or industrial centers. Among rural communities great elasticity of consumption is manifested in many products and countries, e.g. maize in Mexico, wheat in Peru, beans in Brazil, or potatoes in Colombia. In all such instances it is not demand which regulates production, but production which almost automatically regulates consumption. True, there are serious obstacles to the practical implementation of programs for raising food consumption of the rural population to satisfactory levels, but obviously its widespread dietary deficiency is a natural incentive to increasing production, quite independently of other aspects of the economic development.

Another important question related to the need for agricultural expansion has to do with the nature of the industrial development in Latin America. Aside from the fact that production of goods and services in urban centers cannot be expanded if the farms do not provide sufficient quantities of foodstuffs, unless they are imported, Latin American industry is principally based on the processing of agricultural products and consequently cannot expand satisfactorily without their increased domestic supply. This is one of the reasons why many Latin American countries which have already established industries based on the use of imported raw materials, like the sugar refineries of Chile or the textile industry of Colombia, are now trying to produce the required raw materials themselves. If industrial development were based on heavy industry, such as metallurgy, the situation would certainly be different. A second important conclusion is, therefore, that due to the nature of the industrial development of Latin America, expansion of its industries is largely bound up with the further development of agriculture. However, it should be borne in mind that, in turn, the need for more food and raw materials in urban areas will not be translated into effective demand unless industry and trade expand, and incomes rise.

A third reason calling for the development of agriculture is the need which Latin American countries have to export farm products in order to obtain foreign exchange. Since most of these countries are predominantly agricultural, the development of their industry depends to a large extent on the importation of capital goods. Obviously, the possibility of exporting farm products depends on demand in industrial countries, and although this demand is not unlimited, there is still a fair market in various parts of the world for most Latin American products.<sup>1</sup>

The three factors summarily described have a strong bearing on the economic policies of various Latin American countries where, during the past decade, industrial development took pre-eminence over agricultural expansion. At present a return to policies aimed at the development of agricultural production is evident.

#### 4. Prospects for Expansion of Area Through Land Reclamation

It is difficult to comment on the utilization of potential farmland in the region in the absence of inventories of natural resources in most Latin American countries. It would

<sup>1</sup>Further analysis of these problems is made in Chapter VII.

be an oversimplification to take as a basis the geographical area shown in the diagram in Chapter I and to deduce from it that the immediate potentialities are tremendous, since 40 percent of the land is covered with natural forests and woodlands, and 22 percent with pastures and prairies.

With few exceptions, the incorporation of significantly large new areas into agriculture either by irrigation, drainage, land clearance or other such measures termed "land improvement" (bonificación de tierras), is possible only through direct government assistance. This is due particularly to the costliness of the work of bringing such lands under cultivation and the need for additional investments, for example, those required for the improvement of transportation facilities and the solution of serious health and sanitation problems. In order to bring into productivity tremendous expanses of virgin land existing in various parts of Latin America, a virtual land conquest is required. It need not be stressed that these areas will remain beyond the possibility of economic exploitation for many years to come. Nevertheless, they represent long-term potential assets.

In considering irrigation only, it may be asserted that the possibility of increasing substantially the area under cultivation by this means in the near future is comparatively limited. Moreover, much of the work being done now is for the purpose of improving the irrigation of lands already being cultivated. In Chapter II (Table No. 3) it has been seen that the irrigation works planned cover approximately 3.6 million hectares. Since only a part of these can be completed by 1952/53, it is evident that a greater portion of the task of bringing into cultivation 7 million hectares by this time will have to be accomplished by cultivating more of the fallow land, by plowing up natural pastures and by clearing land occupied by natural forests.

In assessing the prospects for development of irrigation in Latin America, account must be taken of the investment required and the cost per hectare of preparing land for irrigation.

From cost estimates for various projects, it may be calculated that in the irrigation of 420,000 hectares, Latin America had made a total investment of approximately U.S. \$125,000,000<sup>1</sup> during the period 1947-49, which represents an average rate of investment of over \$40 million per year. Ninety per cent of this investment was in Mexico, where, since 1947, investment in irrigation works has been at the rate of two hundred million Mexican pesos per year.

In the execution of these projects Latin American countries for the most part are using their own financial resources. For example, Mexico, which negotiated a loan of U.S. \$1,518,875 from the Export-Import Bank for irrigation purposes, during 1949 utilized from this loan U.S. \$727,859, or less than three per cent of the total amount spent in the country on irrigation during that year.

Investment per irrigated hectare varies greatly from one country to another, since differences exist in the costs and the nature and characteristics of each construction project. In Mexico, for instance, whereas irrigation by means of dams and canals means an expenditure of an average of 2,000 Mexican pesos per hectare, irrigation by wells costs only an average 1,000 pesos per hectare. The dollar equivalent of the average investment per hectare brought under irrigation during the period from 1947 to 1949 was as follows for some countries:

---

<sup>1</sup>According to the sums invested or estimated costs of projects in various national currencies, converted into dollars at the prevailing official rate of exchange at the end of each year. In this computation, Argentine investments are excluded.

Venezuela	-	U.S. \$489
Mexico	-	300
Bolivia	-	270
Uruguay	-	200
Chile	-	130
Ecuador	-	115

The most important conclusions to be drawn from the figures on total investments and the previous figures are: (1) that annual investments in irrigation are comparatively low, except in Mexico, but could be increased considerably by appropriate financing; (2) that although these are wide variations, the immediate cost per hectare given above, admitting that it does not cover all the expenses incurred in adapting the land to farming, is not excessive and in many instances is much lower than the average price of irrigated land in the country concerned.

Examination of the scope of current irrigation programs (See Chapter II) and of the financial and cost aspects leads to the conclusion that both in the years immediately ahead and in the long run, irrigation development can make an important contribution to expansion of agricultural production in Latin America. The added area, as a proportion of present cultivated area, cannot be large but in certain regions and for certain crops irrigation can be a major factor.

Over the next few years irrigation projects seem likely to bring more land under cultivation than do the official colonization projects. In the new districts successful colonization calls for simultaneous developments in many other fields; transportation, processing and marketing facilities and housing, and hence is by necessity a slow and gradual development. In the long run, however, it is the opening up of new areas which offers the greatest scope for agricultural expansion.

##### 5. Possibilities of Improving Labor Productivity through Population Resettlement

Generally speaking, it may be said that the expansion of agriculture in Latin America is not limited by scarcity of land but by small population compared with the total area and the bad distribution of the available manpower for efficiency in output per man. A fundamental problem, therefore, is to utilize the labor factor in the best possible manner, since, theoretically, in countries where there is sufficient potential land for farming and the population is sparse, it is more important to concentrate on improving yields per unit of manpower than per unit area. Without accepting this as an invariable axiom, government programs for the development of agriculture and livestock industries should use this as a basic promise.

Agricultural production programs now in operation in Latin American countries seem to indicate that due attention is not always paid to this matter. As stated in the beginning of this report, in many countries in this region, some farmed areas are overpopulated and have extremely low indices of cultivated area per inhabitant, although the surplus manpower could be more efficiently utilized by expanding the area already cultivated. Several countries, as seen in Chapter II, are carrying out programs of farm settlement, but in many instances these efforts are insignificant in view of the magnitude of the problem. True, the solutions required involve extremely complex questions, but it is no less true also that the inability to solve them affects the general productivity of farm labor in areas where the problem of overpopulation is most acute, as in many countries of Central America, in Haiti and the Andean countries of South America.

It would not be possible here to discuss the problem in detail, nor is it possible to treat it in terms of population and farmed areas exclusively. However, in order to illustrate some major aspects of the question, it may suffice to mention a few typical cases of the unequal distribution of population in various parts of a single country. The following table shows the population per square kilometer in various provinces of several Latin American countries.

Table No. 19.--Maximum and Minimum Population Density in Various Latin American Areas

Country	Year <sup>1</sup>	MAXIMUM		MINIMUM	
		Province or Department	Inhabitants per km <sup>2</sup>	Province or Department	Inhabitants per km <sup>2</sup>
Guatemala	1940	Sacatepequez	179	Peten	0.3
Honduras	1943	Valle	270	Colon	0.7
Mexico	1940	Tlaxcala	56	Campeche	1.8
Dominican Republic	1944	Española	165	San Rafael	18.0
Haiti	1937	Oeste	111	Noroeste	72.0
Argentina	1945	Tucuman	27	Territorios	0.6
Bolivia	1943	La Paz	11	Beni	0.3
Brazil	1945	Sao Paulo	32	Amazonas	0.3
Chile	1940	Concepcion	54	Aysen	0.2
Colombia	1943	Atlantico	93	Amazonas	0.05
British Guiana	1943	Demerara	18	Essequibo	0.3
Paraguay	1943	Paraguari	38	Reg. Occidental	0.2
Peru	1945	Cajamarca	19	Madre de Dios	0.1
Uruguay	1941	Canchones	42	Artigas	4.9
Venezuela	1941	Carabobo	44	Amazonas	0.05

<sup>1</sup>Census year or official estimates.

Even within a single province or department uneven distribution of population often exists similar to that shown between various provinces. Part of the difficulty in improving the distribution of population on the land is in many instances the prevailing form of land tenure. Although traditional land tenure systems have social and political aspects which make changes in them difficult, their effect on labour productivity must be emphasized.

The phenomenon of overpopulation of some farmed areas is frequently merely a reflection of the land tenure system. Communities where extreme land division is found are often surrounded by vast estates with cultivable but unused or improperly use land. The importance of the land question and the need for an adequate solution of the land tenure problems are accepted nowadays by even the most conservative economists, because it is understood that the efficiency of production is intimately related to the size of the farm. This problem of land tenure has already been considered to a greater or lesser extent in many Latin American countries, but except for two or three countries, their present programs are very limited in dealing with this basic obstacle to the progress of agriculture.

In areas where the land is too sparsely populated, considerable immigration has taken place, especially in the Atlantic coast countries of South America, by permitting immigration from other parts of the world. Progress in these countries has for many decades depended upon the influx of immigrants. But, since it is now becoming increasingly difficult to expand the cultivated area and since population growth is rapid,

the advantages of immigration are decreasing. The acceptance of new farmer immigrants is now dependent upon the carrying-out of vast colonization projects, involving a very large capital investment. For successful settlement, considerable initial construction work and equipment are necessary. This has not always been thoroughly understood in the countries interested in receiving immigrants, and perhaps even less in those countries desirous of settling their surplus population in other areas. Unquestionably, therefore, in drawing up immigration agreements the country of origin of the immigrants should participate much more actively than at present in the organization and financing of the various colonization projects. This is particularly important in view of the shortage of capital for such investment in the receiving countries.

In deciding colonization policy the resettlement of the existing population needs to be taken into account along with immigration. When there is already a serious imbalance in distribution of a country's population it would not be logical to colonize new areas exclusively with immigrants. Possibly, under certain circumstances and safeguards, and in order to utilize the technical knowledge of farmers from other regions, the establishment of mixed projects including both native and foreign farmers should be carefully considered.

#### 6. Possibilities for Increasing Mechanization of Agriculture

Redistribution of rural population entails both more efficient use of manpower as a factor of production and also some solution to the problem of underemployment. It should be noted that programs to improve soil productivity also affect labor productivity in general. However, this matter must also be considered in its relation to intensive use of rural manpower, which may be achieved by providing better work implements.

The efforts which Latin American countries are making to mechanize agriculture have been reviewed in Chapter II. It would be very difficult to determine the extent to which the official programs for mechanization are adequate, since the profitable use of mechanized farm equipment depends upon innumerable factors, involving obstacles difficult to overcome. These obstacles were analyzed in the FAO/ECLA Joint Working Party Report on Agricultural Requisites. Nevertheless, the progress achieved is relatively slow and animal power is still widely used. Even though since the war Latin America has absorbed approximately one-fifth of the tractors and agricultural machinery entering international trade, the number of tractors in this region is only 1.3 per cent of the world total.

A recent estimate prepared by the FAO<sup>1</sup> shows that since 1930 the total number of traction units has changed.

As for investments made, the f.o.b. export prices<sup>2</sup> of machinery and agricultural implements shipped to Latin America amounted to an average annual sum of US \$100 million in the period 1947-49, of which approximately 50 percent was spent on tractors and the rest on other agricultural machinery and implements. Of these total imports of farm machinery, it is not known how much was imported by the governments. However, most of this investment would appear to have been made by private individuals. All Latin American countries have imported substantial quantities of farm equipment in the period 1947-49, but the largest purchasers, in order of importance, were: Argentina, Mexico, Venezuela, Brazil, Chile, Uruguay, Cuba and Colombia.

<sup>1</sup>*Progress and Economic Problems in Farm Mechanization*, FAO, August 1950.

<sup>2</sup>f.o.b. prices at port of embarkation in the United States, Canada, England, France, Sweden, Switzerland and Australia.

Table No. 20.--Draft Power<sup>1</sup> in Latin America  
(in millions of draft power units)

	As Tractors <sup>2</sup>	As Draft Animals	Total Draft Power Units
1930	0.1	37.6	37.7
1938/39	0.2	42.1	42.3
1946/47	0.4	44.9	45.3
1948/49	0.5	45.2	45.7

<sup>1</sup>In draft power units as follows: Tractors = 6; horse or mule = 1; draft cattle = 0.5.

<sup>2</sup>As far as possible the figures refer to farm tractors, but in some cases no clear separation from horticultural types and tractors used for nonagricultural purposes can be made.

It is estimated that the value of farm machinery and implements manufactured in various Latin American countries during the past three years averages between US \$5 and US \$6 million annually. From import data and figures on domestic manufacture of farm equipment, including miscellaneous expenses such as freight charges, customs duties, and distribution and financing costs, the total investment in mechanized equipment by Latin American agriculture was about \$400 million during the three-year period 1947-49. This means an average annual investment during that period of over \$130 million. Of this US \$400 million, only US \$7.5 million, or 1.75 percent, was foreign credit, of which US \$5 million was an Export-Import Bank loan to Mexico. This country had used US \$4,850,000 by December 1949. The other US \$2,500,000 was an international Bank loan to Chile which was utilized entirely within the period.<sup>1</sup>

In comparing world exports of farm equipment with exports to Latin America, between 1947 and 1949, this region absorbed 20 percent of the total. This proportion might have been even greater if foreign exchange difficulties had not acted as a limiting factor upon demand for these implements. Argentina, for example, which in 1948 imported from the United States, Canada and England 7,480 tractors, in 1949 imported only 631 units from these countries. Uruguay, which in 1948 imported 4,476 tractors from these countries, in 1949 imported only 804. Other countries generally increased their imports of tractors in 1949 over the number imported in 1948, due mainly to priorities given agricultural equipment in the granting of import licenses and in the sale of foreign exchange by the official agencies of each country. In any case, this illustrates that there is a great potential demand for agricultural equipment in all Latin American countries, which means that that continent is capable of absorbing an even greater volume of imports.

The farmers of many countries in this region are desirous of improving agricultural methods by mechanizing their farms, and if endeavors along this line were not complicated by problems of farm prices, production costs, the displacement of farm hands, and the lack of foreign exchange, the process of agricultural mechanization would

<sup>1</sup>During the first half of 1950 Colombia used for mechanization US\$2.7 million of a US\$5 million credit extended by the International Bank. Mexico used the other US\$280,000 of her Export-Import Bank loan and Ecuador received authorization for US\$250,000 credit from the Export-Import Bank, but as of 30 June 1950 has not made any investments.

probably be more rapid than it is in many countries. Venezuela is outstanding in this connection. With an economic structure which gives rise to a system of high exports, prices, and wages, mechanization of agriculture has been greatly facilitated. During the three-year period 1947-49, Venezuela imported tractors at the rate of 1,500 per year, which, in relation to its population and cultivated area, represents one of the highest figures for imports of tractors in Latin America.

Intensified mechanization of agriculture is most urgently required in the countries where depopulation of the rural areas occurs simultaneously with growth of urbanization and of industrial enterprise. This question is becoming increasingly acute in Argentina, for example, where shortage of manpower in the land is retarding the development of agriculture, since it has not been possible adequately to substitute farm machinery for labor moving to the cities. This is the main obstacle encountered at present in maize production, particularly in harvesting the crop. Since maize harvesters are in short supply, the lack of manpower for harvesting constitutes the limiting factor in growing maize. The Government, conscious of this problem of the depopulation of rural areas, is trying to induce the return of labor to farms, but success in this will depend upon improvement of living conditions in rural areas and increase in farm wage levels. This will, in turn, depend upon the more extensive use of farm machinery to make it possible for farm laborers to handle more specialized tasks.

It should be noted here, however, that in underdeveloped areas mechanization of agriculture can only be successfully accomplished if at the same time measures are taken to improve farming techniques and redistribute rural populations. Ancillary measures, such as organization of cooperatives or provision of direct government aid in establishing farm machinery centers, as has already been carried out in many of these countries, may be necessary. Naturally, immediate prospects of agricultural mechanization cannot give rise to too great optimism, despite the effect which the improvement of the productivity of manpower has on agricultural progress, and especially on raising the living standards of the rural population in backward areas and countries where population growth exerts a heavy pressure on agricultural resources. It should be recalled that at the Quito Conference of FAO in September 1949, it was clearly stated that in many instances raising the productivity of farm labor should start by substituting for primitive farm instruments other small but more efficient manual and animal-powered implements.

## 7. Trends in Crop Yields and Its Immediate Prospects

For obvious reasons expansion in volume of production cannot be based solely on extension of cultivated areas; therefore attention in this region has long been directed toward the intensification of production with a view to increasing yields of various crops per unit area or per head, in the case of livestock production. To realize the importance of this, mention need be made only of the approximate 30 percent of the arable land which apparently is not put under crops<sup>1</sup> every year. A great impetus in regional agricultural production would result if at least a part of this area could be put into cultivation annually by the adoption of adequate crop rotation patterns, the use of fertilizers and farm machinery, and the adoption of other modern farm practices.

The measures adopted by the Latin American Governments toward this end have been summarized in the first chapters of this report. Briefly, they are: professional training, experimental research, and extension services. Doubtless this work is bearing fruit, as can be seen in some instances, and beneficial results will accrue in the long run. Nevertheless, if there is a general increase in yields it must be at an extremely slow pace, as no general increase can be discerned from examination of the statistics.

---

<sup>1</sup>See Chapter I, section 3.

Table 21 shows progress in increasing yields per hectare of 11 principal crops, over the 17-year period under discussion. The figures for 1952/53 are based as far as possible on government estimates for production and area, and assume normal weather conditions. According to present expectations for 1952/53, apparently there will be no substantial changes in yields of the major crops as compared with 1934-38, as cereals in general which constitute the basic element in the diet. On the contrary, rice yields show an appreciable increase during the war period, particularly in Peru where improvement in farming methods had outstanding effects. A similar change has occurred in the case of potatoes. No appreciable change is noticed in industrial crops, such as cotton and oilseeds.

It cannot be forgotten that the expansion of the cultivated area to marginal land creates a counterbalancing influence on yields, but another reason for the practically static level of yields per hectare is also the slow adoption of more efficient techniques. There are many determining causes of this situation, which were analyzed in the Report on Agricultural Requisites of the FAO/ECLA Joint Working Party, especially in the first chapter of this report, in which general technological and economic factors were summarized, and in the special chapters on the use of fertilizers and pesticides. The causes are given as: the high cost of agricultural requisites, the lack of sufficient research and agricultural extension services, and finally, a very important factor, the low level of rural prices for the main food crops in some areas.

It would be advisable therefore for government programs to contemplate the adoption of more radical measures than hitherto to increase yields, both in the agricultural and livestock industries which, combined with the more rapid expansion of the cultivated area and better use of the fallow land, would permit them not only to attain higher production levels in keeping with the rate of population growth, but also to achieve the double goal of improving nutritional levels of the population while increasing exports of agricultural raw materials and foodstuffs to other parts of the world.

In comparing estimates for 1952/53 with averages for the prewar years 1934-38, it may be observed first of all that no substantial change is expected in yields of cereals, which constitute the basic food in the diet of the people. Rice is a crop where yields show a noticeable increase over prewar, particularly in Peru where improvement of cultivation methods during the war led to striking results.



Table No. 21.--Yields of Selected Crops in Latin America  
from 1934-38 to 1952/53  
(100 kg. per ha.)

Crops and Countries	1934-38	1945/46	1946/47	1947/48	1948/49	1949/50	1952/53
<u>Wheat</u>	9.5	9.3	9.6	12.7	10.0	10.2	9.7
Argentina	9.8	9.7	10.0	14.1	10.5	11.3	10.0
Other countries	8.7	8.6	8.5	10.0	9.5	8.7	9.1
<u>Barley</u>	9.9	10.4	10.8	10.7	8.7	8.9	10.1
<u>Maize</u>	12.8	10.9	12.8	12.3	11.3	10.2	12.5
Argentina	18.1	14.0	22.6	19.5	15.9	8.8	18.0
Brazil	13.9	13.2	12.7	12.9	12.7	13.0	13.2
Mexico	5.6	6.3	7.2	7.2	7.6	7.0	8.0
Other countries	10.4	10.3	10.6	11.1	10.7	10.7	10.8
<u>Rice (rough)</u>	15.0	17.5	16.7	16.6	16.2	16.3	17.0
Brazil	14.3	16.8	15.7	15.4	15.3	16.1	16.0
Peru	19.9	37.5	31.4	38.8	32.7	31.1	34.5
Other countries	16.4	17.7	18.0	17.8	17.3	16.0	18.1
<u>Potatoes</u>	52.2	60.0	54.0	54.0	52.0	55.0	54.0
Argentina	58.0	66.0	52.0	62.0	47.0	65.0	60.0
Brazil	59.0	49.0	49.0	46.0	50.0	50.0	47.0
Peru	45.0	46.0	44.0	46.0	45.0	45.0	45.0
Other countries	51.5	70.4	61.3	56.9	58.8	56.9	57.8
<u>Beans</u>	6.5	5.7	5.8	5.7	5.8	5.8	5.9
<u>Tobacco</u>	8.5	8.5	8.9	9.0	8.8	8.7	9.0
<u>Cotton (fiber)</u>	2.1	1.6	1.6	1.8	2.0	2.2	1.9
Mexico	2.5	2.7	2.7	2.8	2.9	3.7	3.0
Brazil	1.8	1.5	1.4	1.4	1.7	1.7	1.4
Other countries	2.6	2.5	2.4	2.6	2.3	2.3	2.6
<u>Sunflower</u>	8.9	6.8	6.2	7.3	5.9	5.5	7.5
<u>Linseed</u>	6.5	6.7	6.7	6.7	4.2	5.5	6.8
<u>Groundnuts</u>	8.8	8.5	9.4	9.3	9.4	9.0	8.8

*In comparing estimates for 1952/53 with averages for the prewar years 1934-38, it may be observed first of all that no substantial change is expected in yields of cereals, which constitute the basic food in the diet of the people. Rice is a crop where yields show a noticeable increase over prewar, particularly in Peru where improvement of cultivation methods during the war led to striking results.*

## CHAPTER VII

FOREIGN TRADE IN LATIN AMERICAN AGRICULTURAL COMMODITIES AND  
POSSIBILITIES FOR EXPANSION

Trade in agricultural commodities is an important factor in the general economy of nearly all countries within the region. While as much as 40 percent of the total agricultural production is exported, imports of agricultural products are only about 10% of total domestic supplies of agricultural products. Hence Latin America has to be considered here mainly in the light of its position as a net exporter of agricultural commodities.

1. Changes in Volume of Agricultural Exports and Imports

The following table compares the trends in the volume of agricultural exports and imports with the trends in agricultural production and also shows the importance of exports in relation to production and of imports in relation to total supplies available for consumption. There is indication that levels of agricultural exports in 1952/53 will increase more than 10 percent as compared with the average in the period 1946-49. Such increase will arise mainly through expected recovery in the levels of Argentina's grains production for export. On the other hand, levels of agricultural imports in 1952/53 are expected to be less by some 5 percent as compared with the average in 1946-49.

Table No. 22.--Indices of Trade in Agricultural Commodities and Ratios of Exports to Production and of Imports to Domestic Supplies  
(Including estimates for 1952/53) (Base: 1934-38 = 100)

Years <sup>a</sup>	Production	Volume of Exports	Volume of Imports	Exports as % of Production	Imports as % of Domestic Supplies <sup>b</sup>
Average					
1934-38	100	100	100	46	9
1945/46	98	95	132	45	11
1946/47	109	99	150	42	11
1947/48	114	99	130	40	9
1948/49	112	93	129	38	9
Averages					
1945/46-1948/49	109	97	135	41	10
1952/53 <sup>c</sup>	129	109	128	39	8

<sup>a</sup>Production by crop year. Exports and Imports by calendar year corresponding to the second named year.

<sup>b</sup>Production minus Exports plus Imports. Not including changes in stocks.

<sup>c</sup>Estimates.

Note: The above indexes refer only to 22 crops detailed in Table 8, Chapter IV.

It may be seen that the volume of exports has remained comparatively steady and on the average just a little below the prewar period: The volume of imports for postwar rose to a peak in 1946/47 and has been declining since. Although recently the rate of decline has been slight, the average in 1946-49 was 35 percent above the prewar volume. In relation to production, exports have been slowly declining, which means that most of the increase in production has been absorbed by domestic consumption.

It is interesting to note that despite the rise in the volume of imports, the ratio of imports to available supplies has changed very little. In fact, during prewar as well as in recent years the average degree of self-sufficiency with respect to agricultural commodities has been maintained at a level of about 90 percent of total domestic consumption. These developments have, of course, varied for the different countries and for various commodities. In Chapter IV a general account has been given of changes and expected changes in the situation of each commodity. Here commodities or groups of commodities will be considered from the standpoint of changing relationships between production and exports.

Indices of the volume of exports and imports of individual agricultural commodities are shown in the following Table.

Table No. 23.--Indices of Volume of Exports and Imports of 20 principal Agricultural Commodities in Latin America<sup>a</sup> (Including estimates for 1952/53)  
Base: 1934-38 = 100

Year	Cereals	Sugar	Beans	Bananas	Oil seeds <sup>b</sup>	Coffee	Cocoa	Cotton	Tobacco	Total
I. Exports										
1946	48	123	345	78	59	109	95	167	185	95
1947	58	164	237	83	69	105	86	133	132	99
1948	58	179	203	87	41	118	72	110	99	99
1949	40	159	182	82	37	127	96	99	118	93
Average										
1946-49	51	156	242	83	51	115	88	128	131	97
1952/53	82	173	266	104	67	113	96	113	121	109
II. Imports										
1946	107	192	121	63	86	200	180	611	182	132
1947	147	132	133	79	33	193	107	556	155	150
1948	118	144	164	93	31	190	120	533	109	130
1949	117	144	148	95	53	173	133	556	109	129
Average										
1946-49	122	153	143	83	51	183	133	567	136	135
1952/53 <sup>c</sup>	114	117	129	107	39	167	167	600	164	128

<sup>a</sup>These indices include the same products as those in the indices of Table 9, Chapter IV with the exception of Cassava and sweet potatoes.

<sup>b</sup>Includes oils at seed values.

<sup>c</sup>Preliminary estimate.

The decline of 50 percent in cereal exports has been a decisive factor in the downward trend in total exports, since grains are among the most important items in Latin American exports. Maize exports alone contracted 70 percent, and wheat exports contracted 40 percent. In both cases, the decline as a whole was due to a decline in Argentina's exports which dropped much more than production (42 percent for maize and 20 percent for wheat.) Cereal exports are expected to recover markedly by 1952/53, principally due to Argentina's announced policies, but indications are that they will still be well below prewar levels.

Export of principal oilseeds (including oil in terms of seed), i.e. linseed, sunflower seed, cotton seed, groundnuts, sesame and castor beans, also declined in significant proportions. Here again, though to a lesser extent, Argentina's exports of these commodities averaged 50 percent less in 1946-49 than in 1934-38. Contraction of exports, however, did not result from decreased production as in the case of grains. Regional production of vegetable oils and oilseeds was about the same in the two periods with a slight increase of only one percent in the recent period as against prewar. Exports declined, therefore, due to increasing consumption. Again largely due to changing policies in Argentina exports are expected to recover partially by 1952/53.

Banana exports in 1946-49 declined 17 percent as compared with the volume of annual exports in 1934-38, although prospects are that by 1952/53 exports will again have reached prewar levels. Countries with declining exports were Colombia, Brazil and also some of the Caribbean islands. Other producers increased their exports, with Ecuador, Costa Rica and Guatemala showing the more important increases. Regional production increased by 10 percent.

Exports of sugar, pulses (dry beans), cotton, and tobacco have increased with increasing production. This trend is expected to continue for sugar and dry beans. Cotton exports have already fallen below the high immediate postwar levels and little further change is expected by 1952/53 on the basis of present production plans.

The 1952/53 import figures reflect the general tendency of deficit countries to try to produce their own needs, especially of basic foodstuffs. Imports of cereals, sugar, drybeans, oilseeds and coffee are expected to tend downward. Bananas and cacao are exceptions among foods. Expected higher imports of raw materials - cotton and tobacco - appear to reflect continuation of the trend away from imports of finished products to importation of raw materials for processing. This has been particularly important in the case of cotton.

Production and exports of coffee have presented a picture different from that of grains, oilseeds and bananas. For grain exports declined more than production; exports of vegetable oils and oilseeds declined in spite of unchanged production, and banana exports declined although production increased. But, exports of coffee increased while production decreased. During 1946-49 the average annual production was 20 percent lower than that of the period 1934-38, while exports were 15 percent higher than prewar. In fact, in recent years there has been an apparently paradoxical situation, with exports larger than total production, which has been made possible by the large Brazilian stocks accumulated during the nineteen thirties. With these stocks gone some decline is to be expected in exports despite higher production.

Regional exports of cacao for 1946-49 declined 12 percent from prewar levels. At the same time regional production was 7 percent lower so that exports declined to a greater degree than production, as a result of increasing consumption in the producing countries. Recovery of exports to near prewar levels is expected by 1952/53.

Exports and imports of meat have followed a pattern similar to total agricultural exports and imports (see table 15 chapter IV). The volume of exports declined 9 percent between prewar and the period 1946-49, while meat production - for the eight countries for which information is available - increased during the same period by 9 percent. At the same time imports of deficit countries rose. It is expected that gross meat exports will rise by 1952/53.

Whatever the future trends of exports and imports may be it seems appropriate to examine the significance which foreign trade of agricultural commodities may have in the future economic development of the region.

For a better understanding of this problem it is necessary to review briefly the balance of payments situation during the last few years, and the part played in it by agricultural products. Possibilities of expansion for specific products will be examined later taking into consideration the international outlook for prices and demand.

## 2. Latin American Balance of Payments during 1947-49

The Latin American- extraregional - balance of payments on current and capital account in 1947 resulted in a deficit of 420 million dollars. In 1948 this changed to a surplus of over 120 million dollars. This surplus situation persisted through 1949, although<sup>1</sup> it seems to have been of smaller proportions than in the previous year. The surplus position of the last two years was in contrast with the deficit position during the first postwar years. At that time, the pent-up demand, cancelation of debts, and the repurchase of local foreign assets, brought about an excess of debits over credits on the foreign payments accounts.

Since 1947 a general effort has been made to reduce the deficit and to stop the drainage of gold and foreign exchange reserves. At the same time, however, efforts have been made to maintain in its levels at least imports of prime necessities, raw materials and capital goods, as needed to keep on the new levels of economic activity within each country. Important factors which helped in this process of readjustment of the balance of payments were: (1) the terms of trade; (2) the inflow of private capital; and (3) controls and regulation on foreign exchange and trade.

The terms of trade generally improved to the advantage of many countries, as rises in their export prices were higher than in import prices. The inflow of private capital often assisted in the expansion of export industries and generally improved the exchange position of several countries. Finally, foreign trade and exchange controls and regulations acted by limiting or channeling imports, which tended to expand in proportion to the degree of inflation existing in each country.

The balance of trade for the region was favorable during these three years. Trade relations with the United States, however, resulted in a deficit year after year. On the contrary, trade with Europe and other areas of the world produced a surplus.

In recent years, when Latin American surpluses with Europe were declining and balances in European currencies formerly accumulated were almost offset, the region was driven to a reduction of deficits with the United States, mainly by reducing imports from that origin. Many countries were compelled to this limitation of imports especially by sharp declines in their gold and dollar reserves accumulated during the war period. Thus, while exports to the United States were maintained more or less unchanged, imports

---

<sup>1</sup>The final figure not yet available.

Table No. 24.--Latin American Republics - extraregional - balance of payments  
(Millions of U.S. dollars)

	1947	1948	1949 <sup>1</sup>
Trade balance (Exports f.o.b. minus Imports f.o.b.)	+ 522	+1,290	+ 600
Services (net)	<u>-1,269</u>	-1,432	-1,150
Balance on Goods and Services	- 747	- 182	- 550
Capital Movements (net): -Private	+ 605	+ 534	+ 620
-Official	- 37	- 68	- 75
Errors and omissions and unidentified multilateral settlements	<u>- 244</u>	<u>- 160</u>	<u>- ...</u>
Compensatory official financing surplus (+) or deficit (-)	- 423	+ 124	+ ...

<sup>1</sup>Preliminary.

Sources: *International Monetary Fund - Survey of Current Business*, U.S. Department of Commerce - *Economic Survey of Europe*, 1948 and 1949.

declined from year to year and the deficits have actually been reduced. This improvement in the trade balance with the United States has been the main factor in the reestablishment of equilibrium in the balance of payments of the region during the last two years. On the other hand, while Latin America pursued the reduction of its deficits with the United States, the region was unable to continue securing high surpluses with Europe which rather declined year after year because of increasing imports from Europe and declining Latin American exports to that Region. Contraction of exports to Europe originated for the greatest part in lowered Argentina's production of agricultural exports. Other factors slowing down exports to Europe were the increased desire by Latin America for higher liquidity in foreign balances (especially with the devaluing countries), and increased difficulty for Latin American suppliers to continue extending credits to European buyers.

The preceding figures show the value of exports (f.o.b.) and imports (f.o.b.) by main areas of origin and destination and the respective inter-regional trade balances which in general were always favorable to Latin America. The deficits with the United States were more than counterbalanced by surpluses in other regions, resulting in a net surplus in the total for Latin America. The final result shows the significance of multilateral trade in the foreign transactions of the region.

In the balance on Current Account, Latin American deficits with the United States are of higher proportions than in the balance of trade. With Europe and the other areas, on the contrary, Latin American surpluses on current account are less heavy than in the balance of trade. This means that net payments on services and other invisible factors are in both cases against Latin America, and that the surpluses on trade are insufficient to cover liabilities for services and invisibles. Income payments from foreign investment in Latin America has been the principal factor in such a situation causing a substantial outflow of foreign exchange in the form of profits or dividends.

Table No. 25.--Exports, Imports and Trade Balances  
(Billions of U.S. dollars)

I. Exports f.o.b. (extraregional)

Year	To United States <sup>a</sup>	To Europe <sup>b</sup>	To Other Regions <sup>c</sup>	Total Extra-regional
1947	2.3	2.6	.5	5.4
1948	2.6	2.4	1.1	6.1
1949	2.5	1.7	.8 <sup>p</sup>	5.1 <sup>p</sup>

II. Imports f.o.b. (extraregional)

	From United States <sup>a</sup>	From Europe <sup>b</sup>	From Other Regions <sup>c</sup>	Total Extra-regional
1947	3.7	1.1	.1	4.9
1948	3.1	1.3	.5	4.9
1949	2.7	1.4	.3 <sup>p</sup>	4.5 <sup>p</sup>

III. Trade Balances

	With United States	With Europe	With Other Regions	Total Extra-regional
1947	-1.4	+1.5	+.4	+ .5
1948	- .5	+1.1	+.6	+1.2
1949	- .2	+ .3	+.5 <sup>p</sup>	+ .6 <sup>p</sup>

<sup>a</sup>U.S. data.

<sup>b</sup>European data.

<sup>c</sup>By difference between the two previous and the total

<sup>p</sup>Preliminary.

Table No. 26.--Balance on Current Account  
(Millions of U.S. dollars - in round figures)

	1947	1948	1949 <sup>p</sup>
With the United States	-2,000	-1,200	-800
With Europe and other areas	+1,260	+1,020	+250
Total	- 740	- 180	-550

<sup>p</sup>Preliminary.

A distribution of this balance on Current Account, with a separate indication of the two main groups on "Service Accounts" is presented in Table No. 27.

Table No. 27.--Main Groups in the Current Account Balance  
(Millions of dollars)

	1947	1948	1949 <sup>p</sup>
Trade Balance	+ 522	+1,250	+ 600
Total Service (net)	-1,269	-1,432	-1,150
- Investment income (net)	- 708	- 832	- 650
- All "Other Services" (net)	- 561	- 600	- 500
Total Goods and Services (net)	- 747	- 182	- 550

<sup>p</sup>Preliminary.

### 3. Significance of capital inflow and the terms of trade on the balance of payments -

From the brief review in the preceding paragraphs it is possible to understand why Latin America has to limit its imports, although it would seem possible they might be larger on the basis of the corresponding value of its exports. In fact, from 1947 to 1949 surpluses on trade balances amounted to 2.4 billion dollars against a total deficit of 1.7 billion on the net of the "Other Services" account. In "Other Services" are included all net expenditures in transportation, insurance, travel and other invisibles which can be considered inherent in current trade transactions. The comparison of these results seems to suggest that the surplus in exports against imports will be more than enough to make up for the debit arising out of "Other Services", which as said before, could be considered related to trade. The net export surplus, after deducting "Other Services" would have been some 700 million dollars in favor of Latin America, an amount which could have been used, under different conditions, to increase imports by similar proportions. However, since there have been substantial foreign investments within the region for a long time, there is a continued need of foreign exchange in significant amounts to pay out profits and dividends on these investments. The region therefore has to reserve a rather significant share of its current income of foreign exchange for such payments. Foreign investment thus becomes in a way a limiting factor to the use of Latin American income from current exports, and results in a limitation of imports. This seems to suggest, on the other hand, that present surpluses of exports against imports - as they are now and are likely to continue in the short run - are too small and rather insufficient for building up a better and stronger financial position for Latin America.

Private capital movements, with a net inflow to the region, have contributed significantly to the reduction of deficits and to bringing about a surplus in the Latin American balance of payments during the last two years. From 1947 to 1949, for instance, while payments abroad for investment income amounted to a total of 2.190 million dollars leaving the region, the net private capital inflow - through capital imports or repatriation of capital - amounted to 1.760 millions. This indicates that a large part of such investment income was compensated for by capital inflows looking for investment, it being probable that a large part of this capital inflow has gone to capitalize export industries which, in time, will be reflected in increasing levels of the Latin American exports.

Table No. 28 presents the net inflow of private capital to certain countries and the total for the region during 1947 and 1948. In these inflows are included imports of foreign capital as well as repatriations of capital, and comprise the movements of capital on both long and short term.

The terms of trade, i.e. the relationship between the levels of export prices and import prices, have benefited many countries of the region in recent years, although these



Table No. 28.--Private Capital Movements  
(Millions of U.S. dollars)

	1947	1948
Total 20 Republics	609.0	534.0
Venezuela	263.4	318.8
Brazil	126.0	112.2
Colombia	41.2	17.2
Argentina	-39.9	5.6
Cuba	29.7	-10.4
Uruguay	26.0	5.0
Mexico	26.0	1.6
Peru	24.6	2.5
Costa Rica	18.0	- 0.4
Dominican Republic	8.8	11.6
10 Other Republics	80.2	45.3

<sup>1</sup>Net inflows.  
The sign (-) represent net outflow.

terms have deteriorated lately through lowered export dollar prices for some commodities, particularly meats, which were a consequence of the sterling pound devaluation, and have affected some countries such as Uruguay and Argentina. Changes and fluctuations of these terms of trade obviously become very significant to the balance of payments of the region. The great increase in coffee, wool and cotton prices, for example, as well as less significant increases in the prices of products such as cocoa and tobacco, will have a great effect upon the financial position of many countries, especially with respect to the exporters of these commodities. Through multilateral trade and intra-regional transactions, however, some part of those benefits may also be extended to the rest of the countries in the region. The extent to which such benefits may spread over the whole region will depend, of course, upon the character and intensity of the economic relationships between the different Latin American countries.

Although a continued improvement in Latin American terms of trade through rising export prices would be a contributing factor to the economic progress of the region, it could not be regarded as a basic factor of economic expansion. Lasting changes in price relationships between primary and manufactured goods generally derive from long term economic processes and advancements rather than from cyclical movements and/or short term market fluctuations. Export price increases derived from the latter certainly bring about real benefits to the exporters of the affected commodities, but it is also true that those benefits are temporary in character and conflict with rising costs of production (mainly wages), since such export price trends at any time may be reversed. Sound economic expansion, therefore, is much better founded on increasing production and rising levels of effective demand, rather than on increased price levels originating from temporary or artificially induced shortages of production, which may end in contractions of effective demand, shifts in consumption, or changes in the sources of supply.

#### 4. Agricultural expansion and the balance of payments -

Apparently, greater surpluses in the balance of payments are needed to impel and accelerate the rate of economic progress in Latin America. Surpluses in any of the items would assist, but undoubtedly, an expansion of exports will be most important. Such expansion of exports can bring about the increase in the inflow of foreign exchange which is so sorely needed, (1) to avoid present and sometimes unsound limitations in imports;

(2) to avoid or to eliminate the need for limitations on capital movements and transferences of income from foreign investments; (3) to meet increasing rates of imports arising from the overall internal economic expansion; (4) to permit the undertaking of investments in such areas of enterprise which would reduce service payments to other countries, for example in transportation. So far it seems that the crucial problem in solving questions of international equilibrium as well as questions of economic development, is the problem of raising exports, which should expand as a "sine qua non" condition to the solution of other economic problems in the region.

Agricultural exports are vital to Latin America, now as in the past. This indisputable position of agricultural production for export, as a permanent source of foreign exchange and as a main factor of economic activity, is illustrated by table 29 showing for each country the percentage value of one or more of its major exports with relation to total export. There are countries where a single commodity represents almost the total value of exports, such as Cuba and El Salvador. There are others where two or three commodities represented 60 percent and over of the total value of exports, actually this being the case for most of them. The export of a single mineral commodity is highly significant for three, namely, Venezuela, Bolivia and Chile; and diversification of exports apparently seems to be more the exception rather than the rule for the countries in the region.

In addition, the table presents the index value of total exports in 1949 against 1938, by countries, and compares such index as computed on current dollars basis with the same as computed on constant dollars basis, this last one reflecting furthermore changes in real value of total exports for each country.

Considering the situation and outlook of the balance of payments in relation to Latin American agricultural production and development, it is possible to point out two important facts which should be borne in mind whenever economic planning is contemplated for the countries in the region. They are: (1) Agricultural exports have a traditional position and are fundamental among the balance of payments' credit elements; (2) the region has great potentialities for investment and normally there is a steady inflow of private capital.

On the basis of the above information it is easy to understand the undeniable and necessary influence that any program for agricultural development in the region will have upon the future situation in the balance of payments. Development programs generally are intended in some cases to increase exportable production, in others to increase domestic supplies for consumption of commodities which need to be imported because of shortages of internal production. Agricultural programs directed toward either of these situations will surely affect favorably the balance of payments position. In both cases the result will be a larger availability of foreign exchange which may be used in raising imports of other consumer goods or in increasing imports of capital goods. This last possibility is of great importance in accelerating the process of economic development of the region.

Even in cases where the agricultural programs are intended only for the purpose of raising the nutritional levels, by expanding production of commodities at present being neither imported nor exported, an ultimate effect upon the balance of payments is likely to exist. This effect will come from the fact that, in case the programs succeed in increasing food production and consumption, there will be an increase in levels of real income, with a resulting increased rate of savings or an increase in the levels of total consumption. In both cases, the consequence will ultimately be an eventual increase of imports, either of consumer goods or capital goods. Imports for consumption will increase to the extent that increases in income are neither saved nor spent in consumption

Table No. 29.--Indexes of current and real value of total exports in 1949 against 1938; and major exports as a percentage total value of exports in 1938 and 1948 respectively

Country	Index Value of Total Exports in 1939 (1938=100)		Major Exports	Percent Value of Total Exports	
	Current \$ basis	Constant \$ basis		1938	1948
Venezuela	584	295	Petroleum	92	97
El Salvador	550	278	Coffee	92	80
Dominican Republic	493	249	Sugar, Cocoa, Coffee tobacco	83	84
Haiti	443	225	Coffee, sugar	--	--
Cuba	407	206	Sugar	78	90
Mexico	397	201	Lead, cotton, petroleum, silver, zinc, coffee, copper	75	50
Colombia	377	190	Coffee	61	77
Nicaragua	375	190	Coffee, bananas, sesame	65	67
Brazil	368	186	Coffee, cotton, cocoa	67	63
Paraguay	367	185	Quebracho, meat, hides cotton	62	64
Costa Rica	333	169	Coffee, bananas, cocoa	85	81
Guatemala	325	165	Coffee, bananas	92	83
Uruguay	315	159	Wool, Meat, hides	82	74
Bolivia	300	152	Tin	68	65
Ecuador	280	141	Rice, cocoa, coffee, petroleum	69	93
Panama	275	139	Bananas, cocoa	89	69
Argentina	223	113	Grain, meat, wool, hides	67	76
Chile	215	109	Copper	52	60
Peru	200	101	Cotton, sugar, petroleum, copper	82	71
Honduras	182	92	Bananas	74	66

Source: *International Financial Statistics, Published by the IMF.*

of domestically produced goods; and imports of capital goods may increase when increases in income are saved, and will to the extent that the resulting investments are made in imported capital goods. Consequently, even in this case of agricultural programs aimed at raising the nutritional levels, though the commodities concerned may not be at present a matter of foreign trade there will eventually be an effect upon the balance of payments situation. This is important in considering the coordination of agricultural development programs with the general economic policy.

##### 5. Expansion of agricultural exports and international outlook -

It is apparent that the present international situation regarding the markets for principal Latin American agricultural export commodities allows for a considerable expansion of production and exports of such commodities. The recent FAO Report on "World Outlook and State of Food and Agriculture, 1950" to the 1950 Session of the FAO Conference contains a detailed analysis of this situation which need not be repeated here. Also during the First Latin American Regional FAO Meeting, held in Quito in September 1949, this situation was considered in some detail and the conclusions were included in the General Report of the meeting. The conclusions reached then are still valid. For these reasons the following review will include only points of more recent interest and especially those questions deserving further attention under the present circumstances.

It should be pointed out, however, that government programs related to exportable agricultural production should be continually adjusted to changes in international outlook. Sudden increase in supply or sudden contraction of demand will tend to cause a fall in prices and/or the piling up of surpluses. For this reason the considerations mentioned here refer particularly to prospects for the next two or three years. At any rate, farmers should be constantly informed of changes in world prospects, so they might be able to establish their production programs accordingly. (See document LA/2/5.)

Price trends. World prices for agricultural commodities have in recent years been generally higher than in prewar, thus raising significantly the value of Latin American exports. Price changes varied for the different commodities, and in many cases such as for coffee, cocoa, cotton and rice, price increases were much higher than that for manufactured goods in the principal industrial countries, which are at the same time the principal importers of Latin American exports and suppliers of Latin American imports. This resulted in a net improvement in the Latin American terms of trade and led to a real increase in its value of exports, despite a decline in the physical volume, as has previously been pointed out.

The following table presents, in the form of indices, the world price changes in principal buying markets, affecting nine principal Latin American agricultural export commodities. It shows the relative increase for each product and its level with reference to quotations until June 1950. For a better appreciation of the relative improvement for each product in relation to changes in the real value of two most used means of international settlements, at the bottom of the table are given the indexes on the Wholesale Price Indexes for All Goods in the United States and the United Kingdom, respectively. This comparison is important because these two countries are the main Latin American markets for exports as well for imports, and consequently price relationships for the commodities traded with them are decisive factors in the Latin America's terms of trade.

The Market situation for selected commodities - Grain production and exports can be expanded generally, with expansion of wheat production mainly for purposes of internal consumption. Traditional foreign markets of Latin American wheat can continue to import in large volumes, as they did before, on the basis of competitive international prices. Future conditions for maize seem to be better than for wheat since world demand is increasing at high rates.

Regarding rice it is well to insist on the need for further reduction in costs of production in order to bring Latin American export prices to a level more nearly in conformity with the world market. However, some increase in immediate export possibilities have come into existence, particularly as a consequence of the Korean situation. It is likely that some soft currency countries may become ready to pay relatively high prices for this product.

World sugar consumption has increased and it is likely that demand will improve even more in 1950/51 and 1951/52. In regard to this commodity, the conclusions and recommendations of the International Sugar Council, already submitted to the consideration of the respective Governments, are of great interest for the producer countries.

Special attention must be given to the situation of vegetable oils and oil seeds, expansion of the production of which has been sought in recent years by several Latin American countries. Increases of production in the U.S. and a sharp drop in dollar prices during 1948-49 have produced a confused picture in the situation, due to the

Table No. 30.--Price Relatives of certain Agricultural Commodities  
important in Latin American Exports  
(Base 1938 = 100)

Commodity	Market	Average 1947	Average 1948	December 1949	June 1950
1. Coffee	United States	338	334	628	612
2. Wheat	United Kingdom	154	165	170	170
3. Sugar	United States	181	169	176	168
4. Wool	United States	186	182	187	230
5. Meat <sup>a</sup>	United Kingdom	162	177	125	143
6. Cotton	United Kingdom	356	390	346	381
7. Cocoa	United States	658	750	489	581
8. Tobacco	United States	204	207	219	217
9. Rice	United Kingdom	385	448	330	330
		Average 1947	Average 1948	Average 1949	June 1950
U.S. wholesale price index, all goods <sup>a</sup>		176	191	175	182
U.K. wholesale price index, all goods <sup>a</sup>		176	202	222	236

Source: *International Financial Statistics*, (except for meat which refers to domestic U.K. prices)

<sup>a</sup>1937 = 100.

fact that it is possible now for many countries of the region to import from this source at prices lower than those of the domestic production. Owing to the greater self-sufficiency of North America in fats and oils and the dollar shortage of most of Europe, Latin American exporters naturally found it easier to find markets in the soft currency countries, especially at the higher prices as compared with those for dollar supplies. As it is probable that such prices will tend to level off due to increases in supplies from other sources, it would be wise for any program related to these commodities to be based on long term considerations rather than on the existing market conditions. Therefore, formulations or revisions of programs should consider not only costs of production but also long term market prospects.

The outlook for production and exports of coffee is excellent from all points of view. The difficulty of expanding supplies in a short time become a limiting factor to greater Latin American benefit from the situation, and this limiting factor will prevail for some years to come. Although world demand in 1950-1951 may drop by 10 to 15%, world prices are likely to remain some 60% higher than in 1949. It is difficult to estimate the new demand levels and prices further in the future, but no doubt any further increase in production for export will become profitable for Latin American producers.

Although there is a high level of world demand for cacao, producers are reluctant to increase plantations for fear of sudden changes and a future fall in prices. Latin American prospects for expansion, however, are good, especially considering the difficulties facing producers in other areas, such as those in Western Africa due to the swollen shoot disease.

Latin American exports of tobacco, which declined in recent years, will continue without any significant change in the near future. However, opportunities for expansion exist in view of the situation in some of the European markets, where supplies have

declined because of a contraction of the United States exports because of increased local consumption in that country.

There are good prospects for an increase of cotton production in Latin America. Production in the U.S. in 1950 declined by nearly 40%, and the new defense programs will support an even higher demand than in previous years. The first sign of this situation is a sharp increase in prices during the second half of 1950. U.S. production will increase in 1951-1952 and world demand will continue high, due to increased consumption in the U.S. as well as in India, China and the U.S.S.R.

A similar situation is expected in hard fibers - abaca, henequen, sisal, and jute. Demand for the hard fibers is high, especially as a result of the defense programs. Supplies of jute are still low, and the use of substitutes continues. Possibilities for expanding production of hard fibers in Latin America are great. The recent Brazilian experience is important in this respect. Production of jute in Brazil increased very significantly in the past few years, and that country expects soon to be self-sufficient in this fiber. Other countries of the region have been developing production of various long vegetable fibers to be used as jute substitutes.

The world wool position will continue tight, at least during the next two years. This has created serious problems to which an adequate solution is now being sought. It is apparent that any increase in production by Latin America in the near future will find ample outlets in the world market. Under the assumption of an increase in production in other areas, in years to come the problem will mainly be one of a reduction of costs in order to meet competition on the world markets.

There is no doubt about the need for expanding production of meat for domestic consumption in most Latin American countries, with the exception of Argentina and Uruguay. Expansion of production for export, however, seems liable to certain difficulties in the near future. This may arise from substantial increases of European production, and from current differences between Great Britain and some Latin American suppliers with respect to meat prices. The long term outlook, on the other hand, seems to be good, due to higher levels of economic activity and rising incomes in the principal consumer countries.

As a final consideration regarding the foreign trade of Latin American agricultural commodities, it should be stated that development programs would not obviate the need for a further diversification of production for export in order to reduce the present dependence, evident in some countries on single export commodities. This certainly cannot be achieved in a short while, but it is something which requires keen attention by the countries concerned.

Table I.--Indexes of Agricultural and Industrial Production  
Building Activity and Agricultural Prices in  
Four Latin American Countries

Country	Agricultural <sup>a</sup> Production	Industrial Production	Building Activity	Agricultural <sup>a</sup> Prices
	(1934/35-1938/39=100)	(.....)	.....1937=100.....	(.....)
Argentina				
1946	98	151 <sup>b</sup>	125 <sup>b</sup>	173
1947	114	163 <sup>b</sup>	139 <sup>b</sup>	161
1948	112	165 <sup>b</sup>	136 <sup>b</sup>	...
1949	102	...	...	...
Brazil				
1946	106	179 <sup>c</sup>	289 <sup>d</sup>	273 <sup>e</sup>
1947	106	180 <sup>c</sup>	236 <sup>d</sup>	...
1948	109	199 <sup>c</sup>	207 <sup>d</sup>	...
1949	111	205 <sup>c</sup>	193 <sup>d</sup>	...
Chile				
1946	108	145 <sup>c</sup>	228 <sup>f</sup>	239
1947	108	148 <sup>c</sup>	177 <sup>f</sup>	329
1948	114	154 <sup>c</sup>	162 <sup>f</sup>	388
1949	119	161 <sup>c</sup>	158 <sup>f</sup>	442
Mexico				
1946	124	152 <sup>c</sup>	...	288
1947	129	147 <sup>c</sup>	...	297
1948	139	148 <sup>c</sup>	...	289
1949	149	162 <sup>c</sup>	...	292

...Not available.

<sup>a</sup>FAO, *Statistical Yearbook 1950 and Monthly Bulletin of Statistics*.

<sup>b</sup>ECLA, *The Economic Development of Argentina 1950*, pg. 21.

<sup>c</sup>IMF, *International Financial Statistics*, May 1950.

<sup>d</sup>*Sinopsis Estadística do Brasil 1946; Conjuntura Económica do Brasil Ano IV No. 8 Index reconverted, 1937 base.*

<sup>e</sup>*Revista Brasileira de Estatística*, July-Sept. 1948, pg. 487.

<sup>f</sup>*Estadística Chilena, Sinopsis 1949*, pg. 642.

Table II.--WHEAT - Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED			PRODUCTION			
	Annual Average		Year	Annual Average		Year	
	1934/35- 1938/39	1945/46- 1948/49	1949/50	1952-53 Estimates	1934/35- 1938/39	1945/46- 1948/49	1949/50 1952/53 Estimates
(.....1,000 hectares.....) (.....1,000 metric tons.....)							
<u>Mexico and Central America</u>							
Guatemala	14	18	...	20*	10	11	...
Honduras	...	6	8*	10	...	4	2
Mexico	489	490	535	758	374	396	503
Total	510	510	560	790	390	410	670
<u>South America</u>							
Argentina	6,783	4,810	4,534*	6,300*	6,634	5,322	5,144*
Bolivia	34 <sup>a</sup>	23	37	38*	33 <sup>a</sup>	17	28
Brasil	160	386	622	960	144	303	472
Chile	800	794	833	850	851	998	831
Colombia	134	154	178	194	107	100	134
Ecuador	...	68 <sup>b</sup>	77	80*	19 <sup>a</sup>	26 <sup>b</sup>	32
Paraguay	...	3	...	2*	...	2	...
Perú	109	111	...	160*	76	108	...
Uruguay	484	437	529	520	365	335	449
Venezuela	13 <sup>c</sup>	13 <sup>b</sup>	14	14	7 <sup>c</sup>	7	10
Total	8,560	6,800	6,974	9,110	8,240	7,220	7,224
TOTAL LATIN AMERICA	9,060	7,310	7,534	9,900	8,630	7,630	7,724
							8,910
							9,580

\*Unofficial Estimates.

<sup>a</sup>Year 1938.

<sup>b</sup>Average partially estimated.

<sup>c</sup>Year 1937.



Table III.--WHEAT - Net Trade and Gross Domestic Available Supplies in Latin America  
(Including estimates for 1952/53)

Country	Net Trade		Gross Domestic Available Supplies				
	Annual Average		Total		Per Caput		
	1934-38	1946-49	1952/53 Estimates	1934-38	1946-49	1952/53 Estimates	Year
Mexico and Central America							
.....1,000 metric tons.....) (.....Kilograms.....)							
Costa Rica	+11	+21	+25	11	21	25	27.0
El Salvador	+10	+12	+14	10	12	14	6.0
Guatemala	+13	+23	+30	23	34	40	9.9*
Honduras	+7	+9	+10	10	13	14	10.4
Mexico	+19	+287	+225	393	683	880	33.5
Nicaragua	+6	+9	+10	6	9	10	8.0*
Panama	+11	+15	+18	11	15	18	22.0*
Total	-80	+380	+380	470	790	1,000	27.1
Caribbean Area							
British W.I. <sup>1</sup>	+122	+174	+190*	122	174	190*	66.0*
Cuba	+121	+195	+207*	121	195	207*	38.0*
Dominican Republic	+7	+18	+20*	7	18	20*	8.1*
French W.I.	+22	+35	+40*	22	35	40*	70.0*
Haiti	+14	+26	-27*	14	26	27*	7.0*
Netherlands W.I.	+7	+8	+10*	7	8	10*	55.5*
Puerto Rico	+48	+71	+77*	48	71	77*	33.0*
Total	+340	+530	+570*	340	530	570*	32.0*
South America							
Argentina	-3,340	-1,933	-2,800*	3,294	3,389	3,500*	204.0*
Bolivia	+36	+56	+50*	69	73	80*	18.9*
Brazil	+990	+839	+670	1,134	1,142	1,420	27.0
Chile	-11	+10	-	840	1,008	1,105	182.3
Colombia	+15	+41	+20	122	141	172	14.5
Ecuador	+13	+30	+35*	32	56	70*	18.5*
Guianas	+30	+31	+36*	30	31	36*	51.2*
Paraguay	+32	+35	+40*	33	37	42*	30.0*
Peru	+128	+165	+160	204	273	305	35.0*
Uruguay	-72	-9	-40	293	326	350	143.4
Venezuela	+30	+116	+120	37	123	125	25.0
Total	-2,150	-620	-1,710	6,090	6,600	7,200	63.3
TOTAL LATIN AMERICA	-1,730	+290	-810	6,900	7,920	8,770	52.0

\*Unofficial estimates.  
<sup>1</sup>Including British Honduras.  
+Net imports.  
-Net exports.

NOTE: Gross domestic available supplies include any quantities going into seed, feed, manufacturing uses and waste; no allowance is made for changes in stocks.

Table IV.--OATS - Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED			PRODUCTION		
	Annual Average		Year	Annual Average		Year
	1934/35- 1938/39	1945/46- 1948/49	1949/50	1934/35- 1938/39	1945/46- 1948/49	1949/50 1952/53 Estimates
Mexico	8	35	79	5	25	59
Argentina	794	703	516	748	746	540
Brazil	11	13	14	12	10	11
Chile	107	84	91	108	73	44
Uruguay	85	72	108	43	37	58
TOTAL LATIN AMERICA	1,010	910	816	920	890	710
						1,010

(.....1,000 hectares.....)

(.....1,000 metric tons.....)

Table V.--RYE - Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED			PRODUCTION		
	Annual Average		Year	Annual Average		Year
	1934/35- 1938/39	1945/46- 1948/49	1949/50	1934/35- 1938/39	1945/46- 1948/49	1949/50 1952/53 Estimates
Argentina	434	650	400*	254	404	240*
Brazil	14	14	19	15	10	15
Chile	12	7	9	8	5	6*
Others	10	15	16	7	6	7
TOTAL LATIN AMERICA	470	690	440	280	420	270
						450

(.....1,000 hectares.....)

(.....1,000 metric tons.....)

\*Unofficial estimates.

Table VI.--MAIZE - Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED			PRODUCTION				
	Annual Average		Year	Annual Average		Year		
	1934/35- 1938/39	1945/46- 1948/49	1949/50	1934/35- 1938/39	1945/46- 1948/49	1949/50	1952/53 Estimates	
(.....1,000 hectares.....) (.....1,000 metric tons.....)								
Mexico and Central America	24 <sup>a</sup>	21	19	22	14 <sup>a</sup>	23	22	28
Costa Rica	138	158	...	154	147	175	...	163
El Salvador	240	206 <sup>a</sup>	...	260*	237	208	...	260*
Guatemala	165	201	...	191	174	188	...	191
Honduras	2,976	3,500	3,870	4,100	1,665	2,480	2,700*	3,280
Mexico	38	63	116*	75*	35	42	64	50*
Nicaragua								
Total	3,610	4,190	4,600	4,850	2,300	3,150	3,480	4,000
Caribbean Area								
Cuba	...	254	...	260*	...	225	...	235*
Dominican Republic	...	73	69	80*	136	79	65	80*
Haiti	...	90 <sup>a</sup>	...	125*	...	70 <sup>a</sup>	102	98*
Puerto Rico	28 <sup>d</sup>	25 <sup>a</sup>	...	30*	20 <sup>d</sup>	24	...	30*
Total	460	460	450*	500*	420	420	410*	450*
South America								
Argentina	4,362	2,522	958*	4,000*	7,892	4,537	844	7,200*
Bolivia	...	94 <sup>a</sup>	...	120*	81 <sup>c</sup>	135	...	190*
Brasil	4,092	4,364	4,380	4,400	5,677	5,620	5,700	5,720
Chile	45	47	46	48	62	69	64*	74
Colombia	554 <sup>a</sup>	606	690	700	496 <sup>a</sup>	610	660	705
Ecuador	...	120 <sup>a</sup>	105	110*	...	100 <sup>a</sup>	83	90*
Paraguay	59	103	...	90*	61	116	...	100*
Peru	280 <sup>d</sup>	384	...	370*	452 <sup>d</sup>	570	...	650*
Uruguay	222	179	163	250	139	105	69	163
Venezuela	263 <sup>b</sup>	270 <sup>d</sup>	351	290	361 <sup>b</sup>	310	323	350
Total	10,100	8,650	7,298	10,400	15,350	12,220	8,644	15,250
TOTAL LATIN AMERICA	14,170	13,300	12,348	15,750	18,070	15,790	12,544	19,700

\*Unofficial estimates.

<sup>a</sup>Partially estimated.

<sup>b</sup>Year 1937.

<sup>c</sup>Year 1938.

<sup>d</sup>Year 1929.

Table VII.--BARLEY - Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED			PRODUCTION			
	Annual Average		Year	Annual Average		Year	Year
	1934/35- 1938/39	1945/46- 1948/49		1934/35- 1938/39	1945/46- 1948/49		
Mexico	153	177	200*	81	124	150*	180
Argentina	536	759	393	503	863	395	840*
Bolivia	37 <sup>a</sup>	51	...	28 <sup>a</sup>	41	...	45*
Brazil	9	12	12	12	13	14	14
Chile	76	53	45	112	90	80	122
Colombia	...	24	...	...	23	...	30*
Ecuador	...	116 <sup>b</sup>	205	...	55	94	100*
Peru	125 <sup>c</sup>	150	187	118 <sup>c</sup>	166	...	175*
Uruguay	17	25	32	13	16	26	22
TOTAL LATIN AMERICA	1,040	1,370	1,153	920	1,390	1,035	1,520
(.....1,000 hectares.....) (.....1,000 metric tons.....)							

\*Unofficial estimates.

<sup>a</sup>Year 1938.

<sup>b</sup>Partially estimated.

<sup>c</sup>Year 1929.

Table VIII.--MAIZE, BARLEY, OATS AND RYE - Net Trade in Latin America  
(Including estimates for 1952/53)

Commodity and Country	Annual Average		Year
	1934-38	1946-49	1952/53 Estimates
	(.....1,000 metric tons.....)		
MAIZE			
Argentina	-6,527	-2,042	-4,650*
Brazil	- 46	- 100	-
Dominican Republic	- 11	- 10	-
Mexico	- 31	- 4	- 145
Others	+ 20	+ 56	+ 40
Total	-6,600	-2,100	-4,760
BARLEY			
Argentina	- 334	- 531	- 490*
Chile	- 59	- 30	- 55
Mexico	+ 5	- 2	-
Others	+ 3	+ 17	+ 10
Total	- 390	- 540	- 540
OATS			
Argentina	- 369	- 169	- 200*
Chile	- 55	- 11	- 11
Mexico	+ 8	- 3	- 6
Others	+ 3	+ 14	+ 4
Total	- 410	- 170	- 210
RYE			
Argentina	130	- 190	- 200

\*Unofficial estimates.

Table IX.--RICE (rough) - Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED			PRODUCTION		
	Annual Average		Year	Annual Average		Year
	1934/35- 1938/39	1945/46- 1948/49	1949/50 (1952/53) (Estimates)	1934/35- 1938/39	1945/46- 1948/49	1949/50 (1952/53) (Estimates)
(.....1,000 hectares.....) (.....1,000 metric tons.....)						
<u>Mexico and Central America</u>						
Costa Rica	10 <sup>a</sup>	13	15	11 <sup>a</sup>	16	18
El Salvador	11	22	13*	13	23	23*
Guatemala	6	6	3*	8	7	6
Honduras	5*	12	15	6*	15	12
Mexico	36	69	108	76	140	185
Nicaragua	3 <sup>a</sup>	12	15	3 <sup>a</sup>	17	20*
Panama	20 <sup>b</sup>	48	60*	33 <sup>a</sup>	62	80*
Total	90	180	230	150	280	345
<u>Caribbean Area</u>						
Cuba	18 <sup>b</sup>	50*	50	20 <sup>b</sup>	58	60
Dominican Republic	26 <sup>c</sup>	40	44	35 <sup>e</sup>	55	47
Haiti	6*	15	33	3 <sup>b</sup>	17	31
Puerto Rico	2 <sup>d</sup>	10	7	6 <sup>a</sup>	19	17*
Total	55	115	155	65	150	155
<u>South America</u>						
Argentina	18	47	55*	51	133	110*
Bolivia	6 <sup>e</sup>	11	12	8 <sup>e</sup>	16	18
Brazil	956	1,674	1,850	1,365	2,639	2,980
Chile	3	33	27	11	94	84
Colombia	56	121	150*	99	187	240*
Ecuador	44*	93	100	66	158	390
Guiana (Br.)	28	41	42	70	105	100*
Guiana (Neth.)	14	16	17	29	46	63
Paraguay	4	6	12	8	10	17
Peru	43	52	38*	86	181	50
Uruguay	5	12	14	17	37	22*
Venezuela	10 <sup>d</sup>	13	8*	13 <sup>d</sup>	15	118*
Total	1,185	2,120	2,330	1,825	3,620	4,330
TOTAL LATIN AMERICA	1,330	2,420	2,700	2,040	4,050	4,950

\*Unofficial estimates.

<sup>a</sup>Average of two years.

<sup>b</sup>Average 1935/36-1939/40.

<sup>c</sup>Year 1935.

<sup>d</sup>Year 1936/37.

<sup>e</sup>Year 1938/39.

Table X.--RICE (Milled) - Net Trade and Gross Domestic Available Supplies in Latin America  
(Including estimates for 1952/53)

Country	Net Trade		Gross Domestic Available Supplies				
	Annual Average		Total		Per Caput		
	Year		Year		Year		
	1934/38	1946-49	1952/53 (Est.)	1934-38	1946-49	1952/53 (Est.)	1952/53 (Est.)
(.....1,000 metric tons.....) (.....kilograms.....)							
<u>Mexico and Central America</u>							
Costa Rica	+ 1	-	+ 2	8	11	14	13.0
El Salvador	- 1	- 2	- 1	7	13	14	4.3
Guatemala	-	+ 1	+ 1	5	5	6	6.5
Honduras	+ 2	+ 1	- 1	6	10	12	1.3
Mexico	- 13	- 19	- 68	36	72	95	8.3
Nicaragua	-	- 4	- 3	2	7	12	3.0
Panama	+ 4	+ 4	-	25	44	50	6.3
Total	- 5	- 20	- 70	90	160	200	45.9
							59.3
							4.9
							5.4
<u>Caribbean Area</u>							
British W.I.	+ 52	+ 34	+ 45*	56	46	57	25.3
Cuba	+201	+233	+250*	214	271	295	49.8
Dominican Republic	+ 8	-	-	31	36	42	20.3
French W.I.	+ 11	+ 6	+ 8*	11	6	8	20.1
Haiti	+ 2	-	-	4	11	25	1.3
Neth. W.I.	+ 1	+ 1	+ 1*	1	1	1	10.1
Puerto Rico	+101	+118	+130*	102	122	134	57.2
Total	+375	+390	+435	420	495	560	32.1
							30.1
							31.5
<u>South America</u>							
Argentina	+ 32	- 2	- 9*	65	84	94	4.7
Bolivia	+ 6	+ 8	+ 9*	11	18	22	3.3
Brazil	- 54	-155	-190*	833	1,560	1,786	22.0
Chile	+ 15	-11	-	22	50	83	4.7
Colombia	+ 11	- 1	- 24	75	121	211	8.8
Ecuador	- 12	- 56	- 50*	31	47	51	11.6
Guiana (Br.)	- 16	- 22	- 20*	30	46	50	90.6
Guiana (Fr.)	+ 1	+ 1	+ 1*	1	2	2	32.4
Guiana (Neth.)	- 3	- 10	- 14*	16	20	24	89.8
Paraguay	-	- 1	- 5*	5	6	9	5.6
Peru	+ 20	+ 1	- 5	76	119	130	11.5
Uruguay	-	- 4	- 5	11	20	20	5.2
Venezuela	+ 12	+ 22	+ 11	20	32	37	5.8
Total	+ 10	-230	-285	1,195	2,125	2,520	13.9
							20.3
							22.1
TOTAL LATIN AMERICA	+380	+140	+ 80	1,700	2,780	3,280	13.5
							18.0
							19.4

\*Unofficial estimates.  
+Net Imports  
-Net Exports

NOTE: Gross domestic available supplies include any quantities going into seed, feed, manufacturing uses and waste; no allowance is made for changes in stocks.

Table XI.--POTATOES - Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED				PRODUCTION			
	Annual Average		Year		Annual Average		Year	
	1934/35-1938/39	1945/46-1948/49	1949/50	1952/53 Estimates	1934/35-1938/39	1945/46-1948/49	1949/50	1952/53 Estimates
(.....1,000 hectares.....)								
(.....1,000 metric tons.....)								
Mexico and Central America								
Costa Rica	2	2	...	2	7	8	...	10
El Salvador	(a)	(a)	...	(a)*	1*	2	...	1
Guatemala	3 <sup>b</sup>	2	...	1*	8	5	...	5
Honduras	2	2	2	2	11 <sup>b</sup>	4	4	4
Mexico	14	28	30*	32	67	127	135*	145
Nicaragua	...	1	...	1	...	2	...	2
Panama	(a)	1*	...	1*	1*	2*	2*	2*
Total	25	35	35	40	95	150	165	170
Caribbean Area								
Cuba	6 <sup>c</sup>	9	9*	10*	50 <sup>c</sup>	63	...	70*
Dominican Republic	1 <sup>d</sup>	2	1	1*	2 <sup>d</sup>	2	2	2*
Jamaica	(a)	1	...	1*	1*	3*	...	2*
Puerto Rico	(a)	(a)	(a)	(a)*	1	1	1*	1*
Total	10	15	15	15	55	70	80	75
South America								
Argentina	115	172	185 <sup>h</sup> *	185*	663	977	1,210*	1,115*
Bolivia	26 <sup>d</sup>	51	...	60*	92 <sup>e</sup>	317	...	360*
Brazil	65	126	165*	170	380	607	820*	800
Chile	51	53	50	56	435	570	454	616
Colombia	53	94	100*	115	242	466	490*	520
Ecuador	32 <sup>f</sup>	24	25	30*	120* <sup>f</sup>	82	70	90*
Paraguay	(a)	(a)	(a)	(a)*	1*	1	1	1*
Peru	110*	144	...	155*	490*	650	...	700*
Uruguay	7	8	12	11	29	32	32	44
Venezuela	7 <sup>g</sup>	3	...	9	11 <sup>g</sup>	15	27	45
Total	465	675	760	790	2,465	3,715	4,170	4,290
TOTAL LATIN AMERICA	500	720	800	840	2,610	3,940	4,420	4,540

\*Unofficial estimates.  
<sup>a</sup>Less than 500 hectares.  
<sup>b</sup>Year 1931.  
<sup>c</sup>Average 1935-36.  
<sup>d</sup>Year 1938.  
<sup>e</sup>Year 1938/39.  
<sup>f</sup>Average 1935-39.  
<sup>g</sup>Year 1936.  
<sup>h</sup>Area planted.



Table XII.--SWEET POTATOES - Estimates of Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED			PRODUCTION		
	Average	Year		Average	Year	
	1934-38	1948/49	1952/53 Estimates	1934-38	1948/49	1952/53 Estimates
	(.....1,000 hectares.....)			(.....1,000 metric tons.....)		
<u>North and Central America</u>						
Mexico	6	12	12*	36	62	65*
Brit. W. Indies	(19)	20	22*	(114)	110*	120*
Cuba	(60)	99	100*	184	277	280*
Dominican Republic	32 <sup>a</sup>	50	55*	61 <sup>a</sup>	126	130*
Puerto Rico	23 <sup>a</sup>	20*	25*	59 <sup>a</sup>	115*	120*
Total	150	200	215	460	700	726
<u>South America</u>						
Argentina	25 <sup>b</sup>	36*	35*	161 <sup>b</sup>	374*	360*
Brazil	...	120	125*	...	968	1,000*
Paraguay	(7)	7	7*	77 <sup>c</sup>	70	70*
Peru	(15)	(25)	25*	(130)	(200)	200*
Uruguay	9	10*	12*	40	45*	50
Total	160	200	205	1,240	1,660	1,680
TOTAL LATIN AMERICA	310	400	420	1,700	2,360	2,400

\*Unofficial estimates.

<sup>a</sup>Year 1939.

<sup>b</sup>Average of 3 years.

<sup>c</sup>Year 1938.

NOTE: Figures in parentheses are rough estimates for purposes of comparison in the absence of official data.

Table XIII.--CASSAVA - Estimates of Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED			PRODUCTION		
	Average	Year		Average	Year	
	1934-38	1948/49	1952/53 Estimates	1934-38	1948/49	1952/53 Estimates
	(.....1,000 hectares.....)			(.....1,000 metric tons.....)		
<u>North and Central America</u>						
Cuba	(49)	(55)	60*	163 <sup>a</sup>	180*	200*
Dominican Republic	56 <sup>b</sup>	79	80*	102 <sup>b</sup>	162	170*
Panama	(8)	7	10*	(90)	135	140*
Others	(20)	(25)	30*	(140)*	(175)	210*
Total	135	165	180	500	650	720
<u>South America</u>						
Argentina	27 <sup>c</sup>	(30)	30*	454	(640)	640*
Brazil	378	913	950*	5,163	12,455	13,150*
Colombia	(18)	19	20*	400 <sup>d</sup>	465	480*
Paraguay	(45)	85	85*	616 <sup>f</sup>	1,239	1,240*
Peru	(18)	20	20*	(80)	100	100*
Venezuela	(10)	15	20*	150 <sup>e</sup>	148	150*
Total	510	1,090	1,130	6,900	15,600	15,800
TOTAL LATIN AMERICA	650	1,260	1,310	7,400	16,250	16,500

\*Unofficial estimates.

<sup>a</sup>Average of 2 years.

<sup>b</sup>1939.

<sup>c</sup>Average of 3 years.

<sup>d</sup>Year 1934.

<sup>e</sup>Year 1937

<sup>f</sup>Year 1938/39

NOTE: Figures in parentheses are rough estimates for purposes of comparison in the absence of official data.

Table XIV.--SUGAR (raw) - Production in Latin America  
(Including estimates for 1952/53)

Country	Annual Average		Year	
	1934/35- 1938/39	1945/46- 1948/49	1949/50	1952/53 (Estimates)
	(.....1,000 metric tons.....)			
<u>Mexico and Central America</u>				
Costa Rica	28	17	22	38
El Salvador	18	25	24	28
Guatemala	34*	61	70*	70*
Honduras	2*	4	5*	6
Mexico	319	565	685	775
Nicaragua	8*	16	20	22*
Panama	5*	9	12*	15*
Total	415	695	840	975
<u>Caribbean Area</u>				
British W.I.	436	506	674	700*
Cuba	2,838	5,299	5,558	5,800*
Dominican Republic	436	455	475	500*
French W.I.	102	55	108	70*
Haiti	38	42	50	50*
Puerto Rico	888	996	1,167	1,200*
Total	4,740	7,355	8,030	8,320
<u>South America</u>				
Argentina	410	564	549	620*
Bolivia	3	3	2*	4*
Brazil	1,031	1,517	1,732*	1,780
Colombia	40	86	138	150
Ecuador	21	40	46	50*
Guiana (Br.)	192	170	196	200*
Guiana (Neth.)	15	5	4	7*
Paraguay	6	14	15*	18*
Peru	382	445	470	475*
Uruguay <sup>a</sup>	1	2	4	9
Venezuela	22	30	44	96
Total	2,120	2,875	3,210	3,410
TOTAL LATIN AMERICA	7,280	10,930	12,100	12,700

\*Unofficial estimates.

<sup>a</sup>Beet sugar.

Table XV.--SUGAR (raw) - Net Trade and Gross Domestic Available Supplies in Latin America  
(Including estimates for 1952/53)

Country	Net Trade		Gross Domestic Available Supplies				
	Annual Average		Total		Per Caput		
	1934-38	1946-49	1952/53 (Est.)	1934-38	1946-49	1952/53 (Est.)	1952/53 (Est.)
(.....1,000 metric tons.....) (.....kilograms.....)							
<u>Mexico and Central America</u>							
Costa Rica	-	2	- 15	28	16	23	19.4
El Salvador	- 2	3	- 6	17	22	42	10.7
Guatemala	- 1	-	-	33	61	70	10.2
Honduras	+ 5	4	-	7	8	6	11.5
Mexico	+ 2	46	- 65	321	519	710	6.8
Nicaragua	- 3	1	-	5	15	22	17.4
Panama and Canal Zone	+ 3	3	-	8	12	15	5.1
Total	+ 4	45	- 85	420	655	890	15.5
							16.1
							19.6
							24.0
<u>Caribbean Area</u>							
British W.I.	- 373	- 406*	- 585*	63	100	115	28.6
Cuba	- 2,560	- 5,038	- 5,500*	278	261	300	64.8
Dominican Republic	- 420	- 426	- 465*	16	29	35	10.5
French W.I.	- 91	- 47	- 62*	11	8	8	19.2
Haiti	- 31	- 21	- 25*	7	21	25	2.6
Neth. W.I.	+ 4	+ 4	+ 5*	4	4	5	39.3
Puerto Rico	- 776	- 889	- 1,084*	112	107	116	63.0
Total	- 4,245	- 6,825	- 7,715	490	530	605	37.6
							32.3
							33.9
<u>South America</u>							
Argentina	- 2	+ 11	-	406	575	620	29.2
Bolivia <sup>1</sup>	+ 22	+ 27	+ 30*	25	30	34	7.7
Brazil	- 42	- 121	- 100	990	1,396	1,680	26.2
Chile	+ 123	+ 152	+ 167*	123	152	167	26.1
Colombia <sup>1</sup>	+ 10	-	- 17	50	86	133	6.0
Ecuador	+ 6	+ 4	-	27	44	50	10.1
Guiana (Br.)	- 172	- 164	- 190*	20	6	10	59.0
Guiana (Fr.)	+ 1	+ 1	+ 1*	2	2	2	40.5
Guiana (Neth.)	- 14	-	-	1	5	7	6.3
Paraguay	+ 7	+ -	+ -	13	14	18	13.9
Peru	- 306	- 292	- 300*	77	153	175	11.6
Uruguay	+ 50	+ 75	+ 73	51	77	82	24.8
Venezuela	- 1	+ 50	+ 8	21	80	104	6.2
Total	- 320	- 255	- 330	1,805	2,620	3,080	21.4
							25.1
							27.1
TOTAL LATIN AMERICA	- 4,560	- 7,130	- 8,130	2,720	3,800	4,570	21.8
							24.7
							27.1

\*Unofficial estimates.  
+Net Imports.  
-Net Exports.  
<sup>1</sup>Refined Sugar.

NOTE: Gross domestic available supplies include any quantities going into feed, manufacturing uses and waste; no allowance is made for changes in stocks.

Table XVI.--BEANS - Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED			PRODUCTION				
	Annual Average		Year	Annual Average		Year		
	1934/35-1938/39	1945/46-1948/49	1949/50	1934/35-1938/39	1945/46-1948/49	1949/50	1952/53 Estimates	
(.....1,000 hectares.....) (.....1,000 metric tons.....)								
Mexico and Central America								
Costa Rica	18 <sup>a</sup>	19	15	15*	10 <sup>a</sup>	11	22	
El Salvador	19	29	...	26	17	25	...	
Guatemala	36 <sup>a</sup>	61 <sup>b</sup>	81*	80*	27	49 <sup>b</sup>	45*	
Honduras	15 <sup>a</sup>	31 <sup>b</sup>	25	36	11 <sup>a</sup>	16 <sup>b</sup>	20*	
Mexico	567	748	886	971	112	178	231	
Others	21	23	28*	28*	10	12	15*	
Total	680	910	1,060	1,160	190	290	360	
Caribbean Area								
Cuba	51 <sup>c</sup>	57 <sup>b</sup>	59*	60*	43 <sup>c</sup>	36 <sup>b</sup>	45*	
Dominican Republic	32 <sup>c</sup>	30 <sup>b</sup>	22*	35*	21 <sup>c</sup>	21 <sup>b</sup>	19	
Haiti	32 <sup>c</sup>	27 <sup>b</sup>	26*	25*	20 <sup>c</sup>	18 <sup>b</sup>	17*	
Total <sup>d</sup>	135	135	130	140	95	85	90	
100								
South America								
Argentina	21 <sup>a</sup>	37	35*	40*	22 <sup>a</sup>	37	18*	
Brazil	953 <sup>e</sup>	1,550	1,693	1,950	823 <sup>e</sup>	1,064	1,205	
Chile	87	82	68	90	74	72	60	
Colombia	72 <sup>e</sup>	110 <sup>b</sup>	85*	120*	36 <sup>e</sup>	54	45*	
Paraguay	24 <sup>c</sup>	25	28*	30*	34 <sup>c</sup>	28 <sup>b</sup>	30*	
Peru	23 <sup>c</sup>	23 <sup>b</sup>	24*	25*	18 <sup>c</sup>	17 <sup>b</sup>	21*	
Venezuela	...	41 <sup>b</sup>	...	56	45 <sup>f</sup>	36 <sup>b</sup>	44	
45								
Total <sup>d</sup>	1,250	1,890	2,020	2,350	1,060	1,330	1,460	
1,700								
TOTAL LATIN AMERICA	2,070	2,940	3,210	3,650	1,350	1,700	1,910	
2,160								

\*Unofficial estimates.

<sup>a</sup>Average of two years.

<sup>b</sup>Partially estimated.

<sup>c</sup>1935-39 average.

<sup>d</sup>Including estimates for other small producers.

<sup>e</sup>Year 1937/38

<sup>f</sup>Year 1937, including carraotas.

Table XVII.--BEANS - Net Trade and Gross Domestic Available Supplies  
(Including estimates for 1952/53)

Country	Net Trade		Gross Domestic Available Supplies						
	Annual Average		Year	Annual Average		Year	Annual Average		Year
	1934-38	1946-49	1952/53 Estimates	1934-38	1946-49	1952/53 Estimates	1934-38	1946-49	1952/53 Estimates
	(.....1,000 metric tons.....) (.....kilograms.....)								
Mexico and Central America									
Costa Rica	-	- 1	- 2*	10	10	18*	16.9	12.5	19.1*
El Salvador	-	- 1	-	17	24	24	10.4	11.6	10.3
Guatemala	-	-	-	27	49	45*	8.8	13.3	11.1*
Honduras	-	-	-	11	16	19	11.0	12.8	13.1
Mexico	- 4	-	-	108	178	233	5.8	7.5	8.9
Others	+ 1	+ 1	-	11	13	15*	7.0	7.0	7.0*
Total	- 3	- 1	- 2	185	290	355	7.0	8.7	9.6
Caribbean Area									
Cuba	+ 16	+ 29	+ 27*	59	65	75*	13.6	12.7	13.7*
Dominican Republic	-	- 3	- 3*	21	18	22*	13.5	8.2	8.9*
Haiti	+ 1	-	-	21	18	18*	6.9	4.9	4.6*
Total <sup>a</sup>	+ 35	+ 46	+ 46	130	130	145	9.6	7.9	8.1
South America									
Argentina	+ 2	- 19	- 15*	25	18	20*	1.7	1.1	1.3*
Brazil	-	- 31	- 50	823	1,033	1,350	21.6	21.5	25.7
Chile	- 32	- 34	- 40	42	38	45	8.9	6.8	7.4
Colombia	-	-	-	36	54	60	4.3	5.0	5.1
Paraguay	-	-	-	24	25	30*	25.8	22.5	21.0*
Peru ,	-	-	-	18	17	22*	2.7	2.2	2.5*
Venezuela	-	+ 4	+ 5	45	40	50	13.1	8.9	10.0
Total <sup>a</sup>	- 30	- 80	-100	1,030	1,250	1,600	12.1	12.0	14.1
TOTAL LATIN AMERICA	-	- 35	- 55	1,350	1,660	2,110	10.8	10.8	12.5

\*Unofficial estimates.

<sup>a</sup>Including other countries.

NOTE: Gross domestic available supplies include any quantities going into seed, feed, manufacturing uses and waste; no allowance is made for changes in stocks.

Table XVIII.--BANANAS - Production, Net Trade and Gross Domestic Available Supplies in Latin America  
(Including estimates for 1952/53)

Country	Production			Net Trade			Domestic Available Supplies		
	Annual Average		Year	Annual Average		Year	Annual Average		Year
	1934/35- 1938/39	1945/46- 1948/49	1949/50 Prelim.	1952/53 (Est.)	1934-38	1946-49	1952/53 (Est.)	1934-38	1946-48
Mexico and Central America									
(.....1,000 metric tons.....)									
Costa Rica	110*	158	160*	500	-	97	-	480	13
Guatemala	249	274	240*	240	-	168	-	180	81
Honduras	334*	395*	...	410	-	314	-	385	20
Mexico	587	456	474	521	-	256	-	116	331
Panama	...	...	...	...	-	148	-	160	...
Total <sup>a</sup>	1,500	1,530	1,490	1,850	-1,040	-1,060	-1,320	460	470
Caribbean Area									
British W.I.	(420)	(150)	...	(210)	-	366	-	150*	(54)
Cuba	220*	139 <sup>b</sup>	...	140*	-	121	-	30*	99
Dominican Republic	110 <sup>c</sup>	310 <sup>b</sup>	...	350*	-	6	-	50	104
French W.I.	(80)	85 <sup>b</sup>	...	130	-	62	-	100	18
Puerto Rico	182 <sup>c</sup>	140	...	140*	-	-	-	-	182
Total <sup>a</sup>	1,050	930	...	1,070	-	580	-	380	460
South America									
Argentina	-	-	-	-	+ 160	+ 110	+ 150*	160	110
Brazil	1,479	2,441	2,958	2,750	-	214	-	160	2,299
Colombia	1,145	983	1,041	1,091	-	162	-	41	1,265
Ecuador	(225)	240 <sup>b</sup>	...	310*	-	39	-	150*	983
Peru	(20)	15 <sup>b</sup>	...	20*	-	-	-	(186)	155
Venezuela	42 <sup>d</sup>	56 <sup>b</sup>	...	60	-	2	-	(20)	15
Total <sup>a</sup>	2,970	3,790	4,300	4,290	-	230	-	5	51
TOTAL LATIN AMERICA	5,500	6,250	6,800	7,210	-	1,850	-	1,860	3,630
					-	1,540	-	4,710	5,350

NOTE: Figures in parenthesis are rough estimates for purposes of comparison in the absence of official data. Gross domestic available supplies include any quantities going into feed, manufacturing uses and waste; no allowance is made for changes in stocks.

\*Unofficial estimates.

+Net imports.

-Net exports.

<sup>a</sup>Including other small countries.

<sup>b</sup>Partially estimated.

<sup>c</sup>Year 1939.

<sup>d</sup>Year 1937.

Table XIX.--OILSEEDS - Area and Production in Selected Countries of Latin America  
(Including estimates for 1952/53)

Commodity and Country	AREA HARVESTED			PRODUCTION			
	Annual Average		Year	Annual Average		Year	
	1934/35- 1938/39	1945/46- 1948/49	1949/50	1952/53 (Estimates)	1934/35- 1938/39	1945/46- 1948/49	1949/50 1952/53 (Estimates)
(.....1,000 hectares.....) (.....1,000 metric tons.....)							
<u>Sunflower seed</u>							
Argentina	175	1,379	1,500*	1,600*	154	902	800*
Chile		26	50	58	-	32	69
Uruguay	5 <sup>a,c</sup>	88	82	90	3 <sup>a</sup>	36	32
							41
<u>Groundnuts</u>							
Cuba	...	30	...	30*	...	20	...
Mexico	12	30	36	40	10	30	38
Argentina	82	125	...	150*	80	115	110*
Brazil	...	90	135	110	-	90	130*
Uruguay <sup>b</sup>	2 <sup>c</sup>	10	11	10	1	5	100
Others	25	30	50	40	15	35	10
							35
<u>Linseed</u>							
Mexico	5	40	54	60	2	30	50
Argentina	2,600	1,395	1,100*	1,450*	1,702	860	1,000*
Chile	...	5	5	5	...	5	5
Uruguay	150 <sup>c</sup>	195	158	160	89	105	80
<u>Sesame</u>							
Colombia	...	10	20	30	...	5	15
El Salvador	...	3	10	15	...	2	5
Mexico	53	130	145	180	22	70	90
Nicaragua	...	20	15	15	5	7	20
<u>Castorseed</u>							
Brazil	120	231	250	260	135	195	235

\*Unofficial estimates.

<sup>a</sup>Average 1935-38.

<sup>b</sup>Mostly the area and production of Paraguay and the Dominican Republic

<sup>c</sup>Area sown.



Table XX.--Sunflower, Groundnuts, Linseed and Castorseed -  
Net Trade and Gross Domestic Available Supplies in Selected Countries  
of Latin America  
(Including estimates for 1952/53)

Commodity and Country	Net Trade <sup>a</sup>			Gross Domestic Available Supplies		
	1934-38	1946-49	1952/53 (Estimates)	1934-38	1946-49	1952/53 (Estimates)
	(.....1,000 metric tons.....)					
<u>Sunflowerseed</u>						
Argentina	- 5	-192	-300*	149	710	900
Chile	-	+ 6	-	-	38	70
Uruguay	-	-	-	3	35	41
<u>Groundnuts</u>						
Cuba	-	-	-	15	20	25
Mexico	-	- 2	-	10	28	40
Argentina	- 3	- 16	-	77	99	130
Brazil	...	- 1	-	...	90	100
Uruguay	+ 10	-	-	11	5	10
<u>Linseed</u>						
Mexico	-	- 20	- 45	2	10	5
Argentina	-1,541	-375	-600*	161	485	400
Chile	-	+ 2	+ 2*	...	7	7
Uruguay	- 73	-128	- 66	16	-23 <sup>b</sup>	14
<u>Castorseed</u>						
Brazil	- 110	-165	-200	25	30	35

\*Unofficial estimates.

+Net Imports.

-Net Exports.

<sup>a</sup>Including oil in terms of seed, assuming an average yield of oil of 24 percent for sunflowerseed, 32 percent for groundnuts and 33 percent for linseed.

<sup>b</sup>The available supply appears as negative because changes in stocks have not been considered.

NOTE: Gross domestic available supplies include any quantities going into seed, feed, manufacturing uses and waste; no allowance is made for changes in stocks.

Table XXI.--COTTONSEED - Production, Net Trade and Gross Domestic Available Supplies in Latin America  
(Including estimates for 1952/53)

Country	PRODUCTION			NET TRADE <sup>a</sup>			GROSS DOMES. AVAIL. SUPPLIES		
	Annual Average	Year		Annual Average	Year		Annual Average	Year	
	1934/35- 1938/39	1945/46- 1948/49	1949/50	1952/53 (Est.)	1934-38	1946-49	1952/53 (Est.)	1934-38	1946-49 1952/53 (Est.)
(. . . . . 1,000 metric tons . . . . .)									
Mexico, Central America and Caribbean									
El Salvador	2	7	10*	10	-	-	-	2	7
Mexico	127	166	340*	350	-4	+2	-60*	123	168
Haiti	10*	4	5	5*	-	-	-	10	4
Others	6	5	5	6*	+20	+2	+4*	26	7
Total	145	180	360	370	+16	+4	-55	160	185
South America									
Argentina	146	147	245*	240*	-5	-42	-50*	141	105
Brazil	778	710	690*	709	-155	-52	-9*	623	658
Colombia	9	10	16*	24	-	+2	+1	9	12
Ecuador	5	4	5	5*	-1	-	-	4	4
Paraguay	18	20	32*	30*	-5	-	-10*	13	20
Peru	139	115	102	118*	-31	-	-	108	115
Venezuela	5	6	4	5	-	-	+5	5	6
Others	-	-	-	-	+40	+1	+5*	40	1
Total	1,100	1,020	1,100	1,130	-157	-91	-58	940	920
TOTAL LATIN AMERICA	1,240	1,200	1,460	1,500	-140	-90	-110	1,100	1,100
									1,070
									1,380

<sup>a</sup>Including oil in terms of seed, assuming an average yield of oil of 16 percent.

\*Unofficial estimates.

+Net imports.

-Net exports.

NOTE: Gross domestic available supplies include any quantities going into seed, feed, manufacturing uses and waste; no allowance is made for changes in stocks.

Table XXII.--COTTON (Ginned) - Area and Production in Latin America  
(Including estimates for 1952/53)

Country	AREA HARVESTED				PRODUCTION			
	Annual Average		Year		Annual Average		Year	
	1934/35- 1938/39	1945/46- 1948/49	1949/50 <sup>a</sup>	1952/53 (Est.)	1934/35- 1938/39	1945/46- 1948/49	1949/50 <sup>a</sup>	1952/53 (Est.)
	(.....1,000 hectares.....)				(.....1,000 metric tons.....)			
Mexico and Central America								
El Salvador	3	12	15*	8	1	4	5*	5
Guatemala	1	3	3*	4*	-	1	1*	1*
Mexico	275	358	549	750	69	101	208	225*
Nicaragua	3	2	3*	3*	1	1	1*	1*
Total	280	375	576	765	70	105	215	230
Caribbean Area								
British W. I.	8	5	5*	5*	1	1	1	1*
Haiti	37*	19	20	20*	5*	2	2	2*
Total	45	25	25	25	5	5	5	5
South America								
Argentina	311	394	490*	550*	60	80	128	120*
Brazil <sup>b</sup>	2,118	2,445	2,500	2,550	389	362	350	360
Colombia	35	66	44	64	5	6	5	13
Ecuador	16	16*	...	16*	2	2	3	3*
Paraguay	43	42	72*	55*	9	9	13*	12*
Peru	171	136	120	130*	84	66	60	65*
Venezuela	20	24	20	25	2	3	2	3
Total	2,715	3,125	3,245	3,390	550	530	560	575
TOTAL LATIN AMERICA	3,040	3,520	3,840	4,180	635	640	790	810

\*Unofficial estimates.

<sup>a</sup>Preliminary.

<sup>b</sup>Data of the Instituto Brasileiro de Geografia E Estatística.

Table XXIII.--COTTON (Ginned) - Net Trade and Gross Domestic Available  
Supplies in Latin America<sup>a</sup>  
(Including estimates for 1952/53)

Country	Net Trade			Domestic Available Supplies		
	Annual Average		Year	Annual Average		Year
	1934-38	1946-49	1952/53 (Estimates)	1934-38	1946-49	1952/53 (Estimates)
	(. . . . . 1,000 metric tons . . . . .)					
<u>Mexico</u>	- 23	- 77	-147	46	24	78
<u>Central America and Caribbean Area</u>	- 3	+ 5	+ 5	4	12	12
Total	- 26	- 72	-142	50	36	90
<u>South America</u>	-	-	-	-	-	-
Argentina	- 30	- 9	- 17*	30	71	103
Brazil	-194	-259	-150	190	103	210
Chile	+ 2	+ 13	+ 18*	2	13	18
Colombia	+ 3	+ 18	+ 14	8	24	27
Ecuador	-	+ 1	+ 1*	2	3	4
Paraguay	- 9	- 9	- 12*	-	-	-
Peru	- 75	- 71	- 52*	9	-	13
Uruguay	-	+ 5	+ 6.	-	5	6
Venezuela	-	+ 2	+ 3	2	5	6
Total	-300	-310	-190	245	225	390
TOTAL LATIN AMERICA	-330	-380	-330	300	260	480

\*Unofficial estimates.

+Net Imports.

-Net Exports.

<sup>a</sup>Table refers to trade in and available supplies of raw cotton. Domestic available supplies are therefore not necessarily a measure of cotton available for clothing, which depends also upon trade in cotton textiles. Gross domestic available supplies also do not take into consideration changes in stocks.

Table XXIV.--COFFEE - Production and Net Trade in Latin America  
(Including estimates for 1952/53)

Country	Production <sup>a</sup>				Net Trade <sup>b</sup>		
	Annual Average		Year		Annual Average		Year
	1934/35- 1938/39	1945/46- 1948/49	1949/50	1952/53 (Est.)	1934-38	1946-49	1952/53 (Est.)
	(.....1,000 metric tons.....)						
<u>Mexico and Central America</u>							
Costa Rica	23	23	23*	22	- 23	- 18	- 18
Cuba	32	32	38*	40*	- 4	+ 4	- 4*
Dominican Republic	21	19	28	20*	- 10	- 13	- 16*
El Salvador	64	66	67*	62	- 54	- 61	- 61
Guatemala	69	68	63*	70*	- 47	- 52	- 50*
Haiti	27	36	40	40*	- 29	- 26	- 30*
Mexico	56	56	59	63	- 37	- 37	- 36
Nicaragua	15	14	20*	20*	- 15	- 12	- 20*
Others	20	25	20	30	- 5	- 4	- 6*
Total	325	340	350	365	- 225	- 220	- 240
<u>South America</u>							
Argentina	-	-	-	-	+ 23	+ 33	+ 35*
Brazil	1,446	934	1,032	1,080	- 875	-1,008	- 900*
Chile	-	-	-	-	+ 3	+ 9	+ 10*
Colombia	251	349	343*	440	- 230	- 330	- 396
Ecuador	14	18	18*	20*	- 14	- 11	- 15*
Uruguay	-	-	-	-	+ 2	+ 4	+ 4*
Venezuela	58	42	47	50	- 48	- 32	- 33
Others	4	5	5	4	- 3	-	-
Total	1,775	1,345	1,450	1,595	-1,145	-1,335	-1,295
TOTAL LATIN AMERICA	2,100	1,680	1,800	1,960	-1,370	-1,560	-1,530

\*Unofficial estimates.

+Net Imports.

-Net Exports.

<sup>a</sup>Crop years, beginning 1 July of the first-named years.

<sup>b</sup>Calendar years.

Table XXV.--CACAO - Production and Exports in Latin America  
(Including estimates for 1952/53)

Country	Production <sup>a</sup>				Exports <sup>b</sup>		
	Annual Average		Year		Annual Average		Year
	1934/35- 1938/39	1945/46- 1948/49	1949/50	1952/53 (Est.)	1934-38	1946-49	1952/53 (Est.)
	(.....1,000 metric tons.....)						
<u>Mexico, Central America and Caribbean Area</u>							
British W. I.	22	10	8	12	22	10	11
Costa Rica	7	5	6	6*	6	5	6*
Cuba	3	3	3	3*	-	-	-
Dominican Republic	23	28	26	26*	24	25	21*
Haiti	2	2	2*	2*	2	2	2*
Mexico	1	5	7	8	-	1	1
Panama	5	3	3	4*	5	3	3*
Others	1	1	...	2	1	-	1
Total	65	57	60	63	60	45	45
<u>South America</u>							
Brazil	124	115	129	130	114	108	125*
Colombia	10	10	11	10	-	-	-
Ecuador	20	16	20	20	20	18	19*
Venezuela	17	20	18	20	17	15	18
Others	2	3	3	3	-	-	-
Total	180	165	180	183	150	141	162
TOTAL LATIN AMERICA	240	220	240	250	210	190	210

\*Unofficial estimates.

<sup>a</sup>Years refer, as far as possible, to the year of harvest beginning 1 October of the first-named year.

<sup>b</sup>Calendar years.

Table XXVI.--TOBACCO - Production and Exports in Latin America  
(Including targets and estimates for 1952/53)

Country	Production				Exports <sup>a</sup>		
	Annual Average		Year		Annual Average		Year
	1934/35- 1938/39	1945/46- 1948/49	1949/50	1952/53 (Est.)	1934-38	1946-49	1952/53 (Est.)
	(.....1,000 metric tons.....)						
<u>Mexico, Central America and Caribbean</u>							
Cuba	22	30	45*	45*	12	15	20*
Dominican Republic	12	22	26*	21*	6	20	16*
Mexico	15	36	39*	41	-	-	-
Puerto Rico	14	13	12*	13*	10	8	8*
Others	4	10	...	10	1	-	3
Total	67	110	130	130	30	43	47
<u>South America</u>							
Argentina	13	27	25*	24*	-	2	-
Brazil	93	115	116	120	31	36	30
Colombia	12	18	20	22	3	4	4
Paraguay	8	11	9*	11*	4	5	6*
Others	17	19	20	20	-	-	-
Total	145	190	190	197	38	47	40
TOTAL LATIN AMERICA	210	300	320	330	70	90	90

\*Unofficial estimates.

<sup>a</sup>Calendar years.

## TABLES XXVII AND XXVIII - NOTE

The figures shown in the accompanying tables for Prewar and 1946/49 are taken from Food Balance Sheets for countries for which Food Balance Sheets have been published. Figures for 1952/53 have been prepared on as comparable a basis as possible. Because of uncertainties relating to coverage and to the disposal of supplies for feed, industrial purposes, etc., absolute figures cannot be calculated with a great degree of assuredness. For this reason the figures shown may not agree in all instances with other estimates made elsewhere in individual commodity studies. However, they form a consistent time series for each country, and the major trends exhibited are believed to be substantially correct.

With regard to the countries for which the coverage of statistics is insufficient for the preparation of Food Balance Sheets, the figures given do not, in many instances, represent the total supplies available. Nevertheless for each food group for which figures are shown, the coverage for 1946/49 and 1952/53 has been made as comparable as possible and again it is believed that the major trends are substantially correct.



Table XXVII.--Food Supplies Available for Human Consumption in Latin America

## A. COUNTRIES WITH FOOD BALANCE SHEETS

	Cereals	Roots and Tubers	Pulses and Nuts	Sugar	Fats and Oils	Meat	Eggs	Fish	Milk and Cheese	Vegetables	Fruits
(.....Kilograms per caput per year at the retail level.....)											
ARGENTINA											
Prewar	106.1	65.8	2.5	27.2	9.8	106.9	7.1	4.5	162.0	25	47
1946/49	124.5	87.3	2.1	34.7	16.6	114.4	7.3	4.0	164.0	39	58
1952/53	122.9	87.3	5.2	34.3	20.3	114.4	7.3	4.0	164.0	?	?
BRAZIL											
Prewar	78.3	45.7	23.0	24.7	5.5	49.8	2.6	3.2	80.3	20	68
1946/49	79.3	75.1	26.1	30.4	6.4	39.4	2.7	2.9	78.9	24	81
1952/53	81.9	83.8	28.8	32.0	6.5	39.6	2.8	3.0	82.0	?	?
CHILE											
Prewar	123.8	73.3	10.3	25.4	5.0	38.4	1.7	7.2	54.0	50	42
1946/49	133.7	79.5	6.0	26.0	6.0	37.6	2.0	11.3	68.5	54	41
1952/53	141.9	80.3	7.3	27.6	6.4	37.6	2.1	14.8	66.8	?	?
COLOMBIA											
Prewar	57.4	86.8	7.0	40.0	3.2	26.2	3.5	0.6	94.3	10	132
1946/49	71.5	98.0	8.0	61.7	2.9	29.0	4.2	0.6	144.8	12	105
1952/53	80.3	97.3	8.1	61.8	3.7	33.0	4.5	0.6	166.7	?	?
CUBA											
Prewar	102.4	98.8	12.5	40.0	8.8	33.3	4.4	4.2	79.3	16	148
1946/49	106.3	91.0	16.0	40.4	12.1	35.4	3.1	5.9	90.2	14	124
1952/53	106.3	95.5	16.0	45.0	12.1	36.7	3.5	5.9	91.0	?	?

	Cereals	Roots and Tubers	Pulses and Nuts	Sugar	Fats and Oils	Meat	Eggs	Fish	Milk and Cheese	Vegetables	Fruits
	(.....Kilograms per caput per year at the retail level.....)										
PERU											
Prewar	98.2	108.9	15.6	13.6	4.0	24.0	3.2	3.3	38.7	14	42
1946/49	102.6	122.2	6.9	22.4	3.9	22.6	3.3	3.4	36.3	14	43
1952/53	103.5	115.1	9.1	22.7	3.8	21.9	3.4	4.9	34.5	?	?
URUGUAY											
Prewar	85.2	39.5	2.5	24.0	12.6	106.6	7.4	1.9	165.8	10	29
1946/49	100.4	34.0	2.0	28.1	11.7	106.5	8.2	2.2	183.2	14	40
1952/53	116.0	37.3	2.5	32.8	13.4	115.0	8.5	2.2	190.6	?	?

Table XXVII--(Continued)

## B. COUNTRIES WITHOUT FOOD BALANCE SHEETS

	Cereals	Roots and Tubers	Pulses and Nuts	Sugar	Fats and Oils	Meat	Eggs	Fish	Milk and Cheese	Vegetables	Fruits
(.....Kilograms per caput per year at the retail level.....)											
<u>CENTRAL AMERICA</u>											
DOMINICAN REPUBLIC.											
1946/49	62	92	14	13		14			37		
1952/53	61	97	15	14		16			32		
EL SALVADOR											
1946/49	99	2	17	26	7	37	3	2	44		
1952/53	88	3	15	43	7	40	3	2	49		
GUATEMALA											
1946/49	61	2	8	19		8			27		
1952/53	69	2	8	19		10			30		
MEXICO											
1946/49	123	7	10	26	6	23	2	2	71	24	58
1952/53	141	7	12	33	8	25	2	3	78		
NICARAGUA											
1946/49	54	6	13	27		44			122		
1952/53	58	6	15	35		48			136		
HONDURAS											
1946/49	107	26	18	25	4	36	1	1	119		
1952/53	104	30	21	29	4	39	1	2	131		

	Cereals	Roots and Tubers	Pulses and Nuts	Sugar	Fats and Oils	Meat	Eggs	Fish	Milk and Cheese	Vegetables	Fruits
(.....Kilograms per caput per year at the retail level.....)											
<u>SOUTH AMERICA</u>											*
BOLIVIA											
1946/49	82	87	7	8		36			100		
1952/53	95	91	7	8		43			116		
ECUADOR											
1946/49	79	35	8	30		23			56		
1952/53	86	36	11	35		25			55		
PARAGUAY											
1946/49	69	249	27	38	7	94	3		104		
1952/53	61	280	25	42	8	100	3		112		
VENEZUELA											
1946/49	95	58	16	43	4	26	3	18	87		
1952/53	95	59	16	52	5	27	3	20	93		

Table XXVIII.--Calorie and Protein Content of Food Supplies

## A. COUNTRIES WITH FOOD BALANCE SHEETS

	Calories	Protein (grams)	
		Animal	Total
	(.....Per caput per day.....)		
<u>Argentina</u>			
Prewar	2,731	61.7	98.4
1946/49	3,190	65.6	101.8
1952/53**	3,286	65.6	103.3
<u>Brazil</u>			
Prewar	2,151	31.6	68.0
1946/49	2,343	25.1	63.4
1952/53**	2,459	25.5	66.4
<u>Chile</u>			
Prewar	2,237	21.1	68.9
1946/49	2,357	22.7	71.3
1952/53**	2,482	23.3	75.1
<u>Colombia</u>			
Prewar	1,863	19.8	46.7
1946/49	2,283	25.6	56.3
1952/53**	2,432	29.2	60.8
<u>Cuba</u>			
Prewar	2,609	23.2	61.6
1946/49	2,730	25.3	66.8
1952/53**	2,793	26.0	67.6
<u>Peru</u>			
Prewar	1,865	14.0	56.2
1946/49	1,922	13.3	51.9
1952/53**	1,930	13.3	53.0
<u>Uruguay</u>			
Prewar	2,382	60.9	89.5
1946/49	2,577	62.1	94.1
1952/53**	2,885	66.3	103.4

\*\*Vegetables and fruits are presumed to be at current or prewar levels.

Table XXVIII--(Continued)

## B. COUNTRIES WITHOUT FOOD BALANCE SHEETS

	Calories	Protein (grams)		Remarks
		Animal	Total	
CENTRAL AMERICA				
<u>Dominican Republic</u>				
1946/49 <sup>a</sup>	1,220	9	37	<sup>a</sup> Excludes fats, eggs, fish, fruit and vegetables.
1952/53 <sup>a</sup>	1,240	9	38	
<u>El Salvador</u>				
1946/49 <sup>a</sup>	1,800	20	55	<sup>a</sup> Excludes fruits and vegetables. No fat shown for any period for starchy roots--only a trace for El Salvador and Mexico.
1952/53 <sup>a</sup>	1,880	21	53	
<u>Guatemala</u>				
1946/49 <sup>a</sup>	940	6	26	<sup>a</sup> Excludes fats, eggs, vegetables and fruits. Prewar 1946/49, 52/53, no fat figure shown for starchy roots.
1952/53 <sup>a</sup>	1,040	7	29	
<u>Honduras</u>				
1946/49 <sup>a</sup>	1,900	62	22	<sup>a</sup> Excludes fruits and vegetables.
1952/53 <sup>a</sup>	1,970	64	24	
<u>Mexico</u>				
1946/49	2,050	16	56	<sup>b</sup> Excludes fruits and vegetables.
1952/53 <sup>b</sup>	2,290	18	62	
<u>Nicaragua</u>				
1946/49 <sup>a</sup>	1,340	28	50	<sup>a</sup> Excludes fat, eggs, fish, vegetables and fruits.
1952/53 <sup>a</sup>				
SOUTH AMERICA				
<u>Bolivia</u>				
1946/49 <sup>a</sup>	1,500	23	52	<sup>a</sup> Excludes fats, eggs, fish.
1952/53 <sup>a</sup>	1,680	27	58	
<u>Ecuador</u>				
1946/49 <sup>a</sup>	1,430	14	40	<sup>a</sup> Excludes fats, eggs, fish, vegetables and fruit.
1952/53 <sup>a</sup>	1,570	15	44	
<u>Paraguay</u>				
1946/49 <sup>a</sup>	2,700	47	91	<sup>a</sup> Excludes fish.
1952/53 <sup>a</sup>	2,770	50	92	
<u>Venezuela</u>				
1946/49	2,170	23	61	<sup>a</sup> Excludes fruits and vegetables.
1952/53 <sup>a</sup>	2,170	24	60	

Table XXIX.--Population of Latin America  
(in thousands)

Country	Average 1934-38	Average 1946-49	1949/50	1952/53
Costa Rica	592	796	851	940
El Salvador	1,633	2,074	2,175	2,328
Guatemala	3,061	3,680	3,830	4,054
Honduras	1,005	1,250	1,290	1,350
Mexico	18,574	23,655	24,450	26,240
Nicaragua	916	1,148	1,190	1,250
Panama	568	738	770	821
MEXICO AND CENTRAL AMERICA	26,350	33,341	34,556	36,983
British W. Indies <sup>a</sup>	2,209	2,634	2,742	2,875
Cuba	4,325	5,130	5,260	5,455
Dominican Republic	1,561	2,182	2,298	2,472
Fr. West Indies	556	545	553	566
Haiti	3,059	3,625	3,775	3,925
Neth. W. Indies	91	149	161	180
Puerto Rico	1,760	2,167	2,239	2,348
CARIBBEAN AREA	13,561	16,432	17,028	17,821
Argentina	13,905	16,205	16,493	17,170 <sup>b</sup>
Bolivia	3,210	3,888	3,990	4,230
Brazil	38,160	48,000	49,350	52,508
Chile	4,715	5,527	5,709	6,060 <sup>b</sup>
Colombia	8,447	10,661	11,015	11,826
Ecuador	2,756	3,420	3,480	3,620
Guiana (Br.)	333	389	402	444
Guiana (Fr.)	37	29	29	30
Guiana (Neth.)	176	208	214	229
Paraguay	930	1,245	1,304	1,427
Peru	6,640	7,992	8,204	8,690
Uruguay	2,067	2,315	2,353	2,440 <sup>b</sup>
Venezuela	3,482	4,545	4,696	5,060
SOUTH AMERICA	84,858	104,424	107,239	113,734
REGIONAL TOTAL	124,770	154,197	158,823	168,538

<sup>a</sup>Including British Honduras and Trinidad and Tobago.

<sup>b</sup>Midyear 1953.

**PART II**

**OFFICIAL REPORT**  
of the  
**SECOND REGIONAL MEETING**  
on  
**FOOD AND AGRICULTURAL**  
**PROGRAMS AND OUTLOOK**

Montevideo, Uruguay, December 1950





## AGENDA OF THE MEETING

The Food and Agriculture Organization of the United Nations and the Organization of American States both had planned agricultural conferences during 1950. A close co-ordination was established between the two organizations, in order to avoid possible duplication. The Government of Uruguay had generously offered the Organization of American States the city of Montevideo as the seat of the Fourth Inter-American Conference on Agriculture and was kind enough to extend the invitation to FAO in order that its second Latin-American Regional Meeting could be held simultaneously in Montevideo.

FAO and OAS carefully considered means by which the programs of the two meetings could be integrated. As a result of the exchange of views on this matter, FAO proposed the following provisional agenda which was adopted by the Second Inter-American Regional Meeting:

1. Review of the Food and agricultural situation in Latin America in the light of the 1952/53 targets and estimates of production, trade and supply of agricultural and livestock products; the outlook for demand and prices of agricultural products and trends in international trade.
2. Review of the food and agricultural programs of participating governments and consideration of their economic implications of the programs and their requirements for international cooperation. Special consideration of the levels of food supplies in relation to nutritional needs and the potentialities for expansion of agriculture and fisheries.
3. Technical assistance and other types of mutual aid for improving agriculture and bettering the conditions of rural people.
4. The work of FAO considered in relation to the food and agricultural programs of Latin American countries and the proposals growing out of the technical meetings on Nutrition, Livestock Improvement, Forestry, and Statistics held in Latin America during 1950.
5. Improvement of agricultural economics advisory and information services to administrators and farmers, including consideration of the need for agricultural economic training centers in Latin America.
6. Improvement of current agricultural statistics and censuses, including the training of agricultural statisticians.
7. Supervised credit programs for improving small farm units.
8. Programs for the maintenance of national food and agricultural reserves.

## OFFICERS OF THE MEETING

As the second Latin American Regional Meeting of the FAO was held at the same time as the Fourth Inter-American Conference on Agriculture, it was decided that both meetings would have the same presiding officers. The following officers were elected:

President .....	Sr. Carlos Fischer, Minister of Agriculture and Animal Husbandry of Uruguay.
Vice-Presidents .....	Dr. Angel Florentin Pena, Minister of Agriculture, Paraguay. Mr. Charles Brannan, Secretary of Agriculture of the United States.

It was also decided that Sr. Julian Murguia would act as General Secretary to both meetings, with Sr. Alfredo Saco as Technical Secretary of the Second Regional Meeting.

It was agreed to create three working commissions for the FAO Regional Meeting which appointed the following officers and adopted the specific work programs set forth below:

Commission A: Estimates and targets for 1952/53 in the light of production outlook and demand for agricultural and livestock commodities. (Point 1 of the Agenda)

Chairman .....	Sr. Rodolfo Arango, Director of Agriculture (Cuba)
Vice-Chairman .....	Mr. Fred I. Rossiter, Co-Director, Office of Foreign Agricultural Relations, U.S. Department of Agriculture.
Technical Secretary .....	Sr. Amable Ortiz (FAO Secretariat).

Commission B: Plans and Programs for the development of agriculture, animal husbandry and fisheries. (Point 2 of the Agenda)

Chairman .....	Sr. Leopoldo Barrientos, Ministry of Agriculture of El Salvador.
Vice-Chairman .....	Mr. A. G. Mill, Agricultural Attache of the British Embassy in the Argentine Republic.
Technical Secretary .....	Mr. David Lubbock (FAO Secretariat)

Commission C: Governmental Services essential to the implementation of agricultural programs. (Points 3, 4, 5, 6, 7 and 8 of the Agenda)

Chairman .....	Sr. Horacio Serrano Palma, former Minister of Agriculture (Chile).
Vice-Chairman .....	Sr. Alfredo Weiss, Chief, Agricultural Economy and Statistics Section, Ministry of Agriculture (Uruguay).
Technical Secretary .....	Mr. William Casseres. (FAO Secretariat)

## INTRODUCTION

With the object of continuing the deliberations on the situation and outlook for agriculture begun in Quito in 1949, the Second Latin-American Regional Meeting of FAO considered several preparatory papers on topics related to its agenda, presented by its secretariat.

Several other documents were received and transmitted by the Secretariat, and in the course of the meeting several written proposals were submitted and considered. (See Annex I for a list of documents of these various types).

During the deliberations several delegates also submitted oral proposals. These are noted in the present report, in accordance with the decisions taken with regard to them.

### Participating Delegations:

Delegations of the following countries participated in the Second Inter-American Regional Meeting of FAO.

Bolivia	Haiti
Brazil	Mexico
Colombia	Nicaragua
Costa Rica	Netherlands
Cuba	Panama
Chile	Paraguay
Ecuador	Dominican Republic
El Salvador	Uruguay
France	United States of America
Guatemala	United Kingdom

Argentina and Canada sent observers. Several organizations were also specially invited to participate in the discussions as observers and delegations were sent by the following:

- United Nations
- World Health Organization
- United Nations Educational, Scientific and Cultural Organization
- International Labour Organisation
- International Refugee Organization
- The Holy See
- Economic Commission for Latin America
- Inter-American Institute of Agricultural Sciences
- Inter-American Statistical Institute
- Inter-American Indian Institute
- Pan-American Sanitary Bureau
- International American Institute for the Protection of Childhood
- Inter-American Council of Trade and Production
- International Federation of Agricultural Producers

## Coordination with the Fourth Inter-American Conference on Agriculture

In order to assure close coordination of work between the Second Regional Meeting of FAO and the Fourth Inter-American Conference on Agriculture, a coordinating committee was appointed, consisting of the President of both meetings, the Chairmen of the different Commissions, the Secretary General and the Technical Secretary of the Second Inter-American Regional Meeting of FAO.

At the suggestion of this Committee, plenary sessions were held jointly, and joint working groups were formed for subjects common to the agenda of both meetings. To this end three such groups were appointed for the submission of reports regarding irrigation works, mechanization of agriculture, and the use of fertilizers. The report of these are annexed to this document, after having been approved by the Regional Meeting with the modifications shown in the text. Joint sessions of Commissions A and B were held to discuss problems of interest to both. (Annex II).

### A. IMPORTANCE OF AGRICULTURE IN THE ECONOMIC DEVELOPMENT OF LATIN AMERICA

The analysis of volumes and trends of agricultural production, prepared for the meeting (document LA/2/1) shows that the current production for the region, although greater than prewar, is nevertheless not great enough to restore the prewar per caput levels, owing to the rapid increase of population. Even by 1952/53 the expected volume of crop production would provide only 95% of the prewar production per caput. The per caput supplies for domestic consumption, because of reduction in the volume of net exports, are expected to increase a little above prewar, but in the majority of the countries of the region the nutritive value of the supplies remains inadequate. In regard to livestock, the increase in numbers in the region has been too gradual to provide increases per caput of livestock products, and per caput consumption has only increased through decrease in exports. For the twenty-two main crops, the areas harvested have decreased in relation to population growth, from 0.36 hectares per caput prewar, to a post-war average of 0.31, and is only expected to recover to 0.33 by 1952/53.

Although the values of agricultural exports are considerably higher than before the war, this is due to the much higher prices obtained; post-war volumes of exports have been on the average 97% of prewar, while the corresponding figure for the volume of imports is 135%.

The Meeting, having considered these points, together with others (especially those presented in Chapters V and VI of LA/2/1), emphasizes the need for the countries of the Region to expand their agricultural production both to meet urgent nutritional needs, and to increase their exports at remunerative prices.

It considers that in the region the increase in exports of agricultural products is one of the most effective means of obtaining foreign exchange, necessary for the importation of capital goods required for industrial development. It further believes that to raise the level of living of the peoples of the region it is essential to develop industry, with the initial objective of giving priority to the exportation of agricultural products in a manufactured or semi-manufactured state. Nevertheless, in drawing up programs for economic development, Governments should take care that plans for industrialization do not involve a lessening of agricultural activities, and every effort should be made to balance agriculture and industry in the national economy of each country.

The Meeting observed with satisfaction the increase in purchasing power that has occurred in various countries of the Region in recent years, with a consequent increase in consumption of agricultural products, and therefore recommends that Governments foster the increase of production, especially of those agricultural commodities of which the volume of exports has lessened because of greater national consumption.

Furthermore, the Meeting wishes to emphasize that in order to accelerate the desired agricultural development, greater investment of capital in agriculture is required, together with wider credit facilities, both national and international.

## B. NOTICEABLE TRENDS IN THE PRODUCTION, TRADE AND CONSUMPTION OF AGRICULTURAL PRODUCTS IN LATIN AMERICA FOR 1952/53.

The Regional Meeting studied with great interest information relative to the production, consumption and trade of Latin American products. The process of retrospective and prospective studies on the basis of estimates and future targets for 1952/53 was found to be of great value. This method, which is based on the analysis of normal and current trends, and on the real possibilities of agricultural policies and programs in the different countries was considered of great importance for the determination of future programs of action and new policies which are essential for more effectively promoting the economic development of the region and the raising of the standard of living, particularly among the poorer elements of the population.

In agreement with the FAO reports, the Meeting recognized the unmistakable fact that in recent years agricultural production in Latin America, although increasing, has not quite kept pace with the increase of population. This situation has resulted in a small decrease in the volume of agricultural exports and an increase in agricultural imports, with the per caput supplies below prewar levels. Naturally, this overall situation for the region has been the result of a combination of situations in various countries, and it is noteworthy that in some of them there has been both an appreciable increase in production and a relative increase in supplies per capita.

### a) 1952/53 targets and estimates.

As for agricultural production, consumption and supply prospects for 1952/53, the estimates contained in the FAO documents were generally considered to be well-founded; these estimates anticipate increases not only in production but also in total supplies and consumption per inhabitant. This will permit Latin America to increase the volume of its exports of agricultural commodities in the coming years, while reducing slightly the imports of these products, with a resultant improvement in availability of foreign exchange and in its financial position for intensifying economic development.

The following observations relative to certain commodities are interesting:

With reference to wheat, the Argentine Delegation stated that both the cultivated areas and the production of this grain in the 1952/53 period may be higher than the FAO estimates, since the official policy remains to attain fully the goals which have been set. The Delegate from Brazil stated that, in accordance with the official program of attempting to increase per capita wheat consumption, it is possible that total imports may not decrease appreciably in relation to present levels, and that the slight decline of imports foreseen by FAO may not materialize.

As regards vegetable fats and oils, the delegation of Chile stated that the 1950 production suffered considerable damage from natural causes, which necessitated the

continuation of imports, despite the fact that the official estimate, quoted in the FAO document, assumed that this year's production would be sufficient to supply the home market. The Chilean Delegation added that in future years, unless adverse factors interfere, the objectives and forecasts listed in the FAO documents will be fulfilled.

As regards cotton, the Delegation of Mexico noted that since this product is heavily dependent on the external situation, its production in Mexico may fluctuate considerably in accordance with world market prices, and that this also applies to the forecasts that have been made.

With the aforesaid reservations and observations, the Meeting accepted and confirmed the estimates on production and domestic supply of agricultural products for 1952/53 in Latin America, which appear in the following table, as reported by the FAO Secretariat.

b) Outlook for Latin American Agricultural Exports in View of World Conditions for Demand and Prices

After considering the information contained in the FAO documents, and following an interesting exchange of views on the situation, the Meeting found that, generally speaking, the international economic situation, especially as regards many Latin American agricultural products, is favorable and gives an opportunity to effect sizeable increases in production for export purposes.

However, it was also pointed out that in view of constant changes in the world economic situation with extraordinary upheavals in the international political situation, Government plans concerning agricultural production for export should be continuously revised according to the variations in the international outlook. Sudden increases in production or decreases in demand may cause a fall in prices, or the creation of surpluses. With these reservations, it was considered that the following forecasts relative to certain products are reasonably accurate:

The market for grains will continue to be tight, although it seems evident that in view of the region's traditional position with regard to these products, it may increase the volume of its exports somewhat. The possibilities of expanding corn exports appear to be better than those for wheat.

With regard to rice, it was noted that it is necessary to increase the average yields of the region, in order to reduce costs and maintain this crop in a favorable competitive position in the world market. At any rate, even under present conditions, the market still offers some possibilities for export, especially to soft-currency countries, where it is possible that relatively high prices may still be maintained for this product.

World production and consumption of sugar have increased somewhat in recent years, and this upward trend is likely to continue. To date, consumption has been keeping abreast of production, but it would be much higher if rationing systems still in force in a number of countries, principally in Europe, were relaxed, or if the high prices that sugar brings in the domestic markets could be reduced. The ever-increasing quantity of dollars which a number of markets will have available as a result of the expansion of the United States rearmament program will undoubtedly increase the possibility of continued sugar purchase from the dollar area. In any case, with regard to this matter, the conclusion of an international agreement on sugar, which has already been submitted to the consideration of Governments, is a matter of prime importance.

ESTIMATES ON PRODUCTION, NET INTERNATIONAL TRADE AND  
SUPPLY OF AGRICULTURAL COMMODITIES IN  
LATIN AMERICA FOR 1952/53

141

	Production	Net Trade	Gross Available Supplies <sup>a</sup>	
			Total	Per Capita
	(.....In thousands of metric tons.....)			(..Kilograms..)
<u>Cereals</u>				
Wheat	9,580	-810	8,770	52.0
Rye	450	-200	250	1.5
Corn	19,700	-4,760	14,940	88.6
Oats	1,010	-210	800	4.7
Barley	1,520	-540	980	5.8
Total	32,260	-6,520	25,740	152.7
<u>Rice<sup>b</sup></u>	4,950	+80	3,280	19.4
<u>Roots and Tubers</u>				
Potatoes	4,540	+180	4,720	28.0
Sweet Potatoes	2,400	...	2,400	14.5
Cassava	16,500	...	16,500	98.0
<u>Sugar</u>	12,700	-8,130	4,570	27.1
<u>Beans</u>	2,160	-50	2,110	12.5
<u>Bananas</u>	7,210	-1,860	5,350	21.7
<u>Oilseeds</u>				
Linseed	1,140	-700	440	...
Sunflower	1,310	-300	1,010	...
Peanut	340	...	340	...
Cottonseed	1,500	-110	1,390	...
Sesame & castor seed	360	-200	160	...
<u>Other commodities</u>				
Cotton (ginned)	810	-330	480	2.8
Coffee	1,960	-1,530	430	2.6
Cacao	250	-180	70	0.3
Tobacco	330	-80	250	1.5

+Net imports.

-Net exports.

<sup>a</sup>Supplies available for domestic consumption, including quantities utilized for feed seed and those processed or wasted. Fluctuations of reserve stocks are not taken into consideration.

<sup>b</sup>Production figures correspond to unhusked rice while trade and supply figures correspond to husked rice.

Special attention should be given to oilseeds and vegetable oils, whose production has been encouraged in recent years in a number of countries of this region. The expansion of production in the United States and the substantial decline in dollar prices during 1948 and 1949, have caused a certain degree of confusion as regards the marketing of these commodities abroad, since many countries were in a position to buy in the United States at prices lower than those prevailing for home production itself. Recently, Latin America has been able to export more easily to countries with soft currencies, where relatively high local prices still prevail, as compared with the prices to be paid in dollars. Since in the soft-currency areas it is rather likely that these prices will tend to level off because of the expansion of production in other



sources of supply, it seems advisable that any program concerned with these products should be based on long-term consideration rather than on conditions prevailing at this time.

The outlook for coffee production and export is excellent from every standpoint. The difficulty of increasing supplies within a short time will limit possibilities for Latin America's benefiting by the current situation to a larger extent than at present. Although, owing to the substantial increase in prices, demand for coffee has shown a tendency to decline, it is nevertheless believed that prices will maintain their high levels, possibly at least 60% higher than the 1949 average. Although it is difficult to make an estimate of demand and prices for the distant future, it still seems certain that any increase in the export production will be profitable to Latin American producers.

Despite the existence of an appreciably increased world demand for cacao, the producing countries of the Region do not appear to be much inclined to increase plantations to any extent, as they are fearful of sudden future changes, either in demand or in prices. However, the prospects for development are fairly good, especially considering the difficulties that producers of other regions have to face, such as those caused in Africa by the swollen shoot disease.

The Latin American exports of tobacco, which decreased in recent years, will probably continue without major changes in the future. Yet, there are possibilities of somewhat larger exports in view of the situation in some European countries where supplies have decreased owing to difficulties in supplying themselves from the United States, due largely to an appreciable increase in consumption over production in that country.

The outlook for an increase of Latin American cotton exports is good. United States production decreased in 1950 by about 40%, and the new defense programs of that country will make the demand situation stronger than it has been in recent years. The first sign of this situation was a sudden price increase during the second part of 1950. Although United States production will recover, world demand will still outstrip production owing to an appreciable increase in consumption in most of the producing and importing countries.

The demand for other vegetable fibers, such as abaca, hemp, sisal, and jute is considerable, especially as a result of the military programs. As regards jute, supplies are still low in relation to needs in spite of the use of substitutes in the manufacture of bags. Latin America still offers great possibilities for the development in the cultivation of these fibers, which have not been properly explored as yet. The experience of Brazil in connection with jute is important, since this country has multiplied its production several times over in recent years, and expects to be self-sufficient within a very brief period. In connection with these products, the activities of Cuba and Mexico, which are aimed at increasing the export of fibers are noteworthy.

According to available information world wool supplies will continue at a low level, at least during the next two years. This has occasioned serious problems which are now being studied carefully in an effort to find adequate solutions. It is obvious, however, that any increase in production which may be achieved in Latin America in the near future would find a ready international market. In the more distant future, and assuming similar production increases in other areas, the problem would be mainly that of lowering costs in order to compete in the world market.

There is no doubt as to the need for appreciably increasing meat production for domestic consumption in most of the Latin American countries, with the exception of

Argentina and Uruguay. The expansion of meat exports, however, seems likely to prove difficult in the future, with enlarged production in European countries, and with price problems in concluding agreements between Great Britain and her Latin American suppliers. Looking at the situation from the standpoint of long-range prospects, the outlook is rather good, since the world trend towards increased incomes seems firm, and this will bring about a constant rise in the levels of meat consumption.

In examining the agricultural situation in relation to the optimum possibilities of exports, it was noted that due to the lack of agricultural diversification, the region is still too dependent on the export of relatively few products. Although this situation may prove relatively advantageous during periods of prosperity, it may become dangerous to national economies during periods of general depression or unfavorable price situations for these particular export products.

#### c. International Commodity Agreements

In order to create a spirit of greater confidence within the region with regard to expanded production of exportable agricultural commodities, and to foster international cooperation in solving the problem of surpluses — which could ultimately be useful in maintaining regular world supplies in agricultural products — the Meeting reaffirms its conviction that the provisions of Chapter VI of the Charter of the International Trade Organization, as well as those related to anti-dumping measures should be applied. The Meeting requests the Director-General of FAO to promote through the means at his disposal the application of the provisions of Chapter VI of the Charter and strengthen the participation of FAO in the Study Groups on agricultural commodities.

#### d. Notes on Some Tropical Products

In the course of the Meeting's detailed study of prospects for production, consumption and trade in agricultural products, some suggestions were made with respect to certain tropical crops, which were considered of particular interest for the producing countries. Thus it was suggested that FAO include bananas among the commodities for which studies on supply and demand projects are made. In connection with coffee production it was suggested that the interested countries as well as the Inter-American Coffee Institute, and FAO if possible, should make known the advantages of washed coffee. As regards sugar cane production and the better use of its by-products, the Meeting took note of a study on "Sugar Cane By-Products and their future value in Latin America", which it considered of interest to countries concerned.

### C. REVIEW OF LEVELS AND TRENDS OF FOOD SUPPLIES IN RELATION TO NUTRITIONAL NEEDS

#### a) Suggested Consumption Targets for 1960

During the Meeting, the Chairman of Commission B and the Technical Secretariat of FAO discussed, individually with the delegations of most of the countries of the region, tentative 1960 targets for their respective countries. Figures proposed by the Secretariat were used as a basis for discussion and provisional conclusions were reached from which statements regarding desirable trends of supply for the main food groups may be summarized as follows:

1. Cereals. Increases in supplies of cereals are required for those countries in which the total caloric value of diets is low.
2. Tubers and starchy roots. Moderate increases of supplies are desirable in those countries with low caloric supply and some decreases for those whose caloric levels are adequate. In this food group potatoes and sweet potatoes, especially the yellow varieties, are of greater value than yuca.
3. Sugar. Decrease of supplies of sugar are desirable for those countries whose caloric levels are adequate, and also for any which have a very high sugar consumption. This means that in most of the countries measures to increase production should be adopted only for export purposes.
4. Pulses and nuts. Considerable increases in supplies are desirable in countries with insufficient protein supply, or with low caloric consumption.
5. Fats and oils. Increases of supplies are required in countries with low caloric consumption.
6. Meat. Increases of supplies are required in countries where there is insufficiency of proteins especially those of animal origin. However, in countries with facilities for making substantial increases of vegetable protein or with other sources of animal protein these courses may be followed, at least in part.
7. Eggs. Increases of supplies are desirable in all countries, mainly for the purpose of improving the balance of diets by providing a variety of nutrients.
8. Fish. There is considerable scope in many Latin American countries for increasing supplies of fish with advantage to the nutritive value of the diets. This applies to both fresh-water and deep-sea sources. For those countries where the facilities are good and the diets are low in protein, particular attention should be given to encouraging consumption, and facilitating distribution, of fish supplies.
9. Milk. Increases of supplies for all countries are most desirable for improving the quality of the diets.
10. Vegetables and fruits. Statistical data for these food groups are particularly incomplete for all the countries in the region. However in many countries there is no doubt that the nutritive value of the diets should be improved by considerable increases, in fruits and vegetables. This is true especially of green and yellow leafy vegetables and nearly all fruits, although to a lesser extent of starchy fruits.

It should be noted that even where no increases per caput are needed, a steady slight increase in total national supplies is nevertheless required owing to the continual increase in population.

#### b) The Particular Problem of Coca Chewers

The problem of Coca eaters has been under study for many years, especially in Bolivia and Peru. No satisfactory solution has as yet been found. In 1949 a Commission of the United Nations comprising experts in the various fields concerned visited Bolivia and Peru and initiated discussions with the specialists who have themselves studied the

problem in their countries. At the same time they carried out a preliminary field survey. The Meeting hopes that the recommendations of the Commission be put into effect without delay so that the habit of chewing the coca leaf will eventually be eliminated.

#### D. PLANNING AND ORGANIZATION OF AGRICULTURAL PRODUCTION

The present state of food and agriculture in Latin America and the trend observable in production estimates for the several countries of the region, point to a serious general problem. There is no indication that the situation can improve spontaneously; on the contrary, the rapid increase of population, the much less rapid increase of production, the spread of deforestation and consequent loss of soil by erosion, at a time when the demand for imported articles is increasing and requiring parallel increases of exports, are elements which demand vigorous and disciplined action, to avoid a critical worsening of the nutrition and of the whole economy of a majority of the countries. The means available in the region for dealing with this problem, not only in material terms, such as equipment and funds, but also in terms of technical personnel, are limited.

##### a) Integration of plans. Training Centers

These means must therefore be used as efficiently as possible, through carefully studied programming and through organization. Fortunately, most of the countries of the region have already faced up to this need, and have prepared long- or short-term plans for balanced development of their agricultural and general economy. However, this type of action must be made general; the institutions charged with responsibility for it must be strengthened, and equipped with better means for carrying on their work. Trustworthy and well organized agricultural statistics are essential as the basis for planning. More information is needed on the productive capacity of each country, and it is necessary to be able to define with practical accuracy not only the nutritional requirements of each country but also its import requirements in order to place the different items of production in the appropriate order of importance with reference to specifically national problems of domestic consumption, export and import.

The Second FAO Regional Meeting has given special attention to these needs and in line with the resolution passed by the First Meeting, having in view the new facts presented by the FAO Secretariat, stresses the importance of the formulation of overall programs for agricultural development, including quantitative targets for production, consumption and trade of the various agricultural commodities. At the same time it recommends that governments, where they have not already done so, establish national bodies to be entrusted with the responsibility of preparing and supervising the execution of such plans. As a means of assuring expert personnel in agricultural planning, governments should organize national training centers which local technicians and administrators may attend in order to perfect their knowledge on the subject. The Regional Meeting also requests FAO to give priority in the Expanded Technical Assistance Program to requests from member governments for the provision of experts to assist them in the preparation of plans and programs for agricultural development.

As a starting point in the assistance that FAO may give to member governments, the Regional Meeting requests the Director-General of the FAO to provide for the establishment of a regional training center on agricultural goals and program building for a duration of 3-4 months during 1951 under the Expanded Technical Assistance Program. For the location of the center, the Director-General should use his discretion to select a place generally convenient and in which the host government is ready to provide the necessary facilities. The training to be provided should be for administrators and

technical personnel directly concerned with the subject in their own countries. The advisability of these training centers being attended by delegations of cooperatives and farm organizations was also considered.

#### b. Agricultural Statistics

Availability of statistical information is essential to the agricultural planning work recommended by the Second Regional Meeting. The present is an appropriate time for Governments of the region to make special efforts to improve their statistical services, since the Expanded Technical Assistance Program can provide at least part of the technical advice and training which may be needed.

The Agricultural Census of 1950 provides the principal basic elements for improving and developing continuous statistical services. Once this census has been taken, the opportunity should not be lost for using it to maintain or establish continuity in the gathering of data, beginning with the agricultural year following that of the census.

The Latin American Governments performing the census should therefore organize or expand their departments of Agricultural Statistics as early as possible, endowing them with adequate personnel, equipment, and funds, and should utilize all appropriate data gathered by the census as a bench mark for the agricultural statistics of the years following that of the census.

Modern agricultural statistics procedure includes determination of forward production estimates, and this calls for specialized training for statistical workers. One useful method is statistical sampling, which makes it possible to obtain the required information with a minimum of cost and time. In order to spread the knowledge of this technique, the Inter-American Statistical Institute has organized a Training Center in Statistical Sampling, which will begin to function in Washington in January, 1951.

Furthermore, FAO, together with the Government of Costa Rica and with the cooperation of IASI and other international agencies, has planned a Latin American Training Center in Agricultural Statistics, with highly qualified instructors, which will operate from 8 January to 30th March 1951 in San Jose, Costa Rica.

Centers established with such effort and expense as these deserve to be fully utilized, and the Latin American governments are urged to take advantage of these opportunities for specialized intensive training, by sending to these centers the largest appropriate number of trainees.

The Second Regional Meeting notes with pleasure the present cooperation of FAO and IASI, particularly in the operation of Census and Statistical Training Centers in Latin America, and recognizes that such training programs are particularly important at the present time when all Governments are concerned with the execution of general and agricultural censuses and with the improvement of their permanent statistical services.

The Governments represented at the Meeting therefore request:

(a) that FAO, in line with the Bases of the Expanded Technical Assistance Program, through mutual use of technical personnel by IASI and FAO and the cooperation of the interested Governments and institutions, establish at appropriate points in the Latin American Region additional Agricultural Statistics and Census Training Centers to meet the needs of Governments in these fields, and

(b) that FAO provide, in cooperation with IASI, advisory services of specialists assigned to the statistical offices of Governments requesting such direct aid.

There is a lack of international uniformity in the agricultural studies prepared by the permanent statistical services of the Latin American countries. To assist in this matter, IASI created in 1945 an Ad Hoc Committee, made up of representatives of several American Governments which prepared a list of principal topics for agricultural statistical study, and in 1950 the Inter-American Statistical Congress suggested tentatively a minimum list of topics and also a broader list. For the purposes of international comparability it is essential to agree on minimum standards for the collection of statistical data, and the Regional Meeting recommends that the Latin American Governments adopt these lists tentatively, proposing to FAO and IASI the changes they consider advisable, so that these may be considered at the next meeting of either body.

Most of the Latin American Governments are carrying out agricultural censuses in 1950 and 1951. However, an agricultural census provides a vast number of data, which normally make their tabulation a complex and costly undertaking, which in time makes it desirable to select only the most important data. There are still other factors complicating the process of tabulation, such as:

- a) Concurrence of population and agricultural censuses, and in some instances still others, such as economic censuses;
- b) The fact that this is often the first time the tabulators have dealt with agricultural data.
- c) The need to satisfy national requirements and at the same time the minimum requirements agreed to with FAO for the world summary, and finally,
- d) the limitations imposed by the equipment, the time, or the funds available.

Nevertheless, technical advances made in countries with greater census experience make it possible to apply relatively cheap and short procedures. In order that the Governments of Latin America may have the benefit of these advances, FAO has been negotiating with one of the Governments which has already taken its agricultural census, for the possible establishment of a Tabulation Laboratory which, by using this agricultural census material, would provide Latin American technicians with an opportunity to learn the new techniques in a short space of time. The Second Regional Meeting, considering this an extremely valuable opportunity, recommends that FAO continue its negotiations for such a training laboratory, and provide all other possible assistance to Governments requiring help in the tabulation of their agricultural censuses.

The Meeting is informed that some Latin American Governments are not participating in the World Agricultural Census of 1950. In some cases this is because a census has recently been taken; in other cases because pertinent legislation establishes a census year other than 1950 or 1951; and, finally, because of economic or other reasons. However, it is a matter of world importance, and it is highly useful for the Latin American nations to be able to know the agricultural situation of each country at a given time. The Meeting therefore recommends that Governments which have not as yet decided to take an agricultural census should make an effort to do so not later than 1951, or if this is impossible, to make statistical studies of the most important topics, requesting FAO to provide any required technical assistance, through cooperation, if necessary, with other statistical agencies.

### c) Planning and Nutritional Requirements

The fundamental objective of agricultural planning is to guarantee adequate nutritional intake for the population. Production data must therefore be compared with levels of supply which nutritional science indicates as the physiological requirements of the population, and then the correction of deficiencies thus revealed may be planned. Such studies require the collaboration of all national technical workers concerned.

The Second FAO Conference on Problems of Nutrition in Latin America, which met in Rio de Janeiro this year (1950), considered that

"it is often difficult to coordinate the efforts of the various government departments concerned with nutrition and food supply, both because of the administrative structure of governments and because of insufficient contact between these departments".

and recommended

"that, before adopting measures which influence the nutrition of the people, governments should consult nutrition experts through their specialized organizations".

To implement this recommendation, periodic consultations should take place between the technical officials interested in Agriculture and Economics and those primarily interested in Nutrition.

Data on available food supplies, as well as the possibilities for increasing the supplies of certain foods serve as a basis for nutrition experts to indicate the consumption targets most suited for improving the diet of the people. At the same time it is necessary to estimate the domestic production required to complete the needed food supply, after determining the effect of food imports and exports. Production and consumption targets can then be fixed, with reference to three factors, namely, adequate levels of nutrition, the possibilities for increasing production, and the foreign-trade policy.

The Rio de Janeiro Nutrition Conference also recommended that arrangements be made to convene periodic nutrition symposiums, attended by experts from a group of countries within the region.

The Second Regional Meeting on Food and Agricultural Programs and outlook, having in mind the above antecedents, recommends that in formulating their policies for promoting production and trade, Governments consider first of all the food needs of the people, and that Governments take into account the opinions of technical experts in nutrition, together with the opinions of experts in agricultural production and economics.

The meeting calls the attention of Governments to the importance of implementing the recommendations on popular education in food and nutrition, approved by the FAO Nutrition Conferences of Montevideo (1948) and Rio de Janeiro (1950) and with regard to the nutrition symposiums recommended at Rio de Janeiro, recommends that among their topics of discussion, consideration should be given to the nutritional aspects of future supplies of food for human consumption and especially to the formulation of appropriate and attainable food consumption targets.

### d) Agricultural production potentials

In order to deal with the need for a general increase in agricultural production arising in some countries out of the need for maintaining and improving the nutritional

level of a rapidly increasing population, and in other countries out of the need for strengthening and modernizing the national economy, it is necessary to have the most accurate estimates possible of the resources available. The Second Regional Meeting considers that there is a need for this information, and suggests that Governments may with advantage undertake studies, of the agricultural potentials of the respective countries including development possibilities. Such studies would be of immediate value of each nation as a guide in its agricultural planning and also, once their results were analyzed by FAO and set forth on a regional scale, they would be valuable to the Latin American Governments for the orientation of their general food and agricultural policies.

#### e) Regional Meetings on Food and Agricultural Programs and Outlook

The Second Regional Meeting considers, with special reference to its preceding recommendations on agricultural planning, that it is of great value to the nations of Latin America to convene from time to time in order to examine the regional food and agricultural situation. The Meeting is pleased to note that, thanks to a greater understanding of the objectives, Governments have increased the volume and accuracy of the information provided to FAO in 1950, and FAO has made a very considerable achievement in analyzing and presenting this information in an orderly, clear, and useful form. As a consequence, the documentation for the Second Meeting constitutes a great advance over that of the First, which was no less praiseworthy, but represented only an initial effort.

The Second Regional Meeting therefore recommends to the Director-General to plan for a third meeting on food and agricultural programs and outlook in Latin America, to be held at the most convenient time before the Seventh Session of the Conference of FAO, which probably will be held in 1953. The Second Meeting considers that the selection of the exact date and place of the Third Meeting should be at the discretion of the Director-General, with due regard to the convenience of the Governments of the Latin American region.

At the same time, the Second Regional Meeting recommends that the Latin American Governments prepare with care and submit to FAO in good time the information which will serve as the basis of the documentation for the next meeting; and urges these Governments also again to send to that meeting persons technically qualified to contribute to forming a regional body of thought on food and agriculture by participating actively in its discussions.

The Meeting also recommends that the delegates, on returning to their countries should not only submit reports to their Governments, but should also gather together the technicians concerned, and inform them, by lectures, through the Press, or by any other means, of the importance and the details of the work accomplished at this Second Regional Meeting. In this way, a contribution will be made toward establishing public interest in these matters.

### E. ACTION PROGRAMS FOR IMPLEMENTING AGRICULTURAL POLICIES

An agricultural program which is not related to the possibilities of its execution in the field, or which does not provide for improving existing governmental services to an adequate degree of efficiency for the tasks required, is in danger of coming to nought. Likewise, realistic planning calls for establishing adequate coordination between the different instrumentalities, so that their efforts may be most effective.



On the other hand, the work of government services, such as agricultural research, agricultural and agro-economic research and rural credit, cannot be fully effective if the unsatisfactory distribution of land sets a rigid limit to the productive capacity of a considerable proportion of farmers. For effective implementation of agricultural policy all these factors must be considered in relation to each other.

#### a) Government Services

The Second FAO Regional Meeting has devoted a large part of its discussion to government services, which are essential to agricultural improvement. This discussion has reflected the relatively high degree of technical competence achieved by the technical agricultural services of many Governments of the region, but at the same time has revealed deficiencies in coordination and sometimes of orientation. The Meeting urges Governments to take action to correct these deficiencies in order to achieve more effective overall action.

1. Agricultural Research Centers and Extension Services. The Latin American region contains great variations in cultural levels especially among the rural populations. The problem of improving agricultural techniques for the majority of producers, even in the simplest ways, is one of educating large sections of the population, often with the further complication brought about by the need to apply new specialized teaching methods.

Agricultural research in the region has produced noteworthy results in terms of improved strains, acclimatization of plants and animals, and many other advances. On the other hand, over the last seventeen years the average yields per unit area of eleven major crops of the region have not, on the whole, increased. One of the most important means of improving this situation is the initiation or development of Extension Services, responsible for spreading the knowledge and use of these advances among the masses of farmers. These services should at the same time report back to the research centers the problems encountered by farmers in their efforts to increase production.

The Second Regional Meeting recommends that Governments strengthen and broaden their agricultural extension services, giving particular attention to their effectiveness in increasing the productive efficiency of small farmers through the teaching of relatively simple knowledge and skills. At the same time the Meeting recommends the maintenance of close relations between the extension services and the research centers for technical improvement of the former and practical orientation of the latter.

The Regional Meeting, considering the Program of Work of FAO for Latin America in 1951, notes that FAO with the cooperation of the Inter-American Institute of Agricultural Sciences, will organize in Turrialba, Costa Rica, an Agricultural Extension Training Center. The Meeting urges Governments to participate in this Center, and points out that participants should inform themselves in advance as thoroughly as possible concerning the extension services existing in their countries, as well as the problems encountered and solutions devised, so that they may contribute at the Training Center to the formation of a broad policy on agricultural extension methods and practices applicable to the different parts of the Latin American region.

The Meeting has also been informed of the problems of the American Indian as a small agricultural producer, noting that it is necessary to take special measures to make Government extension services effective for the Indian. The Meeting therefore recommends that the Governments of countries possessing a considerable Indian population give priority to the modification of their agricultural Services in such a way as to:

- 1) Carry out a reliable census of the Indian populations;
- 2) provide effective instruction to the indigenous population in the application of improved methods and implements to their agriculture;
- 3) extend to the Indian population the benefits of agricultural credit;
- 4) facilitate the marketing of the agricultural products of the indigenous population;
- 5) provide facilities, through cooperatives of the Indian population, for purchasing seeds, agricultural implements, medicines, insecticides, and all other elements they require for agricultural production.

The Meeting recommends likewise that FAO continue its present studies on improvement of the level of living of the Indian as a small farmer through the establishment of agricultural credit services specifically devised for the indigenous population, and recommends further that Governments interested in improving the situation of their indigenous populations as agricultural producers seek technical assistance from FAO for this purpose.

2. Extension Services in Agricultural Economics. Farmers must have constant information, not only on the technical aspects of agriculture but also on the economic aspects of production and marketing. One of the most important concerns of farmers is the net return from their enterprises, which is directly affected by the costs and returns involved in the use of machinery or fertilizer, livestock feeding and other practices and elements of production.

Almost all countries in Latin America have channels of information on the economic problems of agricultural production, through bulletins, magazines, radio and newspapers, but such information, as a rule, does not properly reach small producers, for whom in many cases it would be necessary to develop special services and techniques of information.

The Second Latin American Regional Meeting considers it a matter of basic importance to establish extension services in agricultural economics, or their equivalent, and recommends that Governments study the most appropriate ways of arranging for such services in order to provide, particularly for small producers, the continuous agro-economic information they need for improving the efficiency of their production units.

The Regional Meeting recognizes that the organization of such agro-economic extension services requires in many cases the establishment or improvement of agricultural economics sections in the appropriate Ministries, and recommends that Governments expand, or create if necessary, such sections, requesting for this purpose any technical assistance from FAO which may be desirable. Such assistance might take the form of advisory services to their agricultural economists responsible for extension work of this kind or of the training of additional personnel for agricultural economics information services.

As an essential element for such informational services, the Meeting emphasizes the importance of making available exact knowledge of production costs, not only of the total, but also of the various component factors, such knowledge is an essential guide for increasing, diminishing, or changing an enterprise in the light of changing marketing trends. Knowledge of production costs helps countries to plan their foreign trade policies

to best advantage. The Regional Meeting therefore recommends studies of the costs of production and the relative returns obtained from the most important items in the economy of each country, and recommends also that the methods used in studying such costs should be similar for all countries, so that the results may be easily comparable. The Meeting recommends that this matter be included on the agenda of a future meeting, without prejudice to any action which individual countries may take in the interval.

3. Supervised Rural Credit. Effective execution of a good rural credit policy provides one of the most powerful levers for setting in motion a program for improving and expanding agricultural production. Rural conditions differ widely from one part to another of Latin America, making careful studies a necessary prerequisite to the formulation of credit policies suited to each country. Latin American countries whose experience in this matter is relatively brief should seek guidance from technicians specialized in the operation of rural credit systems and at the same time familiar with Latin American farming conditions.

The Second Regional Meeting has considered this problem in relation to those of other governmental services, noting that it is a general rule in Latin America that ordinary credit systems cannot satisfy the credit needs of the great majority of small agricultural producers, and that this constitutes one of the major obstacles to the adoption of improved techniques, expansion of production, and the general raising of rural levels of living.

It is necessary, therefore, to appeal to the experience of other countries in this field, and especially to consider credit systems devised specifically for solving the financial problems of small producers. The system of "Supervised Credit", used with far reaching effectiveness in other parts of the world, and with initial success in Latin America itself is such a system. As its name indicates, Supervised Credit differs from ordinary credit systems principally in that through close and continuous supervision the following can be determined in order to establish a high degree of success:

- a) Reliability of the borrower and his family, and suitability of the production unit which they operate.
- b) His real need for credit, including the maintenance of a satisfactory level of living for the family for the efficient operation of his unit.
- c) Efficient application of credit for productive purposes, and therefore,
- d) Repayment of credit and interest in due time.

Thus, when a loan request is received, duly trained supervisors proceed, through careful discussion and inspection, to investigate the personal character of the proposed borrower, to make an inventory of his means of production and to analyze his financial needs.

Supervised Credit operates on the same principles as ordinary credit, since loans may be mortgage, chattel, or production loans, as is usual elsewhere. However, great weight is given to the borrower's character and potential as a producer, and the credit operation involves the rationalization of the production unit, through a technical economic, and social educational process. This involves making a complete analysis and planning for the application of improved practices, utilization of Government services and the selection of commodities suited, not only to the material conditions of the unit, but also to the outlook for remunerative marketing of its products.

The key to success in Supervised Credit is the character and training of the men and women who act as supervisors. The supervisors are selected for their familiarity with farming conditions, in order to assure sympathetic understanding of farm problems. They are then given a highly practical course of training, which includes knowledge of improved production practices and good management and accounting procedures.

The establishment of a Supervised Credit system requires initial capitalization of its loan fund. It further requires the existence or development of Government technical services to agricultural producers such as agricultural extension services based on experiment centers, and agricultural economic information services based on the agricultural economics sections of the appropriate Government ministries unless such services are provided by cooperatives or other suitable institutions. It is also necessary to provide the necessary administrative apparatus for operating the credit system.

The Regional Meeting while considering this type of credit was informed that various Latin American countries are establishing supervised credit systems. In particular it heard a statement of the experience obtained during the last seven years in Paraguay in the operation of a Supervised Credit System which now serves 10,000 rural families. The Meeting was also informed of the FAO cooperation with the Economic Commission for Latin America for undertaking studies on this and other credit systems in Latin America. The Meeting recommends that Governments of Latin America feeling the need for broadening the availability of credit for small farmers, study the system of Supervised Credit, and particularly the experience of Paraguay in adapting this system to its own needs. It is recommended that these Governments request FAO, which has collected a body of information on this problem in Latin America, to provide any technical assistance they may require, through the services of rural credit experts sent to their countries under the Expanded Program of Technical Assistance.

#### b) Land Policy

The Second Regional Meeting considers land distribution as a matter of great importance in the execution of a rational food and agricultural policy. Thus the limitation imposed on the majority of the farmers of a given country by the very small size of the farms they operate is at the same time a limitation imposed on agricultural targets themselves.

In particular, considering that the population of many Latin American countries is concentrated principally on the high plateaux, and that this causes ill-use of the lands of these areas, producing their destruction through erosion, the Regional Meeting recommends that the Latin American countries create bodies technically, financially, and legally competent to regularize the use of the land, settling farmers in areas more suited for cultivation, and providing them with all means necessary for development.

On the other hand the Regional Meeting, in view of the discussions in the General Assembly of the United Nations on the importance of improvements in the agrarian structure of some of the underdeveloped countries, and recognizing the importance of this subject for agricultural development and for the effective use of technical assistance and investment for such development, has taken note both of the proposal that the Secretary-General invite the cooperation of FAO in preparing an analysis of the situation for submission to ECOSOC, and of the recommendation that the Governments avail themselves of the facilities of the Expanded Program of Technical Assistance for obtaining expert advice in the planning of such measures as land reforms. It notes also that the FAO conference supports this proposal and recommendation.

The Meeting therefore recommends that the Governments of Latin America participate actively in the discussion of this problem in ECOSOC and the General Assembly of the United Nations as well as at the next session of the FAO conference, and that the Governments of this region, desirous of improving agrarian conditions in their countries, request the technical assistance of FAO in planning such measures as land reform.

Another aspect of the land problem which the Second Regional Meeting has discussed, is that of appropriate immigration, which can provide for the Latin American region an opportunity to speed up the rate of introduction of technical improvements in agriculture, and thus improve living conditions in rural areas. This could work out to the benefit of Latin American countries, as well as of the immigrants and of their countries of origin.

#### c) Farm Mechanization

The Regional meeting, considering agricultural mechanization as a powerful factor for increasing agricultural production, referred it for detailed discussion to a Working Party, whose report, duly approved, is appended hereto. Having reviewed this report, and adverting to a series of additional practical considerations derived from the experience of Latin American Governments in the use of agricultural machinery, the meeting recommends that Governments use agricultural machinery in their programs for increasing agricultural production almost exclusively to provide services at the cost of maintenance, to small and medium producers, preferentially for the production of those crops in which the country has a special interest.

#### d) Measures for improving utilization of plant nutrients

In addition to the aforesaid situation with respect to the stagnation of yields of various crops, the Meeting noted also that a considerable amount of farmlands in Latin America remain unused because it is necessary to let them lie fallow, in some cases over a period of several years. While it is true that under certain conditions, part of them must be allowed a period of recuperation, the 30% indicated in the Secretariat report (LA/2/1) does seem to be rather large. This is undoubtedly due, to some extent, to the failure to utilize up-to-date cultivation techniques and, should these be adopted, a smaller proportion of land might be left unused annually, which would result in a considerable increase in the total volume of Latin American crop production.

Considering one of the means that might be used to attain an increase in yields per area unit, a Joint Working Group with delegates to the Fourth Inter-American Conference on Agriculture was established, and was charged with the preparation of a special report on the use of fertilizers. This report, which is attached as Annex IV, was adopted with two reservations, one of which was judged to be of great importance. First, on the section on "attendance at meeting," i.e., the participation in the projected meeting on fertilizers to be held next year for the purpose of discussing regional problems dealing with this topic, it was suggested that the representatives of fertilizer production and distribution industries should participate as observers and advisers only. Secondly, great stress was laid on the importance of sub-regional meetings, for the purpose of considering problems from a more local angle, since, as was pointed out, the problems of soils and the use of nutrients vary considerably from one place to another. Nevertheless, it was felt that the initial meeting planned for all Latin America was highly desirable as a means of discussing jointly the questions of fertilizer policy affecting the region as a whole. Later on, the sub-regional meetings could be convened in order to consider problems of particular local interest. Consequently, the FAO Secretariat was asked to begin the groundwork for holding the initial Regional meeting.

e) Irrigation

Among the programs which can be undertaken to increase the area under cultivation, irrigation is one of those which can produce the desired result most immediately. The discussion of irrigation in the Second Regional Meeting was entrusted largely to a Joint Working Party of the Regional Meeting and the Fourth Inter-American Conference on Agriculture, whose report, duly approved by the Regional Meeting, is annexed hereto.

In discussing this report, The Regional Meeting wished to add to the considerations given by the Joint Working Party, that of the importance of acquiring the fullest possible knowledge of subterranean waters and the possibilities for their utilization, which frequently proves to be a much less costly method of irrigation than by gravity systems.

f) Investment of capital

The Second Regional Meeting of FAO recognizes that without larger investments in agricultural activities, a substantial increase in the productiveness of these activities cannot be expected.

In the last few years the investments in agricultural activities in Latin America have not been sufficient to permit a desirable improvement in the supply of products for internal consumption and for exportation.

The lack of balance between investments in agricultural activities and those made in other sectors of economy make the increase of real income per caput difficult. Therefore, the coordination of investments in the different kinds of activities is desirable, and the Latin American governments have to study the impact of their policy of investments in some sectors of economy on the sectors, especially on the quantity and quality of the food supply.

Even though investments with a view to increasing the agricultural production must be an essential aim of the Latin American governments, they must try to keep the increase of such investments from reaching an extreme that would cause a deterioration of the terms of trade in the region, because such development would mean a waste of capital, which may be scarce.

Agricultural investments which increase the labor productivity in certain kinds of production may cause unemployment among inefficient producers of these commodities and, as a consequence, investment plans in these branches should be accompanied by plans to find alternative employment for these producers, and thus facilitate the adjustment of the economy to the increase of production.

The meeting also recognizes that policies tending to mobilize employment would facilitate the execution of plans to increase production by means of new agricultural investments.

g) Measures for market regulation

1) National reserves of agricultural products. The Second Regional Meeting, recognizing the great importance of reserves of agricultural products both as a means of avoiding violent price fluctuations, which do great harm to producers and consumers alike, and as a safeguard against accidental or artificial scarcity of important foodstuffs, has studied the action taken in different countries of the Latin American Region to establish such reserves.

In particular, the Regional Meeting has taken note of recent action by the Government of Uruguay, in creating an Agricultural Surplus and Reserves Administration, responsible for administering underground storage silos, promoting the formation of reserves of essential foodstuffs, conserving or absorbing unexportable surpluses of agricultural products, developing agricultural production plans so as to assure the absorption of surpluses and to regulate their distribution, participating in the regulation of prices of such products, and carrying out studies of possibilities for conserving additional products by the use of advanced techniques. The Meeting applauds the Uruguayan Government's action, as well as that of other Governments which have undertaken the establishment of similar institutions for maintaining reserves of agricultural products, and recommends that Governments, in order to favor internal stabilization of production and prices, establish organizations to absorb surpluses of the most important agricultural products, and to convert them into reserves.

The Meeting likewise recommends that Governments, in negotiating inter-governmental commodity agreements, include provisions to promote the creation of reserves of the most important agricultural products, and that they study the possibility of their international management.

2) Price policies and subsidies. The principal measures used by many countries in the region are reviewed and analyzed in document LA/2/1. The Meeting expressed the view that price policy is a matter of great importance among the complementary measures that may be used for implementing agricultural policies.

The Second Regional Meeting considers that, owing to the complexity of the subject it is not possible to generalize about many of the aspects of the problem, which should be carefully studied by the Governments themselves.

Concerning floor prices, the Meeting considers that Governments, in establishing their policies in this regard should not lose sight of the fact that their objectives should be principally those of increasing production, stabilizing prices, and raising the level of living, in order to benefit producers and consumers alike, and that Governments should at all times take action to reduce cost prices.

As for policy concerning subsidies, it should be flexible and be applied to individual commodities, in order to solve the specific production or commercial problems of each commodity.

It is likewise recommended that Governments develop policies to promote consumer cooperatives.

## F. FISHERIES DEVELOPMENT

The Second Regional Meeting notes with satisfaction the action taken by the Food and Agricultural Organization in the establishment of the Regional Fisheries Councils in parts of the world not served by such bodies.

It further notes the preparatory work undertaken by its Fisheries Division with fisheries administrators and scientists of the several Latin American countries, towards determining the mutuality of interest that these several countries may have in the development and wise utilization of the living aquatic resources.

The Regional Meeting,

Recommends:

- I. That in continuation of this work, the Director-General of the Food and Agriculture organization be requested to invite member governments of FAO in Latin America to nominate appropriate delegations to meet in some Latin American capital as early as is feasible in 1951 for the purpose of formulating a draft agreement for submission to their several governments and to FAO, for the establishment of a Latin American Fisheries Council.
- II. That the national delegates to said preparatory meeting be chosen among technicians and specialists.
- III. That the objectives of the Latin American Fisheries Council include oceanography, meteorology, and fisheries biological studies in the waters surrounding Latin America.

The Meeting attaches great importance to the adequate utilization of fisheries resources in Latin America for improving the dietary intake of large numbers of the population of the region, since the sea can provide a cheap and abundant source of animal protein. Adequate utilization of these resources calls for the training of national technicians and specialists in the different branches of the fisheries industry.

The Regional Meeting therefore requests the Director-General to establish a Regional Fisheries Training Center in a country whose Government offers adequate facilities for the purpose. This Center would operate for not more than three months, and its costs would be chargeable to the Expanded Technical Assistance Program. Its purpose would be to train experts in the biological, technologic, and economic aspects of fisheries and derived industries in Latin America.

Survey of the Humboldt and El Nino currents. The Second Latin American Regional Meeting of FAO considers that the development of fishing and agriculture requires the study and knowledge of oceanography, meteorology, and other phenomena.

Ever since the discovery by Baron von Humboldt of the cold current that bears his name, and of El Nino current (a warm or countercurrent), both off the western coast of South America in the Pacific Ocean, the surveys made have been incomplete, and have not furnished complete information on the effects of these currents on marine life and on adjacent land as well. A scientific survey of the aforesaid currents, based on oceanography and meteorology, would in a few years, clarify current conjectures on the drought and rainfall cycles in the affected area. A study of these phenomena would benefit the fishing and shipping industries operating on the western coast of South America, which are at present of such great importance.

The Regional Meeting therefore urges international Institutions concerned with this problem, namely, FAO and OAS, to find a way to promote international cooperation and the establishment of a research center on the Humboldt and El Nino currents, a center that might eventually have the support of many scientific agencies such as the Inter-American Geodetic Institute and by those governments directly or indirectly benefiting by this work. Furthermore, since one of the main objectives of FAO is the improvement of nutritional conditions throughout the world through the development of fisheries and agriculture, it is primarily the responsibility of this organization to set uniform standards and suggestions for the purpose of carrying to completion such highly valuable regional and continental research.



## G. OTHER RESOLUTIONS

a) Expanded Technical Assistance Program

The Regional Meeting is informed of the initiation of the FAO Expanded Technical Assistance Program, with participation by various Latin American Governments, and with additional agreements in process of formulation between other Governments and FAO. The Meeting notes with pleasure the degree of progress achieved, and recommends that Governments accelerate their participation, giving special attention to the bases on which the program is founded. At the same time the Meeting requests the Director-General, without prejudice to the bases adopted for the program, to take careful note, in considering requests of Governments for technical assistance, of the economic position of those countries least endowed by nature for satisfying their food and agricultural requirements.

b) Special resolution

At a Special Joint Session of the Second Latin American Regional Meeting on Food and Agriculture, and the Fourth Inter-American Conference on Agriculture, held in Montevideo, Uruguay on the ninth of December 1950, the eve of the second anniversary of the proclamation of Universal Declaration on the Rights of Man by the General Assembly of the United Nations, the following resolution was adopted:

"THE FOURTH INTER-AMERICAN CONFERENCE ON AGRICULTURE

THE SECOND LATIN AMERICAN REGIONAL MEETING OF THE

FOOD AND AGRICULTURAL ORGANIZATION OF THE UNITED NATIONS

meeting jointly in a General Assembly,

RESOLVE:

1. To reaffirm their faith in the principles set forth by the Universal Declaration of the Rights of Man proclaimed by the General Assembly of the United Nations;

2. To declare that to the degree that the nations, inspired by sentiments of brotherhood, recognize and apply these principles as a guiding rule for their international conduct and the regulation of their domestic social relations, they will contribute to the establishment of the unshakeable foundations for peace and understanding between peoples;

3. To address a communication to the General Assembly of the United Nations, transcribing the points set forth in this resolution".

## ANNEXES



## ANNEX I

PAPERS AND RESOLUTIONS CONSIDERED AT THE SECOND LATIN  
AMERICAN REGIONAL MEETING OF FAO

## I - Papers presented by the FAO Secretariat

- LA/2/1 Current Development of and Prospects for Agriculture in Latin America
- LA/2/2 Better Utilization of Fisheries Resources in Latin America
- LA/2/3 Work of FAO in Latin America in 1951
- LA/2/4 Expanded Technical Assistance Program
- LA/2/5 Improvement of Agricultural Economic Advisory Services
- LA/2/6 Improvement of Agricultural Statistics
- LA/2/7 Note on Supervised Credit Programs for Improving Small Farms and Livestock units
- LA/2/8 Programs for the Maintenance of National Reserves of Crop and Livestock products.
- LA/2/20 Project for a Latin American Training Center on Agriculture Program Development

## II - Other papers and proposals presented to the Meeting.

- LA/2/9 Flow of Investments Towards Economic Development in Latin America. Prepared by ECLA.
- LA/2/10 Management of Agricultural Reserves and Surpluses in National and International Plans. By Sr. Alfredo Weiss of the Uruguayan Delegation
- LA/2/12 Draft Resolution of the Delegation of Uruguay. Based on Document LA/2/10 on application of Chapter VI of the Charter of the International Trade Organization.
- LA/2/13 Draft Recommendation presented by the Uruguayan Delegation on Supervised Credit Programs.
- LA/2/15 Draft Recommendation presented by the Uruguayan Delegation on the Improvement of the Agricultural Structure of Under-Developed countries.
- LA/2/16 Oceanographic Research, limnology and biology as guides for industrial fisheries (Chile and Ecuador)
- LA/2/17 Draft Resolution of the Uruguayan Delegation on Expansion and Intensification of Rural Sociology Studies.

LA/2/19 Draft Resolution of the Uruguayan Delegation on Agricultural and Livestock Development in Latin America.

Proposal presented by the Delegation of Chile for holding a Third Latin American Regional Meeting before the Seventh Session of the FAO Conference.

Proposal presented by the Delegation of Ecuador relative to the Redistribution of Population in the Andean Region.

Proposal presented by the Delegation of El Salvador relative to Plans and Programs for Agricultural and Livestock Development.

Proposal presented by the Delegation of Cuba and the United Nations on the use of coca.

Sugar-cane and By-products, their importance in the Outlook for Latin America. Presented by the Delegate of France, Dr. H. Stehle.

The Second Regional Meeting has received also during its session, the following informational documents:

(1) From the Delegation of France,

A report on opportunities in France for fellowship trainees under the Expanded Program of Technical Assistance. This document has been forwarded to the Director General of FAO for his information.

(2) From the Delegation of Chile,

A report on Chilean needs for technical assistance under the Expanded Program. This document has been forwarded to the Director General to be taken into account with reference to any formal requests for technical aid which the Government of Chile may submit to him.

(3) From the Observer of the Holy See,

A Document entitled 'Contribution to the Study of Statistics and Costs of Production' (LA/2/C-doc.2).

## ANNEX II

## SECOND LATIN AMERICAN REGIONAL MEETING OF FAO

Procedure of the work of CommissionsA and B meeting jointly

- (1) - General objectives of an agricultural policy in Latin America
  - a) from the standpoint of nutrition
  - b) from the standpoint of trade
  - c) from the standpoint of general economic development
  
- (2) - Ways of implementing an agricultural policy
  - a) comprehensive planning of agricultural development
  - b) programs for research and extension work, especially in relation to increasing yields
  - c) programs for expanding the area under cultivation
  - d) programs for increasing labor productivity e.g. population resettlement, farm mechanization
  - e) capital investment
  - f) complementary measures e.g. price policies
  - g) fisheries development

BASIC DOCUMENTS: LA/2/1 with special reference to Chapters VI and VII;  
LA/2/9, and LA/2/2 on fisheries development

## ANNEX III

## AGRICULTURAL MACHINERY

REPORT OF JOINT WORKING GROUP OF THE IV INTER-AMERICAN CONFERENCE ON  
AGRICULTURE AND THE SECOND LATIN AMERICAN REGIONAL MEETING OF FAO

The joint working group examined document LA/2/1, entitled "Current Development of and Prospects for Agriculture in Latin America", and in particular Chapter, Section IV, and Chapter VI, Section VI of the aforesaid report. In the course of its deliberations, the joint working group also examined the resolutions adopted by the Economic Commission for Latin America, at its second meeting.

It noted with satisfaction that these resolutions have been carried out by the American States, and wishes to report that the efforts of the American States to improve the farmer's condition through increasing the means of production, have produced beneficial results for the economy of the Americas.

The group has studied the problems which the American States must face in the near future. It considers that the educational work of the agricultural extension services is particularly important at this time, because the States are carrying out vast agricultural mechanization plans and that consequently it is necessary that the farmers know how to utilize economically the funds placed at their disposal.

It also considers that in order to preserve the fertility of the continent's soil it is necessary to select agricultural machinery adapted to ecological conditions.

Therefore, the joint working group on agricultural machinery submits the following draft resolution for consideration by Commission II of the IV Inter-American Conference on Agriculture, and Commission B of the Second Regional Meeting of FAO:

THE IV INTER-AMERICAN CONFERENCE ON AGRICULTURE  
AND THE II INTER-AMERICAN REGIONAL MEETING OF FAO

## WHEREAS:

The FAO and ECLA have already studied the agricultural mechanization problem, and all the resolutions adopted by the Economic Commission for Latin America in its second period of sessions agree on the present needs of Latin America, and

## WHEREAS:

The use of agricultural machinery contributes to a higher standard of living and increases the returns from the farmer's efforts, and

## WHEREAS:

A greater understanding of the use of agricultural machinery is needed in order to enable the farmer to achieve the greatest possible benefit therefrom, and

**WHEREAS:**

The correct use of agricultural machinery is an effective means for soil conservation and reclamation,

IT CALLS THE ATTENTION of the American States to the resolutions on the subject of agricultural machinery adopted by ECLA at its second meeting,

**AND RECOMMENDS**

1. That the American States continue to broaden their programs for the mechanization of agriculture.
2. That the agricultural extension services undertake education campaigns for agricultural mechanization.
3. That the American States organize experimental stations to ascertain the efficiency, adaptability, and economic yield of the different machines, fuels, and other products, so as to further their employment.



## ANNEX IV

## PLANT NUTRIENTS

REPORT OF JOINT WORKING GROUP OF THE IV INTER-AMERICAN CONFERENCE ON  
AGRICULTURE AND THE SECOND LATIN AMERICAN REGIONAL MEETING  
OF FAO

The concern of the American States about the supply, distribution and utilization of plant nutrients has been confirmed by the experience of the individual states and the findings published by FAO. These comprise the initial survey and report prepared by the Joint FAO/ECLA Working Party on "Agricultural Requisites in Latin America" 15 May 1949, and two documents subsequently presented to the Fourth Inter-American Conference on Agriculture of the Organization of American States and the Second Latin American Regional Meeting of FAO, entitled "Current Development of and Prospects for Agriculture in Latin America, LA/2/1, Chapter III, Section 1 and the FAO document IV-AGR- doc. 29 "Notes on the Improvement in the Supply and Use of Plant Nutrients in Latin America", prepared for the Fourth Inter-American Conference on Agriculture".

Being informed of these and additional detailed studies now being carried out by experts who have visited the member States and prepared from questionnaires sent by those States, it is the sense of the Joint Working Party that these more detailed studies in the technical and economic fields of plant-nutrient supply, distribution, and utilization will provide the basis for profitable consideration by a technical conference. It is the opinion of the Joint Working Party that such a conference, as recommended under III A of the above Working Paper, would not only contribute greatly to increasing agricultural production and raising standards of living, but also is necessary to prompt and adequate national action and to coordinated international action to provide greater supplies and promote more efficient use of all materials supplying plant nutrients.

Also a survey of existing experimental data, current farm practices in maintaining soil productivity, and the stimulation by all means possible of the further development of field and laboratory investigations on plant nutrient requirements and fertilizer application is considered very desirable.

The Joint Working Party therefore approves and urges the adoption of the recommendations of the Working Paper, "Note on the Improvement in the Supply, Distribution, and Use of Plant Nutrients in Latin America", as described in Section III, Recommendations A and B of that paper. A copy of these recommendations follows:

Recommendations

A. FAO is considering holding a meeting in Latin America in 1951 to study and discuss plant nutrient problems from the point of view of improving the supply, distribution and utilization.

Supply and Distribution. In considering supply and distribution, the principal subject would be the supply of phosphates, although any necessary attention might well be given to supplies of nitrogen, potash, and possibly some secondary elements. Supply would include the two broad segments, imports and indigenous production.

Among the problems considered in relation to both segments of supply would be transportation and internal distribution systems. In addition, indigenous production would include the consideration of many technical problems, particularly the production of phosphatic materials, including concentrated phosphates. As much detailed data as possible would be assembled prior to the meeting.

Utilization. The principal subject for consideration in connection with utilization would be the type of work that should be initiated by FAO in Latin America as a part of its regular program and under the United Nations Technical Assistance Program to help the countries achieve a more efficient use of plant nutrients. For instance, the meeting might feel that countries would be assisted by better knowledge of rapid chemical soil tests.

Attendance at Meeting. It is considered that the attendance should be on the operating or working level. In addition to government representatives it is suggested that the Conference also be open to representatives of production and distribution industries, financial institutions, and other related groups.

FAO would appreciate the advice of the present FAO/OAS Meeting on the desirability of holding the proposed meeting and on the most suitable time and place.

B. FAO is also considering making a survey in Latin America of the experimental data available on the response of crops to the application of plant nutrients, of the knowledge of plant nutrient status of the soils in different regions, and of the practices used by farmers for the maintenance and improvement of soil productivity. The information provided by this survey would be of value to each Member Government and would indicate what further action should be taken to improve the utilization of plant nutrients in Latin America. Such a survey would be a part of the FAO world-wide survey of soil fertility practices, already completed in one region, the Far East.

If the proposed survey seemed desirable, FAO could undertake it in 1951 under the Expanded Technical Assistance Program, should Governments represented in the FAO and OAS Meetings so request.

## ANNEX V

REPORT OF THE JOINT WORKING GROUP OF THE IV INTER-AMERICAN CONFERENCE  
ON AGRICULTURE AND THE SECOND LATIN AMERICAN REGIONAL MEETING  
OF FAO

The studies carried out by various institutions and compiled in the FAO report show the rudimentary stage of water utilization in many American countries and the possibilities for its use for the increase of the agricultural production potential, the raising of the standard of living and the stabilization of the rural population. It is obvious that there is a marked deficiency of basic information as regards the soils and waters, which is essential for economic planning and for the adequate construction and operation of irrigation works.

In order to obtain the essential information, required for properly planning new projects, or for improving already existing ones, it is necessary to compile meteorological and hydrological data. Moreover, since it admitted that problems dealing with soil, water, and plants must be considered jointly, it is also necessary to carry out in each country the corresponding edaphological surveys as the basis for maintaining agricultural production at a high level. Full utilization of water and soil resources in a given country demands an awareness of the relationships existing between sources (water producing areas) and the areas where water is used for many purposes, such as home, city, irrigation, electric power production, industry, flood control, navigation and recreation. Efficiency in the use of water in irrigation works is of the utmost importance. In order to attain such efficiency, the irrigation index and the method of water application must be known. Good irrigation practice requires also efficient means of disposing of surplus water through an adequate drainage system.

Likewise, the social and economic aspects are of great importance, and are related to the sub-division of lands watered or to be watered, which must take into account the concept of economic units, in accordance with the prospects of different regions for specific farm activities. It must be borne in mind that the settling of satisfied rural populations is one of the bases on which the future of America peoples rests.

Finally, account should be taken not only of the large projects to be built, or those already under construction, with regard to the efficacy of their conveyance, but attention should also be given to smaller projects which might allow the direct utilization of water by the beneficiaries themselves.

In conclusion, The Working Group recommends:

- 1) That sufficient data should be obtained in each country in order to ascertain the climatological features and the amount of water available before initiating irrigation projects.
- 2) That soil surveys should be made in order to determine their agrological and hydrological characteristics.
- 3) That in each country in which irrigation projects are established, or are about to be established, a study be made of the water requirements of plants, and the methods of water application and drainage be determined whenever necessary in accordance with the particular conditions of each region and operation.

- 4) That with a view to the necessary economic stability of farmers who are to settle in regions where irrigation is used, the sub-division of land take into account the fact that each parcel constitutes a production unit.
- 5) That advisory services be extended to small irrigation works in project or already built, and that the construction of necessary works for storing and distributing water, such as small dams, direct diversion of streams, mechanical pump-lifting and the building of channels, for the use of production units be facilitated.
- 6) That each country carry out a program of study, education and development with the purpose of fulfilling these objectives, and that the corresponding international agencies give facilities for the exchange of information and experience, so that the Americas may work in cooperation to develop their basic resources (soil and water) conserving and using them at the highest level of productivity.





