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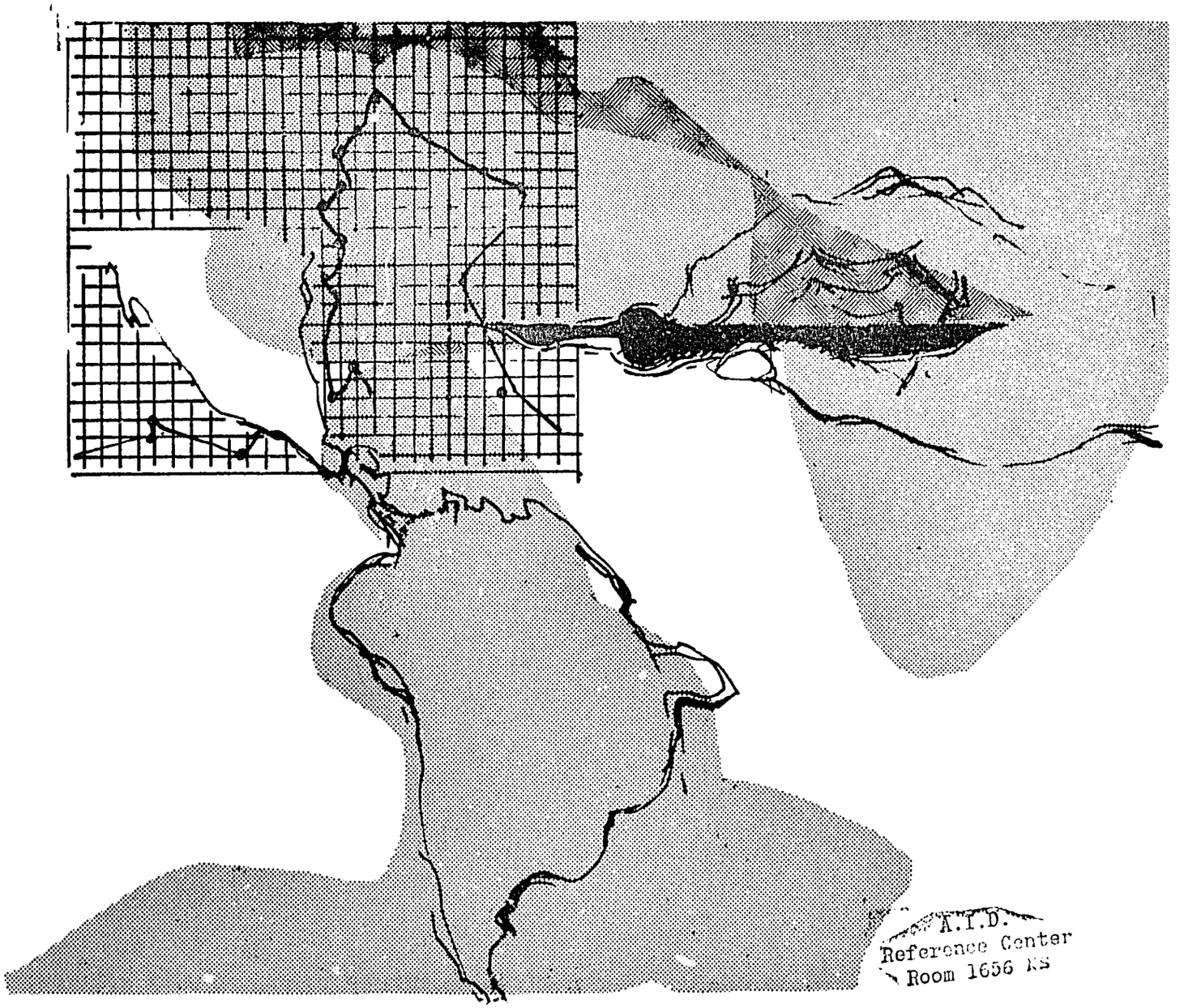
AGRICULTURAL DATA COLLECTING AND REPORTING IN VENEZUELA

WALTER H. EBLING



LAND TENURE CENTER The University of Wisconsin Madison, Wisconsin 53706

FORWARD

In December 1963 Mauricio Báez, Director of the Division of Economics and Statistics of the Ministry of Agriculture in Venezuela, made a request through Professor R.J. Penn of the Land Tenure Center, College of Agriculture, University of Wisconsin, to arrange for an examination of the statistical work of the Ministry. The object of the study was to suggest directions which further growth in this work might take. After some correspondence I went to Venezuela for two months to undertake the assignment.

En route to Venezuela I stopped in Washington, D.C. to obtain published and unpublished material from the U.S. Department of Agriculture about agricultural data collecting in the United States. This was a helpful step and I am indebted to various persons in USDA, but especially to R.K. Smith, Assistant Director of the USDA Statistical Reporting Service, for much material. Some U.S. census questionnaires and other documents were also taken to Venezuela for use in the project.

The work at the Ministry of Agriculture in Caracas, Venezuela, was done between April 16 and June 13, 1964. It consisted of reviewing the agricultural data in the publications of the Ministry of Agriculture and in becoming acquainted with the organization of the Statistical Division, its methods and its directing personnel. Cooperation was obtained from various persons but especially from Mr. Mario A. Duin, the head of the Statistical Section, and Sergio J. Acosta who heads the work of special statistics under Mr. Duin. Various other persons were helpful in the central office and in the only zone office visited (Zone 1 at Maracaibo) Joseph J. Raffensperger, who has a master's degree from Wisconsin, was available to explain the field work in the present 11 zonal offices. I wish to acknowledge the assistance of these persons and others who gave generously of their time so that the work could be seen and understood more fully.

Mauricio Báez, who for about five years was director of the Division of Economics and Statistics and has now been promoted to the position of adviser to the Minister, gave generously of his time so that I could be informed of the agricultural situation in the country. Mr. Baez was available for conference when his advice was needed and we went on several excellent field trips to see some of the main features of the nation's agriculture and geography. The generous help of Mr. Báez is especially appreciated. He is one of the best

informed persons on the agriculture and the economy of Venezuela. He also must be credited with much of the excellent progress which has been made in the collection and publication of agricultural data in Venezuela in recent years.

I am indebted to the workers in the Land Tenure Center of the University of Wisconsin who have assisted with translations and the typing of this manuscript and special credit is due to Herman Felstehausen and John D. Powell who have read this paper and made valuable suggestions.

-- Walter H. Ebling

(This study was carried out with support from the Land) (Tenure Center, a cooperative program of the American) (Nations, the Agency for International Development and) (the University of Wisconsin.)

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By Walter H. Ebling*

PART I

Background -- the FAO Report

In November 1963 the Ministry of Agriculture through its Division of Statistics published a report on scientific sampling for agricultural data in the Central American countries. It was prepared by Psi Ching Tang after a regional study for FAO.

The report reviews broadly the minimum program of agricultural data collection for the various countries and suggests sampling and census procedures for the region. Inasmuch as the agricultural data work in Venezuela is already well established and farther advanced than in other countries in the area, the report probably offers less to Venezuela than to the others. Venezuela is already estimating the annual area planted and the production of about 20 crops and a beginning has been made in data collection on livestock. Likewise prices are reported regularly for certain markets on the major products. In fact, the work in Venezuela is so far along that most of the suggestions in the FAO report have already been met in one way or another.

While the FAO report will serve as a basis for planning agricultural data work in some Central American countries, it does not lay a framework for the future requirements in agricultural statistics which may be expected in Venezuela.

This writer considered it best to look at the work in Venezuela with the experience in the United States as a background and suggest additional developments which may be needed

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in the Venezuelan program in the future. Hence two objectives seemed proper:

1. To understand the existing work in Venezuela.
2. To suggest developments which may bring needed new data about agriculture as the country develops.

Before undertaking a review of the data on agriculture of a country, a look at the nation -- its economy and its agriculture -- is helpful.

It is important to note that agriculture has not developed as rapidly as other sectors in the economy nor as rapidly as the population. Like other nations in tropical South America, Venezuela is suffering from an excessively high birth rate especially in the rural areas which means relative poverty among small farmers, overcrowding and high underemployment for some time to come.

A Look at Venezuela

Venezuela is 6 1/4 times the size of Wisconsin. The capital and principal city is Caracas, a city of over 1 1/2 million people in a mountain valley barely 10 miles inland from the sea. It was the home of Simón Bolívar who liberated northern South America from Spain. Bolívar had a dream of a United States of Hispanic America including all of the countries in it but it never came about. Venezuela was declared independent from Greater Columbia in 1830.

The people of the country are a mixture of races including many European sources, some Negro and a large native population of American Indians. The mixing of these races has gone on for centuries so that the percentages of pure white, pure Negro or pure Indian are small. The great bulk of the people are of mixed stock commonly known as mestizo.

Venezuela is geographically complex. To understand the economy of about 8 1/2 million people, some of the main regional differences should be noted.

The nation may be viewed as having four main geographic divisions: 1) The Venezuelan Highlands, partly a branch of the Andes and partly the coastal range on the north, is a major surface feature and most of the nation's population and activity are found here. 2) The Maracaibo Lowlands which is the second major division of the country. 3) The Plain sloping from the mountains to the Orinoco River known as the Llanos; and 4) The Guiana Highlands Area which lies south of the Orinoco and makes up about half of the National Territory. This region

is mostly undeveloped and partly unexplored.

The Central Highlands were the location of early agricultural settlements. Sugar cane, corn and coffee were grown for market very early. Later cacao, tobacco and indigo were added. With population growth more maize, rice and beans have been grown for home consumption. An important cattle industry also developed in this region. Coffee has become the most valuable crop and it is especially important in the Mérida region.

The Maracaibo Lowlands were for a long time a poor part of Venezuela. Heat and humidity in some parts and extreme dryness in others made development slow and difficult. It was not until the time of the first World War which brought the petroleum companies into the area that rapid development came to this region. Oil not only transformed the Maracaibo Lowlands but the whole economy of Venezuela. Foreign enterprise in cooperation with the government of Venezuela has brought vast changes in this region and relative prosperity to the nation.

In the Orinoco Llanos, a region of grassland, a vast cattle industry has grown. It is a hot and difficult area for human habitation and even for livestock. Agriculture here is extensive and land holdings are usually large. This is a region of great agricultural potential as is already shown by the Guarico irrigation project. Such development, however, is slow and costly, hence it may take a long time to come into being.

The vast region south of the Orinoco River has been slow of development and exploration but important mineral discoveries especially iron in the eastern part are changing some areas. Recently the exploitation of important iron ore resources have made a part of this area the fastest growing region in the country. Even so, much of the land south of the Orinoco is almost uninhabited and development is likely to be slow except for those parts where mineral resources are being exploited.

While much of its better land was divided into large land holdings relatively early -- agriculture has had a mixed and varied history. Various crops were grown for export but the introduction of coffee in 1784 gave the nation its most valuable crop. Cotton for modern textile plants has become a strong competing crop for sugar cane which long dominated some of the better lands. Coffee continues to be the most important export crop. Most of it is grown at higher altitudes than in other countries which provides a quality that competes well in the world markets. Fairly dense populations are maintained in the area of heaviest coffee production even though the standard of living is relatively low.

An item of major importance in any nation's economic development is transportation. Most of the Venezuelan railroads were built during the rule of Guzmán Blanco from 1877 to 1893. Foreign capital built most of them; both British and German capital were involved. Because of the difficult terrain, railroads or road building is extraordinarily expensive and great numbers of tunnels and bridges are required. Some of the foreign built railroads were narrow gauge and considerable trackage has become inoperative because of highway and truck competition. An important new railroad in standard American gauge runs from Ciudad Piar to Puerto Ordaz in Guayana. It transports iron ore, which is an important new resource, to ocean transport on the Orinoco River.

As automobiles, motor trucks and buses came, the need for all weather roads became obvious and in the administration of General Gómez a vast road building program to connect the main cities and the northern coast was undertaken. With the coming of the era of oil about the time of the first World War increasing emphasis was given to road building and the activity continues. The present government emphasizes the program of building main trunk roads between cities and ports as well as penetration roads into undeveloped areas.

The extraordinary development of the oil industry has brought Venezuela rapidly into a new age. Over half of the government revenues (3.2 billion bolívares per year) come from this source. From a once struggling tropical country depending largely on agricultural exports, the nation has become financially the most stable one on the continent. If the oil lasts and other development proceeds, a spectacular growth is likely to continue. Industrialization along with the basic prosperity supported largely by oil will help to keep Venezuela in the forefront of Hispanic American development in the foreseeable future. Since 1950 the important iron industry in Bolívar State south of the Orinoco has added impetus to development in that region and the government now obtains nearly 100 million Bs. of revenue from this source annually. At the present rate of exploitation the visible iron resources are expected to last for perhaps 30 years but there probably are others which have not been explored. Mining is likely to continue to make a basic contribution to the nation's prosperity and progress.

However, there are some uncertainties in the oil situation. Since the government of Venezuela has decided not to give further development rights to foreign oil companies, this part of the industry is no longer expanding. With no new wells being drilled by the foreign companies, employment

has declined in the oil region and there is at present little new foreign investment in the area.

Shell Oil Company is currently negotiating with the government to obtain production rights on the enormous reserves of heavy tar-like petroleum bearing substances which abound in the country. If this new step, which is based on a new extraction process developed by Shell researchers, materializes, the Venezuelan petroleum sector will be considerably re-invigorated.

The Place of Agriculture in the Venezuelan Economy

Compared with other nations in Hispanic America, Venezuela has the highest per capita income. She has for some years been the world's leading exporter of oil and now ranks sixth in the production of iron ore. In most of the first four centuries of this region under European influence, agriculture in various forms and at times combined with mining was the principal enterprise. The range of exports has usually been limited to a few products. In the earlier period it was tobacco, indigo and cotton -- later, cacao and coffee. In 1914 eighty percent of the value of exports consisted of coffee. Then came the oil development and in 1960 this export accounted for nearly 80 percent of the nation's vastly increased exports.

Even though the agricultural exports are now only a small part of the total, a large part of the nation's population is engaged in agriculture. Because of low yields for most crops the agricultural contribution to the total economy has declined greatly. This is also associated with the problem of low literacy and many subsistence farms are the rule among rural people. Capital flow into agriculture is slow because the return on capital in farming is lower than in other enterprises.

The masses of population outside of the cities lack food, clothing, housing and medicines, etc. Historically there have been extensive imports of manufactured products, which in the earlier periods were paid for mainly by agricultural exports, but the list of important export products was always short. The economy now provides a relatively high per capita income but the distribution is very uneven and in general the rural population has not shared much in the increased income whereas major cities have prospered and are enjoying a rising standard of living.

An agrarian reform which has tried to put more people upon the land as small land owners is in progress. With the small size of the holdings a productive commercial agriculture is not in sight by this method. Such agricultural output growth as has taken place is in large part the result of commercial sized farms -- many of which are operated by immigrants from Europe. Much of the small farm agriculture is mainly of the subsistence type. Such holdings are too small to justify mechanization or to permit capital formation. As a result, because of their high birth rate, the people in agriculture have little hope of rising quickly above the present subsistence level and enjoying the benefits of technical advance now shared mainly by the industrial and government workers. As a consequence the efforts of people to move out of agriculture and to the urban areas are constant in Venezuela as is widely observed around the world. An excessively high rural birth rate aggravates the problem greatly in most of Hispanic America, as does the fact that most of the people are not able to form capital by saving so as to improve their situation.

According to estimates for 1960,* agriculture in Venezuela contributes only 6.8 percent of the country's national product. This industry is overshadowed by the other rapidly rising components in the economy such as oil, mining and manufacturing. Production in agriculture in Venezuela provides only a part of the needed food and fibre for a rapidly growing population. Imports supplement production to the extent of 685 million kilos worth 523 million bolívares annually. Coffee and cacao are the only agricultural exports of importance; however, there are smaller ones such as cattle hides and timber products.

In terms of value of products from crops, coffee led with 169 million Bs. in 1960. Maize ranks second with 102 million Bs. Among animal products cattle ranked highest with 305 million Bs. in 1960 followed by pigs and milk with over 100 million Bs. each.

The general characteristics of Venezuelan agriculture today, according to the conclusion of the Venezuelan Agrarian Reform Commission (Comisión de Reforma Agraria de Venezuela) are:

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*Guillermo Morón, History of Venezuela, 1964.

1. Productivity per hectare is low with a few exceptions. This is because the techniques used are very backward. Too little capital is employed and methods are usually primitive. Also, much farming is for subsistence only and in small units. The land is badly divided: 2.5 percent of the estates account for 82 percent of the land farmed (1956); much of the rest is held in too small units; farming is carried on largely by employed laborers whose productivity and standards of living are low. The social system is highly stratified.

2. The relative importance of agriculture is declining in Venezuela as other industries grow more rapidly. Agriculture's low rate of growth is a brake on the whole expansion since the agricultural population (40% of the economically active) and the total rural population (40% of total population) have low purchasing power and form only a small market for other industries. Therefore the difference between the standards of living of the agricultural and the other populations is becoming more accentuated.

3. Underemployment of the land is normal with large areas of permanent crop and natural pasture. Crops are usually in small, subsistence parcels while cattle raising is carried on in extremely large individual areas. The land is not conserved; slope farming and slash-and-burn favor erosion and harm the climate of certain regions. The absence of seasons and the ability to grow crops at any time of the year are not taken advantage of so that really intensive farming takes place on a very small proportion of land. There are 7.2 hectares of natural pasture for every one of sown pasture.

4. Agricultural products never suffice for the country's needs. The rise in productivity (5% in the last ten years) is not sufficient to keep pace with the rise in demand. Much agricultural produce is therefore imported (more than a third the amount produced) and prices are considerably higher than average.

5. The agricultural population has tended to become stable in numbers over the last twenty years so that it is falling in proportion to total population. Migration takes place from the countryside to the industrial areas.

6. The conditions in which the rural population live are lamentable: huts with straw roofs, walls of palm leaves, mud floors, water from the nearest spring or river, no sanitation, food consisting of scraps of meat and spoonsfull of milk. Seventy nine per cent of these people over fifteen

years of age cannot read or write. Their homes are chock-full of people and their family life begins with concubinage.

7. The labor force is much bigger than is needed and therefore wages are low. What increase in agricultural production has taken place has been due to increased productivity of the soil in certain regions -- not increased output per head of laborers.

8. Management is usually inefficient as is seen from the low productivity. Lack of education and of technical training keeps management unqualified. On the small holdings the owner is illiterate and has only rudimentary notions of farming.

9. Marketing is poorly organized, distribution costs are high and losses in the process of marketing are great. There is a shortage of good and well-placed stores. The producer therefore makes very low profits. The whole farming system works against the establishment of a more efficient marketing system.

10. Financial backing is insufficient and in any case many of the farmers are ignorant of the use of credit or are nervous about contracting debts.

11. Oil concessions create doubts about validity of tenure of the farmer on the surface and this inhibits investment and kills incentive.

12. Because of the legal situation whereby a property may be the inheritance of a large number of persons, some estates are scarcely farmed due to the difficulty of making the necessary decisions with so many co-proprietors (some of whom may be absentees).

13. There is an unequal distribution of human and land resources; crops are mainly concentrated in the central and western regions whereas stock-raising is mainly carried on in the Llanos.

Because of the situation described above, it has long been thought that agricultural reform was needed in Venezuela. The Law of Agricultural Reform promulgated in March 1960 is in operation. Its object is to transform the agricultural structure of the country and to incorporate the rural population into the economic, social and political development of the nation. The law calls for replacing the system of large estates by a more equitable system of ownership, tenancy and

use of the land, adequate organization of credit and complete aid for farmers in order that the land shall constitute for those who work it the basis of economic stability, the foundation of progressive social well being and the guarantee of liberty and dignity (Article 1). The law gives country workers the right to ownership of lands granted to them, the right to certain loans to help with the marketing of their produce and to public services in general.

The Census of Agriculture in Venezuela

Agricultural census taking in Venezuela came almost exactly 100 years after the work was begun in the United States. The comparisons are as follows:

	United States	Venezuela
First census of agriculture	1840	1938
Second census of agriculture	1850	1950
Third census of agriculture	1860	1961

However, progress in the Venezuelan census of agriculture has been more rapid than that in the first three U.S. censuses. Foreign technicians were available to help with the work in Venezuela. As a result the 1961 Venezuelan census was relatively far advanced. It included many questions and data blocks similar to those developed for the U.S. census of agriculture in 1959. This progress in three censuses in Venezuela is to be expected because of the availability of experience in other countries. Historically progress in data work has tended to be slow in most places. The United States made much progress in collecting data on agriculture in the 19th and 20th centuries -- some other countries also moved forward rapidly. So much experience has been accumulated that new work in a developing country can be speeded up. Thus in Venezuela the third census of agriculture has included much that was based on the accumulated knowledge and experience in other countries. Quality in modern census work in Venezuela therefore can be expected to develop more rapidly than was possible in the United States where in the 19th Century most of the learning and experimentation were matters of first hand efforts.

The Census of Agriculture - Venezuelan Experience 1938-1961

Census work in Venezuela is organized in the Ministry of Development (Ministerio de Fomento).. The first census of agriculture was taken in 1938, soon after the Ministry of Agriculture began collecting statistics. The data were mainly for 1937. In taking the first census there were many problems and the results probably were quite incomplete. However, there is no good way of knowing the degree of incompleteness in that census. A second census of agriculture was taken November 27-December 26, 1950. The data were for 1950. Efforts were made to make the second census better and more complete than the first, but many problems and difficulties were encountered and considerable incompleteness is still believed to exist in that census particularly on items such as livestock.

The third census of agriculture was taken from February 27 to March 27, 1961. The data were mainly for 1960. In this census the aid of American census technicians as well as that of Sr. José Reuben Mantovani of Brazil (who had training in the Wisconsin Crop Reporting Office) was obtained. Clearly the 1961 questionnaire with its 208 questions in 19 sections is in part an adaptation from the U.S. census of agriculture questionnaire used in the fall of 1959. The U.S. questionnaire had over 300 questions and 16 sections, but since it was regionalized none of the regional questionnaries was that long. Some of the question blocks in the 1961 Venezuelan census resemble similar blocks in the U.S. questionnaire of 1959. This writer represented the American Farm Economic Association on the U.S. census advisory committee for the 1959 census of agriculture and is familiar with that questionnaire.

In preparing the 1961 questionnaire for Venezuela the length was increased over the one in 1950 by about 14 percent. This was partly due to the use of an advisory committee which included representatives of government, industry and financial institutions, a method similar to that followed by the U.S. census for many years. While this use of advisory committees has advantages, it also results in certain groups pressing hard for blocks of questions which are of special interest to them and this results in longer questionnaires.

To an outside reviewer the 1961 Venezuelan census questionnaire on agriculture seems too long. The conditions under which the enumeration was made would argue for a shorter questionnaire. However, the extra length of the questionnaire may have been offset in part by great efforts made to train and supervise the personnel employed to do the enumerating so as to achieve greater accuracy and completeness.

Also, as in the United States, the census of Venezuela was reported to have planned to make a quality check by re-enumerating certain areas after the census was taken in order to get some information on the completeness of the work. Since the 1961 tabulations are not finished it is too early to have information on what can be learned from a quality check. So far the published data from this 1961 census consist of expansions of a ten percent sample of the enumeration which provides a set of preliminary figures by states giving approximate totals for main crop and livestock items as well as farm numbers and land in farms for 1962. Tabulations are reported to be completed for a few states but it will take more time before all of them can be finished and a judgment of completeness undertaken.

Enumerator and Supervisor Training

In the 1961 Venezuelan census of agriculture special efforts were made to do a thorough job. A large staff of supervisors was trained which in turn trained the enumerators. Altogether about 4,000 people were employed in the 1961 census. Of these, about 500 were trained to serve as supervisors of the municipios and the states. There were 20 state supervisors -- one for each of the states except Miranda and the Federal District which were supervised from Caracas. These supervisors trained over 3,000 enumerators. There was one supervisory office in each state and in the municipio the local police offices were used as headquarters. There were usually four or five enumerators trained for each municipio depending on the size of the unit and the amount of work in it.

The training schools for supervisors lasted a month and those for enumerators for two weeks. This is an especially important feature of the 1961 census because no census is better than the enumerations. Errors and omissions in field work can only be partially corrected by editing and checking of the questionnaires once they are received by supervisors or forwarded to the central office. So efforts to improve the enumeration by careful selection, supervision and training of the supervisors and enumerators are of special importance in improving census work and the 1961 census in Venezuela has benefitted from this program.

Some very important side effects can be expected from the training program of the workers employed in the 1961 census. These would include the following:

1. The supervisory personnel was drawn mainly from the ranks of government employees such as inspectors in the Ministry of Agriculture and field workers from the Agricultural Bank,

the Division of Animal Health, the Agricultural Extension Service and other government agencies. Thus the training given to 500 supervisors is not lost with the completion of the census but will be available for further use in government. As a result of this training some men can take other assignments in statistics for the Ministry of Agriculture, thus providing a new body of people who can provide needed information by collection or observation, a resource which up to now has been largely lacking.

2. In training over 3,000 enumerators to collect data with a long and complex questionnaire a corps of the more literate persons has been found and some of them are in a rural culture where a lack of literacy has characterized much of the population. With the training and experience these people have had, some may become volunteer observers and respondents for the Ministry of Agriculture in future efforts to get cheaper and quicker information than has been possible up to now.

3. In case the country should decide that a five year interval census of agriculture is needed and an agricultural enumeration of the most basic items were undertaken in 1966, many of the 1961 census workers could serve again. With additional training further improvements in Venezuelan census work would surely follow and could prepare the same group for assistance to the Ministry in current sampling programs that may be undertaken.

4. Because the 1961 census had to provide trained men for all municipios in all states the census organization covered the entire nation and any efforts to make further use of such personnel again can be undertaken on a nation-wide basis. This will be of increasing importance in the statistical work of the Ministry of Agriculture in the years of development ahead when national pressure for frequent samples may be expected.

5. For the Ministry of Agriculture the use of some of the people trained for the 1961 census is a logical next step, since the personnel trained for supervision of the 1961 census was largely drawn from the workers in this Ministry. This is shown in the following table which gives the sources of the 1961 census supervisors.*

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*Venezuela Census of Agriculture 1961, preliminary results, page 8.

Supervisors, 1961 Venezuela Census of Agriculture

State Supervisors

Organization where employed	Number of men	Percent of total
Ministry of Agriculture	22	100%

Supervisors of Municipios

Ministry of Agriculture	179	37%
Agricultural Bank	63	13%
National Agrarian Institute	56	12%
All others	182	38%
Total	480	100%

From the above table it is clear that all state supervisors and 62 percent of the supervisors of the municipios of the 1961 census were recruited from personnel of the Ministry of Agriculture and organizations closely associated with it. Hence as future statistical work of the Ministry requires new information sources and judgment on agricultural items, some of these people can be further utilized. They are already working in agriculture and can eventually make observations and form judgments which when collected and tabulated can provide the Ministry with a cheap and quick source of needed new information of a current nature.

Defining a Farm

In taking an agricultural census the question of which land holdings to include or to exclude must be met. To define a farm clearly enough so that decisions regarding inclusion or exclusion can be made is never easy. Even though a definition of a farm for enumeration purposes must be arrived at there are always many borderline cases on which judgment must be made. In more than a century of agricultural census taking, the U.S. has acquired considerable experience with farm definitions but major changes were again made in the 1959 census mainly because of the spread of urbanization into rural areas. To bring the problem in focus the farm definitions used in the United States census of agriculture since 1850 are given below.

US CENSUS DEFINITIONS OF A FARM 1850-1959 *

Year	Farms 3 acres & over	Farms under 3 acres Value requirement	Other limitations
1850	$100 (production)	$100 (production)	-------
1870	$100 (production)	$500 (sales)	Requiring employment of labor of able-bodied workman during year
1880	$100 (production)	$500 (sales)	Requiring employment of labor of 1 able-bodied workman during year
1890	$100 (production)	$500 (sales)	Requiring employment of labor of 1 able-bodied workman during year
1900	$100 (production)	$100 (production)	
1910	Any agricultural production	$250 (production)	
1920	Any agricultural production	$250 (production)	
1925	Any agricultural production	$250 (production)	
1935	Any agricultural production	$250 (production)	
1940	Any agricultural production	$250 (production)	
1945	Any agricultural production	$250 (production)	
1950	$150 (production)	$150 (sales)	
1954	$150 (production)	$150 (sales)	

1959	Farms 10 acres and over $50 of sales	Farms Under 10 acres $250 of sales

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* From lecture notes, "Agricultural Economics 107" formerly taught by the author, University of Wisconsin, College of Agriculture.

In Venezuela the problem of defining a farm has not been simplified to the point that prevails in the U.S. Because that country has many small subsistence type land holdings often in remote places from which there comes little or no commercial production, the problem is more difficult. There is little object in enumerating large numbers of small subsistence type places which do not contribute to the market economy. Hence the value of sales or production concepts which have been applied in the United States are as yet difficult to use in Venezuela and a very different set of criteria was developed.

In 1961 the basis for including or excluding farms in the Venezuelan census rested on a list of minimal categories. If a farm or exploitation (as they call it) had over the listed minimum in any of these categories it was enumerated and counted as a farm. The list of minimal categories is as follows:*

1.	Permanent crops		
	a) Cacao		80 plants
	b) Coffee	Centro	200 plants
		Andes	450 plants
	c) Bananas and plantains		100 plants
	d) Pineapple, sisal and figs		1,000 plants
	e) Total of other fruits	of any species	25 plants
		of different species	30 plants
2.	Cultivated annual and semi-permanent crops		1/10 Hectare
3.	Grass - domestic		1 Hectare
4.	Cattle, barnyard and others		
	a) Cows	milk cows	5 head
		Total	8 head
	b) Hogs	Pigs	5 head
		Total (including males, females not weaned)	15 head
	c) Sheep and goats		20 head
	d) Horses and mules		10 head
	Hens		50 head
	e) Barnyard stock		
	Total (all chickens and chicks)		100 head
	f) Rabbits		20 head
	g) Bee hives		20 head

* Manuel for Revievers, 1961 Venezuelan Census of Agriculture, p. 2 and 3.

In preparation for the census lists of farms were established in the municipios and suggestive tables of yields were provided. These assisted in making the enumerations more complete and in checking the reasonableness of production reports both in enumeration and in reviewing the questionnaires afterwards.

Some Major Trends and Changes Shown by the Venezuelan Census, 1950-1961

Venezuela's agricultural economy has grown considerably in some areas during the period between the censuses of 1950 and 1961. Very likely, however, the 1961 census was more complete than the one in 1950, but the degree of difference in the two enumerations is not known. By comparing the 1961 census totals for the country as shown by an expansion of a sample of approximately 10 percent with the results of the 1950 census some important changes for the period are indicated. Selected items are as follows:

	1950	1961	Percent change
Number of farms reported	234,720	320,094	+36.4
Land in farms (has.)	22,126,640	26,214,824	+18.5
Average size of farm (has.)	94.3	82.0	-13.0
Rice			
Number of farms reporting	12,103	15,674	+29.5
Area harvested (has.)	30,081	53,196	+76.8
Production (kg.)	32,807,372	66,833,010	+103.7
Production per ha. (kg.)	1,091	1,256	+15.0
Cacao			
Number of farms reporting	11,138	18,682	+67.7
Area harvested (has.)	73,379	71,635	- 2.4
Production (kg.)	17,114,168	11,767,790	-31.2
Production per ha. (kg.)	233.2	164.3	-29.5

	1950	1961	Percent Change
Coffee			
Number of farms reporting	62,302	84,580	+35.8
Area harvested (has.)	335,341	303,093	- 9.6
Production (kg.)	59,679,015	53,332,100	-10.6
Production per ha (kg.)	178.0	176.0	- 1.1
Sugar Cane			
Number of farms reporting	32,006	23,299	-27.2
Area harvested (has.)	70,407	76,735	+ 9.0
Area harvested per farm (has.)	2.2	3.3	+50.0
Production (kg.)	3,276,693,090	3,173,441,340	- 3.2
Production per ha. (kg.)	46,539	41,356	-11.1
Corn			
Number of farms reporting	142,196	185,909	+30.7
Area harvested (has.)	329,151	591,884	+79.8
Area harvested per farm (has.)	2.3	3.2	+39.1
Production (kg.)	370,459,089	505,303,410	+36.4
Production per ha. (kg)	1,125.5	853.7	-24.2
Livestock numbers			
Cattle	5,768,801	6,440,708	+11.6
Horses	344,447	388,180	+12.7
Mules	50,852	64,890	+27.6
Asses (burros)	386,598	402,362	+ 4.1
Sheep	101,010	83,251	-17.6
Goats	1,288,379	1,251,242	- 2.9
Hogs	1,453,934	1,780,844	+22.5

Insofar as the two censuses -- 1950 and 1961 -- may not be entirely comparable, some uncertainty exists as to the validity of the above comparisons and since these are the only ones available for this purpose, they are offered here.

The Ministry of Agriculture and Its Organization

In Venezuela most of the agricultural work is organized under the Ministerio de Agricultura y Cría (Ministry of Agriculture and Livestock) which was established in 1936. In many ways this large Ministry is comparable to the United States Department of Agriculture. One important difference is the fact that in Venezuela, unlike the United States, agricultural functions are more largely the responsibility of the national government. The extensive state work for agriculture found in the United States is not yet found in Venezuela. Hence the national Ministry is a large organization with varied nation-wide functions.

The principal organized areas of responsibility of the Ministry in Venezuela are the following divisions:

1. Administration Division
2. Division of Agricultural Extension
3. Division of Animal Health and Animal Husbandry
4. Division of Renewable Natural Resources
5. Division of Economics and Statistics
6. Division of Engineering

In addition to the national office at Caracas where the headquarters of the various divisions are located, the Ministry also has 11 regional or zone offices where regional representatives of the various divisions are stationed and from which field work is conducted for all of the divisions.

There are also several autonomous agencies or institutes which are part of the Ministry of Agriculture. These have their own separate legal statutes, budgets and politics but coordinate their functions with those of the Ministry of Agriculture. These agencies are:

1. The Agricultural Bank which functions in various ways in agricultural finance -- in some respects like the American Farm Credit Administration.
2. The National Agrarian Institute which is the Land Reform Agency.
3. The Institute of Fairs and Exhibits.

For the purpose of this paper a mere listing of the divisions and institutes must suffice. Some of them produce data on aspects of agriculture as byproducts of their work and publish them as a part of their reports. This is especially important in the case of the Agricultural Bank which publishes a comprehensive yearbook annually.

The Division of Economics and Statistics

For the purpose of this report the work of the Division of Economics and Statistics is of special interest and a look at the organization and some of its functions is undertaken here, together with some suggestions as to possible future growth and development that is likely to be required in statistics as the nation and its agriculture as well as the general economy grow and become more complex.

The division is already one of the major ones in the Ministry. Its organization is well advanced and a long list of publications -- releases to the press, etc. -- appear each year. The work and data produced are regularly reviewed in monthly bulletins under four main headings:

I. Office of the Director
II. Section of Agricultural Economics (including markets)
III. Section of Agricultural Policy
IV. Section of Statistics

The Section of Agricultural Statistics

This important section of the Ministry's Division of Economics and Statistics is organized under four subsections:

1. Crop and Livestock Statistics
2. Market and Price Statistics
3. Special Statistics
4. Office of Cartography and Statistical Maps and Charts

In addition, there are 11 small regional offices in the zone offices of the Ministry where the field work and data collection in the states is conducted. These zone offices, as they are commonly called, have a man in charge of the statistical work and several permanently employed enumerators who are equipped with auto transportation so that they can regularly visit their sources of information and collect the data as needed.

Because nearly all of the data on the crops and other subjects covered are enumerated by these men who work full time at the job under the supervision of the man in charge of the area office, it is a large schedule of work and the number of crops and other items included in the statistical reports has to be limited by the amount of work that can be accomplished by these methods. The enumerators visit markets for price information, processing plants for data on agricultural pro-

cessing, storages and warehouses for data on stocks, farms for data on areas of crops planted and on quantities of crops harvested and also certain data on livestock.

So far the work has had to be done almost entirely by enumerative methods because literacy in rural areas has been low. The well known mail system so well developed in the United States has not been available because the postal system in Venezuela is not as advanced. The postal system is actually quite complete in the cities but in the rural areas it does not yet reach a substantial part of the population. Under these conditions it has been necessary to develop agricultural data collection almost entirely on an enumerative basis which is both expensive and relatively slow -- thus limiting the amount of work that can be done.

The number of zone offices in operation is 11, but a plan was advanced to increase the number to 18 which would reduce the size of the areas covered from an office. This new proposed number has not been put into operation. In the meantime the new Minister under the new administration has directed that the work of the Ministry be conducted in six zones (the number already used by the Agricultural Bank in the farm credit field). What this will probably mean is that in the six zone areas there will be additional supervision but the data collection and other work in the Ministry will be continued on the present 11 zone basis. Whether the 18 zone proposal recently made will be carried out as planned is not known. From the standpoint of data collection the smaller zones proposed would probably make possible more and better data collection work by the Ministry.

In addition to the enumerations zone offices prepare summaries and organize the material for future processing in the central office in Caracas. The zone chief also has the responsibility of coordinating the various surveys. Only by careful organization can the needed work be done with the manpower available.

Zone workers are called upon at times for general observations on crop progress and prospects as well as other general information and they sometimes work with local groups in providing information that may be requested. There is a growing trend toward providing more local information as desired by producers and others. Some zone personnel have had an opportunity to provide information for local press, radio and TV use. This local outlet for information and other phases of public relations work is a growing responsibility.

The Central Office of the Statistical Section is responsible for coordination and general direction of the entire statistical program, both in the central office subdivisions and in the zone offices. This includes:

1. The maintenance of the data collection program and making changes when needed.
2. Coordinating the work for the entire country which means the needed questionnaires, instructions, etc. for all zones.
3. Maintaining a schedule of publication of data and making interpretations and summaries.
4. Providing the Ministry with data for economic and policy decisions and studies.

The Subsection of Crop and Livestock Statistics is responsible for programs of data related to crops and livestock, including the following for crops:

1. Collection and publication of data on selected crops -- to show:
   a. areas planted and harvested
   b. production
   c. yields
   d. quantity of seed used
   e. some cultural factors such as uses of fertilizer, insecticides, herbicides, irrigation, mechanization, etc.
2. Preparation of summaries of crop production
3. Preparation of questionnaires, instructions, etc. for surveys being made in the zones.

For livestock data which are less well developed the subsection is responsible for:

1. Programs of information about slaughter and consumption of meat, chickens and eggs -- and lists of farms producing these products and inventories held commercially.
2. Preparing questionnaires and instructions relating to this phase of the work.
3. Assisting zone offices with technical problems in this work and with lists of farms producing the various products.

The Subsection of Market and Price Statistics is responsible for the following items:

1. Market statistics, including imports and exports and data on national consumption.

2. Data on storage stocks and capacity of storages.
3. Price statistics, including
   a. retail and wholesale prices in the principal markets
   b. classification of products according to origin
   c. prices paid by farmers for products bought for production
   d. value of production in forestry and fishing industries
   e. publication of prices of agricultural products exported
   f. preparation of price index numbers
   g. parity computations

The Subsection on Markets and Prices is also responsible for the preparation of questionnaires, instructions, etc. for surveys made in this field. It also advises upon and supervises the field work in the collection of these prices.

The Subsection on Special Statistics is responsible for the following:

1. Designs and direction of statistical sampling.
2. Analyzing results of surveys made in the zones for this subsection.
3. Assembling and organizing secondary data on agricultural credit and on the processing of agricultural products.
4. Preparing service statistics for various branches of the Ministry.

The Office of Cartography and Statistical Maps and Charts is actually attached to the Subsection of Special Statistics. Its functions are:

1. To prepare maps and charts of the country for the census.
2. To map statistical information
3. To prepare graphs and charts of statistical material as needed.

Personnel of the Statistical Section

This section has about 70 people in its employ which may be classified as follows:

Section chief	1
Assistant chief	1
Coordinator of electric tabulation	1
Subsection chiefs	3
Zone chiefs	9
Enumerators	39

Cartographers	2
Sketching	2
Calculators	4
Secretaries	8
Total	70

Scope of Reports and Publications

Each year about 20 crops are surveyed and reports made on their production. For 1964 the following crops are being covered:

1964 Crops Selected To Be Surveyed

1. Garlic
2. Sesame
3. Cotton
4. Rice
5. Onion
6. Citrus fruits
7. Coconut trees
8. Peach treas
9. Guava tree
10. Papaw tree
11. Corn
12. Potato
13. "Parcha Granadina"
14. "Parcha Maracuyá"
15. Pineapple
16. "Sisal"
17. Tobacco
18. Tamarind tree
19. Tomato
20. Cassava

Of the above list of crops, separate summer and winter production is surveyed for garlic, cotton, rice, onions, corn, potatoes, tobacco and tomatoes. For the others the surveys are annual. Because of the great work load some items such as sugar cane, coconuts and citrus fruits are only surveyed once in three years.

So far only three livestock surveys are made: (1) poultry production, (2) swine and (3) hatcheries. It should be noted here that no surveys are made on cattle. Cattle, while very important, are so widespread and difficult to measure that the available resources for agricultural statistics have not been adequate for this undertaking. With the new census of agriculture in 1961, adequate base data may become available from which annual estimates of cattle can be developed.

The statistical work in agriculture in Venezuela has been very well covered by publications. Any data available either on a primary or secondary basis can usually be had in published form. This program of publication to accompany data production

makes most of the material available in printed form. While such publications often represent only a beginning of the work regarding a commodity, they provide an excellent base for future development.

In 1963 the list of statistical publications in the Ministry of Agriculture included the following:

Bulletins on crops harvested	13
Bulletins on crops processed	3
Bulletins on meat processed	5
Bulletins on prices	14
State or regional reports	23
Stocks, markets, and other data bulletins	11
Total printed reports	69

Development of Agricultural Statistics in Venezuela Compared With Early Work in the United States

The work in agricultural statistics in Venezuela is relatively young -- going back only to the middle and late 1930's. For the United States it goes back to 1840 -- as a government duty. Thus, the American experience is about a century longer than that in Venezuela.

In the beginning the U.S. census and subsequent work was concerned with annual estimates of production for the major crop and livestock items. Acreage or area planted was not included in the American work until 40 years after the first census. Also in the earliest American work the census was used as a base for making annual production estimates in years between the census enumerations. The estimates were based on changes from year to year as reported by mail to the U.S. Patent Office. Farmers and other informed persons provided the information.*

While the early data work in Venezuela also covers a limited crop list, the annual estimates have included both area planted and production in most cases. The estimates were developed independently using enumerations and any secondary data available to arrive at the quantities reported.

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* For more detail on this early development see: Walter H. Ebling, Evolution of Agricultural Data Systems, pp. 54-61.

It is interesting to note that while the methods employed in the earliest government estimates in the two countries were quite unlike, the types of data developed were similar -- that is estimates of annual production for major crops. In the case of the U.S., livestock items were fairly easy to add to the list but in Venezuela this is more difficult and slower to develop.

It should be noted also that in the U.S. the early activity of making annual estimates from the 1840 census base was largely discontinued after the 1850 census. In that period, however, a new and broader data interest emerged which had much to do with the establishment of the U.S. Department of Agriculture in 1862. This was a demand by farmers and farm leaders for current data on crop conditions and prospects by months.

From the beginning a main function of the U.S. Department of Agriculture was the collection of agricultural statistics and the department developed two lines of effort from the start: (1) Monthly reports on crop conditions and prospects; (2) Annual estimates of crop production and animal numbers; (3) Some four years after the work was begun data on prices of farm products and farm wage rates were added.

The Importance of Communication Methods in Data Collection

One of the lessons learned from early American experience is the fact that data collection in agriculture is largely a matter of communication. The system by which U.S. agriculture has obtained so much data so quickly and cheaply was conceived and developed originally by a journalist.* He had an urgent purpose, cheap communication and simple arithmetic. His basic method has served for over a century and is still the main stay of the agricultural data work in the U.S. today. Obtaining large amounts of data quickly and cheaply has only been possible by the use of quick and cheap methods of collection such as the numerous mailed surveys made by the U.S. Department of Agriculture throughout all parts of the year. To do this vast volume of work entirely by enumerations is beyond the resources of any department or ministry of agriculture anywhere.

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* Orange Judd, Editor of the American Agriculturist, 1862.

It appears especially important to note that not until recent decades has the U.S. Department of Agriculture used enumerative surveys to collect certain data on agriculture. All of the early work and most of the present work is being done with samples obtained by correspondence with farmers and others who have information on agriculture. Even today enumerative surveys in the USDA are used only for supplementary work and in some cases as checks on other methods. Enumerative surveys in American agriculture have not produced much new data and it is expected that the main data source will continue to be the correspondence or mailed inquiries which have for over a century produced such vast amounts of excellent data at a low cost and with a speed and frequency unequalled anywhere up to now.

PART II

A LOOK TO THE FUTURE

No one can visit another nation and see with certainty what the future data needs of the agriculture and the economy of that nation will be. But it is believed that the United States experience has some usefulness in an effort to look ahead. To be sure, any proposals for change or additions to a data system in a country must be based on the assumption that there is a need for the added data. Any such proposals must fit into the requirements of a nation's situation and must from the beginning look to both collection and publication of added material.

Also in such an effort to look ahead it seems clear that the role of the census is likely to be basic. If the essentials are well enumerated in a census it becomes the frame within which various kinds of sampling can be done. Samples offer a relatively cheap and quick way to estimate changes from a census base. Sometimes, too, data from secondary sources offer additional information or checks on existing series.

Coordination of Data From Various Ministry Divisions

Since the Agricultural Bank in its financial activities has the opportunity to collect data on the agricultural production of the farms which the organization serves, it is important that the resulting byproduct data be used in connection with the Ministry's statistical work to the fullest extent possible. The data of the bank have been utilized in the estimates of the Statistical Section. Data can often be collected along with other work and in this way assistance can be given to the Statistical Division.

Likewise the Division of Animal Health and Animal Husbandry works with farms and herds in annual disease control and this agency can bring together valuable information on animal populations and classifications. Inasmuch as the livestock data of a country are usually difficult to obtain, any steps that can be taken to collect and record livestock information by the Division of Animal Health will be an important contribution.

Because of the difficulty of getting some types of data on agriculture any steps that can be taken to use by-product data from agricultural financing, animal disease control, the agrarian institute, irrigation projects, etc. will be of help. It is, therefore, especially important that all agricultural branches cooperate with the statistical division in coordinating data from the various sources so that the material can contribute to a coordinated program.

Advantages of Present Organization and Some Suggestions on Possible Future Development

The Division of Economics and Statistics already has 11 zone offices -- hence has the pattern or structure -- which will permit decentralization of work. As already mentioned in 1964 a plan for 18 districts was proposed and the new minister has now provided for 6 super zones which are already used by the Bank and some other Branches of the Ministry.

Because of the present nature of the agricultural data work in Venezuela, that is enumeration, the necessary dispersion of the employees who do the enumerating has prevailed. Thus the dispersion of staff has existed in Venezuela from the beginning, whereas in the U.S. this did not come about until 50 years after the work was begun in the U.S. Department of Agriculture.

There are important advantages to having personnel dispersed in state or area offices. These include the following:

1. The personnel in area offices can be much closer to the agriculture of an area or state. Not only is this essential for enumeration and sampling but also for making observations on conditions, prospects and changes in conditions in an area or state. When the observations from all zones are pooled a national picture can be assembled quickly by the central office.

2. Because the kinds of crops and livestock vary from state to state and region to region, there comes a time when national questionnaires are no longer sufficient and questionnaires need to be regionalized so as to fit more exactly the production patterns in the various states or regions. The United States census of agriculture came to this for the census of 1940 and the U.S. Department of Agriculture had

regionalized questionnaires for a much longer time. It makes possible shorter questionnaires in each region because only the items produced in a region are included and special items of importance in any area can be added.

3. As personnel in an area office become more expert in understanding the components of the economy of the area in which they work, state publications can be improved with more interpretation and analysis and more information on change and progress. Important interpretation for state publications can eventually be contributed by the statistical workers in each area office as they become more experienced in the work of their area and develop more capacity for observation and analysis.

4. State or area workers can serve local outlets such as the press, radio and TV and supply specific local requests for data.

Some Apparent Needs

While a visitor in a country cannot know the needs for data in agriculture on the basis of having experienced what may be required by the nation's government agencies, agricultural leaders or organizations and others, the sequence of what has developed in the U.S. in the past century and a quarter offers some clues as to types of data that may become more important in a developing country. In Venezuela the following problems seem to exist in the agricultural statistical work:

1. The capacity of the statistical section to add to its present work load with the present resources and the present enumerative system is limited. As much work is now being done as available resources and methods permit. The development of new skills in cheaper and quicker methods of communication over a period of time would probably make possible needed additional work.

2. Gaps exist in the data available which might be filled in time if additional resources or cheaper and quicker methods could be devised. Certain additional data, if they could be added to existing material, would be highly useful. Among these the more important ones include:

a) Data on livestock are still incomplete. Annual estimates of cattle numbers by classes are especially desirable. Likewise current and annual data on production of animal products such as milk, eggs, meat and wool become more important as a nation grows and develops.

b) The list of crops that can be covered with present resources and methods is incomplete. Some now reported only in the census may not be important in all states, but may be sufficiently important in some states so that they will eventually be included in the agricultural estimates.

c) Present estimates of crops or certain livestock items are mainly in the form of yearly production data which are published some time after harvest or after the crop year. In some older countries there has long been a nned for monthly information on crop conditions and prospects between planting time and harvest. In Venezuela the available resources and methods in agricultural statistics have not been able to include this material up to now. The demand and need for such data will surely grow there as it has in some other countries. In the U.S. the interest in current and forecast statistics on crops has been very high. The time is probably at hand when the Ministry of Agriculture in Venezuela will need to consider developing this type of data along with what is now being produced. Current and forecast data require cheaper and more rapid methods of communication than are now used.

Comparative and Base Data From the Census

Unlike the agricultural data work in the U.S. or some other countries, there is as yet less relationship between the Venezuelan census data and the estimates made in the Ministry of Agriculture. In the future it may be desirable that the two be published together wherever it is convenient because the census covers a long list of crops compared with the list on which data are collected by the Ministry. Publishing both the census and the Ministry data together will be useful where it can be done and gradually the estimates of the Ministry can be tied more closely to a census base.

Also as the census becomes more complete, the use of census data as a benchmark for state or other area estimates for

the years between census enumerations by the Ministry of Agriculture will be useful. Year to year sampling to make annual estimates based on census totals provides an effective way of keeping many series up to date without complete enumerations.

Data on Livestock

Since livestock is becoming more important in the economy of the nation, more data on this important subject are needed. Livestock statistics are of major importance in most countries. This area, however, presents complex sampling or enumeration problems and even in the United States rather large samples are required to make the various livestock estimates and reports.

In Venezuela the Ministry of Agriculture has already done good work on poultry and made a beginning with data on hogs. For the important cattle population the data up to now have been mainly from the census. It is understandable that the difficult task of enumerating and estimating the cattle population has been delayed. Resources for the work in statistics could hardly cover this large and difficult class of animals at present.

However, the census of 1961 made an enumeration of the cattle population of Venezuela. That such an enumeration may be somewhat incomplete is to be expected. However, after the census there is supposed to be a quality check by re-enumerating certain districts. If such a measure of enumeration completeness becomes available the census totals could readily be adjusted as indicated by the quality check. In this way base numbers of animals could be established by areas which would provide a usable base for annual estimates based on sample measurements of change.

A selection of the questionnaires for certain livestock farms could be made from the 1961 census and this sample could also be enumerated in another year and a new cattle population would be established by direct ratio to the 1961 census base. If such a base number could be established for each state some further corrections could be made in areas where the number of livestock farms is known to have changed since 1961.

So, by enumerating selected census livestock farms in a later year and making some allowance for incompleteness in the census and other changes, new base numbers could be established and continued from year to year by sampling until the next census provides new base numbers (as has been done in the United States).

Animal populations especially cattle need to be known by major classes. Since the census of Venezuelan agriculture in 1961 used classifications similar to those employed by the United States census, it would be possible to establish estimates for the major classes of animals. With the growing importance of the dairy industry, numbers of milk cows and estimates of milk production will also become increasingly useful.

A Livestock Section in The Division of Statistics

Because of the growing importance of livestock and the complexity of livestock sampling, this work can best be developed in a separate section rather than have livestock combined with crops as at present. Livestock work in statistics requires special knowledge of the industry and it needs to be managed by someone who knows livestock in Venezuela thoroughly and is skilled in livestock data. The economics of the animal industries is more complex than many other items and detailed knowledge of it is required to handle the data on this part of the agricultural economy in a special livestock section.

Sampling

As already emphasized from the beginning, the agricultural statistics in Venezuela have been collected mainly by enumeration. The low cost systems of mail sampling used in some other countries have not been used because of the lack of literacy of many farmers and the undeveloped nature of the postal system (especially in rural areas). Mail sampling with its cheapness and speed so useful elsewhere is not yet widely employed in Venezuela. However, with improvement in the postal system some progress toward the use of mailed surveys may be expected. Already the Division of Statistics gets some data from dairy plants and some other processors by mail and it may be that before long most of the data from mills, cold storage plants and other commercial processors and storages can be collected by mail, thus making the process cheaper. As some of the work can gradually be accomplished by such lower-cost methods, it can reduce the work load of enumerators whose time can then be used more fully for other work. A gradual shift of the industrial inquires to the mail methods could point the way toward other work with such methods.

Can The Mailed Inquiry Serve in Venezuela For General Sampling?

This is a question which will be answered over a period of time. This writer believes that progress in its use will be relatively rapid and that in perhaps 10 years or less much of the statistical data collected in Venezuela may be by this method. The country already has made great progress in many fields and from the present base of work in agricultural statistics, new advances can come faster than is commonly supposed. Let us again review the following points:

1. In the 1961 census of agriculture about 500 supervisors and 3,000 enumerators were trained. These men conducted a complex nationwide enumeration with a long questionnaire. Many of these trained men could supply other information regularly and make observations for the Ministry of Agriculture if this were desired. They are literate and they have training and are widely dispersed through the nation.

2. The Ministry employees in the zone offices and elsewhere see much of the agriculture in their states or districts and selected ones among them could be asked to supply observations and subjective judgment on conditions and report these regularly to the central office.

3. Both the Ministry employees in the zones and the people trained for the census of agriculture have come to know many persons in agriculture and markets well enough so that they can find a small number who are sufficiently alert, literate and sufficiently cooperative to work with the Ministry of Agriculture on sampling problems and general information. It is a recruiting and communications problem.

4. The postal system in Venezuela, while it does not reach all rural people, is already quite good in the cities. It can be expected to improve its rural service gradually. Also, just as has been done in the United States, the Ministry of Agriculture can prepare special envelopes for agricultural letters and surveys which by arrangements with the Post Office Department will receive special handling so as to expedite this function.

Very likely too, many of the persons who would assist the Ministry with mailed surveys are already situated where they can receive and send mail so they could be recruited for cooperation in such work.

Can U.S. Experience Be Useful?

In the U.S. one of the world's most complete agricultural data systems has been developed. As in some other countries there are two complementary data systems in U.S. agriculture -- the census in the Department of Commerce and the Statistical Reporting Service of the U.S. Department of Agriculture. The census through periodic enumerations, originally at 10 year intervals and now at five year intervals, provides basic benchmarks on farm numbers and their various characteristics as well as on crops, livestock, farm equipment, housing and other items.

The U.S. Department of Agriculture makes estimates of changes and forecasts at annual, monthly and other intervals. While the census works mostly by enumeration, the work of the Department of Agriculture is mainly by mailed sampling. However, in recent decades the Department of Agriculture has developed some enumerative sampling for special purposes but the mainstream of information and data continue to come from the mailed samples. At the present time the expenditures of the Statistical Reporting Service are about three-fourths for mail sampling and one-fourth for other methods. It is expected that in the U.S. the mailed samples will continue to provide the bulk of the information and the ratio of three-fourths of the expenditure for mailed samples and one-fourth for other methods is likely to continue.

Probably no country can produce the rapid flow of current data which is found in the U.S. unless it can develop a cheap and rapid way of communication for data collection.

In the U.S. a crop report with a long list of crop and livestock items covering 50 states can be done in about half a month. Nowhere else has so much good data on agriculture been assembled so rapidly and so cheaply. Of course, the system has developed gradually over more than a century of time but the principles involved apply elsewhere.

This writer believes that in a short period of years, Venezuela can develop a highly useful system by which monthly and seasonal data on crops, livestock, and prices can be produced. Progress already made in the country has been so rapid that this next step can readily follow.

Just what pattern will evolve in Venezuela can, of course, not be foreseen. The nation's growth will require the development of more current and forecast data. Because the culture of the country and the state of development differ from the

U.S. the methods of sampling to come in Venezuela will probably differ from those in the U.S. Perhaps the U.S. experience can help find the pattern to come in Venezuela.

As needs for current repetitive information on agriculture grows in Venezuela, experimental work in meeting them is sure to come. A nation that can make the progress Venezuela has already made in agricultural statistics in a short time, probably can also work out and develop subjective inquiries.

Questionnaire Preparation

Since data collection and distribution in agriculture are essentially problems in communication, the art and science of questionnaire design is fundamental to such statistical work. Whether it is the form on which an enumerator records his interviews or the inquiries sent to a processing plant, the organization, wording, content and makeup are important in the effectiveness of a particular data collection project. Comprehensive knowledge of subject matter to be covered in a survey is fundamental to preparation of effective questionnaires.

A new questionnaire needs to be processed in detail in several ways.

1. Have it reviewed by experienced persons and invite their suggestions.
2. Pre-test it in the field or by mail and actually do some work with it.
3. Invite suggestions from persons in zone offices and others who may also do pre-testing.
4. Keep the number of questions to a minimum.
5. Try to get clearly stated questions to which a numerical answer can be given.
6. Explain units employed and state them clearly.
7. Set up a tabulation scheme. The proper sequence of items on the questionnaire may expedite tabulation.
8. Print legibly and clearly--using bold faced type for emphasis where needed.
9. Provide instructions to explain any parts that require explanation.
10. Sometimes colored paper is helpful in making a questionnaire more effective. This is especially true where it is sent and responded to by mail. A dignified appearance and proper heading and signature will encourage attention.

In some organizations a questionnaire review committee is established. Such a committee acquires experience and is useful in making questionnaires more effective. It is a way of bringing varied communication and data experience and viewpoint to bear on questionnaire designs and problems.

Publications

In statistical publications the Ministry of Agriculture in Venezuela has already done a superior job. During the last five years the data on agriculture have been made available in printed form for crops, some animal items, prices by states and in some special subject publications. The Ministry and its workers are to be congratulated on the progress made in this phase of the statistical work. It is all the more remarkable because it has been accomplished in a short period of years. It is, however, in accord with the basic principle that the work of collecting statistics also carries with it the responsibility for publication. Without publication to make the data available much of the justification for collection of data is lost. Both the collection or input of data and the publication or output are tasks in communication. It is a two way street -- collection and distribution of the finished product -- and both are complementary systems of communication.

The work of publication, however, is a process of growth. In the beginning published material is necessarily more simple and more brief than after it has had a period of growth and development. At any one time a pattern of publications may be considered as a stage in the growth and development process.

So the statistical publications now being offered by the Economic and Statistical Division of the Ministry represent a stage in the development. With time the number, type, style and content of the publications change. With new work, new opportunities and needs the printed material will adjust to the newer requirements.

Analysis and Interpretation

Some changes may be foreseen at least in part. For example, with the passing of time an increased sophistication of publications in a statistical office is likely to evolve. This includes interpretation of the data in terms of the significance and meaning. It may include a discussion of trends shown by comparative data on a subject over a period of time. Changes in a trend can usually be understood and

explained, but the persons who assemble the data are closest to them and they have the opportunity to point out what has taken place and the reasons or factors involved in the change. Likewise a study of a trend as measured by the present and past data often suggests the probable behavior of the series in the immediate future. An understanding and explanation of the past leads logically to an appraisal of the probable behavior of a series in the future; hence, the concept of what can probably be expected or a statement of outlook. Thus a tabulation combined with analysis and explanation means much more than a mere tabulation. In fact one of the rules of communication is that tables of numbers mean little to most people and are made more meaningful by written interpretation and analysis.

An effective means of showing the significance of a body of data is to display it on a map or in a graph or chart. Since many people understand what they can see in an illustration better than in a table, the graphic devices add to the presentation. The Statistical Section of the Ministry already has a unit for making maps, graphs and charts so this phase of publications can be developed further.

Sometimes it is possible to increase effectiveness of published data by organizing the material for several commodities in a single publication. Not only is this likely to be less expensive, but the presentation of similar or related items in the same publication can add to the usefulness of the data as compared with publishing the data on each item separately.

So one can suggest that in future years an effort may be made to include in the various publications a growing amount of interpretation and analysis to explain trends and changes that are taking place. This interpretative material will be helpful in bringing about a wider understanding. Likewise, the increasing use of maps and charts to show distribution and trends make understanding easier. Also publishing data for groups of commodities that are similar or related in a single volume with adequate interpretation and analysis can be recommended.

Statistics on Land and Land Use

Since land is a major resource the use of which changes, data on this subject have general public interest. While most of the information on land and its use must come from the census the task of analysis and publication of data on land could be done in the Ministry of Agriculture. Tables showing land

area, land in farms and the utilization of land in farms could be developed by states and municipios and a publication prepared showing as much detail on land and its uses as the data permit. The use of graphic devices to illustrate the essential facts about land and its uses is especially effective. Such a publication would provide a useful body of information in a period when land reform is a widespread problem to which many governments are giving attention.

The Cost of Living Index

In Venezuela a cost of family living index is published by the Ministerio de Fomento. Because of changes in retail food marketing, especially in the larger cities, it has been suggested that with only the general public markets used in collecting the data on food prices the index does not reflect the living costs of those families which patronize the newer markets, where the price level is perhaps higher.

This is a complex problem and special surveys to establish the weights to be given to the newer markets will be needed if they are to be included in the index. At the same time it is likely that the commodities included in the index need examination and need to be brought up to date. This problem requires careful study before the needed changes can be undertaken. Also it has political implications and while the question about the validity of this index came to the writer from the Ministry of Agriculture, it is doubtful that that agency should become involved in it directly because it is the responsibility of another Ministry.

How Can Current Data Be Developed?

While in the United States the pressure for monthly reports on agriculture came more than a hundred years ago and has continued to grow, it remained for one of our presidents, Theodore Roosevelt, to make a statement summarizing the need for current and continuing information when he said:

"Nine-tenths of wisdom consists of being wise in time."

So in the agriculture of a developing country there comes a time when census data on agriculture at ten year intervals or annual estimates are no longer enough. One of the great opportunities for a Ministry of Agriculture lies in providing the current information which a growing economy will increasingly require.

There may be various ways to develop the additional program, but the experience in the United States since the U.S. Crop Reporting Board was developed about 1906 suggests that this device can be used to initiate a plan of current work such as a monthly report on agriculture.

In the beginning a Crop Reporting Board made up largely of present leadership with an able secretary could develop a simple monthly report on conditions of crops, livestock, current prices and other items on which regular information would be useful. Such a Board could ask various ministry and other government people to cooperate by observing and reporting on standardized forms needed information and also to develop new sources, especially the low cost ones which will help to develop such a system.

From the first simple monthly reports the work could grow as more information becomes available and as uses for the information develop. In a short period of years this growth process could lead to more complete information eventually including quantitative estimates and forecasts. More people can gradually be recruited for cooperation in such work and with small cost much can be done.

This writer believes that Venezuela can develop the steps needed to provide monthly data on major agricultural items in only a fraction of the time it took in the United States where quantitative monthly reports and forecasts of crops were over fifty years in developing because the work was pioneered all the way and growth was slow. From a small beginning the growth can be quite rapid and the cost need not be high in Venezuela.

Cooperation from farmers and others to supply current information can be developed gradually, but again with the experience we already have, some good results can come in a few years. Once well underway such a development will be a source of strength for the Ministry of Agriculture in Venezuela just as it is in the U.S. Department of Agriculture. Perhaps the Venezuelan Campesino Federation would welcome such a program and support it just as has been the case with American farmers and farm organizations because it produces the kind of information needed to improve farm markets.

The suggestion that Venezuela establish a Crop Reporting Board to develop the needed new program of current data is the reverse of U.S. experience. But as one looks back over the American development it seems that this procedure could make for rapid progress in Venezuela because such a new board could first give consideration to the new data requirements and then work out ways of meeting them.

Also some of the members of such a board could well be brought to the United States for several months to see at first hand the importance current monthly data holds in the American economy. After seeing the system which has developed from a small beginning more than a century ago and grown with the nation's needs, the application of the principles to a growing nation like Venezuela will be less difficult. If such a new board visits the U.S. this writer would give whatever time is needed to help them see and become familiar with the principles and methods involved and the steps by which the work developed here in the 19th and 20th centuries.

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