

SOME ASPECTS OF PHILIPPINE AGRICULTURAL DEVELOPMENT: AN EXPLORATORY VIEW *

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I. INTRODUCTION

Much has been written about agricultural development in less developed or developing countries. In some cases, the literature deals with several countries, setting each one against the others and comparing their rates of development. In the process, the manner in which the more advanced of these countries have succeeded in hastening the achievement of their development goals becomes evident. But the reader is invariably cautioned that differences in natural resources, history, topography, institutions, and levels of general economic development point to the obvious conclusion that strategy and tactics employed successfully in one country cannot be adopted in another with the assurance of satisfying results. Thus, one who attempts to see how the development of a country's agricultural economy can be accelerated realizes at once that the lessons of success in other countries can merely serve as guides. That, clearly, an understanding of the country's agricultural economy and its problems, in the context of the circumstances the country is in, is an essential first step. It was with this initial thought that this paper on Philippine agricultural development was prepared.

As may be gleaned from its title, this paper is a general survey of the progress which the Philippines, as a developing country, has so far (1968) achieved in agriculture, the problems it is confronted with in this sector of its economy, and the possibilities which carry its hopes for greater agricultural progress in the immediate future.

The first part of the paper discusses some features of the agricultural sector which indicate the status of the agricultural economy of the country, its agricultural program goals, its central problem and overall objectives, the roles private enterprise and the government are expected to play, and the resources available to them. The problems are then identified and the strategy for meeting them is analyzed. The paper ends with the attempt to determine where the focus of efforts should be if development

* The author is indebted to Dr. Sam C. Hsieh and Dr. Amado A. Castro for their comments on earlier drafts of this paper.

...much stronger than is now being experienced should be generated.

The term "agriculture" as used in this paper refers in most instances to food crops. It does not include forestry, fishing or livestock products, and where it does, this is indicated. Also, it virtually leaves out the agricultural export sector and merely touches on this in the survey of indicators of progress in food agriculture.

In this discussion of the problems, the term "agriculture" is limited to rice and corn, partly because these are the staple food of the country and the major development efforts at present concern these crops. Furthermore, the problems involving these crops and the pattern of action which should be taken to meet them are, in a manner, illustrative of the situation surrounding the other crops.

II. PROGRESS IN FOOD AGRICULTURE

Certain indicators give us a picture of the status and progress of Philippine agriculture. These include information on agricultural output, capital formation and investment, physical volume of production, export receipts and import payments, and the relationship between population and production.

Agricultural Output

Table I shows the relative position of the Philippines, in comparison with four other countries, in terms of agricultural output and some of the factors traditionally associated with it.

TABLE I
Agricultural Output and Selected Data, 1960¹

	PHILIPPINES	INDIA	THAILAND	TAIWAN	JAPAN
Agricultural Output in Dollars (crops and livestock)	975.9	15,659.6	1,064.5	420	5,765.3
Per agricultural worker	181	114	94	391	402
Per hectare, arable land	139	91	106	205	961
Arable land in hectares *	7	161	10	3.7	6
Per agricultural worker	1.2	1.2	0.9	0.6	0.4
Agricultural Worker Per hectare, arable land	0.77	0.8	1.13	0.52	2.39
Arable Land Per hectare, arable land in metric tons	12.5	2.2	2.3	203.7	303.7
Harvest Rate (%)	25	76	32	46	32

*In millions.

¹United States Department of Agriculture, *Changes in Agriculture in 26 Developing Nations, 1949-1963* (Foreign Agricultural Economic Report No. 27).

It should be noted in Table I that the Philippines has the lowest agricultural output among the countries cited. This is a function of yield and the arable land utilized. India's premier position in total agricultural output is mainly a result of tremendously high hectareage. Her yield in terms of agricultural output per agricultural worker and per hectare of arable land is way below that of Taiwan, Japan, and the Philippines. Yield figures more than total output, directly reflect the relative productivity of these countries. Thus, in productivity, Japan is rated highest followed by Taiwan and the Philippines. Thailand and India straddle the fourth and fifth places.

The cultivator density, as indicated by *arable land in hectares per agricultural worker* and by the *number of agricultural workers per hectare of arable land*, appears to be closely related to productivity. However, the degree to which fertilizer is used shows a much closer relationship.² The literacy rate has some correlation with productivity but its influence is not as marked as cultivator density and fertilizer used. In 1960, the literacy rate of the Philippines was the highest but her productivity gravitated to third place among the countries being compared. These observations are summarized on Table II.

TABLE II
Correlation, by Rank, of Agricultural Output and Related Data
Shown on Table I

	PHILIPPINES	INDIA	THAILAND	TAIWAN	JAPAN
Agricultural Output	5	1	3	4	2
Per agricultural worker	3	4	5	2	1
Per hectare, arable land	3	5	4	2	1
Arable land in hectares	4	1	2	5	3
Per agricultural worker	4	4	3	2	1
Agricultural Worker					
Per hectare, arable land	3	4	2	5	1
Literacy Rate	1	5	2	3	2
Fertilizer Use	3	5	4	2	1

During the period from 1948 to 1962, the annual rate of increase in crop output in the Philippines was estimated at 5.2%. The major factor responsible for this growth rate was the increase in land area which accounted for about 76% of the rate of increase. Other factors which contributed to the increase were changes in crop pattern and improvement in crop yield which, respectively, accounted for about 5.4%

² *Ibid.*

own 10% of the rate of increase.³

During the same period, the percentage distribution of upward changes in the value of crop output is shown by kind of crops on Table III.

TABLE III
Distribution, by Crops, of Changes in Total Output, 1948-1963⁴

	Per Cent
Rice	28.8
Sugar Crops	22.0
Vegetables and Fruits	11.3
Coconuts and Copra	9.7
Corn	9.6
Coffee, Tea and Cacao	5.7
Tobacco	5.3
Potatoes and Yams	3.0
Other Root Crops	2.6
Pulses	1.3
Fibers	.6
Oilseed Crops	.1
	100.0

From 1956 to 1967, the record of paid-in-capital of newly registered business organizations engaged in (1) agriculture; (2) forestry, fishing, and livestock; and (3) manufacturing clearly shows the partiality of investment in forestry, fishery, and livestock and to manufacturing. This is shown in Table IV.⁵

It should be noted that investment in new business organizations engaged in agriculture rose significantly in 1959, levelled off in the next two years, dipped in 1962 before picking up to a new high of ₱10.9 million in 1964, only to suffer a steep drop, down to a level of ₱4.2 million in 1965.

In forestry, fishing and livestock, the rise of investments in new organizations engaged in these industries was rather significant during the period from 1960 to 1963. In 1964, however, the trend line fell to ₱12.8 million and further plunged to ₱8.5 million in 1965.

In manufacturing, paid-in capital investments of newly registered organizations brought in increases ranging from ₱8.3 million to ₱45.8 million.

⁵ Paid-in capital of newly registered business organizations engaged in forestry, fishing and livestock is lumped. The major portion of the paid-in capital figures shown belongs to forestry. For a more detailed examination of savings and capital accumulation in Philippine agriculture, see *The Philippine Economic Journal*, Vol. II,

TABLE IV
Paid-in Capital of Newly Registered Business Organizations Engaged
in Agriculture, Forestry, Fishing and Livestock, and Manufacturing⁶

YEAR	AGRICULTURE	FORESTRY, FISHING AND LIVESTOCK	MANUFACTURING
1956	2.9	7.8	32
1957	1.4	6	40.7
1958	2.3	4.6	40.3
1959	5.4	2.5	41.8
1960	5.4	9.1	47.1
1961	5.2	9.6	47
1962	4.6	16.2	64.2
1963	8.1	30.2	77.8
1964	10.9	12.8	71.4
1965	4.2	8.5	4.1
1966	6.7	12.9	95.9

The agricultural sector has traditionally lagged behind the industrial sector and this can be seen not only in the disparity of magnitudes of investment in these two sectors, but also in the widening gap between their physical volumes of production shown on Figure I.⁷

TABLE V
Food C.I.F. Export Receipts and F.O.B. Import Payments,⁸ 1954-1966
In Million U.S. Dollars

YEAR	EXPORT RECEIPTS	IMPORT PAYMENTS	CONTRIBUTION TO BALANCE OF TRADE
1954	129.2	79.1	50.1
1955	132.2	102.4	29.8
1956	130.2	88.2	42.0
1957	115.6	108.0	7.6
1958	146.6	117.8	28.8
1959	153.0	68.3	84.7
1960	175.1	85.4	89.7
1961	177.6	101.6	76.0
1962	174.8	87.4	87.4
1963	203.4	104.6	98.8
1964	218.4	122.7	95.7
1965	197.4	155.2	42.2
1966	176.4	122.7	53.7

⁶ Source of basic data: the Central Bank of the Philippines' *Statistical Bulletin*, XVI, 4 (December, 1964); and XIX, 2 (June, 1957).

⁷ *Ibid.*

⁸ The largest contribution to receipts from export of merchandise products has been made by sugar and sugar preparations. Food exports include fish and fish preparations, cereals and cereal preparations, fruits and vegetables, sugar and sugar preparations, and miscellaneous food preparations. Food imports include live animals and meat preparations, dairy products, eggs and honey, fish and fish preparations, cereals and cereal preparations, fruit and vegetables, coffee, tea, cocoa; animal products and miscellaneous food preparations. Central Bank of the Philippines' *Statistical Bulletin*, XIX, 2 (June, 1967).

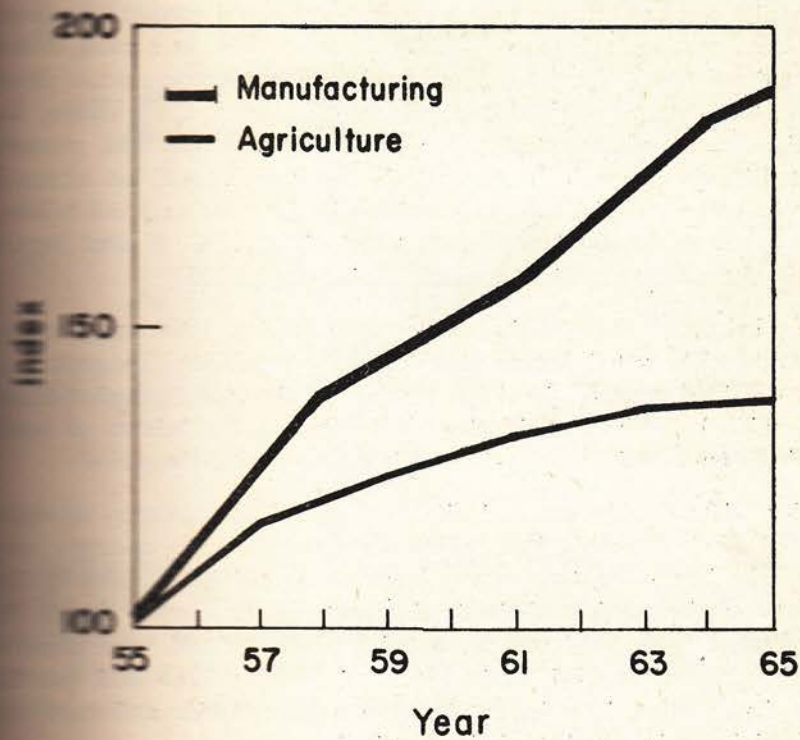


FIG. 1. Index of the Physical Volume of Production, 1955-1965 (1955=100)

Source of Data: Central Bank of the Philippines' *Statistical Bulletin*, XVI, 4 (Dec., 1964); and XIX, 2 (June, 1967).

Export Receipts and Imports Payments

Food exports and imports of the country partly indicate the contribution of the agricultural sector to the country's balance of payments. Table V shows the extent of this contribution.

On the one hand yearly export receipts from food products increased from \$138.3 million in 1945 to \$208.4 million in 1964, in a more or less steady upward trend. Export receipts from food products constitute about 30% of total export receipts from all merchandise products during the period.⁹ On the other hand, yearly import payments for food products fluctuated irregularly, with slumps in 1956, 1959, and 1962, but increased during the entire period from 1954 to 1964 by as much as \$43.6 million. Import payments for food products totalled about 17% of total import payments for all merchandise products during the period.¹⁰

The balance of trade of the country from 1954 to 1964 was generally unfavorable. The net deficit amounted to \$635.9 million. The cost contribution of food crops to the dollar earnings of the country totalled about \$657.2 million. Without this, the total deficit in the balance of trade would have amounted to about \$1,295.1 million during the period.

These data would seem to indicate in general an extremely favorable picture of Philippine agriculture within the context of the country's economy. The impression they create, however, should be qualified by the fact that a major portion of the food exports of the country during the period from 1954 to 1964 was accounted for by sugar and sugar preparations with proportions of 87% in 1953 and 79% in 1964, and that the country has continued to import large quantities of rice and corn, the main food items in the diet of the people.¹¹

Population vs. Production

The indices of the country's total crop production, yield of annual crops, and population, as shown on Figure 2, illustrate that crop production, with hectareage as its major source of strength and decreasing yield as a cause of weakness, has generally kept ahead of population.

⁹ Central Bank of the Philippines' *Statistical Bulletin*, XVI, 4 (December, 1964).

¹⁰ *Ibid.*

¹¹ From the nutritional point of view, present consumption of cereals is high and, if recommended food allowances were followed, the Philippines would be self-sufficient in cereals. In 1960, total net supply of cereals for consumption amounted to 347.2 grams per capita. On a recommendation per capita allowance of 333 grams, the sufficiency ratio for that year would be 105. (See Burton T. Oñate, *Population and Food Requirements: Philippines*, International Rice Research Institute, October 29, 1965.)

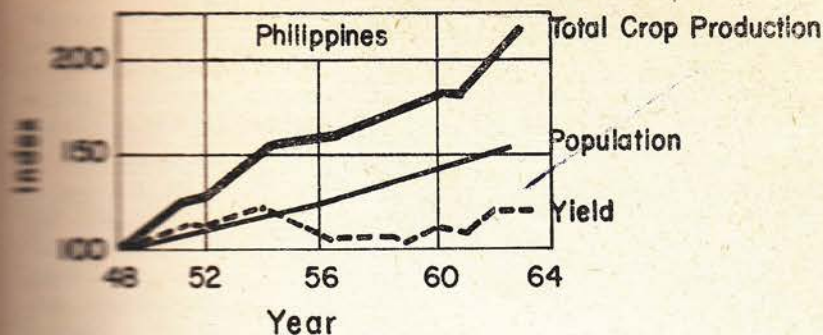


FIG. 2. Indices of Population, Total Crop Production, and Yield of Annual Crops

Source: Central Bank of the Philippines' *Statistical Bulletin*, XVI, 4 (Dec., 1966); and XIX, 2 (June, 1967).

In rice, the staple food of about 80% of the population,¹² production has not kept up with the increase in consumption needs. This has been reflected in the importation of the cereal from various countries including Burma, Thailand, the United States, Cambodia, Iran and Taiwan. Table 1 shows the rice imports from 1955 to 1967.

The population of the Philippines has been increasing by about 3.2% annually and this growth rate is one of the highest in the world.¹³ This means that the number of people in the country has been growing by more than one million annually in most years. This has resulted in a corresponding increase in the annual demand for food in the neighborhood of 4.5% annually.

¹²Source: The files of the Rice and Corn Administration. This is a rough approximation. This means that about 20% of the population eat corn as a staple food item.

¹³See Burton T. Oñate, *Estimation of Population and Labor Force in the Philippines* (The International Rice Research Institute: June, 1966). Also see *Agriculture in the World Economy* (Rome: Food and Agricultural Organization of the United Nations, 1962).

¹⁴UNEP, *Changes in Agriculture in 26 Developing Nations, 1948-1963* (Foreign Agricultural Economic Report No. 27).

TABLE VI
Rice Imports, 1955-1967¹⁵ in metric tons

YEAR	QUANTITY
1955	63,516
1956	42,400
1957	77,904
1958	230,668
1959	6,501
1960	186,380
1963	256,300
1964	300,000
1965	569,275
1966	108,000
1967	183,000

At present, a gap exists between the rate of increase in crop output and the rate of increase in demand for food. While crop output moved ahead of the demand for food by about 3.6% annually from 1948 to 1955, this favorable gap narrows down to 0.77% when the period from 1948 to 1963 is considered. If attention is focused on the period from 1955 to 1963, the surplus in crop output entirely disappears and a deficit of about 1.3% is disclosed.¹⁶

Thus, at present, the Filipino's average daily consumption of food in terms of calorie intake has been placed at about 2,000 calories, a level of consumption which is short of his requirements by 350 calories.¹⁷

Appraisal

The above observations notwithstanding, the Philippines is considered one of the 12 nations which have experienced compounded rates of increase in crop output of more than 4% per year during the period from 1948 to 1963—rates which “surpassed those ever achieved by now economically advanced nations during comparable periods of time.”¹⁸

There are less favorable observations on the progress so far achieved by the Philippines in agriculture. A document prepared by the Government of the Philippines in September, 1966 entitled “Strategy for Philippine Agricultural Development: A Request for Assistance,”¹⁹ has this to say of Philippine agriculture:

¹⁵ See the Rice and Corn Production Coordinating Council, *The Four-Year Rice and Corn Self-Sufficiency Program, 1966-1967-1969-1970*.

¹⁶ *Ibid.*

¹⁷ *Ibid.*

¹⁸ *Ibid.*

¹⁹ This was part of the documents used as basis for foreign assistance negotiations between the Philippines and the United States in October, 1966.

The agricultural sector has a significant place in the overall economic scheme; its contribution toward national development is vital. In 1964, it employed 62 per cent of the total labor force; accounted for approximately 15 per cent of the national income; shared 62 per cent of the total export earnings; and supplied 76 per cent of the food consumed and raw materials utilized by the manufacturing and processing industries.

Growth of Philippine agriculture however has lagged behind population growth and decreasing agricultural production has resulted in low income for agricultural producers. This underdevelopment of agriculture will eventually inhibit industrial growth inasmuch as the meager income of the rural people renders them less capable of buying the products of industry. This situation will result in an unbalanced growth and widening of the gap between agriculture and industry."

On the basis of the historical experience of other countries which have passed the stage of agricultural development the Philippines has been going through, the post-war performance of the Philippines in agricultural development has been quite creditable. However, viewed in itself and in the light of the increasing needs of the country and the rising expectations of the government and the people, it leaves much to be desired. An examination of the series of national economic programs of the government at hand reveals this. One who cursorily compares these programs with actual performance immediately finds quite a disparity and the impression comes rather easily that, either the program goals have invariably been set too high, or performance has somehow fallen below the targets most of the time. The real situation could, of course, be a result of a combination of both of these.²⁰ Whatever the truth about it may be, the government has remained generally optimistic in the face of population pressures and, fortunately, highly critical of the results of its economic programs.

The latest economic program turned out by the National Economic Council²¹ states:

Unfortunately, agricultural production has generally been as backward as it is important. The cultivation and processing of such leading foreign exchange earners as sugar and copra have long been carried on with efficient and modern methods. But the cultivation of food crops is still characterized by crude tilling of minuscule plots. The small increases in production of these crops have continued to come from increases in hectareage rather than yield; and with the present rates of expansion, cultivable land will be exhausted in about twenty years. At the same time, the rising investment

²⁰See National Economic Council of the Philippines, *Three-Year Program of Economic and Social Development, FY 1959-1960 to FY 1961-1962*, January 2, 1959; *Second Macapagal, Five-Year Integrated Socio-Economic Program for the Philippines*, January 22, 1962; and the Rice and Corn Production Coordinating Council, *The Four-Year Rice and Corn Self-Sufficiency Program, 1966-1967/1969-1970*.

²¹National Economic Council of the Philippines, *Four-Year Economic Development Program, 1966-1967/1969-1970*.

requirements of the industrial program require that foreign exchange use for the importation of consuming goods, especially food, be reduced. Final present practices of cultivation are wasteful of manpower and other economic resources; and the prevention of social unrest as well as the need to strengthen domestic markets for manufactured goods require that farm incomes be substantially raised from their present depressed levels.

Goals

In the national economic programs, there are three continuing objectives for the agricultural sector. These are: (1) meeting the increasing food requirements, (2) raising agricultural export production, and (3) providing surpluses for industrial processing.²²

Meeting the increasing food requirements involves not only raising the volume of food production but also diversifying food production so that the nutritive quality of the diet of the people would be improved. There is a need to supplement the Filipino diet with protein-rich foods.²³ The production of rice and corn should be raised to meet consumption needs and to save foreign exchange which otherwise would be spent for continuous importation of these cereals. The production of traditional export crops such as sugar and copra, should be expanded to strengthen the foreign exchange position of the country. The production of other crops, primarily for protective, which in raw or processed form are in great demand in the world market should be encouraged for the same purpose. Processing industries now exist, or may be developed, for which raw materials can be locally produced.²⁴ Agriculture should provide surpluses for these industries.

The central problem and objective is how to raise total agricultural productivity and to diversify it so that domestic requirements are met and the foreign exchange earning capacity of the agricultural sector is further improved. The ultimate purpose of course is the development of the total economy to support a rising standard of living for the country's rapidly growing population.

²² See Diosdado Macapagal, *Five-Year Integrated Socio-Economic Program for the Philippines*, January 22, 1962; and the National Economic Council of the Philippines, *Four-Year Economic Development Program, 1966-1967 to 1969-1970*.

²³ See Burton T. Oñate, *Population and Food Requirements—Philippines* (International Rice Research Institute: October 29, 1965).

²⁴ Philippine annual imports of meat and meat preparations ranged from \$2 million to \$10 million from 1949 to 1964. During the same period, yearly imports of dairy products, eggs, and honey ranged from \$18.3 million to \$31.5 million. These data indicate substitution opportunities.

Role of Private Enterprise and Government

The main responsibility for economic development rests on the shoulders of private enterprise, not on the government.²⁵ This policy was adopted in recognition of the basic character of the economy in a democratic setting, the inherent flexibility of private enterprise, and the inflexibility and inability of the government to become "a good businessman" because political factors always interfere and because those running the business have no genuine concern for the success of the venture.²⁶

The role of the government is essentially to stimulate, assist, and encourage private enterprise through policy instruments and incentive programs—in short, to provide a generally favorable climate for the conduct of economic activities. The government's active participation in economic activities is to be limited only to those areas where private enterprise has proved timid or in areas where government control is deemed essential to the promotion and protection of public welfare.²⁷

In agriculture, the government has played its role by setting up agricultural schools and colleges,²⁸ operating research programs,²⁹ conducting extension activities,³⁰ providing credit and price incentives,³¹ introducing institutional reforms,³² and building the needed economic infrastructures.

Assets, Resources and Potential

The Philippines seems to have great potential in agriculture. A look at its assets and resources readily gives an indication of this. The country has about 7 million hectares of arable land with soils which are generally considered fertile. This tillable land area is slightly bigger than Japan's

²⁵ The economic development programs of the Philippines have consistently devalued the roles of government and of private enterprise.

²⁶ See Macapagal, *op. cit.*

²⁷ Examples of areas of economic activity where the government is actively participating are: (a) railway transportation (only the government engages in this business); (b) air transportation (the multi-owned airline is partly owned by the government); and (c) rice and corn business (the Rice and Corn Administration regulates prices through buying and selling operations).

²⁸ The most notable of the agricultural schools and colleges is the College of Agriculture of the University of the Philippines which is being developed as a regional center for education in tropical agriculture. Other agricultural institutions include the Central Luzon State University and the Mindanao Central University.

²⁹ The Bureau of Plant Industry and the College of Agriculture of the University of the Philippines are the principal research agencies of the government in agriculture.

³⁰ The Agricultural Productivity Commission is the agricultural extension agency of the government. It used to be known as the Bureau of Agricultural Extension.

³¹ The credit agency of the government serving farmers' associations is the Agricultural Credit Administration. The government also uses the rural bank system to extend assistance to farmers.

³² The Land Reform Law is the major instrument for institutional restructuring of Philippine agriculture, with particular reference to the traditional land tenure system of the country.

and almost twice that of Taiwan;³³ it can probably support more than the present population of the country. Of this area, about 3.3 million hectares are devoted to rice, 2.1 million hectares to corn, a little over a million hectares to commercial crops, and the rest to miscellaneous crops.

In rice, although the national average yield is only 28.52 cavans per hectare (and this is among the lowest in the world), experiments and the more progressive farms in the country have shown that yields can be increased economically to more than 100 cavans per hectare, provided proper inputs are thrown into production.³⁵

TABLE VII

Average Yield of Rough Rice per Hectare
in Selected Countries ³⁶
In Cavans of 44 Kilos

Spain	141.41
Italy	124.52
Japan	118.99
United States	94.97
Taiwan	75.22
Burma	36.17
Philippines	28.52
Cambodia	23.96

Located between 4 degrees and 20 degrees north latitude, the Philippines enjoys a climate which permits the growing of a variety of crops throughout the year, despite occasional typhoons and drought.³⁷

The Philippines has a high literacy rate, much higher than the most countries in this part of the world.³⁸ The number of graduates produced by its educational institutions has "exceeded the capacity of the economy to absorb them," and this has even resulted in the export of their services.

³³ See Table I.

³⁴ Department of Agriculture and Natural Resources of the Philippines, *Livestock and Natural Resources Statistics: 1958 and 1959*.

³⁵ If the present national average yield in rice is trebled, the country can be producing, on the area now devoted to rice, enough to meet the rice consumption requirements of more than 80 million people.

³⁶ The Rice and Corn Production Coordinating Council of the Philippines, *The Four-Year Rice and Corn Self-Sufficiency Program, 1966-67 / 1969-70*.

³⁷ Department of Agriculture and Natural Resources of the Philippines, *Philippine Agriculture Atlas, 1957*.

³⁸ USDA, *Changes in 26 Developing Nations, 1948-1963* (Foreign Agricultural Economic Report No. 27).

³⁹ National Economic Council of the Philippines, *Four-Year Economic Development Program, 1966-67/1969-70*.

Politically, the country is among the most stable in this region. Although dissidence, which developed during the years immediately after the Second World War, still exists in remote places, it is no longer considered a real threat to the peace and political stability of the country.⁴⁰

II. PROBLEMS

The economic problems of the Philippines have often been related to the dualistic character of its economy—a growing industrial sector which is essentially producing consumer goods many of which are highly dependent on imported raw materials⁴¹ and a lagging agricultural sector which is oriented to the exportation of a few primary products and is still unable to produce enough of the country's requirements of staple food items. The achievement of a balance in the growth of both sectors has been a continuing concern of the policy makers of the country who believe that on such a balance depends total economic growth and that the persistent lack of it will finally inhibit the further development of both sectors.⁴²

In the agricultural sector itself, a kind of dualism persists, resulting in sectoral lopsidedness. The export-oriented subsector continues to receive substantial assistance from financial institutions⁴³ and is blessed by a favorable international market. The other subsector which is for the most part still subsistence in character⁴⁴ continues to receive government subsidies which growers have welcomed but generally criticized as meager or inadequate.⁴⁵

The second subsector is the focal point of present development efforts

⁴⁰ In the early 1950's the Hukbalahap movement, which had agrarian and political objectives inimical to the government, gained momentum and there was a time when large areas of the countryside were controlled by the Hukbalahaps. In 1954, the backbone of this movement was broken and many of its leaders were brought to prison or killed in armed encounters with government forces.

⁴¹ National Economic Council of the Philippines, *Four-Year Economic Development Progress, 1966-67/1969-70*.

⁴² *Strategy for Philippine Agricultural Development: A Request for Assistance*, September, 1966.

⁴³ Sugar cane which is now one of the biggest earners of foreign exchange is being grown on about 239,000 hectares. Rice is being grown on over 3 million hectares. And yet, loans granted by commercial banks to the sugar industry have exceeded loans granted to the rice industry in most years. For data covering the period from 1958 to 1965, see the Central Bank of the Philippines' *Statistical Bulletin*, Vol. XVIII, No. 1, 1960.

⁴⁴ The government subsidy for cereal price stabilization from 1962 to 1966 amounted to P19.22 million in 1962-1963; P105.47 million in 1963-1964; P46.05 million in 1964-1965 and P77.8 million in 1965-1966. (Source: The Rice and Corn Administration of the Philippines.)

⁴⁵ Association of rice and corn planters have succeeded in raising, through the Congress of the Philippines, the floor prices for rice and corn. In 1954, the floor prices were only P8.00 per cavan of rough rice and P5.70 per cavan of corn grain. From 1964 to the present, the floor prices have been P16.00 per cavan of rough rice and P13.50 per cavan of corn grain.

of the government. Commodity-wise, these efforts are principally at maximizing production of rice and corn, other commercial crops and animal products.⁴⁶ In this subsector, the problems as seen by government administrators, particularly with reference to rice and corn, include the following:⁴⁷

1. Lack of much needed infrastructure such as facilities for irrigation, control and drainage and farm-to-market road and transportation systems;
2. Inadequacy of essential inputs as high-yielding seed varieties, fertilizers, chemicals for insects, diseases and weed control, and ineffective distribution of these inputs when available, resulting in high prices;
3. Insufficient credit facilities;
4. Poor facilities for drying, storage and processing;
5. The need for better trained and well-supported technical personnel to administer and implement the government's cereal program;
6. The traditional land tenure system which has fettered the tenant farmer to low productivity and a life of continuing dependency; and
7. The conservative attitude of farmers toward new production methods and the lack of civic consciousness and national discipline to permit the temporary difficulties required in adjustments toward increasing productivity.

Another problem is the organizational fragmentation of agricultural services which appears to have resulted from a propensity during the war years to supplant or supplement government agencies which did not perform in accordance with executive or legislative expectations.⁴⁸ Usually, this generates difficulties in the planning and implementation of national agricultural programs and the allocation of government resources to support these programs.

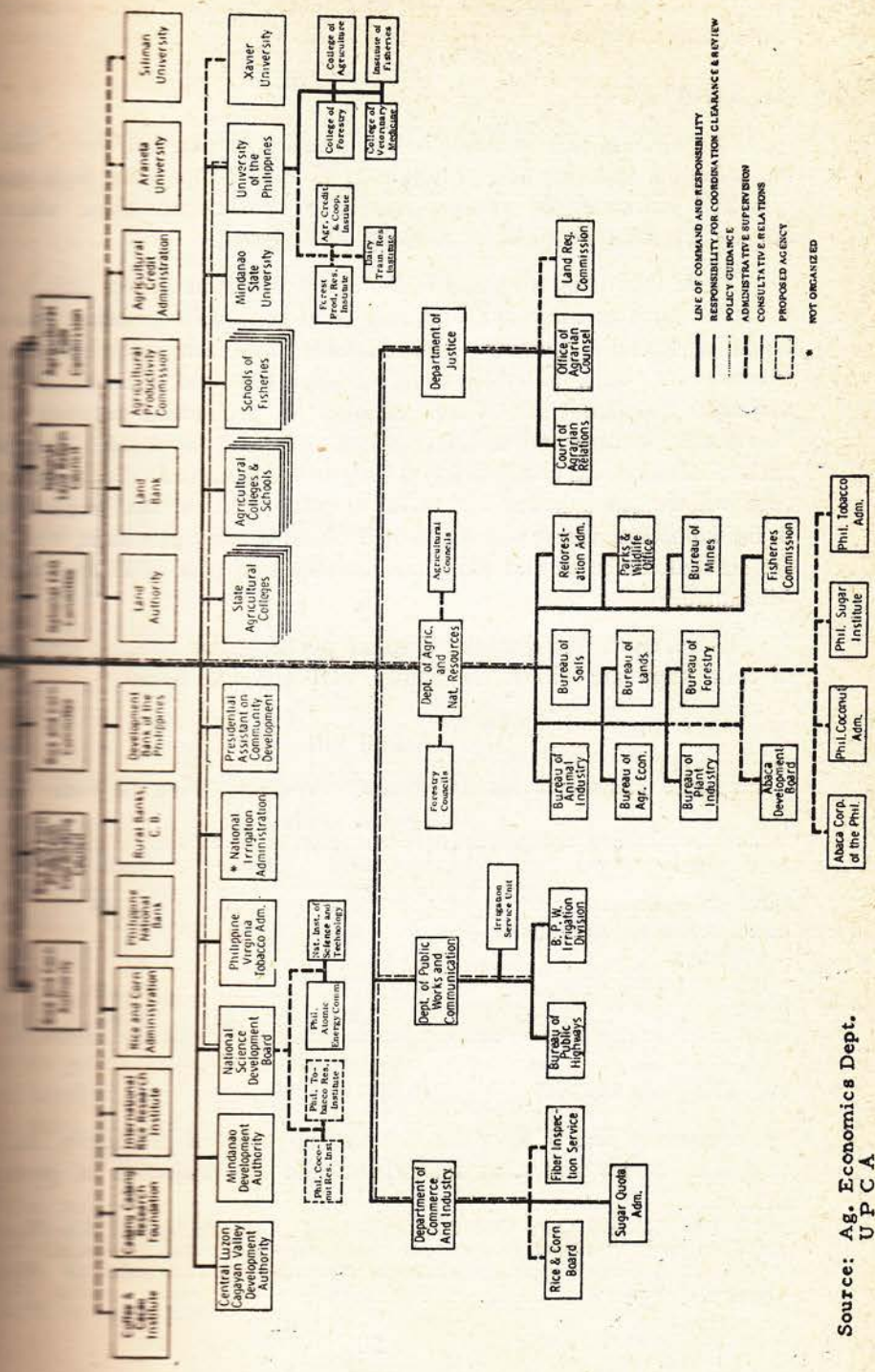
Figure 3 presents a chart of the agricultural services of the Philippines in 1965. Some organizational changes have occurred since the Presidential Administration took over the reins of government in 1966, but these changes have not been substantive. For example, the Presidential Implementation Agency (PIA) was abolished and supplanted by the Presidential Economic Staff, without too much change in basic responsibilities. However, a reorganization bill⁴⁹ is now pending in Congress. It is expected that, after the passage of this bill, substantive organizational changes

⁴⁶ The Rice and Corn Coordination Council of the Philippines, *The Four Year Rice and Corn Self-Sufficiency Program of the Philippines, 1966-67/1969-70*.

⁴⁷ *Ibid.*

⁴⁸ In the agricultural services, the National Rice and Corn Corporation was abolished and the Rice and Corn Administration of the Philippines was established in its place. The Agricultural Cooperative and Credit Financing Administration was changed to the Agricultural Credit Administration. Several changes of this nature have occurred in other government services.

⁴⁹ The reorganization bill is expected to be taken up by Congress in the session of 1968.



Source: Ag. Economics Dept. UPCA

follow in various agencies of the government bureaucracy, including the agricultural services.

III. STRATEGY

The strategy for attaining self-sufficiency in rice and corn calls for the selection, ordering and provision of dominant inputs for both production and marketing in existing rice lands, particularly those which are already irrigated or which can easily be irrigated.

These inputs, as suggested in the list of problems above, include infrastructures such as irrigation, drainage, flood control feeder roads and vocational agricultural training. The infrastructures will make possible the effective use, on a widening scale, of improved seed varieties, fertilizers, pesticides and herbicides. Credit facilities for production purposes will be liberalized. Storage and milling facilities will be modernized. Price support and stabilization will continue for as long as this is needed. Technical knowledge will be strengthened. In order to create concentrated impact, effort in the immediate future will be focused on 10 priority provinces, 9 of which are located in the central plain and northeastern part of Luzon, and 1 in Mindanao.⁵⁰

Estimates of the financial costs of pursuing this strategy for a period of four years are shown on Tables VIII and IX, below:⁵¹

TABLE VIII
Financial Assistance for 10 Priority Provinces, First of Four Years
In Million Dollars

ITEM	GRANTS	LOANS	TOTAL	PER CENT
Direct to Agriculture	2.8	12.5	15.308	45.5
Infrastructure for Agriculture:				
Irrigation		10	10	29.7
Farm-to-market roads, etc.	6.193	2.16	8.353	24.8
Total	9.001	24.66	33.661	100.0

IV. THE PROGRAM

Figures 4 and 5 show the relationship between production and consumption of rice and corn since 1960 and the projection of production

⁵⁰ The Rice and Corn Coordinating Council of the Philippines, *Four-Year Rice and Corn Self-Sufficiency Program of the Philippines, 1966-67/1969-70*.

⁵¹ *Strategy for Philippine Agricultural Development: A Request for Assistance*, September, 1966.

reflecting the objective and timetable the government has set for itself in achieving self-sufficiency in these cereals.

TABLE IX
Financial Requirements of Projects which Directly Benefit Agriculture
In Million Dollars

ITEM	GRANTS	LOANS	TOTAL	PER CENT
Direct to agriculture	19.849	126	145.849	40.4
Support to Agriculture:				
Processing of agricultural products		20	20	5.6
Training for local government officials	.2		.2	
Infrastructure for Agriculture:				
Irrigation		40	40	11.1
Others	1	153.820	154.82	42.9
Total	21.049	339.820	360.809	100.0

The production of clean rice in 1966 was estimated at about 46.6 million cavans of 56 kilos each, while the consumption requirements were about 51.9 million cavans of clean rice. While production in 1958 and 1960 exceeded or equalled consumption requirements, the surplus, if any, was not substantial enough to provide a buffer stock for the country. After those years, production went below consumption and the gap began to widen. Originally, in 1966, the intention of the government was to have bridged the gap by 1969. Figure 4, however, shows that the gap had been closed by the end of 1967. This is the estimate of the Rice and Corn Administration as of the beginning of the year 1968.

It should be noted that Figure 4 expresses data in terms of palay or rough rice while the discussion in the preceding paragraph is in terms of clean or milled rice. Roughly, one cavan or one sack of clean rice (56 lbs.) is equivalent to 2 cavans or sacks of palay or rough rice (112 lbs. each).

In corn, the situation has not been as bad as in rice. In 1959, when the level of almost 15 million sacks of 57 kilos each, corn production began to meet consumption requirements at about 18 million cavans, exceeded consumption requirements by 1960, and continued to rise in the next 5 years, staying above the increasing consumption requirements until 1965.⁴ In 1966, it dropped considerably, but it recovered by the end

⁴The increase in production was mainly due to the increase in hectareage. During the period 1951-1954, the area planted to corn was estimated at 1,088,000 hectares and the production was about 16,867,000 cavans. During the period 1954-1959, the area was approximately 1,759,130 hectares and the production about 22,711,000 cavans. These increases represent an expansion of 61.5% in land area and 32.7% in production.

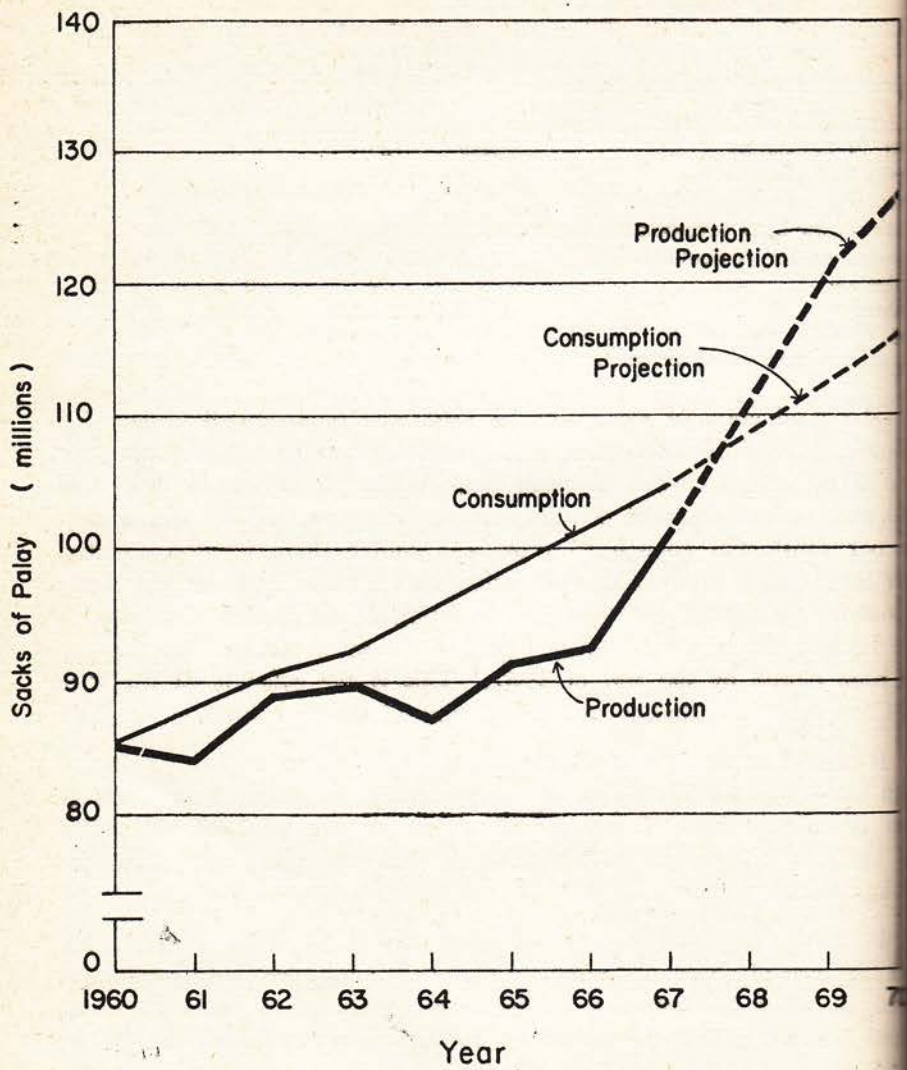


FIG. 4. Annual Rice Production and Consumption Requirements

Source: The Files of the Rice and Corn Administration.

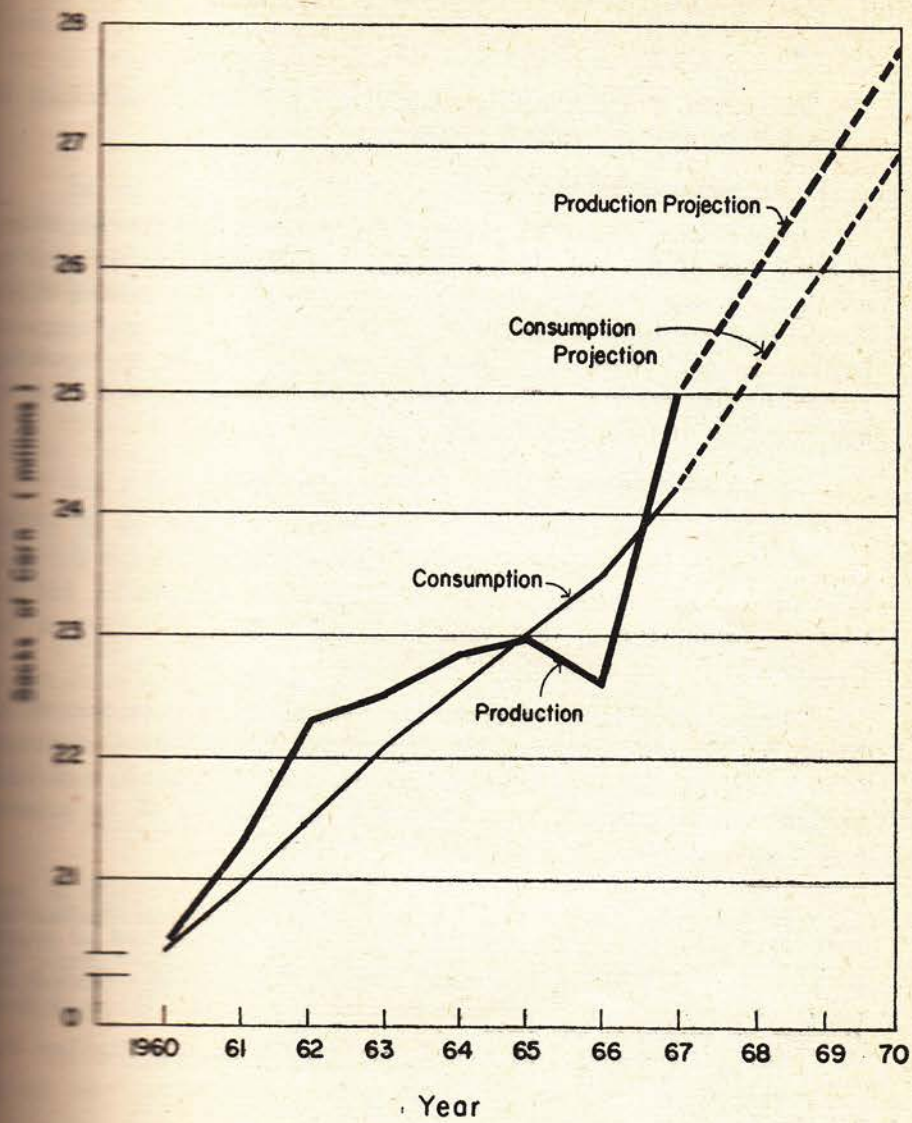


FIG. 5. Annual Corn Production and Consumption Requirements

Source: The Files of the Rice and Corn Administration

of the year.⁵³ The Rice and Corn Administration expected that a deficit in production would be eliminated by the end of 1968. However, it revised its estimates in early 1968 and indicated that by the end of 1967 a clear surplus in corn had been achieved.

The current program activities aimed at achieving self-sufficiency in rice and corn may be outlined as follows:

1. Irrigation and flood control

Approximately 574,000 hectares of the arable land of the country are irrigated, but of this only about 277,000 hectares are fully irrigated and permit the growing of crops during the dry season.⁵⁴ The existing irrigation systems are being rehabilitated. The construction of new irrigation facilities is under way and it is being complemented by an expansion of pump irrigation program. The objective is to increase irrigated lands by approximately 100,000 hectares each year.

2. Seed multiplication

A large-scale seed production program involving the use of private farm cooperators was started in 1966. The seed rice varieties or selections which are being multiplied include the IR8-288-3, the BPI-76, and the C-18.⁵⁵ Synthetic corn seed varieties found to be high-yielding in the country are also being multiplied.⁵⁶

The private seed multipliers are being supervised by technicians of the Bureau of Plant Industry and the Agricultural Productivity Commission. It is anticipated that, by the end of 1967, adequate quantities of high-yielding seed varieties and selections will be available for all the irrigated and a good part of the non-irrigated rice areas.⁵⁷

⁵³ This is a forecast for the whole year of 1966. In the middle of 1966, the Rice and Corn Administration decided to import corn from Thailand from the United States under the U.S. Public Law 480. A total of 100,000 metric tons was authorized to be imported. However, only 20,000 metric tons were actually imported. In November, 1966, a seasonal surplus occurred and the government was ready to authorize the exportation of corn by private farmers. However, no exportation was made.

⁵⁴ The Rice and Corn Production Coordinating Council, *The Four-Year Rice and Corn Program of the Philippines: 1966-67/1969-70*.

⁵⁵ *Ibid.*

⁵⁶ *Ibid.*

⁵⁷ *Ibid.* Of the IR8-288-3 selection, about 50 metric tons, or a little more than 1,000 cavans, were released by the International Rice Research Institute to the government in July, 1966. This quantity was multiplied by private seed multipliers mostly during the period from late July to early November, 1966. The quantity of seed to be used as seed is expected to be no less than 100,000 cavans. In the next crop season this quantity can be re-multiplied, it would produce 10,000,000 cavans which would be enough for at least 5,000,000 hectares under the "dapog" system of seedbed preparation.

3. Soils management

Soil surveys and analyses are being conducted to gather and disseminate information on the soils condition in the rice and corn areas, and the local production of fertilizer is being encouraged so that cheaper fertilizer will become available to more and more farmers.⁵⁸

4. Plant protection

The government maintains a reserve stock of pesticides to control major infestations⁵⁹ and reliance is placed upon private business to make available adequate quantities of pesticides to meet the normal needs of the farmers.

5. Credit

An agricultural credit guaranty fund has been provided to make possible the liberalization of credit to farmers through the rural bank system of the country. A total of P8 million was released for this purpose in 1966 and it was expected that this amount would be able to generate some P40 million of credit to farmers to finance production operations. There is a plan to increase the agricultural guaranty loan fund by P12 million.

A total of P12 million has been released to the Agricultural Credit Administration to meet credit needs of the farm cooperatives. A loan of P20 million was granted by the World Bank to the government in 1966 and this amount will be available for credit to be extended to producers interested in mechanizing farm operations.⁶⁰

6. Integrated farms

Large-scale production and extension projects are being developed. One project covering 3,500 hectares is located in Baliuag, Bulacan. This project is being conducted with the assistance of agricultural technicians from the Republic of China.⁶¹ Similar projects are being planned for other provinces.

The reclamation of the Liguasan Marsh in Cotabato province, Mindanao, involving an area of about 45,000 hectares, is being considered.

7. Farm-to-market roads

⁵⁸Ibid.

⁵⁹Ibid. This stock is handled by the Bureau of Plant Industry.

⁶⁰Ibid.

⁶¹Ibid. This project was started in July, 1965 as a result of the visit of the Vice President of the Philippines to the Republic of China in June, 1966.

Some 6,000 kilometers of barrio roads linking production areas to the main marketing channels are being rehabilitated or constructed to enable farmers in these areas to sell their produce at better prices.⁶²

8. Price support and stabilization

Floor prices for rough rice and for corn are guaranteed by law to encourage the growers to produce more of these cereals. Floor prices for rough rice range from ₱16 to ₱18 per cavan of 44 kilos net while the floor price for shelled corn grain is ₱13.50 per cavan of 56 kilos.⁶³ The amount of ₱20 million is earmarked for the year 1966-1967 to support this program.

9. Research and extension

Research work on rice and corn is being conducted by various government agencies. The major research institutions are the Bureau of Plant Industry and the College of Agriculture of the University of the Philippines.⁶⁴ The International Rice Research Institute, a world center for rice research located in Los Baños, Laguna, continues to turn out new knowledge on rice. The government sees to it that information useful to the national effort to increase rice and corn productivity is passed on to the farmers mainly through the Agricultural Productivity Commission.

In 1963, a land reform law was passed to achieve political, equity and productivity objectives.⁶⁵ The objectives as specified by law are:

"(1) To establish owner-cultivatorship and the economic family-size farm as the basis of Philippine agriculture and, as a consequence, divert land and capital in agriculture to industrial development; (2) to achieve a dignified existence for the small farmers free from the pernicious institutional restraints and practices; (3) to create a truly viable social and economic structure in agriculture conducive to greater productivity and higher farm income; (4) to apply all labor laws equally and without discrimination to both industrial and agricultural wage earners; (5) to provide a more vigorous and systematic resettlement programme and public land distribution; and (6) to make the small farmers more independent, self-reliant, and responsible citizens, and a source of genuine strength in our democratic society."

⁶² *Ibid.*

⁶³ Source: The files of the Rice and Corn Administration of the Philippines.

⁶⁴ The Bureau of Plant Industry has 6 rice and corn research stations in various parts of the country. The College of Agriculture, U.P. is the Central Experiment Station of the country.

⁶⁵ For a discussion of the equity and productivity objectives of the Philippine land reform legislation of 1963, see V. W. Ruttan, "Equity and Productivity Objectives in Agrarian Reform Legislation: Perspectives on the New Philippine Land Reform Code," *Indian Journal of Agricultural Economics*, XIX, Nos. 3-4, December 1964.

The implementation of the land reform law is being done in stages and, already, a major change in administrative orientation concerning the full implementation of the law is beginning to loom. This is discussed briefly elsewhere in this paper.

In preparation for the passage of the reorganization bill, private management firms have been hired to look into the organizational set-up and administrative system of government agencies concerned with the national programs on rice and corn.⁶⁶ The establishment of more efficient systems may be possible within the frame of the present organizational relationships of agencies concerned with rice and corn, but major changes which may be revealed by the survey as necessary are expected to be implemented only after the passage of the reorganization bill.

V. THE CRITICAL AREAS

In trying to assess the possible impact of the current national program to increase productivity in rice and corn, it would be helpful to refer to Figure 6 which shows a model of a program aimed at increasing effective food supply. This model will serve as our frame of reference in examining the critical areas where the national effort might be hindered and where sufficient attention and application of resources would significantly count toward the achievement of program goals.

It should be noted in the frame of reference suggested that the farmer is the focal point of activities because it is he who makes the production decisions, and much of the success or failure of the national effort to increase productivity depends upon him. Two factors, namely (1) the land area cultivated to food crops by the farmers, and (2) the yields he is able to obtain contribute directly to total food production. The degree of efficiency or the marketing systems available to the farmer or other persons engaged in storage, processing and distribution activities determine to a significant degree the total effective food supply for consumers. Total effective food supply is composed of that portion of total food production which is retained by producers for consumption purposes and that portion which goes into the trade channels.

The factors which directly influence the total area cultivated include farm sizes, irrigation facilities, and power available for land preparation. Those which have a direct bearing on yield include seed varieties and practices in soils management, water management, weed control and plant protection.

⁶⁶ These firms have been engaged on a contract basis and most of the funds to support their services have been provided by the United States Agency for International Development.

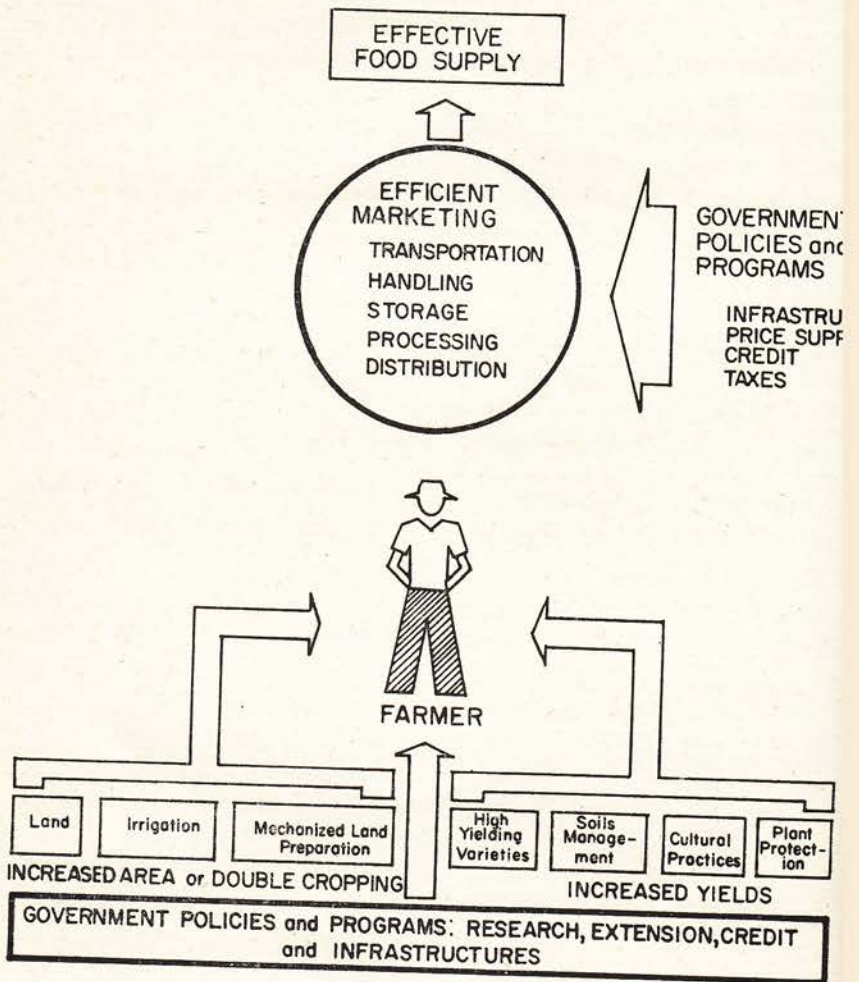


FIG. 6. A Model of a Program for Increasing Effective Food Supply

Marketing efficiency, the bridge between total production and effective food supply, is determined by transport infrastructures, the kind of storage and processing facilities used, and the forces that more directly bear on the market prices of food crops, such as the interplay of supply and demand, competition and government subsidies.

Certain other factors, mostly institutional in character, provide the general matrix for decision and action both in production and marketing. These factors are: the effectiveness of the government extension services; the credit facilities that the government is able to provide directly through its own financing institutions, or indirectly, through private financing entities; the degree of organization among the farmers, either through cooperative and marketing associations or through other forms of business enterprises; the social and cultural values of the community; and government policies that influence the supply of food production inputs.

Now, to bring attention to the critical areas of consideration in the national drive toward increased productivity in food.

Objectives and Timetable

Within the space of three years, the production deficit in rice is expected to be eliminated and this is to be achieved on a production growth rate escalating from 7.5% in the first year (1967) to 30% in the third year (1969).⁶⁷ In the case of corn, the shortage in production is expected to be covered within a period of 2 years on a production growth rate of 5%. Those growth rates are quite formidable and, considering the time space within which they are to be achieved, it is extremely important that the dominant factors which are to be provided as part of the growth here are brought into the process of development in adequate quantities and at the appropriate moment. These factors are essential to the attainment of self-sufficiency in food in the immediate future. They are equally essential, and perhaps in a much more imperative respect, to the maintenance of food sufficiency against the cumulatively increasing population.⁶⁸

Order and Magnitude of Dominant Inputs

It seems that the Philippines is still in the first phase of agricultural development.⁶⁹ Therefore, the most dominant inputs it needs are "irriga-

⁶⁷ *The Four-Year Rice and Corn Self-Sufficiency Program of the Philippines, 1966-67/1969-70.*

⁶⁸ Oñate, *Estimation of Population and Labor Force.*

⁶⁹ Clifton R. Wharton, Jr., in his paper entitled "Research on Agricultural Development in Southeast Asia" (Agricultural Development Council, New York), characterizes the stages of agricultural development as follows: "Stage I. Traditional techniques of production are traditional: family labor primarily used and farm

tion, drainage, flood control, feeder roads and vocational agricultural ing.⁷⁰ These inputs obviously require large amounts of capital o In the face of an increasing demand for public services in other fiel government endeavor, local sources of funds to meet this capital outla inadequate and hence, the government is looking to external source assistance. The magnitude of this assistance, as shown earlier on Tab is almost \$200 million for infrastructures for agriculture alone. Exi sources of assistance are naturally beyond the control of the country while preliminary negotiations with the governments and private bus groups of the United States and of Japan in 1966 indicated bright a ance prospects, there is no certainty that such assistance will be pro in adequate amounts without delay. Thorough project studies must port requests for assistance and these take time to prepare. Much time separates the receipt of assistance and the completion of the pro. The hastening of efforts to obtain the assistance and to get the i structure projects started is crucial, both from the immediate and long-range points of view.

While the needed infrastructures await assistance funds, infrastruc available in agriculture at present should be exploited to the maximum

Hectarage

The bringing of new land areas into cultivation can no longer relied upon in the immediate future as a means for increasing the nati production of rice and corn. Considering the scarcity of available fina resources in relation to present plans for agricultural development, opening of new lands is at once uneconomic from the benefit-cost i point of view. Long-range projects of this nature which are now on planning boards of the government, such as the reclamation of Liguasan marsh in Cotabato, Mindanao, should probably stay somewh at the end of the priority line until some time in the future. The con centration of efforts in land areas where the necessary infrastructures

production is mainly or entirely consumed by the family. The farm-home com is a self-contained unit and very few factor inputs are purchased which are duced in the non-farmer sector. Stage II. Transitional. This phase is character by an increased use of purchase inputs for both farm and home, by a la fraction of farm production sold, and by a greater degree of specialization production. This phase also involves a change from tradition to choice ma agriculture. Stage III. Commercial. Commercialization is virtually comp i.e., nearly all factor inputs and farm production go through the market pro Decision-making is more oriented toward costs and receipts than toward fa consumption needs."

⁷⁰ *Strategy for Philippine Agricultural Development: A Request for As sance*, September, 1964.

production and marketing are now relatively well-developed offers greater returns in terms of immediate contribution to national production.

The pace of implementing the Land Reform Program as an instrument affecting effective hectareage devoted to the food crops is rather slow, and perhaps rightly so, because this provides an opportunity for the lessons learned in the first land reform districts to be forged into the law and the implementing program. Rapid implementation could offset efforts to raise productivity in land reform areas, unless a much greater support is provided for the tenant farmers in terms of readily available credit to meet their farm needs. Partly because of preliminary research reports that production in some land reform areas decreased because tenant farmers were unable to obtain traditional financial assistance after having been "weaned" from their landlords, some government leaders have begun to espouse the idea that a district would be ripe for land reform only after the tenant farmers in the area have succeeded in raising their productivity and their income to a level that would give them a sense of real security and independence.

Yields

It is mainly through the economic increase in yields that productivity and income of farmers can be raised, assuming that a favorable market for their produce exists. The increase must be dramatic enough to capture the imagination and enthusiasm of farmers who for many years have been content with, and conditioned to, yields not too far above the national average. This would be possible only if seed varieties which are early maturing and non-photoperiod sensitive, highly responsive to fertilizers, and resistant to disease and to lodging are made available to a considerable number of farmers. This would, of course, require credit support, and an increasingly effective extension service, or organizational leadership at the farm level that would bring technology to the farmers and enable them to use these varieties productively.

Marketing

In marketing, the price support and stabilization program for rice and corn has economic logic behind it when viewed in the light of problems concerning the distribution of these cereals as conditioned by the geographic segmentation of the country, poor transportation facilities in many regions, and the lack of effective marketing organization for the farmers. However, some researchers have found no significant correlation between yields on the one hand and support prices on the other. Not much evidence has been found to indicate that farmers have responded

positively to support prices by significant increases in their yields.⁷¹ It seems that, in marketing, the critical consideration is long-range in nature and that is the development of better storage and processing facilities, transportation systems and organizational leadership that would encourage the farmers to venture profitably into marketing operations.

Manpower

Because of its relatively advanced development the industrial sector is attracting more and more of the trained manpower of the country. In general, industry has had greater drawing power than agriculture and as a result, agricultural leadership in the government or the private sector had to face a great handicap both in number and quality. This is, of course, partly due to the social structure and cultural values of the people. The real leaders in agriculture who have recently risen to positions of responsibility in the government have found it difficult to obtain for agriculture the attention and support it deserves even in the context of its being a sector complementary to industry in the entire scheme of the national economy. This problem of manpower in agriculture is also caused in part by the low productivity in this sector of the economy. Conversely, the need for manpower is partly a cause of the present status of agriculture in the country. The manpower is needed and must be produced on a sustained basis for service in agricultural education, research, extension, and in the very business of production and marketing.⁷²

VI. POSSIBILITIES

In the long run, the ability of the country to order and provide in sequence the dominant inputs for agricultural development will be

⁷¹ Mahar Mangahas, Aida E. Rector and V. W. Ruttan, in their paper "Marketing Relationships for Rice and Corn in the Philippines" which was presented in 1965, state: "While prices of rice and corn in the Philippines have apparently been fairly efficient in their resource allocation function, there is little evidence to indicate that price changes represent an effective device for influencing aggregate agricultural output. In spite of micro-economic evidence that prices represent an important incentive for the purchase of yield-increasing technical inputs (fertilizers, insecticides, etc.), no measurable yield response to price was obtained. Thus, a 10 per cent rise in the price of rice will result in at least a 5 per cent increase in the marketable surplus of rice, most of the increase in output is a result of shifting land from other crops to rice or bringing new land into production. This implies a much less optimistic role for price as a development tool than if price changes induced yield as well as hectareage changes."

⁷² V. Jarmin and A.O. Gagni conducted a survey of graduates from the College of Agriculture, University of the Philippines from 1950 to 1957 to determine their occupation. Returns from 514 alumni (47% of the entire number of graduates) who graduated during this period indicated that 46% were engaged in educational work in agriculture, 33.7% in technical work in agriculture, 8.3% in occupations related to agriculture, 8.4% in school farming, 2.1% in occupations not related to agriculture and 1% unemployed.

essential ingredient for success in achieving its continuing goals, and pushing it to the next stage of agricultural development at the earliest possible time.

To achieve the short-term goals in agriculture, particularly in the principal food crops, the provision of dominant inputs should be initially focused rather than spread out. Real impact in areas which are irrigated and where the transportation systems are relatively good, appears to be feasible in the next few years. Let us look at rice in particular.

In rice, almost 300,000 hectares of irrigated land capable of multi-cropping are available. High-yielding seed varieties and selections are in the process of being multiplied. It has been shown that seed selection can produce from 6,000 to 10,000 kilograms, or from 150 cavans to more than 200 cavans, per hectare.⁷³ If this selection were used on the irrigated areas and grown twice a year, the country's deficit in rice production which is about 12 million cavans of rough rice in 1966 would be readily covered and a substantial surplus would result even if average yield in this area were placed merely at 100 cavans of rough rice per hectare. Consider Table X below:⁷⁴

TABLE X

Total Land Area Cultivated to Rice	3 million hectares
Average Yield	28.5 cavans per hectare
Total production86 million cavans
Total Production, if 300,000 hectares produce 200 cavans per hectare per year	137 million cavans
Consumption Requirements	102 million cavans
Surplus available for stock for export	35 million cavans

If this should occur, it would offer two possibilities. First, the country will be able to move from the status of rice importer to that of rice exporter. The world demand for this staple food item being on a steady rise, a ready market for Philippine rice surplus would be available, and

⁷³ The IR8-3 has yielded on the experimental farm of the International Rice Research Institute in Los Baños, Laguna, Philippines, from 5,000 to 7,000 kilograms of rough rice during the wet season and from 7,000 to 9,000 kilograms of rough rice during the dry season. This selection was multiplied by private growers during the last wet season this year and their yields in most places reported so far have been better than 6,000 kilograms and in some places better than 9,000 kilograms.

⁷⁴ In this calculation, total land area is rounded off to 3 million hectares; total production, if 300,000 hectares produce 200 cavans per hectare per year, further assumes an average yield of 45.6 cavans per hectare for entire area devoted to rice; consumption requirements are set at the rough equivalent of 51 million cavans of clean rice.

the country would thus be in a position to earn rather than spend exchange on rice. Second, the country could reduce its area of land devoted at present to rice and utilize the hectareage released for other than rice now being imported into the country, or crops, such as soybean,⁷⁵ that would supply the raw materials for the local processing industry. Part of the released land area could also be utilized to increase the country's production of protective food items toward improvement of the diet of the people.

The organizational approach in getting the farmers to adopt new techniques for raising their productivity promises to overcome such difficulties as the farmers' traditionally slow rate of absorption, their lack of bargaining power as individuals for better government policies, and an inability to take advantage of the economies of scale which are associated with organized groups. In this approach, honest and capable leadership is vital. Effective leadership can save many farmers the trouble of attempting to understand the intricacies of new technology. It can lead them in seeking favorable action from the government bureaucracy to meet their needs, and in turn in helping the government to fill these needs by obtaining financial assistance to support their farm activities; to optimize the use of their resources; and to relate their production operation to current government market anticipations.

We refer to organizations of farmer associations, to business enterprises⁷⁶ which of late have begun to "invade" the agricultural field, to management services toward higher yields and more income, and to government action groups established specifically to see that development efforts are producing results at the farms.

At present, the government is trying to rehabilitate farmers' cooperative marketing associations. Experience in such countries as Thailand has shown the effective role farmers' associations can play in serving the interest of their members and giving impetus to the national agricultural progress. In the Philippines, the move to encourage farmers' cooperative marketing associations appears to have suffered setbacks in the terms of disappointing leadership in some of these associations. Judging from the earnestness of the Agricultural Productivity Com-

⁷⁵ Rice and Corn Production Coordinating Council, *Accelerating the Development of Philippine Agriculture Through Assistance Programs*, November 1965.

⁷⁶ In Santa Rosa, Laguna, Abel Silva started his management service project last June, 1966. The Philippine Seed Corporation has announced to offer farm management services in Luzon and the Visayas. The Pila-Victoria Development Company and the Dome Agricultural and Management Company have on-going farm management projects in Laguna province and Nueva Ecija respectively, and prospective projects on the Bataan peninsula and Zambales. The Agricultural Executives Incorporated has projects in Isabela and Nueva Ecija.

and the Agricultural Credit Administration in trying to revitalize the movement, some slow but real progress may be expected in this regard in the next decade.

Perhaps, because of its initial success and because it is a new phenomenon on the agricultural scene, the entry of business firms into the field of agricultural management services has attracted attention recently. In the province of Laguna, two of such firms have demonstrated the fact that agriculture can be a business in which the farmers stand to gain more as they work under the central direction of persons or firms with management acumen. One such enterprise has succeeded in mustering some four hundred hectares of riceland under its management. In the next crop season, it expects to expand its operations to some two hundred hectares. The enterprise obtains financial assistance for both the landlord and the tenant, seeks the improvement of irrigation facilities in the area, schedules and directs the farm operations of tenants and provides the technical services they need. As a management fee, the enterprise receives a percentage of the increased yields, assuring for both the landlord and the tenant a level of income at least equal to what they have received in the past. Its success has brought the landlord and the tenant closer, with a third party working for both of them toward higher productivity.

The entry of business enterprises into the production and marketing of food crops bears watching as this might be one of the forces that will provide the springboard for the take off of the country's traditional agriculture toward modernization.

In the government sector, another organizational phenomenon is occurring and it is to a significant degree offsetting the difficulties which are generated in part by the fragmentation of the agricultural services. This is the emergence of the provincial development council concept. Under this concept a council is charged with the economic development of the province and, invariably, the development of the agricultural sector of the provincial economy receives the major portion of its attention. A shining example is the Agricultural Development Council of the province of Rizal. Created by provincial administrative order and supported by provincial appropriations, it has a staff of technical and administrative personnel whose responsibility is mainly to get things done in the agricultural programs of the province. The staff complements the work of the national agricultural agencies in the province and, apparently has virtually succeeded in coordinating their activities in the province. It is working with the usual tools—financing, irrigation, farm supplies, technical services and marketing assistance—and it is working on specific projects. One of

its objectives is to demonstrate to the farmers that, as associations, they themselves can profitably go into business—the business of producing high crop yields and profitably marketing their produce.⁷⁷

CONCLUSION

We have so far cited only two courses of action which seem to carry the biggest hopes of the country for closing the gap between food production and population in the immediate future, and for opening opportunities necessary to diversify its agricultural economy and thus improve the nutrition of its people and produce more crops for export and for the local processing industries. These are: (1) the concentration of attention and efforts on solving the food problems through increase in yields in areas which are now benefiting from earlier development of production and marketing infrastructures; and (2) the emphasis on the organizational approach, both in the government agencies and the private sector whose functions or interests are closely related to agricultural development. These are suggested mainly because they complement each other in an attack on the weakest spot of Philippine agriculture—low productivity—and they can be the very tools that will minimize the hindrances which for many years have deterred agricultural development.

It should be stressed that the limitation of the suggestions of these two courses of action does not mean that the other aspects of the national strategy and program for agricultural development should be minimized in importance. It is evident from the experience of other countries, both in the western and eastern hemispheres, that agricultural progress over time is not possible and cannot be sustained without a well-rounded national effort premised on the provision of the basic infrastructures.

A question which inevitably comes to one who is trying to assess the possibilities in Philippine agricultural development is the matter of the overall timetable within which the transformation of Philippine agriculture to an advanced status could be, and should be, accomplished. The experience of other countries gives us an indication.

Taking the percentage of agricultural population in the total population as an indicator of modern agriculture, we find that it was only in 1959 that Japan passed through the “turning point of agricultural development.”⁷⁸ It took Japan almost a century to reach this point from a state of feudal agriculture.⁷⁹ Also, it took the United States almost

⁷⁷ Nick Joaquin (Quijano de Manila), “Challenge and Experiment in Rizal,” *The Philippines Free Press* (November 26, 1966), pp. 4-5, 85, 87-88.

⁷⁸ S. C. Hsieh, *Agricultural Development and Small Farm System in Taiwan*.

⁷⁹ See Takakazu Ogura, *Agricultural Development in Modern Japan*, Japan FAO Association, 1963.

hundred years before its agricultural sector could attain a level of productivity which permitted a substantial outflow of rural population into the industrial sector.⁸⁰ Taiwan, whose agricultural development was unusually accelerated in the last 10 years, has not yet reached the turning point of development.⁸¹ Of course, a country's agricultural development cannot be isolated from the development of the industrial sector of its economy and its progress in trade and commerce. This seems to suggest that the Philippines still has a long way to go before it can achieve an advanced agricultural economy. But one can be able to expect that, within the next 10 or 15 years, the Philippines would be able to attain self-sufficiency in the staple food items, establish more of the foundations of development by providing the dominant inputs, and build on these to close the time space between an underdeveloped and an advanced economy in agriculture.

⁸⁰ "A hundred years ago about 70 per cent of the total labor force of the United States was engaged in agriculture, a proportion not unlike that of the rural population of many emerging nations. Today, the United States has only 7 per cent of its labor force employed in farms." (Albert N. Moseman, *Agricultural Sciences for the Developing Nations*, American Association for the Advancement of Science, Washington D.C., 1964).

⁸¹ See S. C. Hsieh, *op. cit.* Also see S. C. Hsieh and T. H. Lee, *Agricultural Development and its Contribution to Economic Growth in Taiwan* (Taipei: April, 1966).