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Working Paper

An Historical Evaluation of Governmental Attempts to Achieve Self- Sufficiency in Rice Production in the Phillipines

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AN HISTORICAL EVALUATION OF GOVERNMENTAL
ATTEMPTS TO ACHIEVE SELF-SUFFICIENCY IN RICE
PRODUCTION IN THE PHILIPPINES

By

Guia R. Miguez

February 1978

No. 78-9 (Draft)

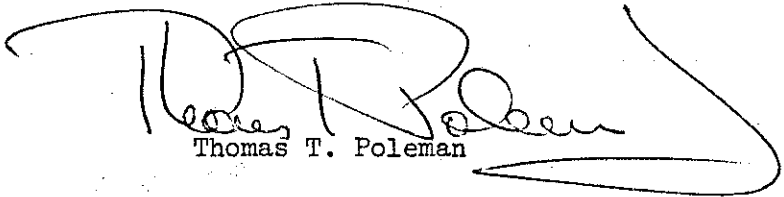
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ITHACA, NEW YORK 14853

DEPARTMENT OF
AGRICULTURAL ECONOMICS
WARREN HALL

INTRODUCTION

The attainment of self-sufficiency in rice by the Philippines has attracted a great deal of favorable comment. The Masagaña 99 program, and the underlying commitment by the government to greater attention to the rural sector, are hailed as models to be followed by other developing countries. Yet the program has not been without its detractors. It has been expensive and at times loan defaults have been depressingly high. Further the program has coincided with three years of uncommonly favorable weather. This has led critics to contend that the current self-sufficiency will be fleeting and that a return to more normal weather will witness renewed dependence on imports.

Guia Minguez is attempting to see the present situation in the broad perspective of time. Her paper, as it now stands, is in draft stage. Much will be added between now and its completion in August. Comments, therefore, are earnestly solicited. What has been omitted? What is incomplete? And what is right? With the assistance of you and other knowledgeable observers, we hope the story can be objectively told.


Thomas T. Poleman

AN HISTORICAL EVALUATION OF GOVERNMENTAL ATTEMPTS TO ACHIEVE
SELF-SUFFICIENCY IN RICE PRODUCTION IN THE PHILIPPINES

By

Guia Minguez

I. IMPORTANCE OF ATTAINING SELF-SUFFICIENCY

The Philippine government has consistently placed high priority on achieving self-sufficiency in rice. The rice policies have been employed to meet the following objectives: to maintain political stability, cut dependence on foreign countries, stem off inflation, increase farmers' income, raise standards of health and save foreign currency (1, p. 106).

The past administrations have exploited the rice crises as political issues in order to maintain and improve their political power. Until late 1962, the development policy was more pro-urban than anything else, and within that sector due recognition was given to the potential influence of political unrest amongst the poor, who were better organized and less subject to patron-client relationships than the rural poor. There was a tendency, therefore, for government to favor consumer markets; rice imports, especially during election years or referenda, were used to hold down prices, as a result of which production incentives were disrupted (2, p. 13).

The drive for self-sufficiency status has been to avoid leverage that can be posed to the country by foreign states on account of their positions as important suppliers of the staple food. The foreign supplier may also experience internal supply problems which may prevent them from exporting, as in 1973 when the import orders were cancelled by the Thai government precisely when the need for imports was most critical (1, p. 122).

The government has always aimed at pressing down the price of rice especially in the urban areas since it is regarded as a price leader. The consumers use the price of rice as an index of the level of standard of living. An increase in the level of price of rice will trigger the laborers to demand an increase in wages.

*In slightly modified form, this paper was first submitted as a part of the requirements for Agricultural Economics 660: Food, Population, and Employment, Fall Term 1977/78.

Since the majority of the small landholders are rice farmers, increasing the price support for rice provides for income generation in rural areas thus narrowing the discrepancies between the average incomes of farm families and nonfarm families and limit the rural population flow to urban areas.

The adequacy of rice for consumption provides an assurance that standards of health may be raised since rice supplies the greater portion of the calorie and protein requirements of the Filipinos.

Importing means outflow of the limited foreign exchange. It also means subsidizing foreign farmers rather than the native farmers. Importation has socio-economic implications which government officials, especially the politicians, would like to avoid.

II. RICE IN THE PHILIPPINE ECONOMY

A. Rice in the Filipino Diet

Rice is eaten by about 80 percent of the Filipino populace with maize as the next important food crop. It provides the bulk in the three meals taken each day although bread is sometimes substituted for rice during breakfast.

Chart 1 shows the per capita available supply of calories per day from all food groups from 1953 to 1972. The supply of calories from all food groups has risen over time with some ups and downs. There was an acceleration up to 1965 and instability from 1966-1972. Rice accounts for 40-50 percent of the calorie intake and 30 percent of the protein intake. The proportion of rice to the available supply of calories from all food groups has not exceeded 50 percent despite the increase in per capita available supply of calories. This implies that the consumption of rice has remained more or less constant and that the consumption of other sources of calories such as corn and wheat has increased (see Chart 2).

The per capita consumption of corn per day has almost doubled from 1953 to 1972. The increased consumption of corn may be due to the increase in population where corn is produced and lack of transport and marketing facilities which necessitated direct, subsistence consumption (3, p. 30).

It may seem from Chart 1 that the recommended allowance of calories has finally been met beginning in 1963. This is not true since the available supply per person is derived by dividing the total food supply by the population. The distribution of food consumption due to the distribution of income is not only very unequal but it is quite skewed (1, p. 97).

The per capita absorption of rice varied from a low of 75.6 kilograms in 1946-47 to a high of 91.9 kilograms in 1964-65 (see Chart 3). Absorption in crop years 1947 and 1948 was low because of the partial recovery of production in the early years following World War I. Absorption in

CHART 1. PER CAPITA AVAILABLE SUPPLY OF CALORIES PER DAY FROM ALL FOOD GROUPS, CALENDAR YEARS 1953 TO 1972*

Calories Per Day

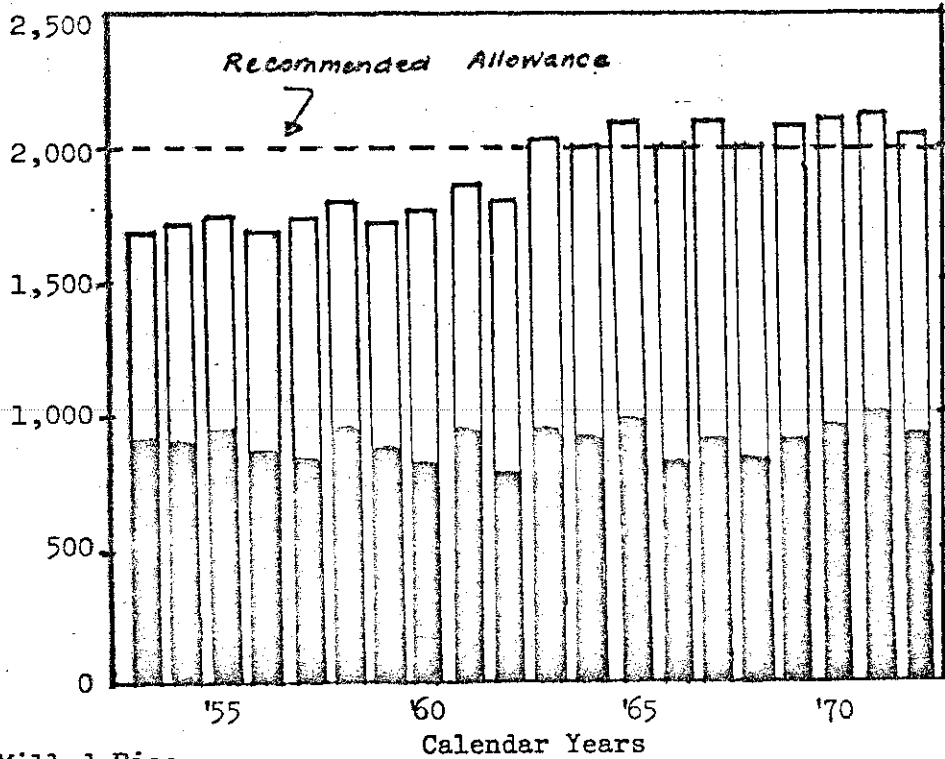
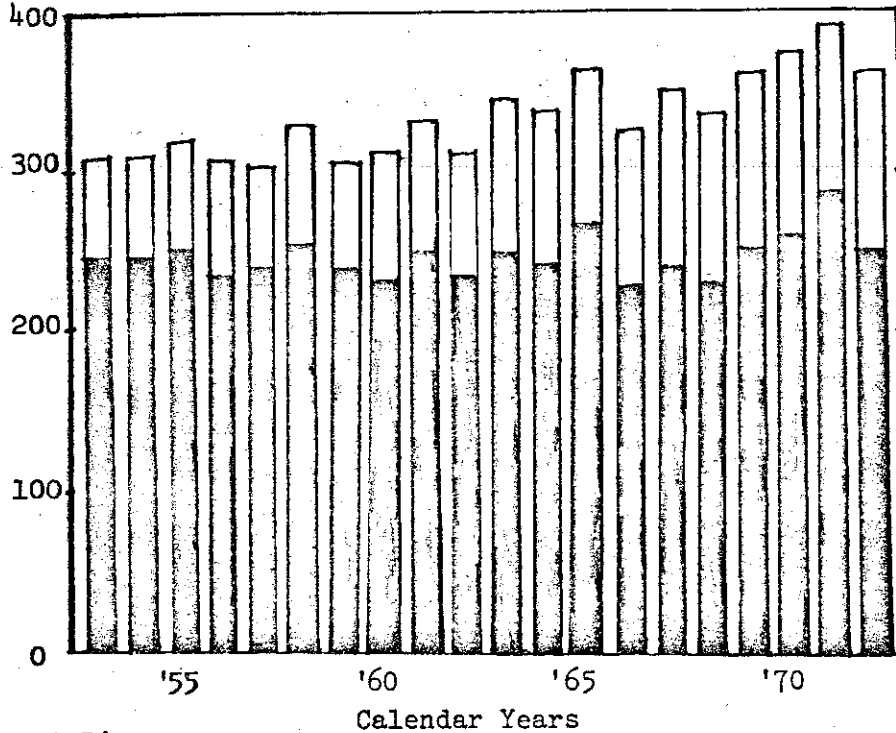


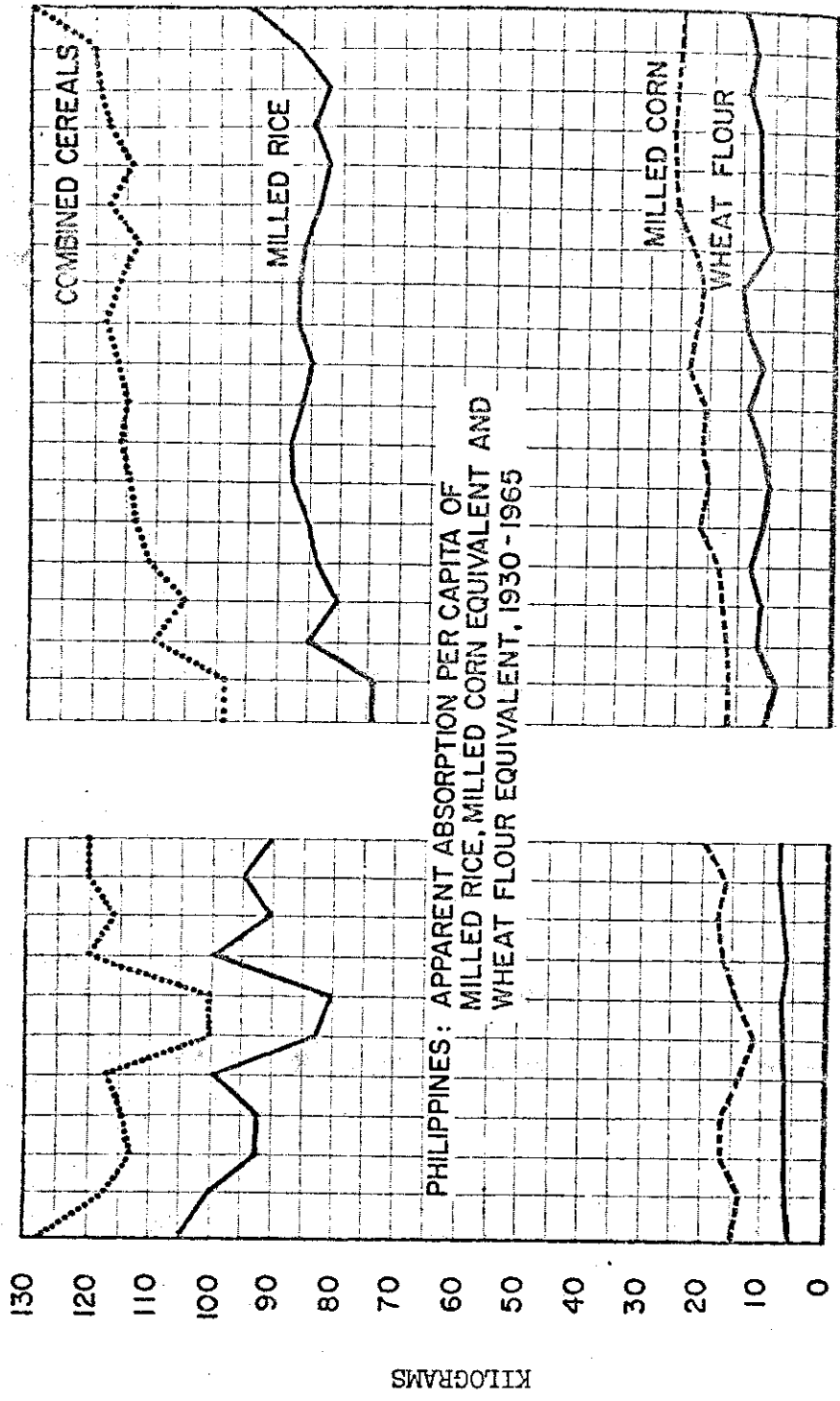
CHART 2. PER CAPITA NET AVAILABLE SUPPLY OF CEREALS, CALENDAR YEARS 1953 TO 1972*

Grams Per Day



*Source: The Philippine Food Balance Sheets, CY1953 to CY1972.

CHART 3.



Source: Golay and Goodstein, Philippine Rice Needs to 1990: Output and Input Requirements, p. 26.

crop year 1964-65 also was affected by special circumstances, namely the unprecedented import of 600,000 metric tons of rice which was the amount "certified" as the "shortage" in that year since 1965 was an election year.

The per capita absorption of corn has varied over the period following the war on an increasing trend.

The per capita absorption of wheat flour has been volatile from year to year since its importation is subject to import controls (3, p. 24).

The Philippine per capita absorption of milled rice over the post-war period has remained somewhat below earlier levels and has displayed basic stability with no increasing trend. On the other hand, per capita absorption of wheat flour and milled corn equivalent have been relatively unstable around an increasing trend. The net effect of these changes, therefore, has been to substitute both milled corn and wheat flour for rice in the diet of the average Filipino (3, p. 25).

B. Rice in the Household Budget [This section needs better data]

The proportion of the family budget spent on food declines as family income increases. Chart 4 clearly depicts Engel's Law. At the median family income, nearly 60 percent of family expenditures are on food; at the mean family income level, the proportion is just above 55 percent.

Estimated from a survey conducted, the results show that per capita intake of rice increases as income increases but the income spent on rice decreases as income increases (see Table 1).

In Chart 5, the lines show that as per capita income increases, the apparent absorption of milled rice decreases.

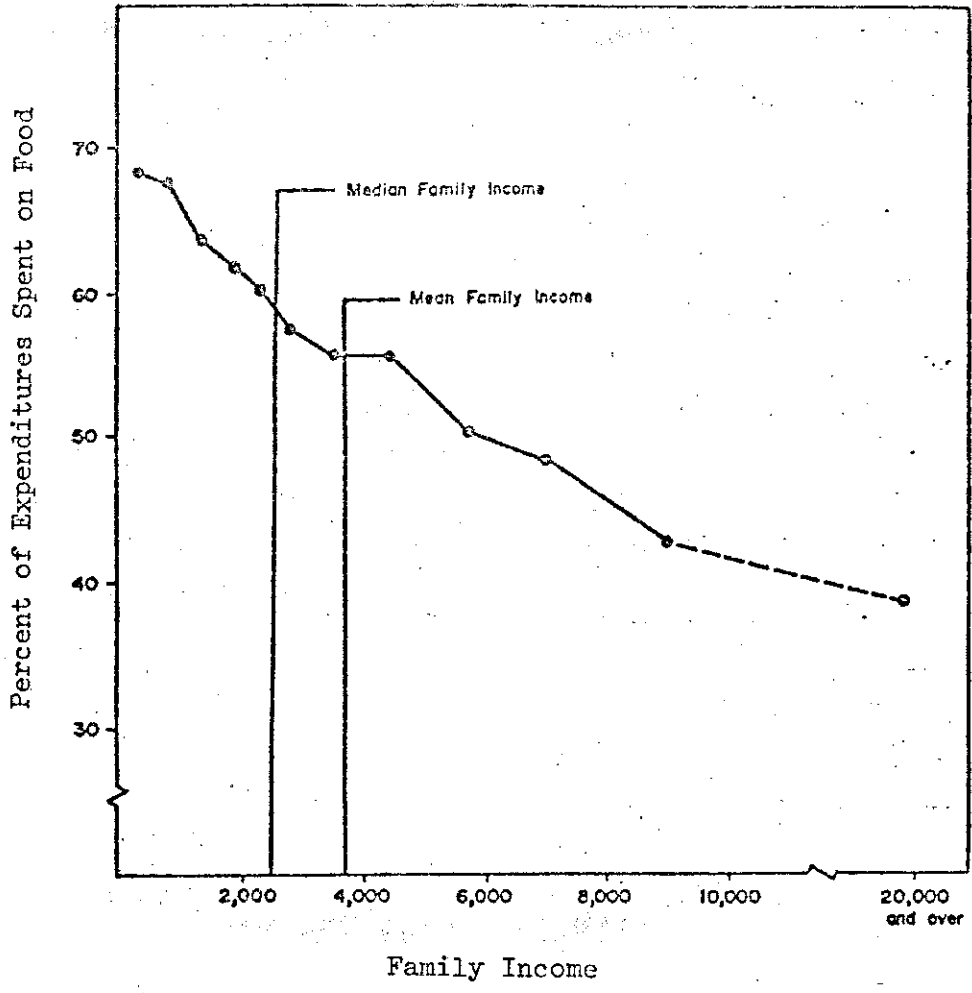
C. Rice Prices [This section needs further analysis on price support and fertilizer price policy]

The index of cereal prices remain below the retail price index of foodstuffs generally and substantially below the cost of living index (3, p. 30; see Chart 6).

The farm price of corn fluctuated above the farm price of rice and even exceeded the consumer prices.

As in most other developing countries, the price of the domestically consumed food staple is kept as low as possible in the Philippines in order to keep down wage goods and wages as a stimulant to development, especially for urban-industrial development (2, p. 21).

CHART 4. PROPORTION OF FOOD EXPENDITURES TO TOTAL FAMILY EXPENDITURES, 1971



Source: Tan and Tecson (1974).

TABLE 1. PHILIPPINES: ESTIMATED PROPORTION OF INCOME
SPENT ON CONSUMPTION OF RICE*

Per Capita Income (pesos)	Kilograms per Capita	Cost (pesos)	Percent of Income
< 400	92.9	161.6	40
400 - 799	99.3	172.8	28
800 - 1,499	104.4	181.6	16
> 1,500	106.8	185.8	12

*Source: Philippines, Department of Agriculture, Special Studies
Division, 1975.

CHART 5.

PHILIPPINES: PER CAPITA REAL INCOME AND PER CAPITA ABSORPTION OF CEREALS, 1947-1965 (INDEXES, 1951-55 = 100)

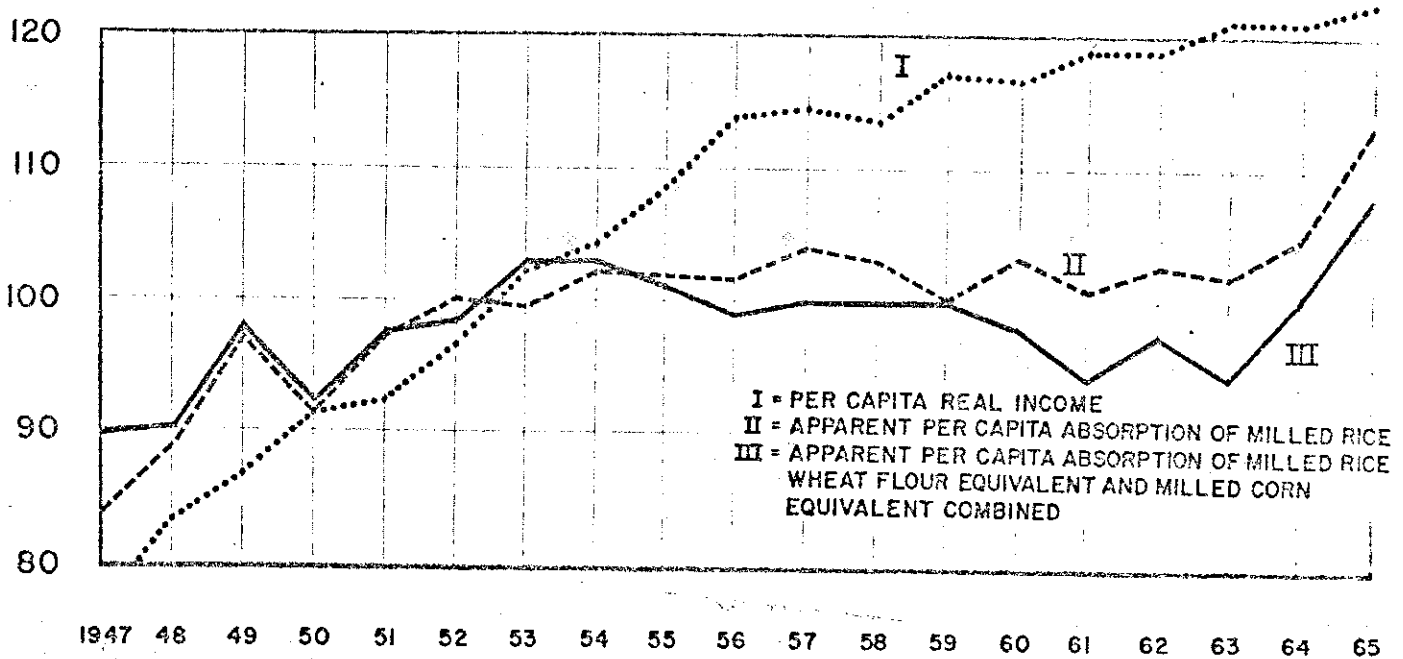
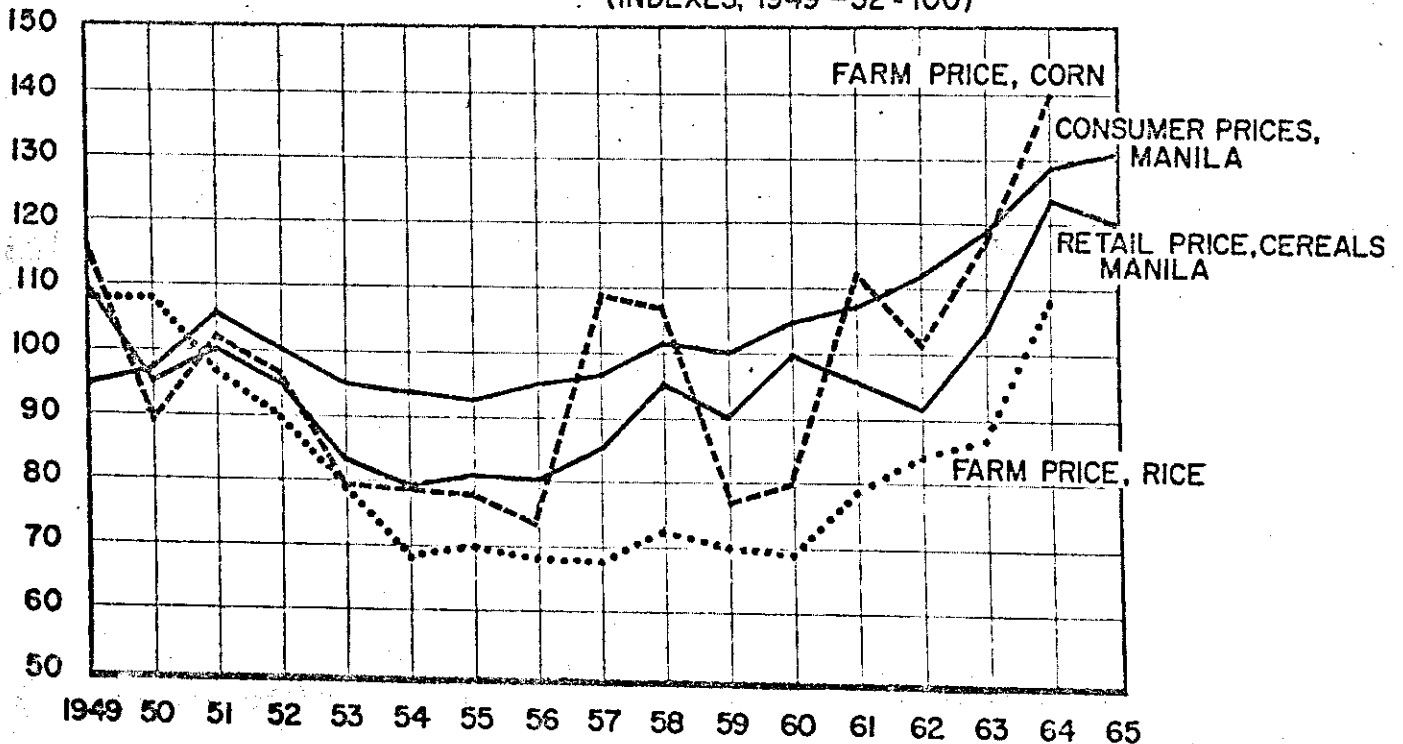


CHART 6. PHILIPPINES: POSTWAR MOVEMENTS IN RELATIVE PRICES OF CEREALS AND CONSUMER PRICES GENERALLY (INDEXES, 1949-52 = 100)



Source: Golay and Goodstein, Philippine Rice Needs to 1990: Output and Input Requirements, pp. 29, 31.

The main objectives of the rice policy are: 1) providing a fair return to small and poor rice farmers by means of a floor price and narrowing the seasonal range of prices and, 2) providing a stable and reasonably low-priced supply of rice to consumers to maintain urban stability and continued investment in economic development by means of a ceiling price; 3) relating domestic prices to international prices and of allowing a reasonable range of seasonal prices in order to encourage investment in storage facilities (2, p. 23).

For many years, the world price of rice was well below the domestic price and the government importing agency was able to make a profit on domestic sales especially since it would be then selling close to the ceiling price. However, more recently the world price has risen so sharply that the financing supplied by the Philippine National Bank is in danger of accumulating in a long-term debt. Funds have always been limited such that influential farmers were the first in the queue for the supporting funds whenever the market price sank below the support price (2, p. 29).

D. The Philippine Rice Culture

There are two methods of rice culture that have been introduced: the Masagana and the Margate systems. The Masagana and Margate systems follow the traditional procedures of rice culture but with significant improvements particularly in transplanting and weeding. In the traditional system uniform distances between plants are not observed. However, the Masagana system recommends uniform spacing between hills (depending on the soil and on the rice variety planted). The Margate system follows a strict distance of 50 centimeters between hills. The uniform straight spacing of the Masagana and Margate methods allow for semi-mechanical weeding, a task which the traditional method usually omits. Also, the traditional method usually requires 25 gantas of seeds to plant a hectare, as against 10 gantas for the Masagana and four to five gantas for the Margate systems. The Masagana system, which incorporates proven good practices in rice culture is more widely adopted than the Margate since the farmer system is being demonstrated and propagated by the government.

The rice crop areas are classified as irrigated lowland, unirrigated lowland and upland. The available land area for rice production is rapidly approaching a limit such that many farmers producing on subsistence levels plant rice for their own consumption on the only available land such as the upland (4, p. 110).

In order to increase food production per unit of land area in a given year, several cropping systems are being extended to the farmers for adoption: direct seeding, double cropping, rice-fish culture and multiple cropping. All of these cropping systems are based on rice as the principal crop.

The cropping patterns are based on the two distinct cropping seasons--May to October and November to April. November to April is the regular season from which about 52 percent of the rice crop is harvested.

E. The Adoption of High Yielding Varieties (HYVs)

The rapid increase in output of rice in the first half of the twentieth century was the result of new areas being brought under cultivation. In the 1950s the 115 percent increase in growth in output is explained by the expansion of land. During the 1960s the changes in yield provided for the growth in output (see Table 2). However, the growth of production decelerated for rice from 3.7 percent to 2.3 percent growth per year and from 6.4 to 5.4 percent growth for corn per year. The increase in output due to increase in output per area shows that land productivity is increasing (see Table 3).

The emergence of IRRI varieties over other improved varieties occurred quickly in the Philippines in contrast to the other countries of monsoon Asia. This was probably due to the fact that the Philippines is the home of the International Rice Research Institute (IRRI) (2, p. 77).

Table 2 shows the amount of land planted to HYVs and its percentage contribution to the total production. The data also shows the effect of typhoons and tungro in 1969-70 and 1970-71 on total area harvested. The area planted to HYVs continued to increase and by 1971-72 the area planted to HYVs was 56 percent of total area harvested while its contribution to total production was 63 percent.

About 73 percent of the irrigated areas was planted to HYVs by 1971-72. In 1967-68 and 1968-69, the percentage of all paddy area under HYVs was the same as the percentage of lowland area under HYVs. After 1968-69, the rate of increase was faster on lowland than on upland areas. This could be attributed to the expansion of irrigation in lowland areas (2, p. 80).

With the adoption of HYVs, fertilizer utilization levels increased from 8 kilograms nitrogen (N) per hectare in 1965 to 26.82 kg. N/ha. in 1974, but not enough to meet the recommended rate of 80 kg. N/ha.

Despite increases in yield and production attributed to the adoption of HYVs, expansion of irrigation and adoption of improved cultural practices, the rice yields and production remained among the lowest in Asia (see Table 4). However, output growth due to increased yield was highest in the Philippines.

F. Land Tenure and Its Effects on Productivity

The Agricultural Land Reform Code was passed in 1963 with the major objectives of effecting land tenure reform, to improve the general welfare, and to increase the income of the farmers through the improvement of their productive capabilities. The two phases of the land reform

TABLE 2. PHILIPPINES: AREA, PRODUCTION AND YIELD PER HECTARE OF HIGH YIELDING VARIETIES (HYV) OF PADDY*

	1967-68	1968-69	1969-70	1970-71	1971-72
<u>Area (thousand hectares)</u>					
Total area harvested, all paddy	3,304	3,332	3,113	3,112	3,246
Percent of total area under HYV	21.2	40.6	43.5	50.3	56.3
Percent of lowland area under HYV	22	41	50	57	
Total area irrigated	1,309	1,483	1,346	1,471	1,332
Percent of irrigated area to total	39.6	44.5	43.2	47.3	41.0
Percent of irrigated area under HYV	34.0	61.6	61.4	67.0	73.4
<u>Production (thousand cavans)</u>					
Total production of all paddy	103,700	101,000	118,900	121,400	115,900
Total production of HYV	27,550	48,130	58,330	66,600	73,460
Percent of HYV to total production	26.6	40.5	49.1	54.8	63.4
<u>Yield Per Hectare (cavans/hectare)</u>					
All paddy	31.4	30.3	38.2	39.0	35.7
HYV	39.3	35.6	43.1	42.5	40.2
Other varieties	29.2	26.7	34.5	35.4	29.9
Proportion of HYV to other varieties	1.35	1.33	1.25	1.20	1.34

*Source: I. Palmer, The New Rice in the Philippines, Studies on the Green Revolution, No. 10, United Nations Research Institute for Social Development, Geneva, 1975, p. 81.

TABLE 3. PHILIPPINES: RICE AND CORN: DECOMPOSITION OF OUTPUT GROWTH INTO LAND AREA AND YIELD COMPONENTS, 1948/50-1958/60
1950/60-1967/69

(percent)

	Rice	Corn
1948/50-1958/60		
Annual growth rate of output	3.7	6.4
Percentage due to area changes	115	114
Percentage due to yield changes	-15	-14
1958/60-1967/69		
Annual growth rate of output	2.3	5.4
Percentage due to area changes	-3	49
Percentage due to yield changes	103	51

Source: ILO (1974), p. 444.

TABLE 4. PROPORTION OF OUTPUT GROWTH EXPLAINED BY INCREASED CROP YIELD AMONG FOUR ASIAN COUNTRIES

Country	Yield 1971-73 (M.T.)	Crop Area in HYV, 1970-71 (percent)	Output Growth	
			Annual, 1960-64 to 1968-70 (percent)	Proportion Explained by Increased Yield (percent)
India		15	2.0	57
Philippines	1.5	50	3.1	91
Burma	1.7	4	1.2	39
Thailand	1.9	2	5.3	47

Source: Randolph Barker, "The Economic Consequences of the Green Revolution in Asia," Rice, Science and Man, IRRI, Los Banos, Philippines, 1972, pp. 127-142.

were the abolition of share tenancy and the establishment of a leasehold system and the transfer of landownership to the cultivator. The Land Reform Code was designed to abolish share tenancy which was viewed as the deterrent factor towards increasing productivity (5, p. 259). However, as studies have shown, tenure status does not affect productivity and the commonly held assumptions need to be further studied. The shift from share tenancy to leasehold nevertheless increased the leaseholders income simply by obtaining the larger share of the harvest (5, p. 322).

The land reform program was further given priority under the New Society (the martial-law government enforced since September 21, 1972). A Presidential Decree was issued which formally shifted the government land reform program from the rental reduction stage to the land transfer stage wherein all rice and corn tenants are declared owner-operators through a 15-year amortization plan. Again, share tenants were viewed as economically worse off than owner-operators. However, studies that were made after the implementation of the program have shown that the owner-operators have the highest income among the tenure groups, not because they are more productive, but simply because they do not have any rental to pay. This again has disputed the government's position that land reform will provide the incentives to increase farmers' productivity and thus increase food production. Owner-operators and tenants are more or less equally productive. Therefore, the primary potential accomplishment of land reform is in the area of equity and not in productivity (1, p. 130).

Nevertheless, the land tenure system has been one of the significant causes of dissidence and it has created a great disparity in the income distribution and has always been regarded as an excuse for low productivity. It is, therefore, interesting how this kind of system came about and how the past administrations tried to meet the objectives of self-sufficiency and increasing farm income under this kind of land tenure system.

An historical background will be presented to trace the beginnings of land use patterns as well as rice cultivation.

III. GOVERNMENT POLICIES UP TO 1966

A. Pre-Spanish Occupation

Rice was introduced to the Philippines by the Neolithic farmers who came from Indo-China and South China about two thousand years ago. The rice terrace culture of the northern Philippines was brought by the Neolithic farmers who seem to have preferred the hilly areas to the flat. These Neolithic farmers were a crop-cultivating, irrigating, terrace-building people who knew and used bronze and gold; who brought the pig, millet and probably rice; who built houses of wood and thatch, and lived in villages; and who had the complex social patterns for group operation in land and water control (6, p. 5).

Elsewhere in the central to northern Luzon, different patterns of land use were brought in by the first Neolithic farmers. Two types of agriculture gradually developed throughout the southern occupied parts of the islands where different cropping patterns emerged as could be practiced in the different landscapes. A lowland variety of agriculture utilized moist margins particularly in and above alluvial estuaries. In the inland and hilly parts of northern Luzon a different type of land use emerged which is known as "shifting agriculture" or "caingin cultivation" wherein old fields are abandoned and new fields are cleared according to the soil fertility (6, p. 7).

Rice became an ideal crop in the Philippines since rice is highly suited to the hot moist climate and wide stretches of land which are naturally flooded at seasons and easy to irrigate by primitive and inexpensive means. The farmers found rice as a relatively safe crop because of its growing on flooded fields which provide a control over diseases and pests and its relatively low risk to drought. The favorable soil and climatic conditions account for rice culture in almost all parts of the Philippines. The Philippines has two general types of seasons--the dry and the wet (rainy) and this climate lends well to rice cultivation since water is needed during planting and a dry spell during harvest (7, p. 27).

In a typical small-scale subsistence type of agriculture as in the Philippines, farmers use their available resources of land, labor and a little capital to produce mainly for home consumption and sell little amount of farm produce for purchase of little food or other commodities. The farmers motive is strong to concentrate upon a crop that will provide more food per unit area, involve a minimum risk of crop failure and that will provide food that can be successfully stored. These considerations provide rationale to the farmers' adoption of rice as their principal crop (7, p. 26).

Rice is well accepted as the principal cereal since it is essentially mild, digestible and it makes an ideal base for combination with more highly flavored food substances (7, p. 126).

B. Spanish Occupation: 1570s to 1896

In former years, the rice cultivation was and had been the principal industrial occupation of the people. As far as can be ascertained, rice was the only cultivated crop produced by the natives when the islands were first discovered by the Spanish explorer, Magellan, in 1521 and for three centuries of Spanish sovereignty it was the principal product. For many years surplus crops were produced and the grain was exported in large quantities. But as the production of more profitable crops increased, the cultivation of rice diminished and from becoming an article of export, it changed to one of importation, as the population increased (8, p. 120).

In 1857, import duties on rice were abolished, and since then the deficiency has been made good by importation, although small quantities have been occasionally exported (8, p. 120).

The opening of the Philippines to the world trade led to a great change in the economy. The demand abroad for tropical products such as hemp, sugar, copra, tobacco and coffee encouraged the clearing and cultivation of more land areas in order to supply the foreign market.

The Spaniards promoted planting of export crops which can be easily taxed, centrally managed and required less labor than rice production. With the production of more profitable crops, the importation of rice became relatively cheaper to feed the workers in the plantations.

The cultivation of export crops was further enhanced with the introduction of the encomienda (large estates) system wherein the Spanish King granted to loyal Spanish civil and military servants large estates as rewards for their services. This became the forerunner of the haciendas which later dominated the rice and sugar cultivation which contributed to the unequal distribution of land. The encomienderos became the landowners who later controlled the economic and political power of the country.

The Spaniards developed a land system which operated to maintain and solidify the position of the landed aristocracy. The land grant practice introduced the pattern of large holdings among the wealthy, the privileged and the Catholic Church. The system also made almost all the cultivated or utilized lands into private property. Private ownership through issuance of land titles was exploited by the rich and powerful who further expanded their estates (6, p. 19).

C. The Philippine Revolution: 1896-1898

The Philippine Revolution evolved from the national movement against the Church which exercised economic and political power and the feudalistic tendencies of the Spanish landed aristocracy. One of the major objectives of the Revolution was to free the tenants from their bondage to the landlords. However, the farmers' hopes were not realized with the coming of another colonizer.

D. The American Administration: 1898-1941

The Philippine Revolution was short-lived due to the coming of the Americans who negotiated with the Spaniards regarding the colonization of the country. The administration of the new colonial power did not alter the traditional rules which governed the old relations between tenants and landlords. However, the American administration laid down a basic policy that aimed at giving the land to the Filipinos in small landholdings and at preventing plantation agriculture and corporate landholdings of tremendous size. This has been circumvented but it was effective in preserving the reserve lands for Filipinos (6, p. 116).

The first move towards land reform was through the policy of purchasing large landed estates and resale to cultivators. The first purchase was from the Roman Catholic Church in 1904 which is referred to as friar lands. This policy was revived under the administration of

President Quezon in his "Social Justice" program. Before the program was dropped, about two percent of the area of tenant-occupied farms in 1948 was acquired (3, p. 273).

When the United States took over the administration of the country, some of the few land records which existed were destroyed or lost. The wealthy and influential families were able to get new claims documented and even increased their holdings. The poor, uneducated, rural and migrating groups were caught in a more complex system of landownership.

The land policy under the American administration has failed, firstly, because the influential Filipinos took advantage of their positions to circumvent the laws, and secondly, the Americans did not fully implement the law since it needed the support of the educated-landed aristocracy to administer the country.

Therefore, the land tenure problems still prevailed under the American administration.

The country also continued to import rice since the cultivation of export crops was more profitable and easy to market through the special trade relations with the United States. The U.S. needed the raw materials for their factories and markets for the manufactured goods.

The export earnings were also needed to support the colonial government.

The outbreak of rinderpest which reduced the work animal population by 40 percent further reduced rice production since much of the rice land has been allowed to remain idle. In the Philippines a carabao is highly essential in rice production. In 1911-12, heavy importation was done due to drought and again in 1913-14 due to drought and typhoon. See Chart 7. Failure to obtain adequate rice supplies was also due to lack of irrigation facilities and pest and disease infestation (9, p. 38).

Due to the improved health, nutrition and sanitation services, there was sharp decline in the death rate. And with the increasing population and an erratic rice production trend, self-sufficiency was never attained under the American regime.

Despite the nonattainment of self-sufficiency in rice, the American administration brought about significant contributions to agriculture. The Americans set up the administrative machinery to run the agriculture sector, an educational and research system, credit program and data collection.

The first agricultural college was founded as one of the branches of the University of the Philippines which is a state-run university. It has produced the leading agricultural scientists and the basic research on crop production in the Philippines.

DOMESTIC PRODUCTION & IMPORTS (000)

LEGEND:
 DOMESTIC
 IMPORTS
 TOTAL SUPPLY
 POPULATION

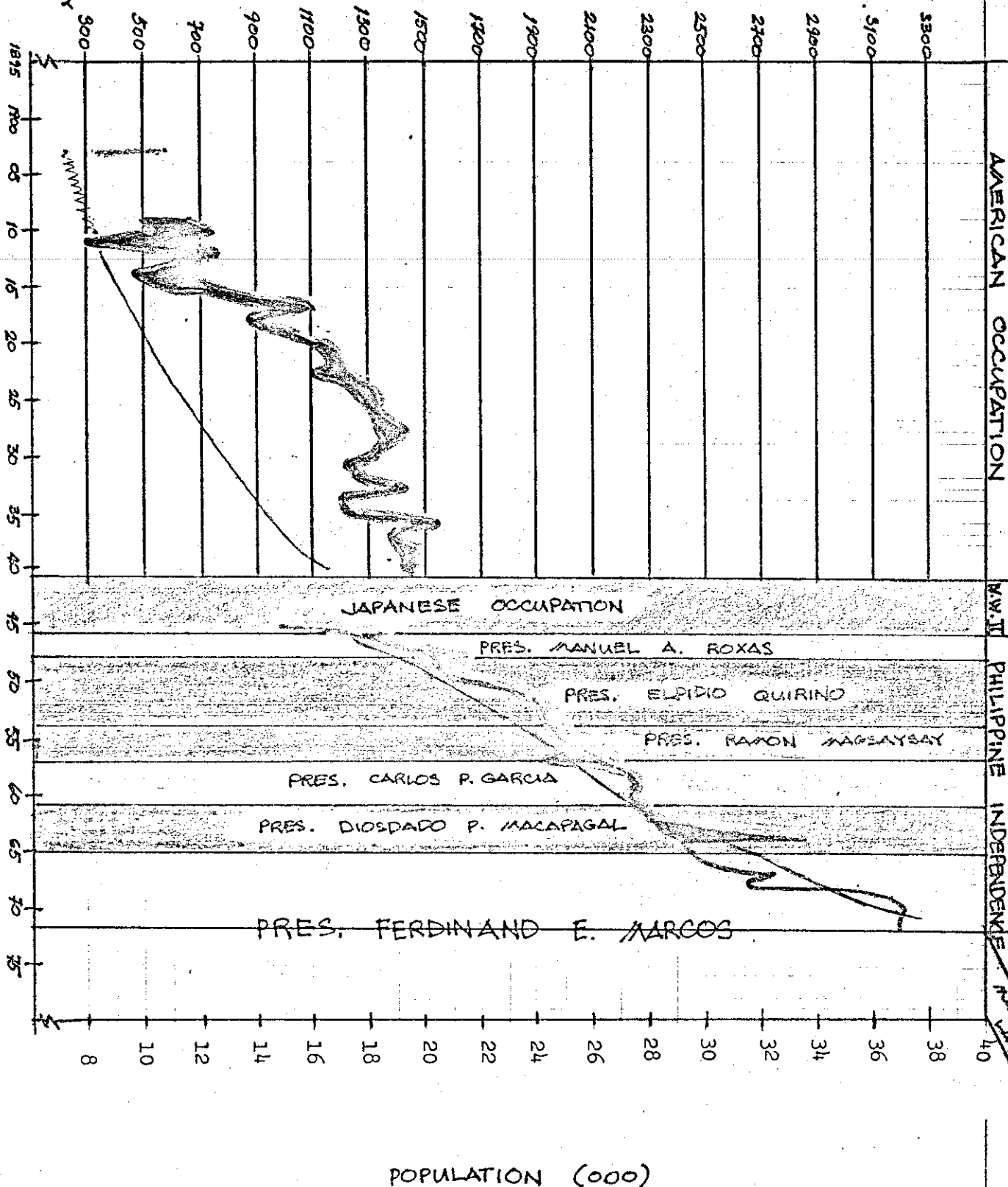


CHART 7. RICE PRODUCTION & IMPORTS IN THE PHILIPPINES, 1909 - 1974.

The network of experiment stations for plant propagation, research, and pest control has been established under the Department of Agriculture.

Statistical reporting was started in 1903 under the American regime. The first survey was conducted and it tried to determine the tenancy arrangements in the different parts of the islands. The most frequent was sharecropping and another is cash tenancy. However, the data gathered was not very reliable due to the newness of American control, the inability of census to cover the islands completely and the lack of definitions of what constituted an owner, tenant, and a squatter. However, the statistical design and data collection system was organized and institutionalized (6, p. 126).

The first agricultural bank was established by the government in 1908 but its location in Manila prevented it from reaching the rural areas. The bank was reorganized in 1916 into the Philippine National Bank and the small agricultural loans decreased significantly. Commercial banks and the Central Bank were set up, but it was only the Philippine National Bank which had a real system of branches outside Manila although it has never engaged itself in credit programs to small farmers (6, p. 135).

E. The Japanese Occupation

What was to have been a specific ten-year period of preparing the Philippines for independence was interrupted by World War II with its tremendous destruction of agriculture, industry, transport, housing and personal well-being. The Japanese occupied the Philippines from 1942-1945 and left a neglected agriculture and a desolate countryside. The absence of peace and order conditions provided the cause for the people to organize the HUKBALAHAP "Hukbo Laban se Hapon" (The Nation's Army Against the Japanese) which turned subversive due to tenancy problems in the major rice producing region in the country.

F. The Philippines Became Independent

Manuel A. Roxas (1946-1948)

The Philippines received its independence before the country could launch a program of rebuilding. To start the work, a survey was done on reconstruction needs, rehabilitation programs, reorganization of local governments, especially in the remote areas, and crop planting. A large amount of Philippine government funds was added to the United States war-damage funds to rebuild infrastructures and to stimulate the industrial, commercial and agricultural enterprises of the country (6, p. 225).

As a step toward restoration of law and order, President Roxas banned the HUKBALAHAP on the grounds that its members were engaged in subversive activities. Government expenses were incurred in the military operations against the HUKBALAHAP without a sign of ending the dissident movement.

Under the Roxas administration the Philippine National Bank was reestablished to extend agricultural loans but its branches were limited and loans were concentrated on export crops.

As shown in Chart 7, the country imported sizable amounts of rice in order to meet its requirements. It should be understood that the agriculture sector was still recovering from the destructive losses of World War II. The area and production were below prewar levels, but they were on an increasing trend. The yield per hectare was maintained at the prewar level.

Elpidio Quirino (1948-1953)

The Administration of President Quirino inherited the problem of the HUKBALAHAP (HUK). Extraordinary expenses were encountered in the enforcement of law against this group of dissidents. And the financial situation of the government grew worse, such that some projects were cancelled and teachers' salaries could not be paid. This prompted the President to request the United States for a survey mission which came up with the Bell report. The mission's recommendations provided a broad outline of a series of institutional reforms and policy changes which guided the Quirino's administration (10, p. 81).

The most important accomplishment of the Quirino administration was reducing the HUK threat.

Another major achievement under the administration was the establishment of the Central Bank and its governing Monetary Board. This made possible the creation of the rural banking system to service the credit needs for agricultural development. For the improvement of the marketing operations, the Agricultural Credit and Cooperative Financing Administration (ACCFA) was created to extend credit to members of Farmers Co-operative Marketing Associations (FACOMAS).

However, Quirino's administration did not pursue land reform as its policy. But an administrative machinery was set up for land survey and title registration.

The Land Settlement and Development Corporation (LADECOR) was established but it failed due to lack of funds, graft, mismanagement, and incompetence.

The Bureau of Agricultural Extension Service, which is currently an important agency in the implementation of food production programs was established during Quirino's administration.

Ramon Magsaysay (1953-1957)

The Magsaysay administration has been referred to as the "Era of the Common Man" due to his personal concern for the rural people and for his sincere efforts to implement agriculture reform. He organized the National Rehabilitation and Resettlement Administration (NARRA) with the hope that internal migration and resettlement would relieve congestion and agricultural poverty (10, p. 89).

Under his administration, the Philippine Rice Tenancy Act, Commonwealth Act No. 178 and Agrarian Relations Act--all legislations to improve the cultivators claim to agricultural product were passed.

In order to help settle and regulate tenancy relations, the Court of Agrarian Relations was established.

However, the agrarian reform movement failed due to the political power of the legislative landowners who also subverted legislation with ambiguities and escape clauses. The lawmakers had no real intention of enforcing the land reform laws which would cut down their economic base (11, p. 20).

President Magsaysay's focus on the development of the rural sector brought about the Community Development Program which was funded and implemented through the Office of the President.

In spite of the failure to implement land reform, other programs were implemented such as the Agricultural Co-operative Credit and Financing Administration and the liberal support of the Rural Banks which provided agricultural credit extensively (10, p. 92).

The most important achievement in President Magsaysay's administration was that his leadership disturbed the patterns of landlord-tenant relations and that he set the trend for focusing on the development of the rural sector.

There was no comprehensive rice program under the Magsaysay administration. As seen in Chart 7, self-sufficiency was not attained but production was increased during and dropped at the end of his administration.

Carlos P. Garcia (1958-1962)

It was under the administration of President Garcia that an administrative machinery was set up to centralize operations and funds to attain self-sufficiency in rice and corn. The Rice and Corn Production Coordinating Council (RCPCC) was established (now the National Food and Agriculture Council). A comprehensive program was planned and implemented through which fertilizer and certified seeds were distributed, price subsidies implemented and research and extension services systematized (11, p. 23).

Despite the government's administrative efforts to achieve self-sufficiency, the country still had to import rice since domestic production was short of meeting total requirements. However, it was under Garcia's administration where the area under rice cultivation increased and extended to marginal lands. The growth rate in the increase in area cultivated moved faster than the population growth rate although the population increased rapidly through 1959. There was a decrease in average production which should have resulted from the cultivation of marginal areas which was offset by the production from the improvements in irrigation of the more productive and fertile soils.

Diosdado Macapagal (1962-1966)

The Macapagal administration is remembered for the passage of the Agricultural Land Reform Code and its initial implementation to break the landlord-tenant relationship. The land reform program was viewed as an instrument to increase production.

With the land reform program, a Crash Rice Production Program was implemented with an extensive use of agricultural extension agents to deliver the program.

The program was "packaged" in the sense that it had price support policy, fertilizer subsidy, irrigation and drainage projects, basic and applied research, pest and disease control and selected-superior rice varieties.

However, the land reform program was not successfully implemented due to lack of funds and administrative machinery to run it. The fertilizer subsidy program failed due to anomalies and red tape.

Although there was increase in production, as seen in Chart 7, tremendous amounts of rice were imported not based on supply and demand conditions but on political needs since the last year of Macapagal's administration was an election year.

Ferdinand E. Marcos (1966-1968; 1969-1973)

It was during President Marcos' administration that the country attained self-sufficiency in rice. The administrative machinery was strengthened through the National Food and Agriculture Council. A comprehensive program from production to distribution was seriously implemented. The government's objective was to attain self-sufficiency and its political determination spelled the difference from the past administrations' outlook on food self-sufficiency.

But despite the government's sincere and determined efforts to attain self-sufficiency, increases in production were accompanied by increases in population and increases in the costs of inputs.

The government must continue doubling its efforts in order to attain self-sufficiency year in and year out. With the increase in population that would present a major burden on resources and implementation capacity to increase rice production, how much should the country produce and how could it be produced?

IV. DEMAND PROJECTIONS

[This section needs more stable assumptions]

A. Population Projections

The increase in population in the Philippines is primarily the result of a high rate of natural increase, that is, an excess of births over deaths. Crude birth rates (number of births per thousand persons) have always exceeded the crude death rates, except for the three years 1903, 1918 and 1919 (Chart 8).

Better health, sanitation and medical practices and facilities improved diet and education have all contributed to the fall in death rates in the Philippines. It was estimated that the death rate dropped from about 85 percent between 1903 and 1960. In spite of the decline in crude death rate, the infant mortality rate remains high (1, p. 54).

The population projections in Table 5 differ chiefly with respect to their assumptions about fertility. Fertility may be summarized in the single statistic of the total fertility rate (TFR) which is the number of children born to an average woman who survive through the childbearing years. The determinants of fertility rates are physiological factors, economic, social and cultural.

The low projection provides an optimism that the government's family planning programs would be effective.

B. Demand Projections (Tables 6 and 7)

In a normal year, rice consumption in the Philippines is about 90 kilograms per capita. Therefore, rice requirements may range from 5.2 to 6.0 million metric tons by 1990 based on the low to high population projections--if the possibility of increased consumption due to higher incomes or improved nutritional standards is disregarded.

On a high projection of 100 kilograms per capita consumption which was based on the highest per capita of 98.8 kilograms reported in 1971, the requirements would range from 5.7 to 6.7 million metric tons by 1990.

In palay terms (Table 7) the production level may range from a low of 8.2 metric tons to a high of 10.6 metric tons.

This indicates that rice production must be doubled to meet self-sufficiency level. The area under cultivation cannot be doubled and increases in output will depend on efficient use of resources. The problem that the government faces is how to manage the present resources.

V. THE MASAGANA 99 PROGRAM

The Masagana 99 Program was launched as a "program for survival" in the light of the worst rice situation the Philippines has suffered when production levels were greatly reduced by typhoons, floods and tungro in crop years 1970-71, 1971-72 and 1972-73. Rice was imported at very high

CHART 8. CRUDE BIRTH AND DEATH RATES PER 1,000 POPULATION
PHILIPPINES, 1903-1990

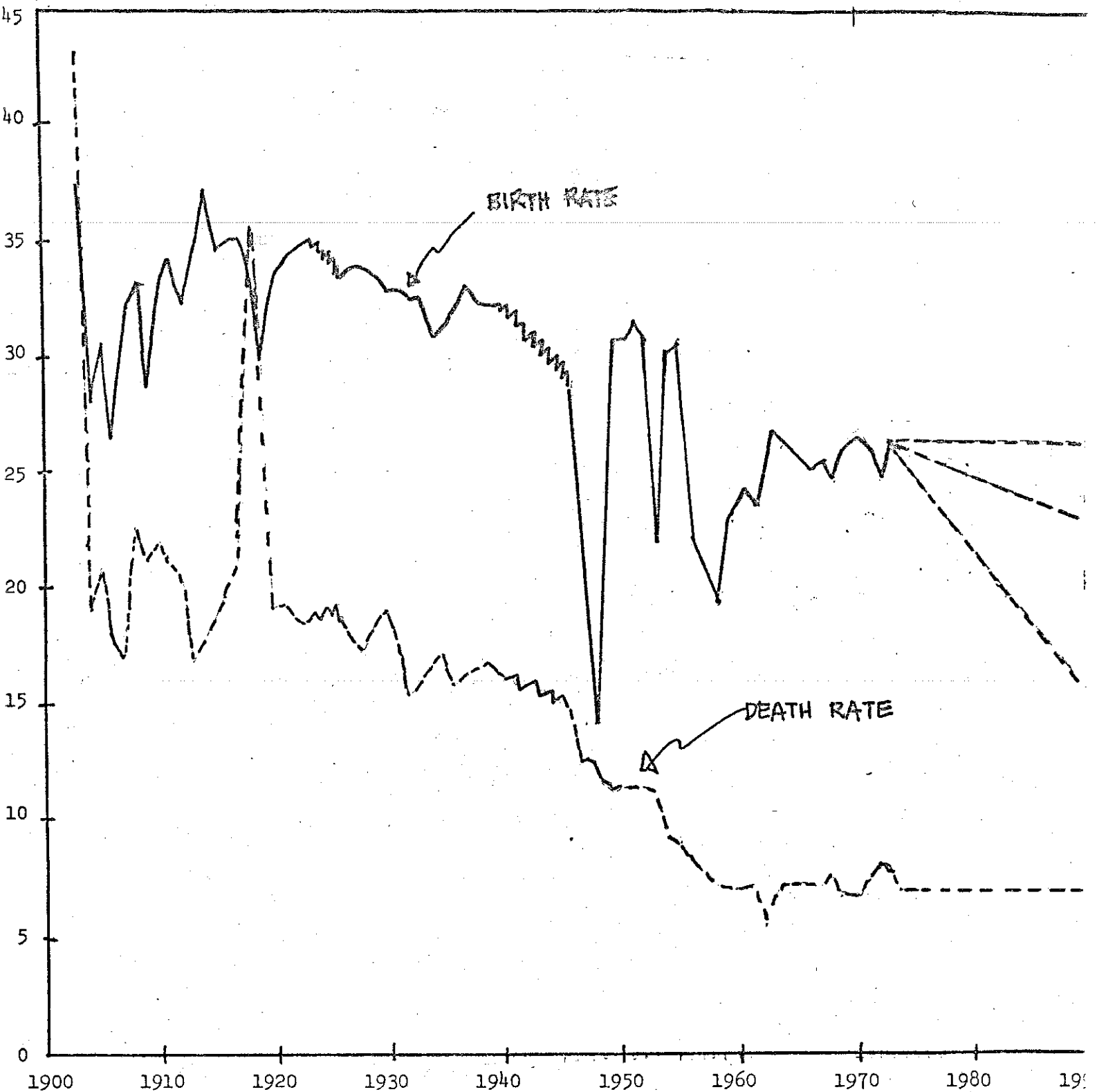


TABLE 5. PHILIPPINES: POPULATION PROJECTIONS,^{a/} 1980-1990

Year	Fertility Rates ^{b/}			Population Projections		
	Low	Medium	High	Low	Medium	High
(millions).					
1970	2.7					
1975	2.5					
1980	2.2	2.5	2.6	50.7	51.5	51.7
1985	2.0	2.4	2.6	55.5	57.7	58.8
1990	1.6	2.3	2.6	57.7	63.9	66.9

a/ Computed using a base population of 45.5 in 1975.

b/ Assumes a 7 percent death rate.

TABLE 6. PHILIPPINES: RICE DEMAND PROJECTIONS, 1980-1990

(thousand metric tons)

Year	Per Capita Consumption (kilograms)	Low ^{a/}	Medium ^{a/}	High ^{a/}
1980	90	4,563	4,635	4,653
	100	5,070	5,150	5,170
1985	90	4,995	5,193	5,292
	100	5,550	5,770	5,880
1990	90	5,193	5,751	6,021
	100	5,770	6,390	6,690

a/ Based on the population projections in Table 5.

TABLE 7. PHILIPPINES: PALAY DEMAND PROJECTIONS,^{a/} 1980-1990

Year	Per Capita Consumption (kilograms)	Low ^{b/}	Medium ^{b/}	High ^{b/}
1980	90	7,215	7,329	7,358
	100	8,017	8,144	8,175
1985	90	7,898	8,212	8,368
	100	8,776	9,124	9,298
1990	90	8,212	9,094	9,520
	100	9,124	10,104	10,578

^{a/} Converted from Table 6 at .6324 (.68 milling recovery times .93 palay milled)

^{b/} Based on population projections in Table 5.

prices. For the first time in the Philippine history, rice was allocated and distributed and people had to consume rice and corn mixture. To the Filipinos, rice is the "staff of life" and rebellion may possibly arise from this kind of crisis.

As a result of this crisis Masagana 99 was launched in May 1973. The word Masagana means bountiful and 99 was the yield target expressed in sacks (cavans) of palay per hectare or about five tons per hectare.

The program is composed of five major instruments of change:
1) 16-step package of technology, 2) noncollateral, low-interest loans, 3) extensive agricultural extension system, 4) strong administrative machinery and 5) effective price support system.

The government set-up was reorganized from the "barrio" or village up through the provincial and national level. See Chart 9. At the top is a National Management Committee which is composed of representatives from the cooperating public and private agencies. The Committee is supported by a Technical Advisory Committee and an Information Committee.

A. Evaluation of the Masagana 99 Program

[This section needs updated data and more in-depth analysis, possibly by region]

The data used to evaluate the performance of the Masagana 99 are based on the annual surveys conducted by the Special Studies Division of the Department of Agriculture. The surveys were done on participants and nonparticipants operating in the same production areas.

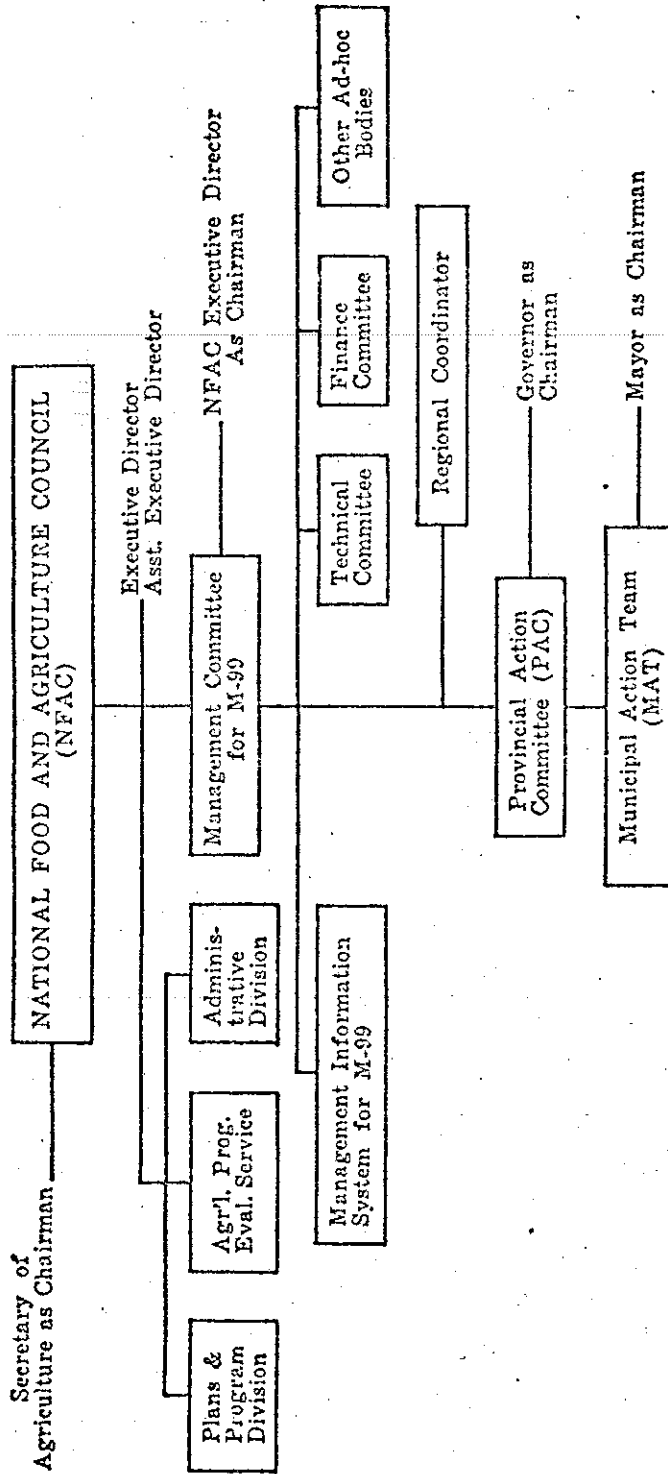
Yields (Table 8)

During the first two phases of the program under review, the participants of the program obtained higher yield levels than nonparticipants. However, the yield differences between the two groups were higher during Phases III and IV. This could imply that the participants in the initial implementation of the program did not follow the complete package of technology and only selected some practices which involved lower risks. However, the trend in growth in outputs were the same for the participants and nonparticipants which showed that both groups followed the same risk aversion logic although the participants had more access to better technology and government assistance. The continued yield increases for nonparticipants could imply that they were able to obtain and use high-yielding varieties. This access to the new technology means that the impact of the program does not only benefit the participants but also the nonparticipants.

Disposition of the Crop (Table 9)

This table shows that the participants sold more than the nonparticipants. This may be due to the differences in yields as well as hectares where it was higher for nonparticipants. However, the differences are relatively small. Nevertheless, the volume directed to the market increased.

CHART 9. ORGANIZATIONAL STRUCTURE FOR M-99 PROGRAM*



Note: 1) The NFAC is a coordinating body not only for rice production but also for other foodstuffs. The major agencies involved in M-99 program at the nation and local levels are: Bureau of Agricultural Extension (for extension work), Bureau of Plant Industry (plant pest control), Bureau of Soils (for soil analysis), Bureau of Agricultural Economics (for statistics and the management information system). Supporting agencies are the PNB and rural banks (for credit) and the NGA (for marketing and distribution).

Note: 2) Compared to the Council where only the government sector is represented (with the exception of IRRI), the M-99 Management Committee includes the private sector and foreign agency representatives.

Source: National Food and Agriculture, Philippines, p. 25.

TABLE 8. AVERAGE YIELDS PER HECTARE, PARTICIPANTS AND NON-PARTICIPANTS

Phase	Participants		Non-participants		Difference in favor of participants (Cavans of 50 kilos)
	Number reporting	Cavans of 50 kilos per hectare	Number reporting	Cavans of 50 kilos per hectare	
I	952	54.1	470	47.7	6.4
II	?	54.7	?	45.0	9.7
III	940	63.2	408	51.4	11.8
IV	670	73.5	304	54.8	18.7
V	<u>Per Hectare Harvested</u>		<u>Per Hectare Harvested</u>		
	735 Irrigated	66.9	334 Irrigated	57.1	9.8
VI	197 Rainfed	49.7	108 Rainfed	42.5	7.2
	399 Irrigated	63.9	313 Irrigated	52.1	11.8
	78 Rainfed	44.8	61 Rainfed	36.9	7.9
V	<u>Per Hectare Harvested</u>		<u>Per Hectare Harvested</u>		
	735 Irrigated	70.0	334 Irrigated	N.A.	
VI	197 Rainfed	51.9	108 Rainfed	N.A.	
	499 Irrigated	65.0	313 Irrigated	N.A.	
	78 Rainfed	53.2	61 Rainfed	N.A.	

SOURCE: SPECIAL STUDIES DIVISION, DEPARTMENT OF AGRICULTURE, PHIL.

Phase I May - Oct '73
 II Nov '73 - Apr '74
 III May - Oct '74
 IV Nov '74 - April '75
 V May - Oct. '76
 VI Nov '76 - Apr. '77

TABLE 9. PHILIPPINES: PRODUCTION PER FARM AND PROPORTION SOLD, MASAGANA 99 PROGRAM

Phase	Participants		Nonparticipants	
	Cavans Produced per Farm	Percent Sold	Cavans Produced per Farm	Percent Sold
I and II (two crops)	147.6	39	111.0	35
III	116.1	41	83.8	32
IV	129.8	41	86.6	35
V Irrigated	136.6	43	107.1	40
Rainfed	85.7	37	79.3	34
VI Irrigated	118.0	43	93.7	40
Rainfed	79.3	42	55.9	27

Loans and Repayments (Table 10 and 11)

The overall repayment rate for Masagana 99 loans is nearly 78 percent. The repayment rates for the first two phases were high. Loan collections declined in the later phases which may be due to the corresponding decreases in yields due to bad weather, occurrence of pest and diseases as well as institutional changes. However, the repayment rates may not appear to be depressingly low if compared to commercial-collateralized loans and considering the thousands of farmers involved and the underlying factors in a noncollateral credit program.

Benefits from the Masagana 99 Program (Table 12)

Analyzing the cost benefits accrued from the program, one may take a simple and direct view by comparing the government costs, value of total output and the importation cost of the incremental production.

From this point of view, one may easily conclude that the government is better off with the big savings on foreign exchange.

However, the most significant accomplishment is that the country became self-sufficient. By 1975-76, the third year of the program, the Philippines reached self-sufficiency. Compared to past programs, Masagana 99 was well-supported by the government and there was a political will to achieve its objectives. This political will has reached the farmers sensitivities to respond favorably. The new political climate has changed the farmers' attitudes toward the government. In the past, there was lack of continuity in policies, policies were legislated but not implemented due to lack of funds or its implementation was circumvented by politicians with vested interests to protect.

TABLE 10. PHILIPPINES: TOTAL LOANS GRANTED BY SOURCE AND PHASE AS OF SEPTEMBER 30, 1976, MASAGANA 99 PROGRAM

Source	Phase						Total
	I	II	III	IV	V	VI	
	(million pesos.)						
Rural Banks	150.0	113.4	283.4	268.0	176.3	74.1	1,065.2
Philippine National Bank*	175.1	91.2	273.9	155.9	178.3	67.0	942.3
Agricultural Credit Administration	18.5	7.6	19.3	8.2	12.6	3.2	69.4
TOTAL	343.6	212.2	576.6	432.1	367.2	145.2	2,076.9

*As of October 31, 1976

TABLE 11. PHILIPPINES: REPAYMENT RATES BY SOURCE AND PHASE AS OF SEPTEMBER 30, 1976, MASAGANA 99 PROGRAM

Source	Phase					
	I	II	III	IV	V	VI
	(percent)					
Rural Banks	98	97	93	80	75	72
Philippine National Bank	90	90	72	69	56	62
Agricultural Credit Administration	87	66	62	60	69	53
AVERAGE	93	92	81	76	64	67

TABLE 12. PHILIPPINES: ESTIMATED BENEFITS FROM MASAGANA 99 PRODUCTION INCREMENT

Phase	Hectares Harvested	Total Production	Quantity ^{1/}	Local Value ^{2/}	Local Value ^{3/} Less Cost	Importation Cost ^{4/}
		(thousand tons)			(million pesos)	
I	620.2	2,115.9	1,015.1	812.1	672.7	2,182.2
II	501.1	1,683.3	793.9	635.1	467.6	2,549.7
III	926.1	2,794.1	1,150.2	920.2	495.9	3,694.0

Source: National Food and Agriculture Council, Department of Agriculture, Philippines

^{1/} Production increment for each phase

^{2/} At Pesos 800 per ton

^{3/} Estimated cost of importing the production increment

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