NOTES ON THE PHILIPPINE RICE INDUSTRY

By

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INTRODUCTION

This paper attempts to present significant aspects of the Philippine rice industry, and the response of the industry to the impact of certain innovative forces. It seeks to clarify some of the alternative directions the industry might take as these are seen from the seats of decision in the industry's public and private sectors.

First, it presents an overview of the industry. This is followed by a discussion of the three major phases of the industry; namely, (1) production; (2) storage and processing; and (3) marketing. A brief analysis of the issues that must be faced in the near future by firms engaged in the industry and by the government closes this paper.

AN OVERVIEW

Rice is the most important food crop of the Philippines. It is the staple food item in the diet of about 80% of the Filipino people.[1] The value of the annual production of this commodity is close to ₱2 billion.[2] Some 3 million hectares representing about 40% of the country's arable land are devoted to rice.[3] About 60% of the labor force is located in the rice areas,[4] and more than 15 million Filipinos are depending on the rice industry as their main source of livelihood.[5]

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[1] Source: the files of the Rice and Corn Administration (RCA).

[2] This calculation was derived by multiplying 119 million cavans of palay (the estimated production for 1969) by ₱16–the government-support price for rice. This is a conservative estimate, because the "special" and "fancy" varieties sell in the domestic market at prices well above ₱16/cavan.

[3] Department of Agriculture and Natural Resources of the Philippines, *Crop and Livestock and Natural Resources Statistics,* 1958-1959, Quezon City.

[4] See *Strategy for Philippine Agricultural Development: A Request for Assistance,* September 1966.

[5] Confederation of Filipino Rice and Corn Association, Inc. *A Letter to the President, Republic of the Philippines,* Manila, 1966-1967.

Because of its economic importance as a commodity and as an industry, rice has attracted much attention from government policy makers; and public policies concerning rice have invariably become political issues, particularly during election years in the country.

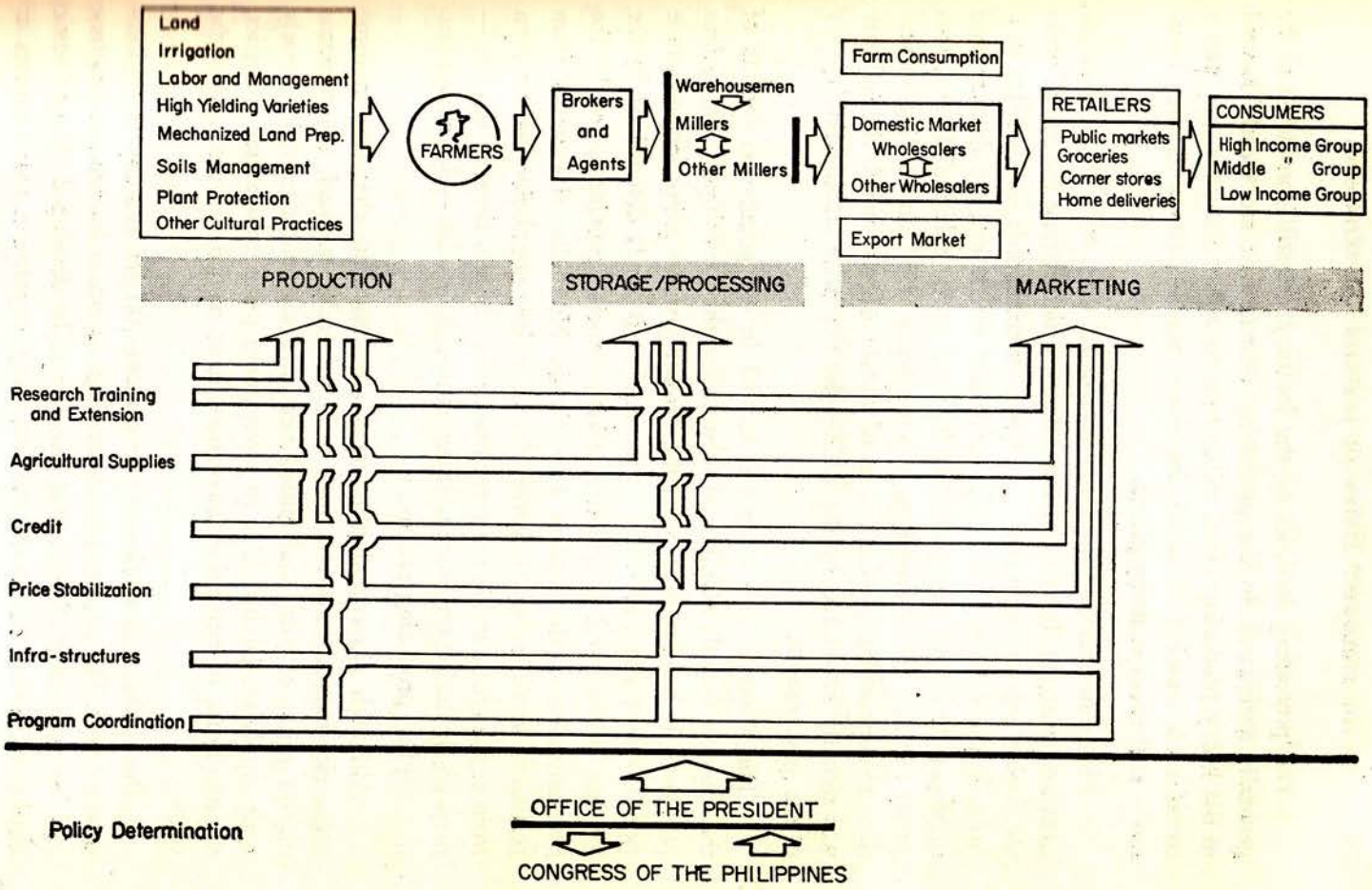
Available records show that the Philippines imported rice as early as 1885, and since then until *1967,* it was importing this cereal almost each year. This perennial importation of rice began to be regarded in the early *1950s* by rice growers as undesirable, because it tended to depress palay prices at the farms, and created pressure on the dollar reserves of the country. This led to price support policies that sought a middle road, where the interest of both the rice farmers and the rice consumers could possibly be served. Changes in these policies and others, and advances in production technology have created innovative forces that are reshaping the structural system of the entire industry.

(Exhibit 1 presents a general view of the structure of the rice industry).

Some of the major inputs utilized by the rice industry are provided by certain other industries such as the chemical and the agricultural equipment industries. Others are provided by the various government and private organizations working in the areas of research, training and extension, price stabilization, financing and management and training.

The rice industry is rather complex in its organizational relationships, and it is quite fragmented. Farm sizes vary in different parts of the country, but the average farm size is roughly three hectares. Farmer organizations constitute only a small part of the entire farm population. Most of the farm areas are located in regions where transportation facilities need to be developed, or improved. Integrative and collaborative activities in the industry have yet to gain wide acceptance. Farmers do not have firm organizational relationships with those who are engaged in storage and processing. In many places, rice is moved from the farms to the mills by brokers working independently or as agents of the millers. In the urban centers, rice wholesalers are a distinct group from the rice retailers.

STRUCTURE OF THE PHILIPPINE RICE INDUSTRY SHOWING THE INDUSTRY'S INPUT-OUTPUT FLOW, 1969



The processing facilities of the industry are still considered to be generally antiquated. In the processing centers that are mostly located in the heavy producing areas, milling plants are of the *cone*-type, but a considerable number of small, inefficient mills—known as the "kiski-san"—still exists in many places.

Also, most storage facilities in the country are considered to be inefficient and wasteful. Horizontal warehouses, which require the use of sacks for storing palay (rough rice), are the most commonly used storage facilities in the country. Losses due to insect infestation, rat damage and improper drying of the grain are believed to be substantial, and, this partly explains the hesitance, or unwillingness of private lending institutions to support the *quedan* system of warehousing to which the industry was recently introduced by the RCA—the rice price stabilization agency of the government.

The domestic rice market is located in the population centers of the country: notably Manila and suburbs and the townships in the various provinces. It is *segmented,* with the greater portion going for low-grade rice. The movement of stocks to the market is partly determined by the location of the surplus- and the deficit-producing provinces, and by the fragmentation of the country into islands. Normally, rice moves from *surplus* to *deficit* areas. However, rice flows into population centers even from *deficit* areas, and in some regions duriing certain times of the year—particularly during the months of June through October—rice moves into the surplus - producing provinces.

Although rice-cropping patterns are somewhat changing in some areas, rice harvest have remained to be generally *seasonal,* and domestic market prices of palay and milled rice have seasonally moved inversely with supply availability. Due to government price stabilization activities, the amplitude of rice price fluctuations have tended to narrow over the years.

Per capita consumption of rice is about 300 grams a day, or 98 kilograms a year. The principal producer usage of rice is *human consumption* and industrial uses of the cereal have yet to be developed. The domestic market is expanding due to the fast-rising population that increases at

the rate of 3.5% annually. The income and price elasticities of rice in the country are rather low, and per capita consumption is not bound to increase or decrease significantly with rising incomes or dropping rice prices.

The Philippines seems to be looking forward to being able to gain a foothold in the world market which, in a sense, is shrinking, and perhaps vanishing. There is a growing awareness among those engaged in the various phases of the industry that in order for the country to capture a good share of an increasingly competitive foreign market for rice, it should be able to grow better-quality rice, store the gain in efficient warehouses, and process it through mills capable of readily meeting world market specifications. These requirements for successful entry into the world market suggest the necessity of increasing investment in the industry.

Opinion appears to be divided as to the beneficial effects of the *Land Reform Law* passed in 1963, particularly in the face of advances in rice production technology. Conflicts with respect to the achievements of the productivity objective of the Law have manifested themselves at the farm levels in certain areas, suggesting that a reexamination of the Law might be useful.

The government price support program for rice has moved to higher support levels, but has continued to be troubled with inadequate funding in relation to the expectation of the farmers as well as administrators of the program. However, the program has been considered a boon to the rice industry, and has helped to encourage farmers to continue planting rice, using more productive varieties and cultural practices.

New scientific knowledge about the production of high-quality and high-yielding rice varieties is being turned out by research organizations in the country. In Los Baños, Laguna, the IRRI, the world center for rice research, is intensively investigating the causes of low rice yields in the humid tropics, and—in collaboration with national agencies in a number of countries—it is seeking and providing the answers to many questions toward improving rice harvests both in quantity and quality in this part of the world. Efforts of such government agencies as the College of Agriculture, U.P., and the Bureau of Plant Industry (BPI)

are contributing to the expansion of knowledge in rice that is of direct value to the Philippines.

In 1966, the Rice and Corn Production Coordinating Council (RCPCC) mounted a rather well-rounded program aimed at increasing rice productivity in the country. This organization, which is responsible for the management of the national rice program, has been able to create cohesiveness among its member agencies; use more effectively the financial support it receives; stimulate a reasonably strong credit program for rice; and monitor the national progress toward increased productivity in the rice industry. Business firms handling fertilizers, herbicides, insecticides and agricultural machinery and implements, are widening the market for these inputs which are needed for high yields and better returns in rice farming.

There is a growing belief that in rice the Philippines has at long last bridged the distance between population and production, and its revolutionary success in this regard is creating certain pressures and issues that must be recognized and met if the industry is to continue moving forward. Already, a move to improve storage-and-processing facilities is beginning to gain momentum. As this and other developments are occurring in the industry, a central issue is starting to emerge as one deserving immediate attention. Should the objective of the country be *self-sufficiency* or *surplus production* in rice? Either of these alternatives carry a host of other questions addressed to those engaged in the industry and to the government. Obviously, the answers would influence decision-making at the level of the numerous firms participating in the industry and up in the government quarters that are functionally concerned with the well-being of the industry as part of the larger system—the national economy.

PRODUCTION

In 1960, some 3.1 to 3.3 million hectares of land were planted to rice.[6] In 1968, the rice land was reported to be about 2.9 million hectares.[7] This change represents a reduction in rice hectarage of about 10 to 12%.

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[6] See Exhibits Two and Four.

[7] See RCPCC, *Annual Report, Fiscal Year 1967-1968,* Quezon City, August 1968.

Roughly about 30% of the land devoted to rice has irrigation, but only about 10% of it is relatively well irrigated by national irrigation systems.[8] The remaining 20% is irrigated by communal irrigation systems, and by pumps most of which were provided by the Irrigation Service Unit (ISU).

The rice farms are generally small holdings that average about three hectares each. About 37% of the rice areas are held by full-owners with an average farm size of 3.63 hectares and approximately 46% is held by tenants with an average farm size of 2.27 hectares. The rest is held in some other forms of tenure such as part-ownership and managership. (See Exhibits 2 and 3).

While more than half of the country's labor force is located in the rice areas, the number of agricultural workers per hectare of arable land was reported to be less than one in 1960.[9] Because population is increasing at the rate of 3.4% annually, the continuing increase in the man-land ratio in rice areas appears to be certain. Yet—with this changing population density at the farms—one could find many rice farms labor requirements during transplanting and harvesting operations. This raises certain development policy questions. How should income levels at the farm be raised, and how far up? How much purchasing power should be developed at the farm level in order to provide a viable market for the goods of the industrial sector, one that would enable this section to siphon off and utilize an increasing portion of the growing labor force now located in the farms? Can farm incomes be raised by part-time off-farm employment?

Until 1967, rice yields in the country had been among the lowest in the world. (See Exhibit 4). As a result, the country imported rice almost each year. Available records indicate that from 1885 through 1967, the only years rice importation did not occur were *1942-1944; 1960;* and *1962.* (See Exhibit 5).

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[8] The National Irrigation Administration (NIA) supervises these systems which cover some 300,000 hectares.

[9] See United States Department of Agriculture, *Changes in Agriculture in Twenty-six Developing Nations, 1948-1963* (*Foreign Agricultural Economic Report No. 27*).

EXHIBIT 2

NUMBER AND AREA OF PALAY FARMS, BY TYPE OF LAND TENURE, PHILIPPINES, 1960

Tenure of Farm Operator	*Number of Farms*	*Per cent of Total*	*Area in Hectares*	*Per cent of Total*	*Average Farm Size in Hectares*
Full-owner	385,170	36.97	1,399,590	44.97	3.63
Part-owner	164,557	15.79	528,215	16.98	3.21
Tenant (all types)	479,143	46.00	1,089,274	35.00	2.27
Manager	781	0.07	49,615	1.59	63.53
Other forms of tenure	12,231	1.17	45,437	1.46	3.71
Philippines	1,041,882	100.00	3,112,131	100.00	2.99

Source: *Census of the Philippines: 1960–Agriculture,* Vol. II, *Summary Report,* Bureau of the Census and Statistics, Republic of the Philippines, Manila

EXHIBIT 3

NUMBER AND AREA OF PALAY FARMS, BY TYPE OF TENANCY, PHILIPPINES, 1960

Tenancy Type	*Number of Farms*	*Per cent of Total*	*Area in Hectares*	*Per cent of Total*	*Average Farm Size in Hectares*
Cash	5,058	1.06	13,543	1.24	2.68
Fixed amount of produce	25,728	5.37	60,011	5.51	2.33
Share of produce	417,741	87.18	940,589	86.35	2.25
Cash and fixed amount of produce	225	0.05	932	0.09	4.14
Cash and share of produce	4,205	0.87	11,990	1.10	2.85
Rent-free	12,115	2.53	23,656	2.17	1.96
Other tenants	14,071	2.94	38,553	3.54	2.74
Philippines	479,143	100.00	1,089,274	100.00	2.27

Source: *Census of the Philippines: 1960–Agriculture,* Vol. II, *Summary Report,* Bureau of the Census and Statistics, Republic of the Philippines, Manila

EXHIBIT 4
AVERAGE RICE YIELDS AND AREA DEVOTED TO RICE, SELECTED COUNTRIES, 1960

Country	*Yield Kg./Ha.*	*Area Ha.*
Australia	5,950	22,000
Spain	5,770	67,000
Italy	5,240	136,000
United Arab Republic	5,020	306,000
Japan	4,750	3,289,000
United States	3,750	642,000
Nationalist China	2,970	776,000
South Korea	2,920	1,113,000
Malaysia	2,390	378,000
South Vietnam	2,120	2,503,000
Indonesia	1,720	7,197,000
Burma	1,700	4,034,000
Ceylon	1,550	447,000
Pakistan	1,480	9,763,000
Hongkong	1,479	9,000
Thailand	1,390	5,226,000
India	1,360	32,917,000
Philippines	1,100	3,334,000
Cambodia	1,050	1,385,000
Laos	800	650,000

Source: *FAO Production Yearbook,* 1960, Vol. 14, Rome.

EXHIBIT 5
PHILIPPINE RICE IMPORTATION, 1885-1967

Period	*Average Yearly Importation In Metric Tons*	*In Cavans*
1885-1895	60,560	1,081,536
1896-1897	N.A.	N.A.
1898-1941	110,861	1,993,459
1942-1944	N.A.	N.A.
1945-1967	126,726	2,176,223

Source: the RCPCC. (Basic information was obtained by the RCPCC from *The Bureau of Commerce Statistical Bulletin, 1929;* statistical handbooks and yearbooks of the Bureau of the Census and Statistics; the *1955 Annual Report* of the National Rice and Corn Corporation (NARIC); the foreign trade statistics of the Bureau of the Census and Statistics; the files of the National Marketing Corporation (NAMARCO) and of the RCA.

Seventeen provinces are considered to be rice surplus producing provinces. Four provinces are believed to be self-sufficient, while the other provinces are producing rice below their consumption requirements. (See Exhibit 6).

The RCPCC,[10] the government agency responsible for managing the national rice (and corn) production program, has divided the country into three priority program areas.[11] (See Exhibit 7).

The composition of the program areas gives an indication of the national strategy toward achieving production goals in rice. A greater concentration of efforts has been placed in Priority Area I, where the infrastructures of development are far more advanced than in other areas: infrastructures such as irrigation systems, roads and transportation facilities, communications, banking systems, warehousing and milling facilities and trade channels. The whole strategy has heavily relied on the belief that development efforts would have a greater impact, hence, higher returns in areas where development has, in fact, already begun.

If the government's participation in increasing rice productivity from 1966 up to this writing were to be assessed, the RCPCC's contribution during the period would, indeed, stand out as significant. There is much evidence to show that the RCPCC has effectively coordinated its member agencies, and focused their efforts to the central problem of closing the gap between rice production and consumption. Extension, soils survey, soils management, plant protection, varieties and cultural practices, storage, drying, processing, credit, cooperatives and price sup-

[10] The following are some of the member agencies of the RCPCC: the Agricultural Credit Administration (ACA), the RCA, the BPI, the College of Agriculture, U.P., the Bureau of Soils and the Bureau of Agricultural Extension (BAE).

[11] Area I: Bataan, Bulacan, Cagayan, Camarines Sur, Cotabato, Iloilo, Isabela, Laguna, Leyte, Mindoro Oriental, Nueva Ecija, Nueva Vizcaya, Pampanga, Pangasinan and Tarlac.

Area II: Aklan, Albay, Antique, Batangas, Bukidnon, Camarines Norte, Cavite, Davao, Ilocos Norte, Ilocos Sur, Davao del Norte, Lanao del Sur, La Union, Leyte del Sur, Misamis Occidental, Negros Occidental, Quezon, Rizal, Sorsogon, Zambales, Zamboanga del Norte and Zamboanga del Sur.

Area III: Abra, Agusan, Bohol, Capiz, Catanduanes, Cebu, Davao del Norte, Davao Oriental, Ifugao, Kalinga-Apayao, Marinduque, Masbate, Mindoro Occidental, Mindoro Oriental, Negros Oriental, Palawan, Romblon, Samar, Sulu, Surigao del Norte and Surigao del Sur.

ports, are problem areas that have received continuing attention from the Council.[12]

There is a growing belief that the country has at long last bridged the rice production gap and that the trend from hereon would be in favor of self-sufficiency or surplus in the staple cereal. A good part of this success is obviously traceable to the RCPCC's administration of the national rice production program.

The National rice production program is basically geared to the promotion of high-yielding varieties and the package of productive cultural practices they require. This accentuates the contribution that rice research institutions have made, and are continuing to make toward increasing productivity in rice. These research organizations—notably the IRRI, the College of Agriculture, U.P., and the BPI, produced the rice varieties that spread fast over wide areas in 1967 and 1968. Exhibits 8 and 9 shows the hectarage planted to the high-yielding varieties duriing the crop year 1967-1968. A total of about 390,000 crop hectares were planted to these varieties, with IR-8 and IR-5 accounting for about 66% of total crop hectares, BPI-76 for about 31% and C-13 and C4-63 for about 3%.[13]

The significance of the high-yielding, short, stiff-strawed varieties in increasing rice productivity is vividly illustrated in Exhibit 10 which compares the response of IR-8 with those of two other varieties to fertilization with nitrogen.[14]

At the IRRI, intensive work is continuing in breeding a series of varieties that would do well almost anywhere in the humid tropics. In

[12] See *The Four-Year Rice and Corn Self-Sufficiency Program of the Philippines,* 1966-67/1969-70. Also, see RCPCC, *Annual Report, Fiscal Year, 1967-1968.*

[13] IR-8 and IR-5 are IRRI varieties. BPI-76 was produced by the BPI, while C-18 and C4-63 were turned out by the College of Agriculture, U.P.

[14] IR-8 is expected to be replaced in Philippine farms by better-quality varieties which are of the plant type represented by IR-8: short, stiff-strawed, high-tillering, resistant to disease, responsive to nitrogen, early maturing, and photoperiod insensitive. For an explanation of what IRRI breeders did to develop this plant type in order to make possible dramatic increases in rice yields, see R. F. Chandler, Jr. *Dwarf Rice–a Giant in Tropical Asia* (*USDA Yearbook of Agriculture,* 1968).

EXHIBIT 6
DISTRIBUTION OF RICE SURPLUS OR DEFICIT AREAS
(1965-1966)

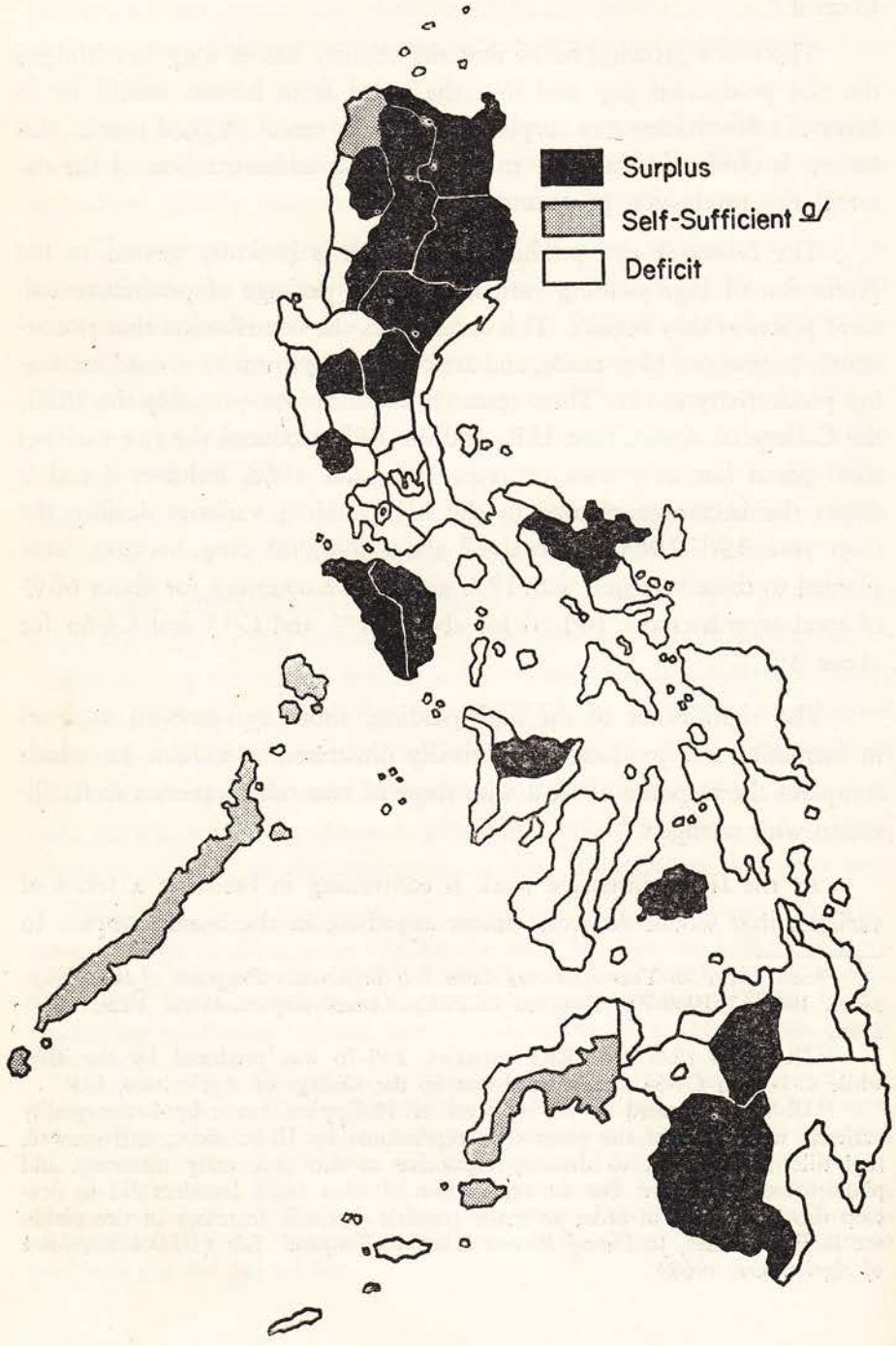

EXHIBIT 7

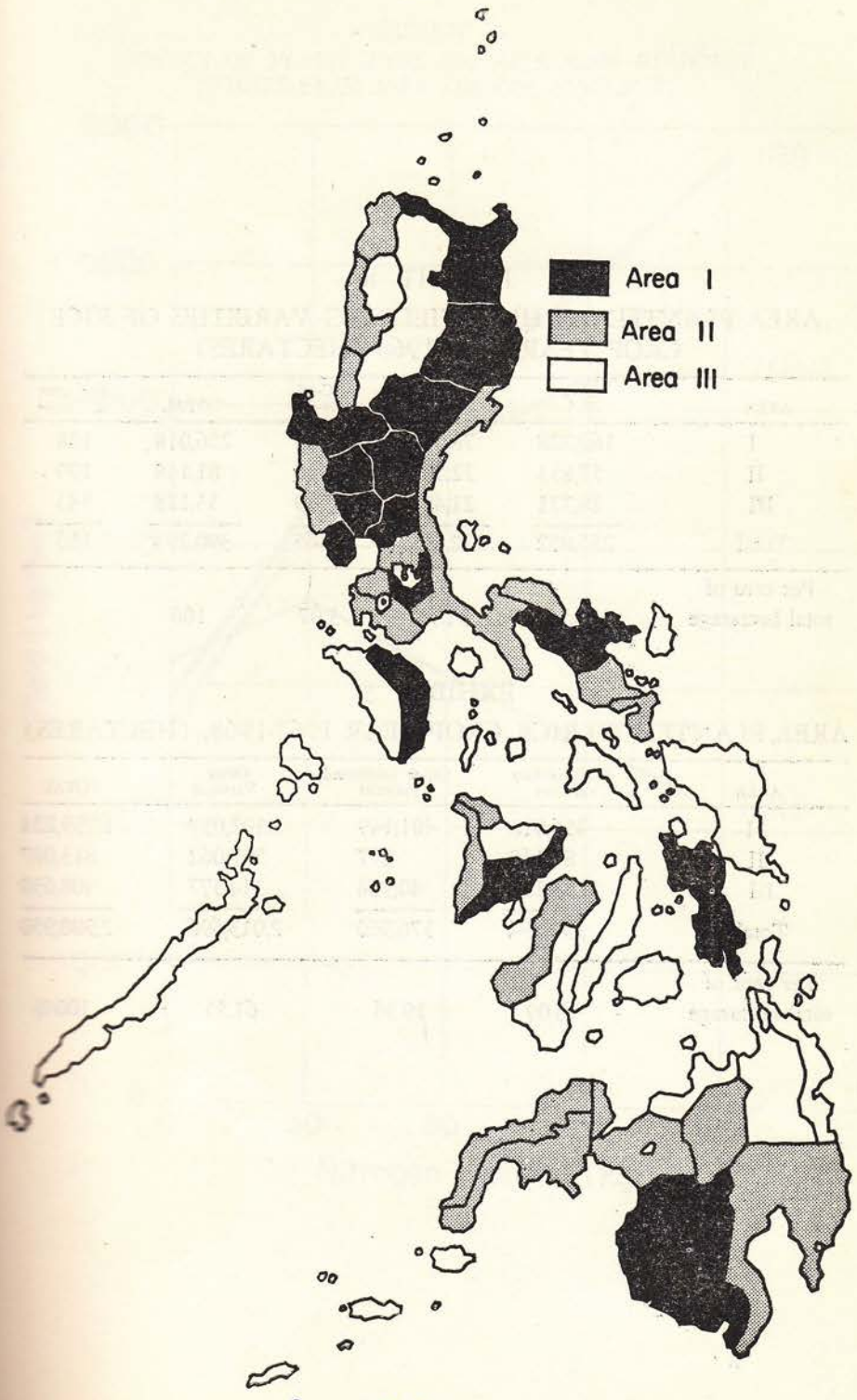

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EXHIBIT 8

AREA PLANTED TO HIGH-YIELDING VARIETIES OF RICE CROP YEAR, 1967-1968 (HECTARES)

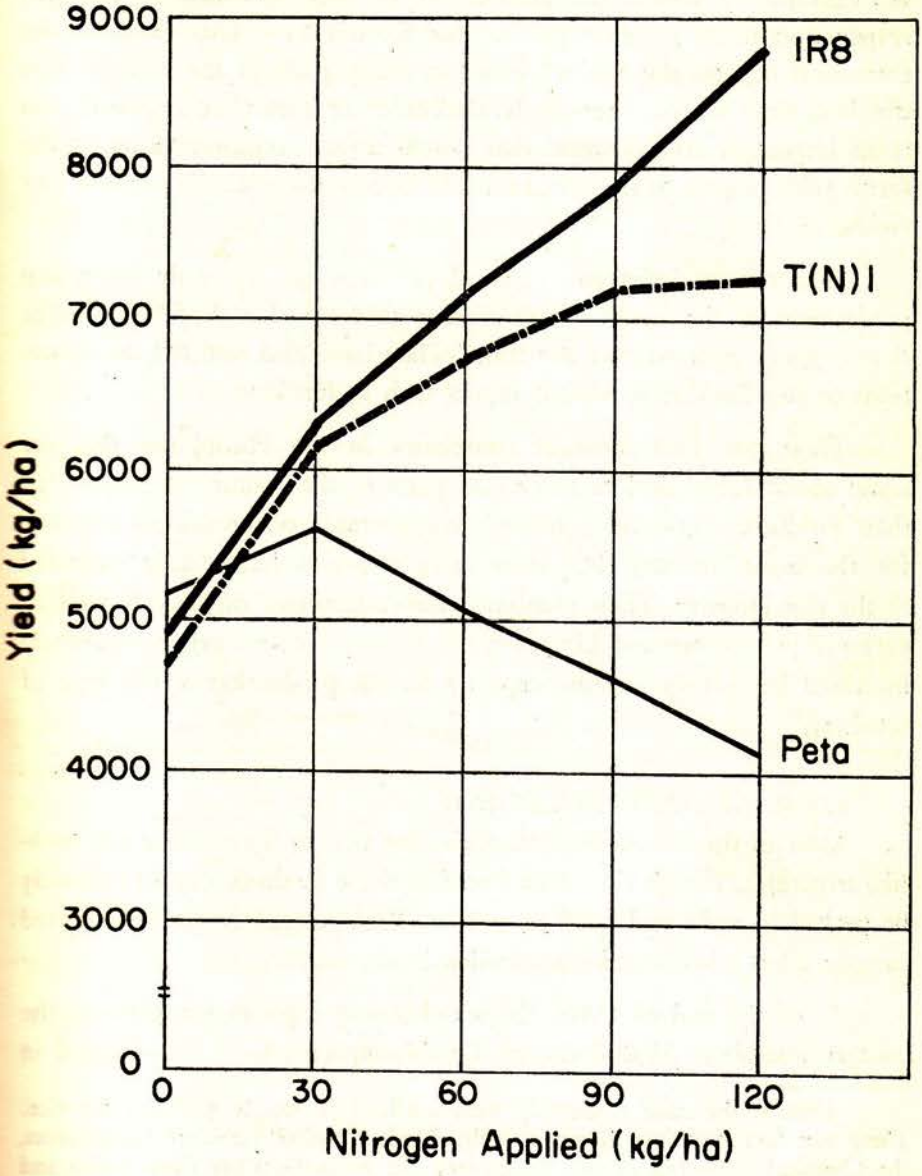
AREA	IR-8 IR-5	BPI-76-1	C-18 C4-63	TOTAL	Per cent of Target
I	169,228	78,530	8,260	256,018	128
II	57,853	22,507	788	81,148	199
III	28,771	21,428	2,929	53,128	533
Total	255,852	122,465	11,465	390,294	156
Per cent of total hectarage	65.55	31.38	3.07	100	

EXHIBIT 9

AREA PLANTED TO RICE, CROP YEAR 1967-1968, (HECTARES)

AREA	High-yielding Varieties	Other Seedbrand Varieties	Other Varieties	TOTAL
I	256,018	401,149	1,102,057	1,759,224
II	81,148	877	597,062	813,087
III	53,128	40,934	314,577	408,639
Total	390,294	576,960	2,013,696	2,980,950
Per cent of total hectarage	13.09	19.36	67.55	= 100%

EXHIBIT 10
EFFECT OF PLANT TYPE ON NITROGEN RESPONSE
(THREE-YEAR DRY SEASON AVERAGE)



addition, new knowledge is being turned out concerning cultural practices and other factors affecting the economics of rice production operations. An example of this is the relationship of solar radiation to nitrogen response in terms of grain yields. (See Exhibit 11). This particular information negates the age-old belief in many parts of the country that the best time for rice harvest is December or thereabout. Indeed, this is an important consideration that would affect decision-making at the farms with respect to the scheduling of operations toward optimum rice yields.

New rice varieties and cultural practices are not only increasing productivity at the farms. There is some evidence that they will change rice-cropping patterns over the times. They have also affected the operations of suppliers of important inputs such as fertilizer.

There are four fertilizer companies in the Philippines that are using about 1,400 dealers in various parts of the country as outlets for their products. These firms initially concentrated on producing fertilizer for the sugar industry, but their sales activities have lately extended to the rice industry. Their combined mixed-fertilizer capacity is well in excess of present demand. However, the demand for *urea* may have already increased beyond the existing capacity for the production of this type of fertilizer.[15]

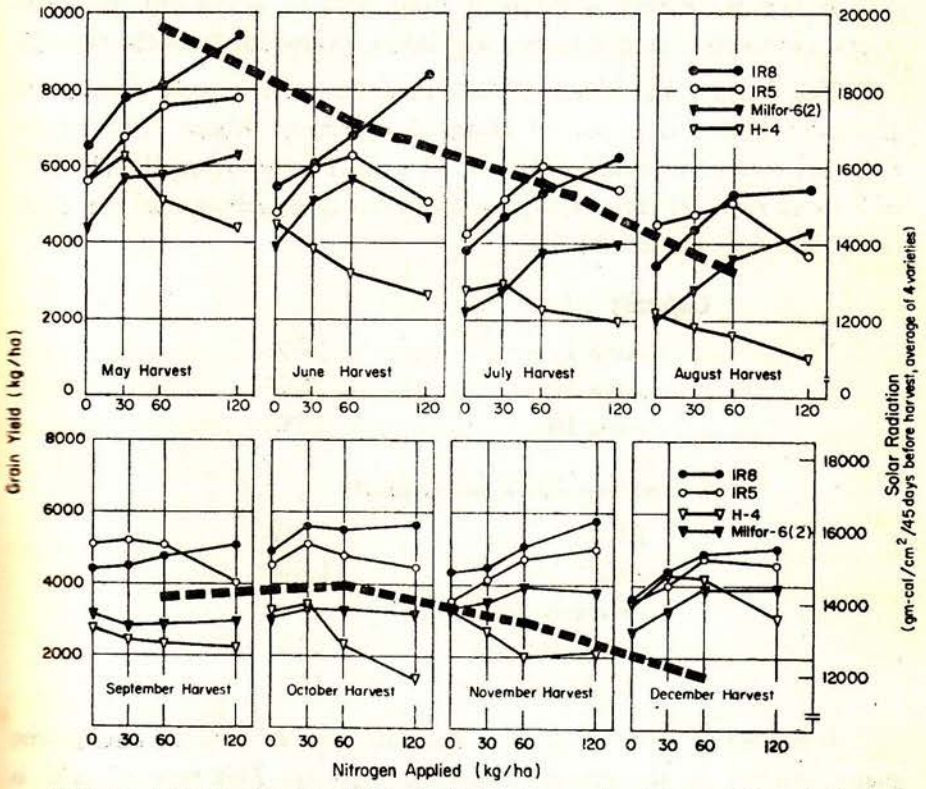
STORAGE AND PROCESSING

Most of the warehousing facilities for rice in the country are barn-like structures. Rough rice to be stored in these facilities should normally be packed in sacks and piled on pallets. Bulk storage is not widely used as only a few silos have been installed in the country.

As of the end of 1968, the warehousing capacity for grain in the country was about 59,000 cavans. Of this capacity, 69% was located in

[15] Urea is the most commonly used fertilizer to supply nitrogen for rice. There are four fertilizer firms; namely, Maria Cristina Fertilizer Corporation, the Chemical Industries of the Philippines, the Atlas Fertilizer Corporation and Esso Standard Fertilizer and Agricultural Chemicals Co. (ESFAC). Of these firms, only ESFAC has productive capacity of about 68,000 metric tons of urea. See the *IRRI Agricultural Economic Annual Report, 1968.*

EXHIBIT 11



Nitrogen response of four varieties as affected by month of harvest. Date-of-planting experiment, IRRI, 1968.

Priority Area I, 19% in Priority Area II and 12% in Priority Area III. The ownership distribution was as follows (see Exhibit 12):

RCA	6%
ACA	12%
Privately owned	82%

A rice warehouse is normally built next to a ricemill. It is not seldom, however, that one finds a warehouse located far from the ricemill.

The country has about 10,000 ricemills with a total capacity of about 680,000 cavans per 12 hours of operation. About 50% of the mills are located in Priority Area I, 35% in Priority Area II and 15% in Priority Area III. The capacity-and-ownership distribution of the warehouse follows (see Exhibit 13):

Capacity

Area I	57%
Area II	28%
Area III	15%

Ownership Based on Capacity

RCA	.2%
ACA	1.8%
Privately owned (cone-type)	43%
"Kiskisan"	55%

It should be noted that the "kiskisan"-type of mill constitutes the major portion of the country's milling capacity. This type of mill is known to have a relatively low milling recovery of 45% by volume; and is, therefore, considered to be inefficient and wasteful. If mills of this type were to be replaced with cone-type mills, the resulting improvement in rice recovery would increase the effective supply of rice for human consumption by as much as 2 to 3% of total milling outturns in the country. But the "kiskisan" mill appears to be performing a necessary function in the rural areas. Many of them mill rough rice only for the subsistence of customers in the barrios where they are operating, and, they receive payment in kind for milling services. It may not be inaccurate

EXHIBIT 12
WAREHOUSES BY OWNERSHIP AND LOCATION
PHILIPPINES, 1968
(Capacity in Cavans)

Location	RCA		ACA		Private Owned		Total	
	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity
Area I	31	2,811,000	164	6,213,600	1,849	31,892,538	2,044	40,917,138
Area II	12	348,000	48	750,500	898	9,325,120	958	10,423,620
Area III	9	324,000	15	315,000	469	7,409,586	493	8,048,586
TOTAL	52	3,483,000	227	7,279,100	3,216	48,627,244	3,495	59,389,344

Source: the RCPCC.

EXHIBIT 13
RICE MILLS BY OWNERSHIP LOCATION AND CAPACITY
PHILIPPINES, 1968
(Capacity in cavans/twelve hours)

Location	RCA		ACA		Privately Owned				Total	
					Cone		"Kiskisan"			
	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity
Area I	5	750	45	9,156	1,159	191,121	3,493	187,732	4,702	388,759
Area II	2	540	7							
Area III	—	—	—	1,060	222	34,606	1,108	64,434	1,336	100,100
TOTAL	7	1,290	58	11,666	1,941	290,157	7,389	379,884	9,395	682,997

to say that the operation of many of this type of mill does not count very much in the cash economy of the country.

The cone-type of mill is much more efficient than the "kiskisan" by as much as 10% in volume recovery. It is the most commonly used mill by the commercial rice processors. Depending on the variety and condition of the rough rice being milled, the cone-type mill turns out an average product with 30 to 50% brokens; and is not able to segregate milling outturns to various sizes for mixtures, or combinations that would readily meet standard specifications of the world market.

Most mills in the country are not equipped with mechanical or artificial driers. Although many of them are equipped with concrete solar driers, they are naturally unable to dry rough rice during the rainy season.

Handling problems associated with harvests occurring in some places during the wet months in the last two years have emphasized the need for a national program to encourage the establishment of modern warehouses equipped with driers and cleaners.[16]

Because the country was able to export Philippine rice last year and early this year, miller groups and traders are anticipating a policy that would encourage surplus production, and, in this regard they are attempting—with the encouragement of the administration, and the financial support of the Development Bank of the Philippines (DBP)—to establish rather highly sophisticated storage and handling systems and processing plants.[17]

There is a growing recognition of the value of modern storage-and-processing facilities. Although modern plants require heavy investment, and call for skillful management, forward-looking individuals in the rice-processing business feel a sense of urgency about having such plants established as a means to a viable position in the local or export markets. They seem to feel that vertical integration in the rice industry

[16] The United States' AID financed studies on the need for modern storage facilities. RCA conducted contest in locally designed driers, and announced a policy that it would favor the use of warehouses with driers in its palay procurement program.

[17] The authors know of at least six groups that are working toward modern storage and milling facilities.

is inevitable, and that the rice processors—being strategically located between the farms and the markets—are in the best position to initiate moves in this direction.

MARKETING

Generally, rice moves from *surplus* to *deficit* areas. Yet—partly due to the variation of harvest time from province to province, and partly because of differences in the anticipations of rice traders—rice moves in some instances from *deficit* to *surplus* areas.

Up to about 10% of the national production of palay is sold by farmers and millers to the government each year. Some 45 to as much as 80% of the production is believed passing through the trade channels.

The consumption centers of the country constitute the domestic market for rice. The biggest single market is Manila and suburbs: a population center that absorbs daily some 15,000 to 20,000 cavans of rice from the trade outlets.

Most rice consumers are not discriminating as they go for low-quality rice with as much as 40 to 60% brokens. But, in Manila and suburbs, the rice market is really segmented. Those who belong to the upper middle-income group, and to the high-income group have inclined to better-quality rice.

The majority of rice consumers are reached by rice retailers through the public market places and "cornerstores." Some rice firms—particularly those attempting to reach rice consumers who belong to the upper-income group are resorting to home deliveries: with convenience to the rice consumer and higher product quality as their selling points.

The income and price elasticities of demand for rice in the Philippines are generally low. "For the Philippines as a whole, the income elasticity of demand for rice appears to be extremely low. That is to say, the bulk of the population will change the quantity of rice eaten very little with a change in income."[18] An estimate of the price elasticity of demand for rice is approximately- 0.35.[19]

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[18] The income elasticity for rice producer is–.14, while that for non-producers is 0.09.

[19] See IRRI, *Agricultural Economics Annual Report, 1968.*

There is reason to believe, however, that as income levels rise, more people tend to eat more of the protective foods and less of rice. And as their consumption of rice decreases, they are liable to be more and more discriminating against low-quality and in favor of high-quality rice.

Changes in production technology are found to influence the preference of rice consumers. As the use of high-quality, high-yielding seed rice increases, high-quality is liable to push low-quality rice out of the market.

Recently, the government prescribed rice quality standards for the first time, and, this move would improve rice product quality in the market. (See Exhibit 14).

The price of rice to the consumers has been generally held down by the government's rice price stabilization program. Prices for palay and for rice have usually moved at or above the upper levels of the government stabilization price ranges. (See Exhibit 15).

Partly due to the government's rice price stabilization program, the moving average price of palay during the last ten years or so has tended to taper off in amplitude. (See Exhibit 16). This has led certain rice millers to believe that margins in the business could be achieved only through operational efficiency obtainable through the modernization of storage-and-processing facilities, increasing volumes that would make up for decreasing profit yields, vertical integration that would coordinate production and processing and market activities of firms in the rice industry.

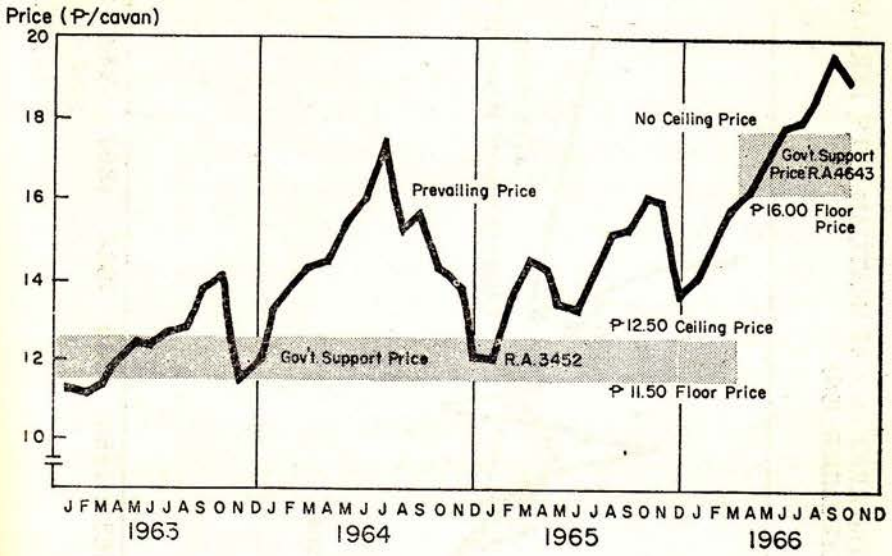
The breakthrough achieved in rice production seems to have raised high hopes in the rice industry that the Philippines could become a rice-exporting country. The resulting optimism has not been dampened at all by thoughts of difficulties usually associated with market entry. To gain, maintain, or widen one's foothold in the world market for rice would call for certain capabilities in growing good-quality rice; in efficiently transporting the grain from the farm; in handling, drying and milling it to the grade specifications of international trade; and in providing readily substantial quantities of supply to meet expected orders. Indeed, these capabilities do not develop, and become available, over-

EXHIBIT 14
STANDARD GRADE REQUIREMENT FOR PHILIPPINE MILLED RICE, 1969

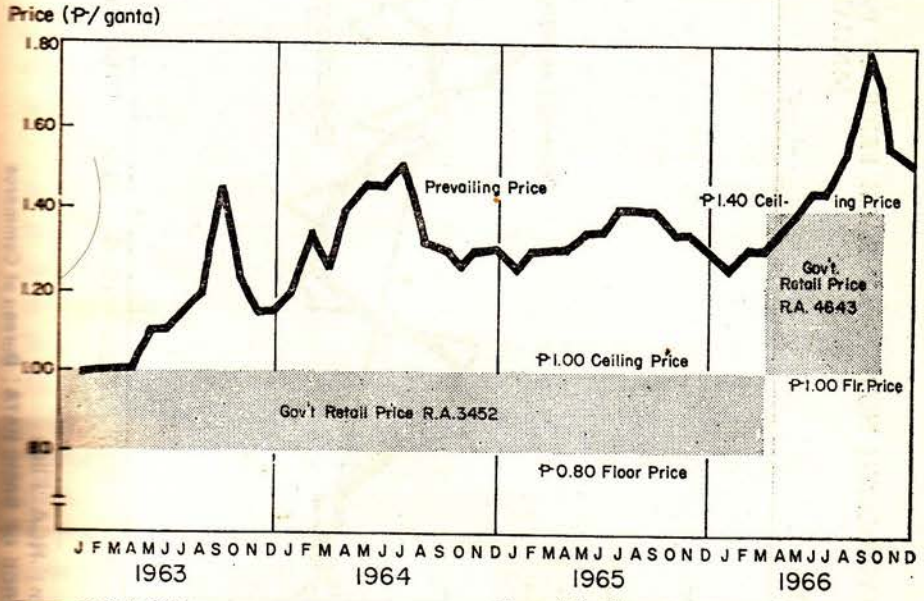
Grade	Broken (Max.) % Big and Small	Binlid	Head Rice (Min.) %	Yellow and Damaged (Max.) %	Chalky Kernels (Max.) %	Paddy No. 500 Grams (Max.) %	Other Varieties (Max.) %	Red Rice (Max.) %	Foreign Matter (Max.) %	Moisture Content (Max.) %	Size of Broken/ Kernel
1	10	none	90	0.25	3	none	2	nil	nil	14	Less than 3/4
2	20	nil	80	0.5	5	1	4	trace	0.5	14	Less than 3/4
3	30	0.5	70	0.75	8	2	5	0.5	0.75	14	Less than 2/3
4	43	1.5	60	1.0	10	2	7	1.0	1.0	15	Less than 1/2
5	50	3	50	3	12	4	15	5	2	14	Less than 1/2

EXHIBIT 15

PALAY SUPPORT PRICE COMPARED TO AVERAGE MONTHLY PREVAILING PRICE PER CAVAN OF PALAY ORDINARIO IN CABANATUAN CITY (1963-1966)



GOVERNMENT-SELLING PRICE OF LOCAL M-2 RICE COMPARED TO AVERAGE MONTHLY PREVAILING PRICE PER GANTA OF M-2 RICE IN MANILA (1963-1966)

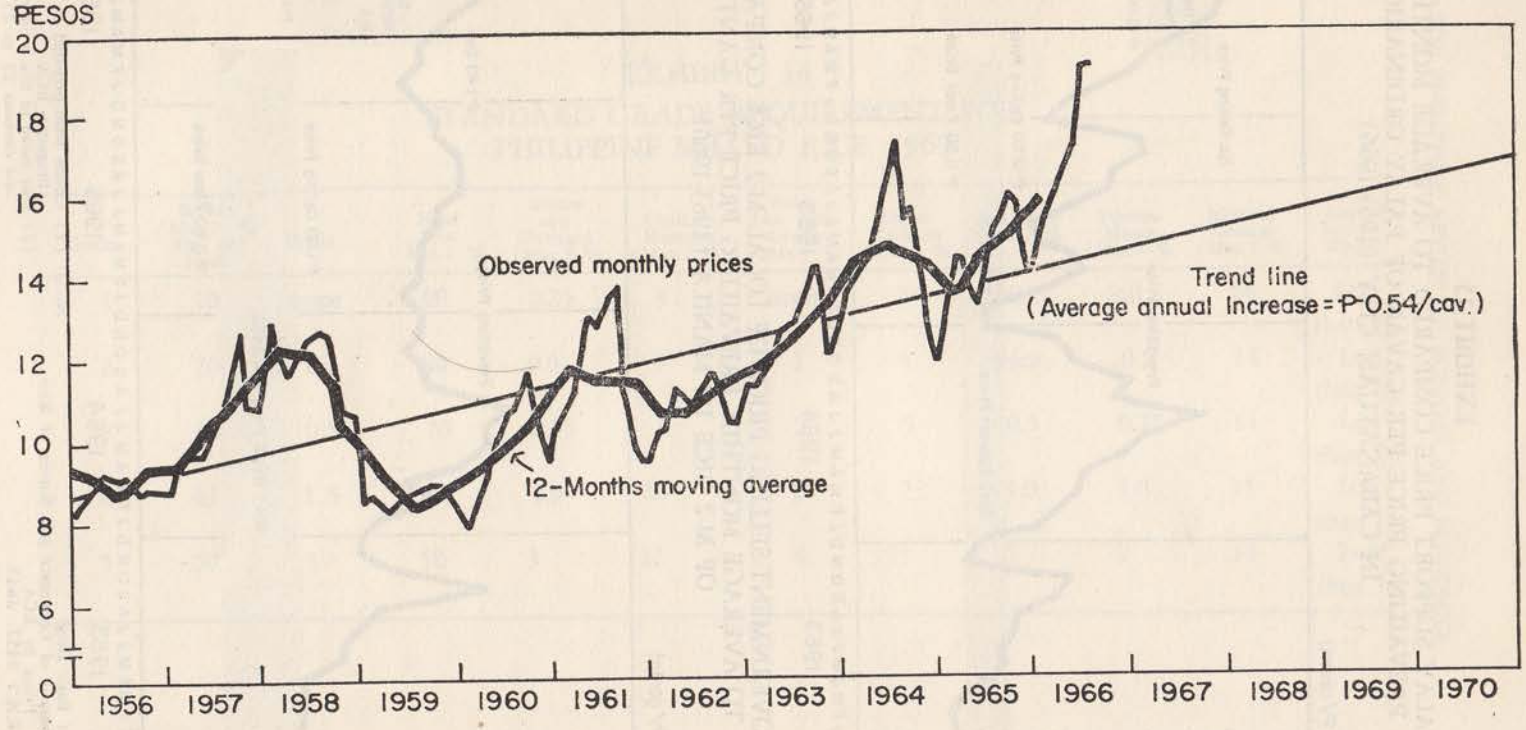


Source of Basic Data:
a. Bureau of Commerce and Survey of Rice Prices by RCA.
b. *R.A.'s* 3452, 4643.

Notes: (1) Charts were prepared by Plans and Programs, RCA
(2) One cavan of rice weighs 56 kgms. and contains 23 to 25 gantas of rice.

EXHIBIT 16

TWELVE-MONTH MOVING AVERAGE PRICE OF PALAY ORDINARIO IN CABANATUAN CITY PER SACK (45 kls.)
JANUARY 1956-DECEMBER 1965



From: RCA Files
SOURCE OF BASIC DATA: Bureau of Commerce

night in any country. Their development requires investment of certain material resources that are usually limited, particularly in developing countries.

The revolutionary advances in production technology which have occurred in the country are being duplicated in other countries in this part of the world, and, are presumably creating similar pressures in their respective rice commodity systems. It seems that traditionally importing countries are moving into positions of self-sufficiency or surplus. Countries that have relied for years on the rice export market for economic strength may continue to produce rice surpluses. With fast-increasing oppulations, the Far Eastern rice market may be expanding. It could also be shrinking, or in fact vanishing. (See Exhibit 17).

Certain developments, however, may change the character and size of domestic and foreign markets for rice. Industrial uses of rice could be developed through scientific research. This potential has yet tc be exploited, and, it may yield tremendous economic opportunities.

QUESTIONS

At this stage of the rice industry's development, it seems that certain policy decisions must be made by the government. An important one concerns the issue of whether the country's objectives should be *self-sufficiency* or *surplus production* in rice.

If the choice is *self-sufficiency,* answers to certain questions should be sought by public policy makers. What should be the strategy for maintaining production at self-sufficiency levels? With the momentum so far gained toward increasiing productivity in rice, what steps might be taken to limit production to the requirements of an increasing population? Would some of the land areas now devoted to rice be retired and shifted to other crops? Where should the shift be made, and how? Should the shift be made in areas where the infrastructures are well developed and where the rice farms are heavily tenanted and fragmented into small sizes? Or, should it be elsewhere, where large-scale, tenant-free farming is possible but where the infrastructures are less developed or underdeveloped? Should the storage-and-processing facilities be improved? What kind of storage and processing plants should be established, and

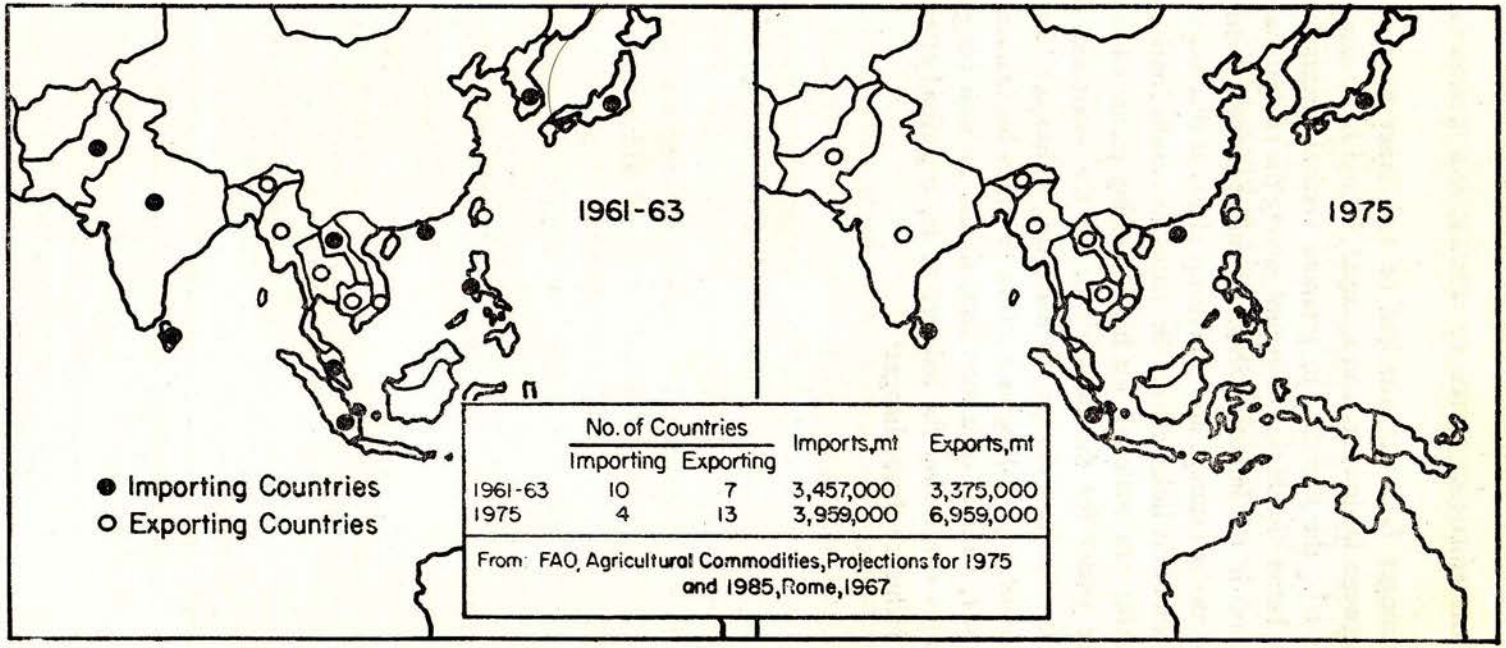
what sizes? How could financial support be provided for developing such facilities? Should there be a change in the price policy of the country?

If the choice is *surplus production,* other equally important questions would need to be answered. What should be the strategy for meeting the requirements of the export market? What are the chances of the Philippines in the world market in competition with present or future rice-exporting countries? What incentives should be provided to enable the rice industry to meet the difficulties usually associated with entry into a new market? Should vertical integration in the industry be promoted? Should the country urge international agreement to protect the regional rice market in the Far East, and hedge against competition from existing and potential rice-exporting countries located in the Western hemisphere? How should the Philippines meet competition from other countries in this part of the world whose national economic welfare has heavily depended upon rice exports? Should fragmentation or consolidation of rice farms be encouraged? How should storage and processing facilities in the country be developed? To what extent should the establishment of facilities such as grain silo systems and modern, big capacity mills be encouraged and supported? How much financial support could be made available for the establishment of such facilities? Should industrial uses of rice be developed, and in this regard, should secondary industries be fostered? What should the rice price policy be? Should the price policy differentiate the domestic from the foreign market for Philippine rice?

Self-sufficiency or *surplus production,* as an objective, suggests changes in legislative and executive policies concerning land tenure, investment, credit, price stabilization and infrastructures.

In either of the alternative choices, private firms participating in the industry—in production, storage, processing or marketing—will have to decide what anticipations and actions would enable them to maintain or improve their profitability positions, and what their contributions might be toward the continued viability of the industry. Should a landowner improve the productive capacity of his farm, particularly if it is tenanted? Should he shift his investment to other ventures? Should he

EXHIBIT 17



	No. of Countries		Imports,mt	Exports,mt
	Importing	Exporting		
1961-63	10	7	3,457,000	3,375,000
1975	4	13	3,959,000	6,959,000

From: FAO, Agricultural Commodities, Projections for 1975 and 1985, Rome, 1967

Is the export market for rice in the Far East expanding, shrinking or vanishing?

promote stronger farm organizations or seek other ways to minimize conflicts between landowners and tenants? Should he or some other entrepreneurs take the initiative to promote vertical integration in order to achieve a better distribution of income among the rice producers, millers and merchants in the industry? Should a miller move toward the establishment of modern storage and processing plants at this time? Should he attempt to establish linkage with the farms to ensure continuing supply of good-quality raw materials for his processing plant? Should he turn out product grades for the domestic or for the international market? Should a rice merchant change his marketing techniques? For example, should he resort to packaging as a means to widen his market? Whether he is a farmer, a miller or a merchant, should he wait for government policy changes concerning the industry or try organized effort to bring about and influence these changes?