

DESCRIPTION AND ANALYSIS OF PHILIPPINE
GRAIN MARKETING SYSTEM

by

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requirements for the degree

MASTER OF SCIENCE

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Major Professor

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I would also like to acknowledge the love and support my family and my brothers and sisters in Christ have given me these years at Kansas State. Thanks from the bottom of my heart.

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CHAPTER I

INTRODUCTION

This paper presents a description and analysis of the Philippine grain marketing system and of the government agencies and programs which directly affect it's agriculture. It is organized into six major sections: 1) Introduction, 2) General Overview, 3) Agricultural Overview, 4) Government Agencies and Programs, 5) Analyses of Production Practices, and 6) Marketing of Rice and Corn.

This paper is limited by the fact that this author was unable to visit the Philippines first hand. However, valuable information was obtained for this project by K-State personnel who are working in the Philippines. Further, some of the Filipino students at K-State work for some of the governmental agencies of their country and were helpful in providing needed information.

It is recognized that there is a distinct lack of information in corn and sorghum marketing. Research in corn and sorghum marketing has been minimal compared to that for rice which is the principal grain and food crop in the Philippines.

CHAPTER II

GENERAL OVERVIEW OF COUNTRY

Selected climatical, economic, geographical, political and social facts and problems will be discussed and analyzed in this section to better understand the role of agriculture. The Philippines can be classified, economically speaking, as one of the lesser developed nations. Although steady economic gains have been achieved since 1960, it is still largely underdeveloped. In the Philippines, a modern money economy has developed alongside a traditional indigenous economy resulting in a "dualistic economy."

The Philippines comprises about 7,100 islands with a land area of 115,830 square miles approximately the size of Arizona. Mountain ranges running north to south divide the islands into small watersheds with short and usually rapid rivers and isolated alluvial plains. About 65% of the land in the Philippines is classified as either mountainous or upland (see Map 1).

There are four distinct types of climate which run north to south with the mountain ranges and which also cause distinct variations in rainfall from month to month. Map 2 illustrates these types along with a short explanation of each one.

One benefit of the mountain ranges is that they act as a shield preventing parts of all the islands from receiving the full force of the monsoons. There are monsoons from the northeast from November to February and the southwest during the months of June to September. Over 50% of the rainfall in the Philippines is associated with typhoons and tropical storms. The one

unifying element climate-wise in the Philippines is the temperature. It averages around 26 to 28 degrees centigrade annually, providing the Philippines with a year round growing season.

The Philippines has one of the fastest growing population rates in Asia. Since 1946 the average annual rate has been about 3% (see Table 1). The average annual growth rate for all other East Asian countries (Republic of China, Malaysia, Thailand and Indonesia) was about 2.6% for the same time period. For the South Asia countries (Burma, Ceylon, India and Pakistan) the average annual growth rate of population for the same time period was 2.2%. With an estimated population of 42.8 million people in 1975, the Philippines is the eighth most populous nation in the developing world. Approximately 1 out of every 3 Filipinos reside in urban areas, and about two-thirds of these live in communities of 50,000 and above.

The original inhabitants of the Philippine Islands were believed to be Negritos. Today the majority of the population is of Malay stock who migrated from the Malay peninsula and the Indonesian Islands. However, according to the Bureau of Census and Statistics, in 1974 about 4.4 million Filipinos were classified as ethnic or cultural minorities. No language in the Philippines is the mother tongue of more than a quarter of the population. In 1960 about 40% of the population could speak English and about 44% a dialect of Filipino known as Tagalog.

The estimated rate of literacy is about 83%. This is among the highest in Asia. In contrast, however, average nutritional standards are among the lowest of any country in the world. Average daily calorie intake in the Philippines is estimated to be 1,700 calories which is about 300 calories or 15 percent below estimated minimum daily requirements. The estimated daily per capita intake of nearby countries are: Taiwan 2,350 calories; South Korea

2,200 calories; and Malaysia 2,100 calories. Daily protein intake is estimated at 46.4 grams per capita as compared with a minimum estimated daily requirement of 50.0 grams per person.

Table 2 shows some selected economic indicators. The gross national product at current prices was 94,800,000,000 pesos in 1974. At constant 1967 prices, the GNP was 40,651,000,000 pesos. Overall economic growth during the 1960's and the first half of the 1970's averaged about 6 percent a year in real terms. This rate of growth compares favorably with the Philippines' fellow Asian countries. Over the same time period the average annual rate of growth was approximately 3.6% and 5.1% respectively, for South and East Asian countries.

The Philippines has a fairly broad diversified industrial sector. Significant quantities of silver, copper, chromite and copper ore are produced. In 1974, manufacturing, mining and construction accounted for about 32% of net domestic product. Approximately one-third of the total annual fixed investment is estimated to be in the industrial sector. However, this sector provides employment for only 15 percent of the labor force.

In the 1950's and 1960's an import substitution strategy was vigorously promoted by the national government. This strategy failed for demand was merely shifted to capital and intermediate goods to meet the needs of the domestic consumer market. Consequently manufacturing became concentrated in large scale and capital intensive units which were located in greater Manila and Southern Luzon. This policy has "constrained industrial growth particularly during the second half of the 1960's!"¹ Presently, "the Philippine

¹United States Agency for International Development, Developmental Assistance Plan for the Philippines, vol. I, sec. III (Washington, D.C., 1974), p. 1.

Government is in the process of rationalizing the existing industrial structure and reorienting industrial growth."²

The transportation, communication, storage and utilities sector has composed less than .04 percent of the net domestic product in any year. According to Volume I of the Development Assistant Plan of the Philippines, this has severely retarded economic growth. "The Philippines lacks the economic infrastructure necessary to support the movement of goods and services needed to foster economic development."³ Conversely, the growth of commerce and services were major contributors to the overall economic advance of the Philippines. These sectors registered the greatest increase in number of workers hired of any economic group since 1965.

The labor force was estimated to be about 14.3 million people in 1974 by the National Economic Development Authority (NEDA) as found in their statistical yearbook. Of this number, it was estimated that 13.8 million of them were employed. This gives an official unemployment rate of 3.2% for 1974, which compares favorably for an official unemployment rate of approximately 6.2% for the 1960's, and 5.1% for the period 1970-1973.

This official unemployment rate is a misleading indicator as to the health and strength of the Philippine economy. The term employment "presuppose conditions which are absent in many underdeveloped countries. 'Employment' presupposes a fairly homogeneous mobile labour force willing and able to work and responsive to incentives."⁴ This is not the case in the Philippines according to a World Bank study done on the Philippines in 1976. This study further concluded that there was a high "underemployment" rate. If

²Ibid.

³D.A.P., vol. I, sec. I, p. 12.

⁴Gerald Meier, Leading Issues in Economic Development (New York: Oxford University Press, 1970), p. 75.

underemployment exists it is equivalent to saying that "the marginal productivity of labor is zero or almost zero and may even be a negative quantity."⁵ The United States Agency for International Development in its Developmental Assistance Plan for the Philippines concluded that the level of underemployment has been increasing since the late 1960's and that in 1974 the underemployment rate was somewhere between 12-14%.

For an underdeveloped country, the Philippines has had growth with relative price stability. (See D.A.P. vol. I, sec. I) Not many underdeveloped countries have been able to achieve this relationship. This stability was present each year until fiscal years 1973-74 and 1974-75. In these years, however, consumer prices rose very rapidly. This was due to three principal factors: 1) substantial expansion in liquidity due to an export boom of sugar and copra, 2) domestic food shortages and 3) higher import costs of petroleum. The consumer price index in those two years rose a little under 100 points. If there are no major upheavals in any of the key commodities and "the continuance of a selective policy of monetary and fiscal restraint, the rate of price inflation could fall below 10 percent."⁶ Presently this situation appears to be taking place in the Philippines.

In IBRD's study Agricultural Survey of the Philippines it was estimated that approximately half of the labor force is employed in agriculture, forestry and fishing. And that about two-thirds of the labor force live in rural areas. This study stated that the labor force is presently growing at an annual rate of 400,000 but is expected to climb 50% by the year 1985.

The average per capita income in real terms has grown from \$154 in 1960 to \$226 in 1974 which are significant gains in increasing real income.

⁵Ibid., pp. 151-152.

⁶D.A.P., vol. I, sec. I, p. 13.

However, today the average per capita income of the Philippines is still considerably less than many of her Asian neighbors. It is less than one-half of Taiwan's, and about two-thirds of South Korea's and Malaysia's current GNP per capita levels.

Table 3 points up the fact that the national income of the Philippines is quite unevenly divided between income classes and between rural and urban families. This table clearly illustrates the point that the income of urban families is much higher than rural ones. In 1971, 39.8% of all urban families had incomes of over 5,000 pesos a year whereas only 12.8% of the rural families had incomes over 5,000 pesos annually. And this distribution of income has gotten worse, not better, in recent years. "Since 1956, however, there has been a deterioration in the distribution of incomes among the rural population as measured by the gini coefficient, which increased by 21% between 1957 and 1971."⁷ Table 3 shows that in 1971, 40% of the families in the Philippines received less than 12% of the total income. Putting it another way, 2.5 million families received an average annual income of about 4,400 pesos or about 75 percent of the national average. For the rural families, "it is estimated that in 1971 about half of all rural families had incomes below that required to provide adequate nutrition and other essentials of life."⁸

Another problem brought upon by the increase of population and industrialization is that of internal migration. The rural to urban migration rate, according to NEDA statistics compiled in their four-year development plan, is estimated at about 50% a year which has contributed substantially to the de-

⁷The Philippines: Priorities and Prospects for Development (Washington, D.C.: World Bank, 1976), p. 94.

⁸Ibid., p. 95.

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PROD.	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8		1,10	1,11	1,12	1,13	1,14								
L. STOR.	2,1	2,2	2,3	2,4						2,10												
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MID, AGT.	5,1				5,5					5,10	5,11	5,12	5,13									
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GAMA COP							15,7								15,15			15,18	15,19	15,20		
CMSP									16,9					16,14		16,16		16,18	16,19	16,20		
IMP.														17,14			17,17					
L/W										18,10				18,14	18,15	18,16		18,18	18,19	18,20		
S.M. LCL-W/R										19,10			19,13	19,14	19,15	19,16		19,18	19,19	19,20	19,21	
RET.										20,10			20,13	20,14	20,15	20,16		20,18	20,19	20,20	20,21	
CONS.										21,10		21,12							21,19	21,20	21,21	
G. I.										22,10				22,14								22,22

LIST OF ACRONYMS

PROD.	PRODUCERS
L. STOR.	LOCAL STORES
K. MILLS	KISKISAN MILLS
L. CON.	LOCAL CONSUMERS
MID, AGT.	MIDDLEMAN & AGENTS
LANDLRD.	LANDLORD
FACOMAS	FARM MARKETING COOPERATIVES
S. H.	SAMAHANG NATON
AMC	AREA MARKETING COOPERATIVES
M/W	COMO MILLS & WAREHOUSES
P/R-W	PALAT & RICE WHOLESALERS
S.M. P/R-W/R	SMALL PALAT & RICE WHOLESALERS & RETAILERS
VIAJ.	VIAJEROS
HGA-A/M/W	NATIONAL GRAIN AUTHORITY / AGENTS- MILLS- WAREHOUSES
GAMA COP	GRAIN MARKETING COOPERATIVE OF THE PHILIPPINE
CMSP	COOPERATIVE MARKETING SYSTEM OF THE PHILIPPINES
IMP.	IMPORTS OF MILLED RICE
L/W	LOCAL WHOLESALERS
S.M. LCL-W/R	SMALL LOCAL WHOLESALERS & RETAILERS
RET.	RETAILERS
CONS.	CONSUMERS
G. I.	GOVERNMENT INSTITUTIONS

FILIPINO GOVERNMENTAL MATRIX

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	P R O D.	L. S T O R.	K. M I L L S	L. C O N.	M I D., A G T.	L A N D L R D.	F A C O M A S	S. N.	A M C	M / W	P / R - W	S. M. P / R - W / R	V I A J.	N G A - A / M / W	G A M A C O P	C M S P	I M P.	L / W	S. M. L C L. - W / R	R E T.	C O N S.	G. I.
PROD.	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8		1,10	1,11	1,12	1,13	1,14								
L. STOR.	2,1	2,2	2,3	2,4						2,10												
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MID, AGT.	5,1				5,5					5,10	5,11	5,12	5,13									
LANDLRD.	6,1					6,6				6,10	6,11	6,12										
FACOMAS.	7,1						7,7			7,10		7,12			7,15							
S. N.	8,1							8,8	8,9	8,10		8,12		8,14								
AMC								9,8	9,9	9,10		9,12		9,14		9,16						
M/W	10,1	10,2			10,5	10,6	10,7	10,8	10,9	10,10	10,11	10,12	10,13					10,18	10,19	10,20	10,21	10,22
P/R- W	11,1				11,5	11,6				11,10	11,11	11,12	11,13							11,20		
SM. P/R- W/R	12,1						12,7	12,8		12,10	12,11	12,12									12,21	
VIAJ.	13,1				13,5					13,10	13,11		13,13	13,14					13,19	13,20		
NGA- A/M/W	14,1							14,8	14,9				14,13	14,14		14,16	14,17	14,18	14,19	14,20		14,22
GAMA COP							15,7								15,15			15,18	15,19	15,20		
CMSP									16,9					16,14		16,16		16,18	16,19	16,20		
IMP.														17,14			17,17					
L/W										18,10				18,14	18,15	18,16		18,18	18,19	18,20		
SM. LCL- W/R										19,10			19,13	19,14	19,15	19,16		19,18	19,19	19,20	19,21	
RET.										20,10			20,13	20,14	20,15	20,16		20,18	20,19	20,20	20,21	
CONS.										21,10		21,12							21,19	21,20	21,21	
G. I.										22,10				22,14								22,22

LIST OF ACRONYMS

PROD.	PRODUCERS
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L. CON.	LOCAL CONSUMERS
MID, AGT.	MIDDLEMAN & AGENTS
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L/W	LOCAL WHOLESALERS
SM. LCL- W/R	SMALL LOCAL WHOLESALERS & RETAILERS
RET.	RETAILERS
CONS.	CONSUMERS
G. I.	GOVERNMENT INSTITUTIONS

PALAY/ RICE MARKETING MATRIX

KERRY PATRICK

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terioration of urban conditions. The high rate of population growth has also been one of the principal inhibiting factors in government efforts to improve health and civil service services. Paradoxically, however, "despite the economic and social disadvantages, squatters and slum dwellers (in urban areas) consider their present lives better than their former situations."⁹

Table 4 on inter-regional migration statistically points up another problem which is as serious as the rural to urban migration problem. Economic development and unequal distribution of government services and programs have been prevalent throughout the country. The internal migration has been to the regions where there has been more economic development and urbanization such as Southern Tagalog where Manila and Quezon City are located. The regions listed on Table 4 which have a negative net migration have had the least amount of development. They are Ilocos, Bicol, Western Visayas, and Central Visayas regions. Map 3 indicates the location of these regions.

The migration of Filipinos from Bicol and the Visayas regions to Mindanao have caused much social unrest and conflict. In 1960 over 80% of the Filipinos were Roman Catholic and 5% of them were Muslem. The Muslems are located almost entirely upon the island of Mindanao. The large Muslem minority in the Philippines has historically resisted integration of Mindanao, their homeland, by non-Muslem Filipinos. An armed revolt broke out in late 1973, "primarily in response to land pressure as settlers immigrated from other parts of the country."¹⁰ The revolt has hampered development and created a drain on government resources. This problem, the World Bank concluded in their study, is still present with the Philippines today.

⁹Ibid., p. 53.

¹⁰Ibid., p. 9.

In 1946, the Philippines became an independent nation from the United States. It was a colony of the United States from 1898 to 1946 and was established as a constitutional government modeled after the United States. This system of government lasted 26 years under September 21, 1972, when President Ferdinand Marcos suspended the legislative powers of the Congress and established martial law and a dictatorship. His leading political opponent was then imprisoned.

A number of programs to bring about economic, financial and social reforms have been launched by the National government. These reforms are part of an effort to build a "New Society" for the Philippines. These "New Society" programs are intended to promote social development, economic growth and a more equitable distribution of income and wealth.

Will the government succeed in bringing about the "New Society"? In 1960 the Economic Research Service and Foreign Agricultural Service of the United States Department of Agriculture published a study on agriculture in the Philippines. Many of the problems were identified and the necessary prescriptions for changes were made. Recent studies cited in this paper by the World Bank, the International Bank for Reconstruction and Development and other international agencies point up a sad reality that for the most part the same problems remain and that these studies offer basically the same prescriptions to ongoing problems.

Can the present government cope with these problems? Initially it seems as if the government's attempts are succeeding. Yet to bring about the changes required for the "New Society" much more effort and time is required to determine if any permanent change has come about. Hopefully, for the material well-being of all Filipinos, the government will succeed.

In conclusion, much economic progress has been made by the Philippines since independence. However, much of this progress and development has not improved the economic well-being of the average Filipino. The aforecited economic studies indicate that with modifications in governmental policy the Philippines has the capacity to make even more significant progress economically speaking. It has the capacity to succeed whereas many lesser developed countries lack even the capacity to grow and advance economically. There exists genuine hope for the Philippines that with the establishment of the new governmental system and resulting programs the country will develop rapidly in the future.

MAP 1

ELEVATION MAP OF THE PHILIPPINES

SOURCE: Philippine Almanac and Handbook of Facts, 1975, p. 33.

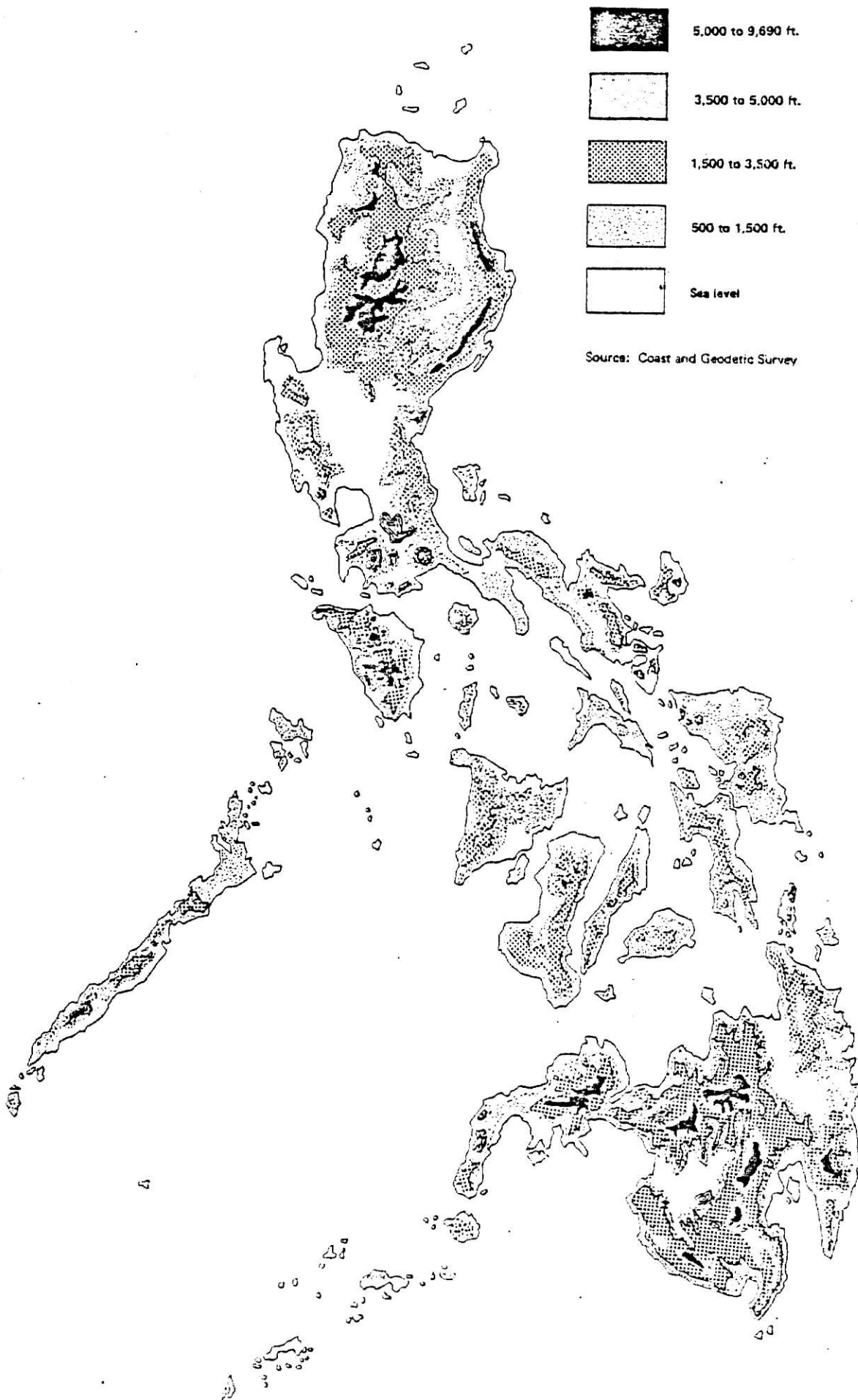
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**THE FOLLOWING
MAP(S) / PLAN(S) IS OF
POOR LEGIBILITY IN
THE ORIGINAL**

**THIS IS THE BEST
COPY AVAILABLE**

ELEVATION MAP OF THE PHILIPPINES

12



MAP 2
CLIMATE MAP





SOURCE: Philippine Almanac and Handbook of Facts, 1975, p. 35.

CLIMATE MAP

VERY
FREQUENT
25 %

14

LEGEND

-  1st Type - Two pronounced seasons; dry from November to April; wet during rest of the year
-  2nd Type - No dry season with very pronounced maximum rainfall from November to January
-  3rd Type - Seasons not very pronounced; relatively dry from November to April and wet during rest of the year
-  4th Type - Rainfall more or less evenly distributed throughout the year

VERY FREQUENT
32 %

Source: Weather Bureau

FREQUENT
16 %

FREQUENT
19 %

LESS FREQUENT
7 %

RARE
1 %

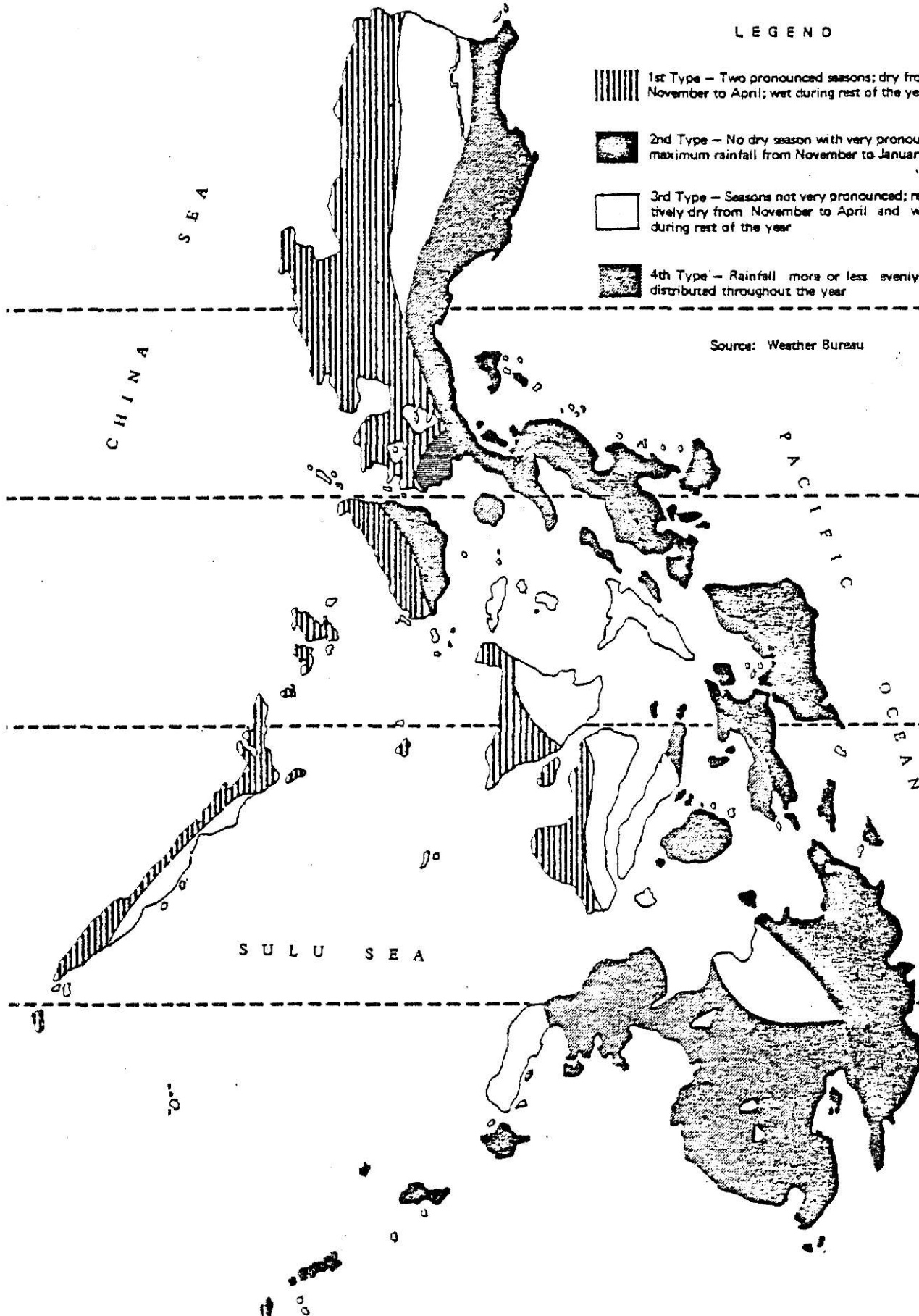


TABLE 1
TOTAL POPULATION 1948-1975
(Census and Selected Years)

Year	Census Population	Estimated Mid-Year Population	Annual Intercensal Growth Rate
1948	19,234,182		
1960	27,087,865	27,732,340	3.1
1961		28,174,753	
1962		29,001,656	
1963		29,859,498	
1964		30,749,682	
1965		31,673,693	
1966		32,633,087	
1967		33,629,509	
1968		34,664,683	
1969		35,740,434	
1970	36,684,486	36,851,954	3.0
1971		37,919,096	
1972		39,040,439	
1973		40,218,819	
1974		41,457,174	
1975		42,758,657	

SOURCE: Bureau of National Census and Statistics Office, Developmental Assistance Plan of Philippines, USAID/Philippines, June 1, 1975, vol. IV, sec. 1, p. 1.

TABLE 2

SELECTED ECONOMIC INDICATORS OF THE PHILIPPINES

National Income Statistics	1960	1965	1970	1971	1972	1973	1974
A) Gross National Product (million pesos)							
1) At current prices	12,883	21,793	40,462	49,172	55,848	69,559	94,800
2) At constant 1967 prices	18,790	24,353	31,682	33,536	34,919	38,403	40,651
3) Annual real GNP increase		5.1%	5.5%	5.9%	4.1%	9.9%	5.9%
4) GNP per capita (U.S. \$ at 1970 constant pesos)	154	173	198	203	206	220	226
B) Net Domestic Product by Industrial Origin (at current prices in million pesos)							
1) Agriculture, fishing and forestry	3,575	6,017	11,951	14,624	16,531	20,004	28,959
2) Mining and quarrying	128	232	845	924	1,051	1,692	2,128
3) Manufacturing	2,141	3,400	6,476	7,808	8,979	12,177	19,564
4) Construction	395	758	813	927	1,344	1,462	1,948
5) Transportation, communication storage and utilities	560	781	1,255	1,443	1,651	1,955	2,574
6) Commerce	1,865	2,914	4,889	5,863	6,823	8,268	11,125
7) Services	2,647	4,571	7,497	8,515	9,731	11,205	13,296
Total	11,311	18,673	33,726	40,104	46,110	56,321	79,594
% Annual NDP Increase		10.6	12.6	18.9	15.0	23.1	40.2

TABLE 2--Continued

National Income Statistics	1960	1965	1970	1971	1972	1973	1974
C) Employment							
1) Labor force (millions)	9.1	10.8	NA	13.2	13.2	14.6	14.283
Persons employed	8.5	10.1	NA	12.65	12.6	13.9	13.8
Employment rate	6.3%	6.2%	NA	5.3%	5.4%	4.8%	3.2%
2) By major industry group (in thousands)							
Agriculture, forestry, fishing	5,224	5,725	NA	6,321	6,863	7,766	7,684
Mining and quarrying	29	24	NA	59	36	51	47
Manufacturing	1,036	1,101	NA	1,439	1,323	1,396	1,423
Construction	231	295	NA	420	433	350	403
Transportation, communication, storage and utilities	291	361	NA	578	511	544	527
Commerce	753	1,114	NA	1,559	1,478	1,537	1,549
Services (including government workers)	929	1,435	NA	2,140	1,934	2,194	2,165
Industry not reported	46	47	NA	27	4	30	28
Total	8,539	10,101	NA	12,543	12,582	13,865	13,824
D) Prices and Wages (1965 = 100)							
Philippine consumer price index	76.5	100.0	131.5	160.2	173.4	194.5	271.9
Manila	79.4	100.0	133.7	153.2	168.9	187.5	251.9
Regions outside Manila	75.7	100.0	130.9	162.0	174.5	196.4	277.0

SOURCE: 1) National Economic Development Authority (NEDA) Statistical Yearbook, 1976.

2) Developmental Assistance Plan of the Philippines - 1975.

TABLE 3

SELECTED INCOME STATISTICS

A) Total Number of Families by Income Class, Urban and Rural (1961, 1965, 1971)								
Income Class by Pesos	Year 1961		Year 1965		Year 1971		Philippines	Urban
	Philippines	Rural	Urban	Philippines	Rural	Urban		
Number of Families (in thousands)	4,426	2,921	1,505	5,126	3,606	1,520	6,347	4,434
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under - 500	17.0	21.2	8.8	11.6	14.5	4.5	5.2	6.6
500 - 999	29.3	36.0	16.3	17.7	21.9	7.7	12.1	15.8
1,000 - 1,499	17.8	18.8	16.0	16.7	18.8	11.7	12.2	15.0
1,500 - 1,999	12.0	10.5	14.9	13.5	14.4	11.4	11.8	13.9
2,000 - 2,999	10.8	8.2	15.9	17.5	15.8	21.6	17.7	18.0
3,000 - 4,999	7.4	3.7	14.3	13.5	10.7	20.0	20.0	17.9
5,000 and over	5.8	1.6	13.7	9.4	3.7	23.1	21.0	12.8
								39.8
B) Distribution of Family Income in the Philippines (1961, 1965, 1971)								
Family Income Group	1961	1965	1971					
Lowest 20 percent	4.2	3.5	3.7					
Second 20 percent	7.9	8.0	8.2					
Third 20 percent	12.1	12.8	13.2					
Fourth 20 percent	19.3	20.2	21.0					
Top 20 percent	56.4	55.4	53.9					
Top 10 percent	41.0	40.0	36.9					

SOURCE: 1) National Economic Development Authority (NEDA) Statistical Yearbook, 1976, pp. 444-445.

2) The Philippines: Priorities and Prospects for Development (Washington, D.C.: World Bank, 1976, p. 95.

TABLE 4
REGIONAL POPULATION AND INTER-REGIONAL MIGRATION
AND GROWTH FIGURES BETWEEN 1960-1970
(in thousands)

Province	Natural Population Growth	Net Migration	Net Change	Population	
				1960	1970
	A				
I. Ilocos	787.4	(161.2)	626.2	2,427	2,991
II. Cagayan	394.6	32.3	426.9	1,202	1,690
III. Central Luzon	956.7	190.4	1,147.1	2,566	3,713
IV. Southern Tagalog	1,918.7	904.2	2,822.9	5,502	8,325
V. Bicol	904.9	(300.8)	604.1	2,363	2,966
VI. Western Visayas	965.7	(425.6)	540.1	3,077	3,618
VII. Central Visayas	749.7	(239.8)	509.9	2,523	3,032
VIII. Eastern Visayas	698.4	(358.0)	340.4	2,041	2,381
IX. Western Mindanao	522.6	(4.3)	518.3	1,350	1,869
X. Northern Mindanao	817.7	44.2	861.9	2,111	3,019
XI. Southern Mindanao	837.3	318.6	1,155.9	1,923	3,078

SOURCE: NEDA Statistical Yearbook of the Philippines, 1976, pp. 36, 37, and 59; also, NEDA Book, graph (Xerox), p. 44.

MAP 3

REGIONAL DELINEATION AND REGIONAL CAPITALS

SOURCE: Philippine Almanac and Handbook of Facts, 1975, p. 52.

**THIS BOOK
CONTAINS
NUMEROUS
PAGES THAT ARE
CUT OFF**

**THIS IS AS
RECEIVED FROM
THE CUSTOMER**

REGION I Ilocos

1. Ilocos Norte
2. Abra
3. Ilocos Sur
4. Mt. Province
5. Benguet
6. La Union
7. Pangasinan

REGION II Cagayan

8. Batanes
9. Cagayan
10. Kalinga-Apayao
11. Isabela
12. Nueva Vizcaya
13. Quirino*

REGION III Central Luzon

14. Nueva Ecija
15. Tarlac
16. Zambales
17. Pampanga
18. Bulacan
19. Bataan

REGION IV Southern Tagalog

20. Rizal
21. Cavite
22. Laguna
23. Batangas
24. Quezon
25. Marinduque
26. Occidental Mindoro
27. Oriental Mindoro
28. Romblon
29. Palawan

REGION V Bicol

30. Camarines Norte
31. Camarines Sur
32. Albay
33. Sorsogon
34. Catanduanes
35. Masbate

REGION VI Western Visayas

36. Aklan
37. Antique
38. Capiz
39. Iloilo
40. Negros Occidental

REGION VII Central Visayas

41. Negros Oriental
42. Cebu
43. Bohol

REGION VIII Eastern Visayas

44. Northern Samar
45. Eastern Samar
46. Samar
47. Leyte
48. Southern Leyte

REGION IX Western Mindanao

49. Zamboanga del Norte
50. Zamboanga del Sur
51. Basilan*
52. Sulu
53. Tawi-tawi*

REGION X Northern Mindanao

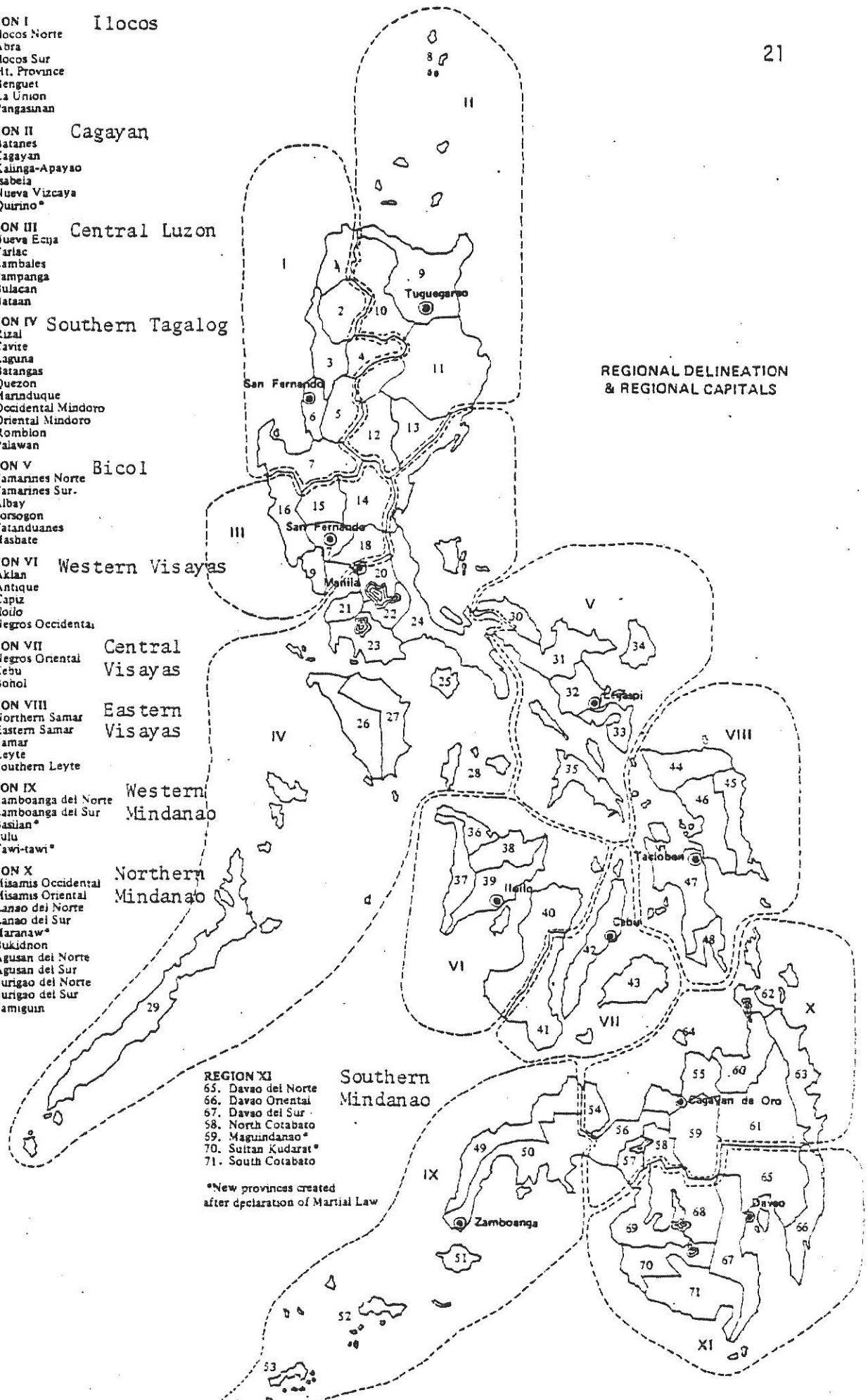
54. Misamis Occidental
55. Misamis Oriental
56. Lanao del Norte
57. Lanao del Sur
58. Maranaw*
59. Bukidnon
60. Agusan del Norte
61. Agusan del Sur
62. Surigao del Norte
63. Surigao del Sur
64. Camiguin

REGION XI Southern Mindanao

65. Davao del Norte
66. Davao Oriental
67. Davao del Sur
68. North Cotabato
69. Maguindanao*
70. Sultan Kudarat*
71. South Cotabato

*New provinces created
after declaration of Martial Law

REGIONAL DELINEATION
& REGIONAL CAPITALS



CHAPTER III

AGRICULTURAL OVERVIEW

This section of the thesis shall specifically focus upon the non-grain activities of agriculture in the Philippines. This is done in an attempt to provide background for a more complete understanding of the grain marketing system.

As the economy has expanded its industrial base since Independence the relative importance of agriculture has been reduced. (See NEDA Statistical Yearbook of the Philippines, 1976) Yet agriculture is still the most important sector of the Philippine economy. It accounts, today, for about one-third of net domestic product, one-half of total employment and 20 percent of commodity export earnings.

The Philippines has a broad diversified agricultural sector, as is evidenced by a review of the statistics presented in the Philippine Almanac and Handbook of Facts for 1975 and in the NEDA Statistical Yearbook of the Philippines, 1976. A wide variety of both food and commercial crops are grown. Palay (rough rice) and corn are the principal food crops grown. Coconut, sugar cane and abaca are the major commercial crops grown.

The total level of crop production has increased greatly since 1960 (see Tables 5 and 6). Total crop production in 1960 was about 10.4 million metric tons and in 1974 it was about 17.6 million metric tons, a 70% increase in total crop tonnage. In 1974 food crop production represented 69% of total crop production. The percentage of food and commercial crop production to total crop production in any year is represented schematically in Table 7.

Food crop production has increased by approximately 5 million metric tons since 1960. The primary components of the increase in food production has been in palay production of around 2.4 million tons, in corn production of around 1.1 million tons and in banana production of .9 million tons. Since there has been a yearly growth rate of population at 3%, despite the increases, food output has been able to grow only at a per capita rate of 1%. Consequently, production shortfalls have generally characterized the basic foodstuffs sub-sector and imports have been necessary to satisfy domestic demand. These imports have generally been rice from Thailand and wheat from the United States, Australia and Canada. (See IBRD Study, vol. I)

Food crop production since 1970 has increased significantly in the banana and fruits category (see Table 5). This increase in production has been brought about by producer reaction to increased demand abroad for these crops. This increase in demand comes primarily from other Asian countries.

The Philippines have been exporting bananas since only 1970. The major production centers for bananas are the regions of Western Visayas, Eastern Visayas and Northern Mindanao. These three regions account for about 63% of annual production. Current annual production has increased fourfold since 1960. Japan is the major export market for the bananas. The Philippines now supplies 30% of Japan's annual imports. Further expansion of banana production is unlikely, however, "for further rapid expansion in the Japanese market may be limited by increasing competition from other suppliers."¹¹

The demand for other fruits grown in the Philippines has risen rapidly the past five years. (See A Fresh Look at Export Development by the Philippines Export Council) Mango production has risen over 135 thousand metric tons

¹¹International Bank for Reconstruction and Development, Agricultural Sector Survey--Philippines, vol. I, May 1973, p. 29.

since 1960. Hong Kong imports a sizeable quantity of these mangoes. Annual pineapple production has grown from 133.9 thousand metric tons in 1960 to a production level of 338.3 thousand metric tons in 1974 with the vast majority of this increase in production being exported to Japan and the United States.

Root crop and vegetable production is virtually unchanged since 1960 even though the amount of hectorage devoted to vegetable production declined 18% between 1960 and 1975 (see Table 8). This despite the fact that "vegetables are the cheapest source of protein, minerals and vitamins for the human body."¹²

Soybeans is a minor crop in the Philippines. The Filipino farmer's "experience (in growing them) over the past decade has been disappointing."¹³ The area in soybeans and yields have declined since the early 1960's and current production, largely centered in the region of Western Visayas (72% of production), is only around 2,000 metric tons annually. Soybeans are used mainly as food.

Since agricultural food crop production has significantly increased since 1960, what is the source of the increase? "Growth in agricultural production has come from expansion of hectorage, particularly during the post-war period before 1960 and from increases in yields due to investments in irrigation, use of fertilizer and the new higher yielding rice varieties after 1960."¹⁴

There are three principal commercial crops grown in the Philippines. They are coconuts, sugar cane and abaca (see Table 6).

¹²D.A.P., vol. II, p. 11.

¹³IBRD, vol. I, p. 25.

¹⁴D.A.P., vol. II, p. 1.

According to the Philippines Almanac and Handbook of Facts, the Philippines rank first in the world in the production and export of copra, coconut oil, copra meal and cake, and desiccated coconut. Production of coconuts has increased about 780 thousand metric tons since 1960. This increase in production has come about primarily due to an expansion of hectorage devoted to coconut production (see Table 8). Production is principally located in the regions of Northern, Western, and Southern Mindanao, and Eastern Visayas. These four regions account for 75% of the production.

Most of the coconuts are processed into copra according to statistics compiled by NEDA and published in their statistical yearbook. Copra output reached a peak of 1.75 million tons in 1963, after which it declined to 1.3 million tons by 1970. For the rest of the 70's there has been increasing production levels of copra. Approximately 80% of the coconut production is exported in the form of copra (41%, including meal and cake), oil (52%), and desiccated coconut (7%).

Although average coconut yield is high compared to other producing countries, the IBRD study characterized producers as being generally uneconomic and disorganized. The high yield is due to the superior climatic conditions in the Philippines for growing coconuts rather than improved production practices.

Sugar cane production has increased tremendously since 1960. (See generally vol. II, D.A.P., and the IBRD study) Prior to 1960 the Philippines could export 980,000 tons of cane duty free to the United States. In 1961, the U. S. stopped importing sugar from Cuba as a result of Castro's takeover. The Laurel-Langley trade agreement of 1965 between the U.S. and the Philippines raised this duty free quota to 1.3-1.5 million tons annually. Consequently

sugar cane producers doubled the area devoted to production (see Table 8). Production of sugar cane increased by .7 million tons by 1970 and by 1974 had increased by over 1.6 million tons from 1965 levels. The region of Western Visayas is the sugar cane producing area of the country with about 72% of annual sugar cane production originating there.

The rapid expansion created problems. Sugar cane production was pushed into marginal land. Breakdowns in the sugar marketing system and declining production yields brought about a decline in sugar yield from a high of 7.7 tons/ha in 1958/59 to about 5.4 tons in 1970/71. In an effort to alleviate the marketing problem in 1974 the government assumed control over marketing the entire sugar crop. The Philippine Exchange Company was formed by the government owned Philippine National Bank to be the sole exporter of sugar. The Philippine National Bank had already controlled domestic markets.

Yet despite all of these efforts, the Philippines has been consistently unable to fulfill the quota set in the agreement. The Laurel-Langley agreement expired in 1974 and a new agreement is under negotiation between the two countries. If the Philippines fails to get some preferential agreement for the exporting of its sugar into the U.S., severe economic difficulties will beset the whole industry. Due to its geographic location and the increase in Latin American production, as well as the possible reentry of Cuban sugar, the Philippines would be hard pressed to compete in the U.S. market concluded the U.S.A.T.D. in their Developmental Assistance Plan for the Philippines.

Abaca or manila hemp has always been one of the Philippines main export crops. In 1974, 125.9 thousand metric tons were produced which represents a 33% increase in tonnage from 1960. Much of this increase in output is due to renewed demand for abaca fiber in the pulp and paper industry, not for cordage purposes. Bicol, Western Visayas, and Southern and Western Mindanao regions are where 84% of the annual crop is produced (see Table 5).

Another major component of the agricultural sector of the Philippines is the livestock (carabao, cattle and hogs) and poultry industry. The total number of livestock in 1973 was about 16.9 million head which represents an increase of about 4.7 million head since 1960. During this same time period poultry production remained relatively unchanged (see Table 9).

Despite the increases in livestock production, the livestock and poultry subsector as a whole has not expanded as rapidly as other subsectors of Filipino agriculture. For example the value added (in constant prices) by the livestock subsector of the agricultural sector was 23% in 1960. However, this subsector contributed only 17% of the value added of the agricultural sector in 1970 (see Tables 5 and 9).

Livestock and poultry production is spread out more evenly throughout the Philippines than crop production. The regions of Southern and Western Mindanao, Southern Tagalog and Central Luzon account for about 53% of annual production. The leading hog producing provinces are Eastern Visayas, Northern Mindanao and Southern Tagalog which comprise 46% of annual production. The leading provinces for poultry production are Southern Tagalog, Northern Mindanao and Central Luzon. Fifty-nine percent of annual production comes from these three regions.

The national government, through the Bureau of Animal Industry of the Department of Agriculture, is engaged in a program to increase swine and poultry production. However, the major constraint to potential expansion is an adequate feed base. "Achievement of the government's targets for poultry and pork production will be determined by the availability of feedgrains and mill by-products. . . . Prospects for a significant increase in domestic supplies (of these products) during the next few years are not bright."¹⁵

¹⁵IBRD, vol. II, annex 4, p. 30.

"Although it is one of the most important food items in the Filipino diet, fish has not been produced in sufficient quantities to meet the needs of a fast growing population."¹⁶ (see Table 10) Retail prices of fish, which is the principal source of animal protein in the typical Filipino's diet, rose faster than other food prices in the past five years.¹⁷

The category listed as municipal or subsistence fishing of Table 10 involves the utilization of small traditional craft which operate no more than three miles from shore. Commercial fishing vessels, however, are defined for statistical purposes as those which weigh three tons or more and operate three miles or further from the coast.

The marine catch from the municipal and commercial fishing has represented about three-fourths of the total production each year since 1970. The total marine "catch appears to be approaching its potential limit. Catches in many commercial fishing grounds around Luzon are recording declines . . . the potential for further rapid expansion of commercial (includes municipal and subsistence) fishing would appear to be an extension into more remote fishing areas of the Sulu Sea, the Northern Celebes Sea, and the South China Sea. But in view of fairly intensive fishing by other nationals in these waters the prospects for the Philippines are quite uncertain."¹⁸

It appears that future increases in fish production will come through the utilization of more fishponds. The production from fishponds has become an increasingly important component of total production since 1965. In 1970 production from fishponds represented 10% of total production and in 1973 it represented 36% of total production (see Table 10). The further expansion of

¹⁶Philippine Almanac of Facts for 1975 (Manila: Philippine Almanac Printers, 1975), p. 212.

¹⁷See Summary of 19 Economic Surveys of Food Consumption by the Special Studies Division, Department of Agriculture, March, 1977.

¹⁸IBRD, vol. I, p. 34.

fish farming was one of the major objectives of the just completed four year development plan 1974-1977 drawn up by the National Economic and Development Authority for the national government.

The Philippines is one of the major exporters of forestry products in Southeast Asia. The Philippines, Indonesia and Sabah annually provide some 90 percent of the world's tropical wood. In 1972 there existed some 14 million hectares of productive or commercial forest lands throughout the Philippines. Mindanao Island accounts for about 75 percent of the timber production each year. The 1970's saw major increases in nearly every sector of the forestry industry (see Table 11).

Most of the logs, according to the Bureau of Forest Development in statistics compiled in the Developmental Assistance Plans by USAID, are exported to Japan (80% in 1972) and the United States. A review of the statistics in this study would find that the plywood and veneer production is shipped largely to the United States. The lumber produced is used solely in the Philippines. The worldwide recession of the past few years has led to a decrease in demand, so states this study, for products produced by each part of the Filipino forestry industry. Veneer production is down due to a sharp drop in demand from the United States. Current log production has been maintained during these years which has led to huge inventory levels of logs.

Although the Philippines is so well endowed with wood materials, it has had to import increasing amounts of pulp and waste paper. Ironically, this situation exists because per capita paper use is quite low. Domestic demand is thought to be at a level where it cannot yet support the output from an economic size mill.

If worldwide demand for forestry products were to increase, the Philippines could expand even further its level of production. There is, according

to the International Bank for Reconstruction and Development in its four-volume Agricultural Sector Survey of the Philippines, substantial room for increases in timber production. This increase can come from two sources: 1) major timberlands still not under production and 2) through better management, production could be increased substantially without jeopardizing the resource base.

Agriculture has been the principal foreign exchange earner for the Philippines. In 1950 agricultural exports accounted for some 85% of exchange earnings. By 1974 this share had declined to some 70% of exchange earnings (see Table 12). "This downward trend will probably continue, even though by 1985 agricultural exports could still account for a third of total export earnings."¹⁹

Agricultural export production is dominated by the sugar and coconut products group (see Tables 12 and 13). Since 1970 these two product groups have provided about 42% of the foreign exchange earned each year. As a result of the boom in international commodity prices of a few years ago, the earnings of sugar, desiccated coconut, and coconut oil have skyrocketed. The volume of both sugar and coconut products has not increased substantially despite the price boom. The boom in international commodity prices also significantly affected the increase in the value of mineral products exported. Virtually all of this increase is due to the expanded production and price level of copper concentrates.

According to a World Bank study, Philippines - Priorities and Prospects for Development, in 1976, earnings from exports of traditional agricultural products will expand slowly. If there is to be an expansion of exports, it "will depend on the implementation of an aggressive program to stimulate

¹⁹World Bank, p. 146.

export production, particularly of non-traditional manufacture, and diversify products as well as markets."²⁰ Increases in exports in terms of volume and earnings are expected to come from minerals, particularly copper and nickel, and processed wood products.

The World Bank, in this same study, concludes that the Philippines has a relatively open economy with exports and imports equal to about 22% and 26% of gross national product, respectively. This study states the instability in the international commodity markets has posed major financial management problems for the government. It poses a problem to the financing of the national government's budget for a significant proportion of government revenue is through export taxes. The financing of the budget is therefore extremely vulnerable to the uncertainties of the international commodity markets. During the international commodity price boom, export taxes were revised significantly upward in 1972. As a result of the tax increase when this boom ended in 1974, many of the export industries could no longer compete in foreign markets, so the government had to suspend temporarily the new export tax on some commodities. This has played havoc on financing the national government's budget.

"The extent to which the Philippines can successfully expand its exports will depend not only on the ability to increase production for export but also on the expansion of overseas markets through promotional activities and measures to keep exports competitive."²¹ The direction of trade has changed dramatically over the past fifteen years. Japan now rivals the United States as a major trading partner of the Philippines (see Table 14). In the past few years the national government has attempted to expand overseas markets by entering into various economic agreements. The Philippines has concluded

²⁰World Bank, p. 457.

²¹World Bank, p. 461.

seventeen bilateral trade agreements including six with Communist countries. In the past two years nine other agreements are currently under negotiation. This is expected to decrease the importance of the United States even further as a trading partner.

The setting in which agriculture operates is presently undergoing a complete overhaul. Since 1972, when martial law was instituted, there has been a major expansion of the role of government in promoting agricultural development.

Under the auspices of the "New Society" programs the direction of government in agriculture has changed from supporter to initiator. The government has initiated a series of programs which include input production support, increased credit support, infrastructure development, basic agrarian reform and export financing. "Compared with public sector's poor performance in the past, however, significant progress has been made in virtually all areas of fiscal and financial management."²² However, substantial obstacles still exist within the government bureaucracy in its efforts to promote agricultural development, and until they are overcome it will continue to be the principal constraint to growth of the agricultural sector. Only time will tell if the new direction of government and its programs will be successful.

Despite the expanding role of public corporations such as the Philippine Exchange Council, the government is still committed to a free enterprise economy for agriculture (see Agricultural and Natural Resources - A Strategy for the Seventies by the Department of Agriculture and Natural Resources). The means of production for all facets of the agricultural economy are to remain in the hands of private individuals and corporations. This appears to be a most viable policy to continue since the landlords and businessmen have been two of the most powerful groups in Filipino society. Perhaps this

²²World Bank, p. 31.

is best evident by the minimal progress made in land reform despite many government efforts in that direction since Independence. This policy contributes to the stability of government. It also avoids any clashes with owners which might then hinder agricultural output and processing of agricultural goods positively in the short run and most probably in the long run too.

TABLE 5

QUANTITY AND VALUE OF PRODUCTION BY KIND OF CROP
(quantity in thousand metric tons; value in million pesos)

Crop Year	Total Crops		Food Crops		Commercial Crops		Palay		Corn	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
1960	10,411.2	2,045.9	7,315.1	1,168.1	3,096.1	877.8	3,739.5	711.9	1,165.3	149.7
1965	12,242.8	3,278.4	8,478.9	1,965.3	3,763.9	1,313.1	3,992.5	1,227.7	1,312.7	272.8
1970	15,200.7	8,099.9	10,670.1	4,750.3	4,530.6	3,399.6	5,233.4	2,073.7	2,008.2	525.9
1971	15,621.4	9,143.9	10,773.8	5,559.2	4,847.6	3,584.7	5,342.9	2,490.2	2,005.0	720.9
1972	15,192.9	10,305.9	10,625.0	6,741.6	4,567.0	3,563.0	5,100.1	3,150.1	2,012.6	1,043.5
1973	15,079.5	10,742.7	9,877.7	6,258.3	5,201.8	4,484.5	4,414.6	2,650.0	1,831.1	828.2
1974	17,546.3	17,743.5	12,072.6	10,370.0	5,473.7	7,393.5	5,594.1	4,960.4	2,288.7	1,537.1

Crop Year	Banana		Root Crops		Vegetables ²		Fruits ³		Other Food Crops ⁴	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
1960	307.3	24.1	1,411.6	84.4	185.2	45.6	411.4	61.5	94.8	77.0
1965	684.8	44.1	1,536.7	149.5	216.0	60.9	645.2	111.7	136.7	98.6
1970	896.0	656.9	1,316.3	404.5	310.3	245.8	744.2	505.9	161.7	337.6
1971	1,034.8	811.8	1,220.8	426.8	304.4	275.1	691.1	484.5	171.2	349.8
1972	980.1	781.2	1,217.7	446.7	305.6	303.1	823.9	672.8	185.0	377.0
1973	1,012.6	814.7	1,220.5	490.5	332.6	372.4	854.6	681.7	212.4	420.8
1974	1,235.5	1,038.1	1,410.8	561.0	400.0	588.7	918.2	1,097.8	225.3	586.5

SOURCE: National Economic and Development Authority, Statistical Yearbook of the Philippines, 1976, portions of pp. 133-142.

¹Root crops include: cassava, gabi, camote, tugue, ubi, and pao (galicing).

²Vegetables include: cabbage, eggplant, radish, tomatoes, onions, and potatoes.

³Fruits include: mango, pineapple, mandarin, orange, pomelo and calamansi, and 14 others.

⁴Other food crops include: beans, peas, coffee, cacao, and peanuts.

TABLE 6

QUANTITY AND VALUE OF PRODUCTION BY KIND OF CROP
(quantity in thousand metric tons; value in million pesos)

Crop Year	Total Crops		Food Crops		Commercial Crops		Coconut		Sugar Cane	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
1960	10,411.2	2,045.9	7,315.1	1,168.1	3,096.1	877.8	1,117.3	399.6	1,809.7	339.8
1965	12,242.8	3,278.4	8,478.9	1,965.3	3,763.9	1,313.1	1,533.5	672.2	2,034.8	506.3
1970	15,200.7	8,099.9	10,670.1	4,750.3	4,530.6	3,399.6	1,726.2	1,273.0	2,594.6	1,801.6
1971	15,621.4	9,143.9	10,773.8	5,559.2	4,847.6	3,584.7	1,679.1	1,261.7	2,980.2	2,079.3
1972	15,192.9	10,305.9	10,625.0	6,741.6	4,567.0	3,563.0	1,813.4	1,386.7	2,559.7	1,897.3
1973	15,079.5	10,742.7	9,877.7	6,258.3	5,201.8	4,484.5	1,797.1	1,646.5	3,190.8	2,499.0
1974	17,546.3	17,743.5	12,072.6	10,370.0	5,473.7	7,393.5	1,799.7	3,704.8	3,449.7	3,020.8

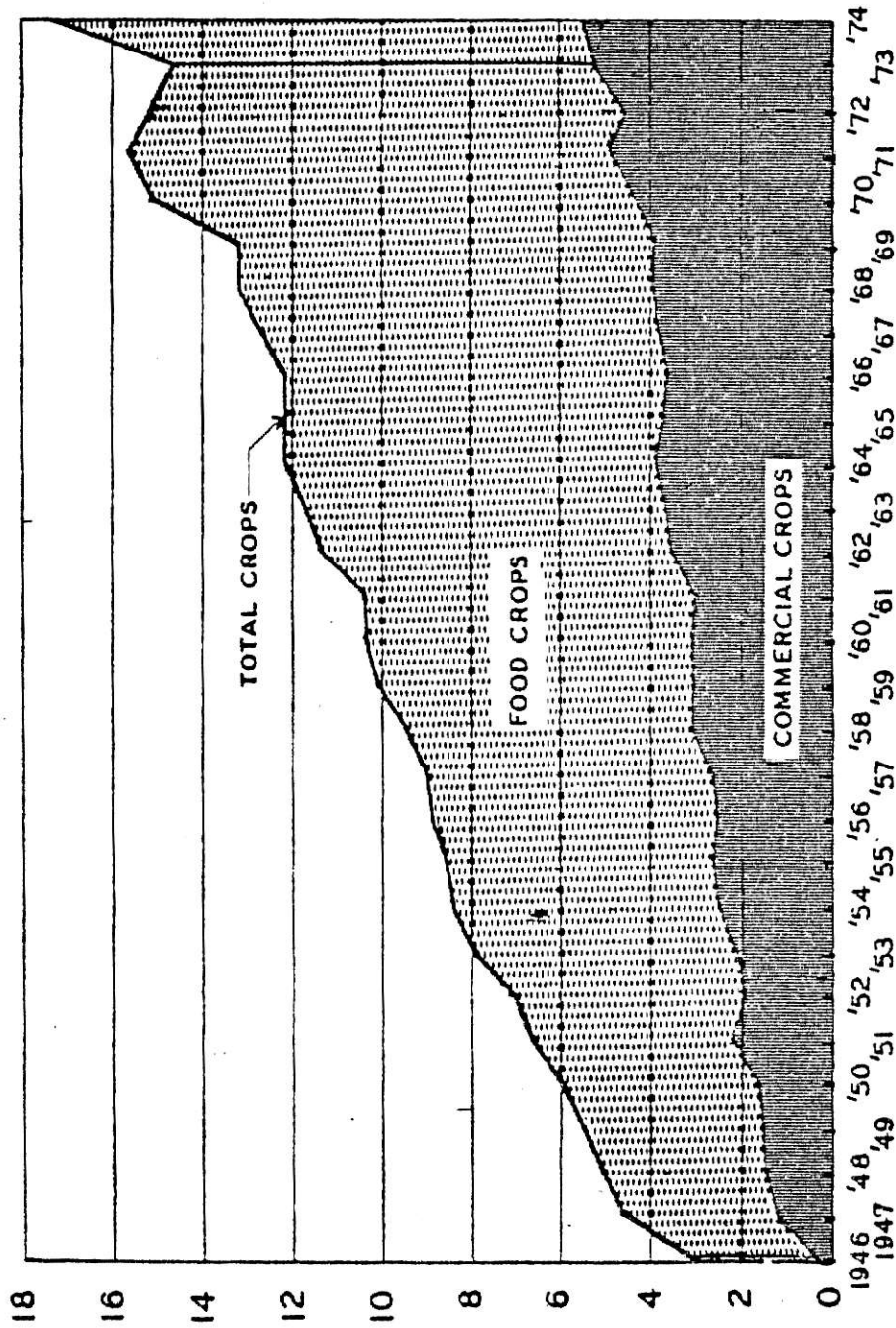
Crop Year	Tobacco ¹		Abaca		Other ² Comm. Crops	
	Qty	Value	Qty	Value	Qty	Value
1960	64.0	73.4	94.5	58.8	10.6	6.2
1965	45.8	45.0	134.0	78.6	15.8	11.0
1970	61.2	129.0	122.4	105.7	26.2	40.3
1971	55.8	110.9	104.6	90.9	27.9	41.9
1972	56.3	135.7	110.1	102.6	28.4	41.2
1973	64.8	175.1	119.2	118.5	29.9	45.3
1974	63.4	235.7	125.9	374.7	35.1	57.5

SOURCE: National Economic and Development Authority, Statistical Yearbook of the Philippines, 1976, portions of pp. 133-142.

¹Tobacco consists of Native and Virginia brands.

²Other commercial crops consists of ramre, rubber, maguey, and kapok.

TABLE 7
OVER-ALL CROP PRODUCTION: CROP YEAR 1946-74
MILLION METRIC TONS



SOURCE: National Economic and Development Authority, Statistical Yearbook of the Philippines, 1975, p. 144.

TABLE 8

AREA HARVESTED BY KIND OF CROP¹
(area in thousand hectares)

Crop Year	Total Area Harvested	Palay	Corn	Banana	Root Crops	Vegetables	Fruits	Other Food Crops	Coconuts	Sugar Cane	Tobacco	Abaca	Other Commercial Crops
1960	7,593.8	3,306.5	1,845.5	161.5	289.1	80.7	181.1	143.6	1,059.4	242.2	95.8	175.2	13.2
1965	8,251.8	3,199.7	1,922.8	220.5	273.7	53.1	180.1	145.4	1,604.7	350.5	76.1	199.3	25.9
1970	8,946.5	3,113.4	2,419.6	235.2	252.4	62.8	166.4	157.8	1,883.9	366.1	87.4	173.0	29.7
1971	9,096.8	3,112.6	2,392.2	227.1	246.0	58.5	152.6	156.3	2,048.5	441.6	75.6	155.3	30.5
1972	9,381.8	3,246.4	2,431.7	243.8	258.5	65.9	149.9	154.9	2,125.5	441.0	77.6	145.2	31.4
1973	9,210.0	3,111.8	2,325.4	247.5	266.3	65.5	160.6	164.7	2,133.3	455.2	84.0	163.3	32.4
1974	10,117.0	3,436.8	2,763.0	211.8	314.0	65.9	158.1	171.8	2,206.0	490.7	87.1	170.1	39.2

SOURCE: National Economic and Development Authority, Statistical Yearbook of the Philippines, 1976, pp. 148-155.

¹Column headings represent same commodities as in Tables 5 and 6.

TABLE 9

POPULATION AND INVENTORY VALUE OF SELECTED LIVESTOCK AND POULTRY
(number in thousand head; value in thousand pesos)

Crop Year	Total Livestock and Poultry		Total Livestock		Total Poultry ¹		Carabao		Cattle	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
1960	66,930	921,551	12,229	850,046	54,701	71,505	3,696	506,183	1,111	135,271
1965	71,307	1,549,835	12,718	1,448,205	58,589	101,630	3,346	755,400	1,560	365,494
1970	73,039	2,519,149	13,634	2,362,884	59,405	156,265	4,432	1,338,527	1,679	460,167
1971	73,189	2,888,844	14,325	2,670,082	58,864	218,762	4,556	1,358,228	1,795	473,012
1972	68,172	3,563,337	15,469	3,374,791	52,703	188,546	4,711	1,892,187	1,933	748,114
1973	69,782	3,795,511	16,911	3,620,039	52,871	175,472	4,937	2,051,156	2,099	784,016

Crop Year	Hog		Other Livestock ²		Chicken		Duck	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value
1960	6,573	182,393	849	26,199	32,355	67,236	2,231	3,725
1965	6,939	273,536	873	53,775	56,929	96,693	1,478	4,142
1970	6,456	485,480	1,067 ³	78,710	56,999	149,380	2,132	5,382
1971	7,050	812,843	924 ⁴	25,999	56,512	209,831	2,352	8,931
1972	7,742	705,001	1,083	29,489	50,103	179,357	2,600	9,189
1973	8,627	753,874	1,248	30,993	49,965	165,492	2,906	9,980

SOURCE: National Economic and Development Authority, Statistical Yearbook of the Philippines, 1976, pp. 161-163.

¹Total poultry also includes geese and turkeys.

²Other livestock is composed of horses, goats and sheep.

³Other livestock is composed of just horses and goats. The sheep series was discontinued.⁴

⁴Other livestock is composed only of goats. The horse series that year was discontinued.

TABLE 10
 QUANTITY AND VALUE OF FISH PRODUCTION, BY
 TYPE OF PRODUCTION
 (quantity in thousand metric tons; value in million pesos)

Year	Total		Commercial Fishing Vessels		Fishponds		Municipal Fisheries and Subsistence Fishing	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value
1960	444.6	464.4	120.0	93.6	60.1	96.2	264.5	274.6
1965	667.2	806.5	300.1	372.1	63.2	106.2	326.7	330.0
1970	988.9	1,725.3	381.9	614.8	96.5	252.7	510.5	857.7
1971	1,023.1	2,613.4	382.3	879.2	97.9	328.0	542.9	1,123.8
1972	1,222.4	2,827.5	424.8	1,106.1	98.9	332.4	598.7	1,389.1
1973	1,204.8	3,295.3	465.4	1,261.6	99.6	434.3	639.8	1,599.5

SOURCE: Fisheries Statistics of the Philippines, NEDA Statistical Yearbook of the Philippines for 1976, p. 190.

TABLE 11
 QUANTITY OF PRODUCTION OF LOGS, LUMBER,
 PLYWOOD AND VENEER

Fiscal Year	Logs (cu m)	Lumber (1,000 bd ft)	Plywood (1,000 sq ft)	Veneer (1,000 sq ft)
1960	6,314,737	384,227	324,027	254,231
1965	6,175,142	531,413	597,427	742,327
1970	11,004,564	568,420	573,048	305,280
1971	10,679,519	364,827	589,971	635,162
1972	8,416,099	598,166	785,353	764,303
1973	10,445,620	449,404	1,240,539	717,000
1974	10,189,898	472,319	1,194,422	584,046

SOURCE: Bureau of Forest Development, NEDA Statistical Yearbook of the Philippines for 1976, p. 211.

TABLE 12
PRINCIPAL PHILIPPINE EXPORTS BY MAJOR COMMODITY GROUPS
(f.o.b. value in million U.S. dollars)

Year	Total	Coconut Products	Sugar Products	Forest Products	Mineral Products	Fruits and Vegetables	Abaca Products	Tobacco and Products	Miscellaneous Manufactures and Others
1960	560	179	143	102	61	10	45	7	13
1965	768	270	147	195	77	15	26	16	22
1970	1,062	209	196	295	224	34	17	15	72
1971	1,136	254	220	264	216	41	15	15	111
1972	1,106	228	218	235	212	52	16	18	127
1973	1,837	372	295	444	334	58	23	27	284
1974	2,725	609	766	336	444	91	45	31	403

SOURCE: Central Bank of Philippines and National Census and Statistics Office, NEDA Statistical Yearbook for 1975, pp. 422-423.

TABLE 13
TEN PRINCIPAL EXPORTS AND TOTAL EXPORTS
(f.o.b. value in U.S. dollars)

Year	Total	Copra	Sugar	Bananas	Logs and Lumber	Desiccated Coconut	Coconut Oil	Canned Pineapples	Gold	Abaca (unmanu- factured)	Copper Concen- trates	Others
1960	560,389	138,643	133,484	18	91,600	18,837	15,669	7,400	N.A.	41,744	29,589	83,375
1965	768,448	170,004	132,439	2	162,001	20,447	68,095	8,738	N.A.	24,216	46,518	135,988
1970	1,061,702	80,077	187,653	4,954	249,766	19,449	95,585	21,398	N.A.	15,342	185,190	202,288
1971	1,136,431	114,040	212,348	15,389	225,907	20,741	103,451	19,683	7,942	12,971	185,135	218,824
1972	1,105,538	110,480	208,639	24,326	174,444	17,551	84,269	19,552	26,898	12,874	190,867	235,638
1973	1,837,188	165,764	273,966	27,831	338,680	32,456	152,648	19,696	39,941	19,631	290,281	536,294
1974	2,724,989	139,784	737,365	45,479	245,711	60,300	380,021	30,625	74,309	37,533	393,184	580,678

SOURCE: Central Bank of Philippines and National Census and Statistics Office, NEDA Statistical Yearbook for 1975, pp. 426-429.

TABLE 14
DIRECTIONS OF EXTERNAL TRADE
(in percent)

	1960	1965	1970	1971	1972	1973	1974
<u>Trading Partner</u>							
<u>Exports:</u>							
United States & Canada	50.7	45.7	41.8	40.8	41.0	36.5	42.9
Europe	19.5	20.6	9.3	14.1	16.6	16.2	14.2
Japan	21.9	28.4	39.7	35.1	33.8	35.8	34.8
Other Asian Countries	3.4	3.8	7.7	8.4	6.8	9.1	5.2
Others	4.5	1.5	1.5	1.6	1.8	2.4	2.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Imports:</u>							
United States & Canada	45.5	36.6	30.5	27.2	27.4	29.4	24.5
Europe	13.2	16.7	18.4	19.4	15.6	14.9	15.2
Japan	26.5	24.3	31.7	30.3	31.8	32.4	27.5
Other Asian Countries	9.0	12.7	8.1	11.0	9.0	6.9	7.1
Others	5.8	9.7	11.3	12.1	16.2	16.4	25.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Central Bank of the Philippines, The Philippines: Priorities and Prospects for Development, The World Bank: Washington D.C., 1976, p. 463.

CHAPTER IV

GOVERNMENT AGENCIES AND PROGRAMS

Prevailing public policy dictates the way producers and those involved in the marketing process can operate and function. An understanding of government agencies and programs is essential if one is to understand the Filipino grain marketing system.

A matrix was created to describe and analyze the workings of the national government in the agriculture sector of the Philippines. It explains the lines of authority and communication between the governmental agencies and programs which directly affect Filipino agriculture.

An organizational matrix is an arrangement which identifies and classifies the origin and direction of authority, coordination and information. It is made up of horizontal rows and vertical columns which are numbered. A given element is located by indicating the row number followed by the column number. For example, an element (6,40) is in the fortieth column of the sixth row.

The following format rules apply to this matrix. They are:

- 1) Posts that send information are listed as names of rows on the matrix
- 2) Posts that receive direction and information are listed as names of columns on the matrix
- 3) Information being communicated between two posts is identified in the appropriate boxes common to the two posts in question

A description of each governmental agency and program will be given on a row by row basis. For convenience and ease of reading, the description of

each government agency will be preceded by its row number. Where applicable, the agency or program acronym will be given. This will be followed by an analysis of the matrix.

A) Description of Government Agencies and Programs

1) The President

The President is at the apex of the present governmental system of the Philippines. With the declaration of martial law and the abolition of Congress, the President assumed dictatorial powers. Through decrees he has implemented new, wide ranging agrarian reforms as the key component of his "New Society" program. In recent years the President has been taking a more activist role in implementing agricultural public policy. Two examples of this are the Masagña 99 program and Masaganang Maisan programs. The President also has the power of the purse. He determines how much money each agency and program receives.

According to the 1975 Philippine Almanac²³ the powers of the office of the President are divided into 12 areas of responsibility. His cabinet is also divided into fifteen departments, of which ten have a direct role in agriculture policy. The departments are quite comparable to the various cabinet offices of our own federal government but are much more powerful than those in the U.S.

2) Department of Agriculture--DA

This is a cabinet level office which reports directly to and is responsible only to the President. In recent years the power of this office

²³The Philippine Almanac and Handbook of Facts of 1975 lists each governmental agency with the person in charge of it on pages 168-176.

has been expanded. The extension service has once again been placed under the authority of this office. The National Grains Authority and National Food and Agricultural Council, two new government super agencies, have also been placed under this department's control. Various commercial crop research institutes are now under the Secretary's jurisdictional control.

3) Department of Natural Resources--DNR

This is a cabinet level office which reports directly to and is responsible only to the President. It is in charge of all mining, forest, and fishing related activities. This department has undergone a major reorganization the past three years, and is located in the same building as the Department of Agriculture.

4) Department of Agrarian Reform--DAR

This cabinet level office reports directly to and is responsible only to the President. It is in charge of overall coordination of agrarian reform efforts along with the Agrarian Reform Coordinating Council. Its principal efforts are now in the direction of transferring tenure holders into land owners as a result of Presidential Decree #2.

5) National Economic Development Authority--NEDA

This is another cabinet level office which reports directly to and is responsible only to the President. NEDA is in charge of long range, overall economic planning in the Philippines. From this office originated the just completed four year development plan for the fiscal years 1974-77 for the Philippines.

6) Department of Local Government and Community Development--DLGCD

This is yet another cabinet level office which reports directly to and is responsible only to the President. This department is spear-heading the formation, development, and operation of production and marketing cooperatives in the Philippines. It is also responsible for the effort to strengthen the viability of the operations of local governments.

7) Department of Public Works, Transportation and Communication--DPWTC

This is another cabinet level office which reports directly to and is responsible only to the President. This department is in charge of expanding and maintaining the irrigation systems of the Philippines. It is also trying to improve the overall infrastructure of the country.

8) National Science Development Board--NSDB

This too is another cabinet level office which reports to and is directly responsible to the President. This department carries on a great deal of agriculturally related research. The federal government's food and nutrition research center is located in this department.

9) Department of Education and Culture--DEC

This is a cabinet level office which reports to and is directly responsible to the President. This department heads up vocational training in agriculture. This department is also working with the National Grains Authority in the establishment of a corporate farming program designed to train farmers to farm better.

10) Department of Justice--DJ

This is another cabinet level office which reports to and is directly responsible to the President. This department handles the transfer of land

titles to tenant producers and settles all legal disputes resulting from the transfer.

11) Department of Finance--DF

This is the final cabinet level office which has a direct effect on agriculture in the Philippines. It reports to and is directly responsible to the President. Budget preparations and fiscal and monetary policy with the Central Bank are made in this office. Historically this office has had little real authority.

12) University of Philippines at Los Banos--UPLB

This is a university in which its Chancellor reports directly to the President. This is the leading university in the Philippines. Practically all of the agricultural related research done by universities and colleges is done at the UPLB. Comparatively speaking it is the land grant university of the Philippines.

13) Central Bank of the Philippines--CB

This bank reports directly to the President. Its role in the Filipino financial system is akin to the role the Federal Reserve Bank plays in the U.S. system. About one-fourth of the total assets of the financial system of the Philippines lies within the Central Bank.

14) Philippine National Bank--PNB

This government owned bank is directly responsible to the President. Although it is a government owned bank, it operates like a profit oriented, private bank. The government provides the funds for its operation. It is the largest commercial bank in the Philippines.

It provides both short term financing and long term financing, as well as credit for a wide variety of government programs. It is presently heading the expansion of credit for the Masagna 99 program. The PNB has a widespread network of branch offices in the provinces which lends itself well to the implementation of such programs.

15) Development Bank of the Philippines--DBP

The DBP is another government owned and controlled bank which reports directly to the President. It provides only long term financing to projects in all sectors of the economy. It is by far the most important source of long term credit in the Philippines.

16) Agricultural Credit Administration--ACA

The ACA reports directly to the President. The ACA assists farmers through the provision of production credits and marketing loans. This agency has had in the past, the prime responsibility for providing credit to cooperatives such as the Farm Marketing Cooperatives and the Grain Marketing Cooperatives of the Philippines (see post #62 and #63 for more information). The DBP and PNB are to increase in importance at the expense of this organization.

17) Land Bank of the Philippines--LBP

The LBP is another government owned and controlled bank which reports directly to the President. It obtains money to loan from both government and private sources. Through this bank, the government is financing the land reform program. Instead of expropriating the landowners land, they are given compensation through the Land Bank. This compensation is in the form of 20% in cash and 80% in 25 year Land Bank bonds according to the value of the land.

18) Agrarian Reform Coordinating Council--ARCC

This council is in charge of coordinating the agrarian reform efforts of the DAR, NEDA, DA, DNR, DPWTC, DLGCD, ARF, and the DJ. The President and the Secretaries of these departments are on the council. It was also set up to ensure that there was no unnecessary duplication of effort and to facilitate cooperation among various line agencies of the departments.

19) Philippine Council for Agricultural and Resources Research--PCARR

The PCARR is an agency attached to both the Presidents office and the DA. This agency was established initially as the Philippine Council for Agricultural Research in 1972 by Presidential decree. This decree was amended in 1975 to include mining and thus the PCAR became the PCARR.

The PCARR was created to provide a systematic approach to the planning, coordination, direction, and conduct of the National Agricultural and Resources research program. PCARR is essentially an agency which monitors the implementation of all research using government monies. It does not itself actively engage in research.

The PCARR's source of power lies in the fact that this agency allocates all government research money in these fields and, thus, ultimately decides what research is going to be carried out in the country. The PCARR was also created in an attempt to see that all research funded out of government appropriations is geared to the solution of national problems and the attainment of the national goals of the "New Society."

The PCARR achieves this coordination and control through the makeup of its governing council and its technical program planning and review board. These two bodies are composed of members from almost every governmental unit involved in research in areas under PCARR jurisdiction.

The governing council of the PCARR has the head of the NSDB as chairman. The secretaries of the DA, DNR, are also on this council as are a representative from NEDA, the Chancellor of the UPLB and the President of the Association of Colleges of Agriculture in the Philippines. The director-general of the PCARR is also on the governing council, as well as two representatives from the business sector. The governing council makes the final decision on the allocations of government appropriations.

The PCARR has a large staff of professional people from various governmental agencies which make up a technical planning and Review Board. The Board advises and evaluates for the council the ongoing progress of all the research programs under PCARR control.

The PCARR also has its own full time director general and management staff. This staff does the actual monitoring and overseeing of all the research programs for the PCARR. This management staff is quite large and contains technicians and specialists in almost every research field. This staff also works with the Bureau of Agricultural Extension in seeing that research results are as broadly disseminated as possible to the people.

PCARR is one of the key agencies in the national government. There appears to exist a need for better coordination among various research agencies of the government. This same need exists for disseminating the information both within the governmental agencies and to the people. The success or failure of the PCARR will determine to a considerable extent the rate at which the advances from the laboratory are made available to the people.

20) Fertilizer Industry Authority--FIA

The Fertilizer Industry Authority is another new agency created by the President. This authority reports to and is directly responsible to him. It

has the regulatory powers over fertilizer prices, and only it can authorize imports and exports of fertilizer.

In 1973, the FIA established a two-price policy for fertilizers. There exists the regular price for fertilizer intended for commercial crops and a subsidized price for fertilizer intended for food crops.

21) Greater Manila Terminal Food Market, Inc.--GMTFM

The GMTFM is a financial project of the DBP. This government controlled agency is responsible to the President and its board of directors. It is set up to run like a profit oriented business. The initial objective of the GMTFM is to systematize agricultural marketing throughout the country. Secondly, it is attempting to increase the food processing and the export capabilities of the Philippines.

22) National Economic Council--NEC

This council is located in the office of the President. It is chaired by the President and has on it representatives from the CB, NEDA and DA. Others are probably on the council but these are the only ones which could be positively identified.

23) Presidential Economic Staff--PES

This is the in-house team of economists in the office of the President.

24) Presidential Committee on Agricultural Credit--PCAC

This committee located in the office of the President is also made up of members of the CB, DBP, PNB and NPAC who oversee and evaluate the credit needs of the agricultural sector of the economy. It has been charged with monitoring and evaluating the agricultural credit plan provided by the Four

Year Development Plan--FY 1974-77. This committee is also charged with making the first comprehensive compiling of all agricultural credit data.

25) Agricultural Colleges and Schools--ACS

These colleges and schools generally receive some of their funding through the office of the President. Apart from the UPLB, there are 91 agricultural colleges and schools who receive some governmental funding. Most of these colleges and schools are geared for training teachers and vocationally trained workers. Only Central Luzon State University and The Mindanao Institute of Technology have significant research programs.

26) Agrarian Reform Fund--ARF

This fund, established by the President and administered through the CB, is similar to the LBP. It was set up to finance and guarantee payment to land owners from whom land is acquired. It also guarantees loans for agricultural production for the new land owners. It differs from the LBP in the sense that it is not a Bank, and that it is wholly funded by the national government.

27) Agricultural Guarantee Loan Fund--AGLF

This fund was administered by a Board including the secretaries of Finance, Agriculture, and National Resources, the governor of the Central Bank, and the president of the Rural Banker's Association. It provides funds to producers who suffer crop failures caused by natural calamities, pests or disease.

The AGLF is now part of the ARF. It was included in the matrix because of its effect upon the agricultural credit system in the recent past and because some of its loans are still outstanding.

28) Philippine Export Council--PEC

The council functions directly under the office of the President. It was set up to formulate the national export strategy of the country subject to final approval by the President. The PEC coordinates government and private sector efforts to increase exports.

It is directed by a board of directors which include various cabinet secretaries. It has a large full time technical staff. The PEC is involved in foreign countries abroad seeking to expand and find new markets for Filipino exports.

29) Private Development Corporation of the Philippines--PDCP

The PDCP while not legally a bank is an important source of long term development credit which is earmarked for large projects. It is chartered through the office of the President. The leading shareholder in the bank is the DBP.

The PDCP serves as a conduit for funds from international agencies such as the IBRD, USAID and ADB. It has an excellent international reputation for being credit worthy.

It has not made many loans in the agriculture sector of the economy; less than 2.4% of total loans in 1972. Yet due to Presidential prodding the PDCP is increasingly becoming an important source of long term agricultural credit in the Philippines.

30) Cooperative Development Loan Fund--CDLF

This is another fund established by the President in the past few years. The CDLF is the vehicle through which government funds are made available to cooperatives. This fund is incorporated and it can only loan money to the newly established CMSP and to regional area marketing cooperatives.

31) National Food and Agricultural Council--NFAC

The NFAC is an agency of the DA. It is located in the office of the Secretary of Agriculture from which it coordinates all food production programs.

The NFAC is chaired by the Secretary of Agriculture. The council is also composed of representatives from the BPI, BAECON, BAE, BF, BAI, NGA, NIA, DAR, ACA, DNB, DBP and the FNRC. The NFAC is able to coordinate the food production programs as a result of the membership of its governing council.

The NFAC is in charge of implementing the Masagana 99, and Masaganang Maisan programs (see post #88 and #89 for more information). It coordinates and monitors the actions of all governmental agencies involved in these programs. The NFAC is also in charge of national food programs for the other feed grains, vegetables and beans, fish, livestock and nutrition.

The NFAC has a sizeable technical staff at its headquarters. The day to day operations are handled by an executive and two deputy directors. The NFAC has regional directors for each program throughout the Philippines to oversee their implementation and operation. Under each regional director there are provincial directors and under each provincial director there are various municipal directors.

The NFAC has its own inhouse staff of economists and scientists who conduct short term research for it. The quality of the research turned out by this unit has been highly praised.

The NFAC is a super agency. The success of this agency in implementing the various food production programs will determine whether or not the Philippines will be able to raise production levels in agriculture and achieve self sufficiency in food production.

32) Bureau of Plant Industry--BPI

The BPI is an agency of the Department of Agriculture. The BPI is mainly a research institution concerned with the improvement and development of agricultural crops and commodities. Many of the high yielding variety (HYV) seeds of various crops have come from the BPI.

The BPI is actively engaged in aiding the Masagana 99, and Masaganang Maisan programs. It also is involved with the PCARR in the coordinating of all government sponsored agricultural research. The BPI has been a very effective and productive agency and has done some excellent research.

33) Bureau of Agricultural Economics--BAECON

BAECON is another agency of the Department of Agriculture. BAECON is the information gathering agency for the agricultural sector. It is charged with gathering all possible crop and crop marketing related statistics. BAECON works with the NGA and the marketing research unit of the NFAC in the gathering of this information.

BAECON regularly distributes its information to the NEDA for use in its long range planning analysis. Information gathering efforts with the NGA are continually being strengthened.

34) Bureau of Animal Industry--BAI

The BAI is another agency of the Department of Agriculture. It is primarily responsible for animal related research along with the UPCA and UPLB's College of Veterinary Medicine. The meat inspection system is located in the BAI. The BAI is also engaged in promoting the expansion of the total animal agribusiness complex.

35) National Grains Authority--NGA

The NGA is an agency of the DA. It was created in September of 1972 in one of the first decrees under martial law.

The NGA has been set up to overhaul and further develop every component of the grain industry. The NGA is to coordinate the activities of all government agencies which are directly or indirectly involved in the grains industry in conjunction with the NFAC. The NGA was not created with the intention of becoming the monopoly marketing agency for grains in the Philippines. It was set up to do some of the marketing in grains but the NGA's more basic goal is to stimulate the private industry to be more efficient and productive.

The NGA is the agency set up to administer the floor price programs of the government for rice and corn. As noted in prior sections, these programs have been ineffectual.

By law the NGA is limited to marketing no more than 10 percent of the total grain crops in any one year. Through the grain it purchases the NGA is to set up a buffer stock of grains equivalent to one month's supply for the urban populace. The NGA is also charged by law to aid the CMSP and AMC as they market their goods. It must give them preferential treatment.

The NGA also functions as the regulatory authority of the grains industry. It is to enforce grain quality standards and license and bond warehousemen and warehouses. Many of the warehouses are presently quite substandard so the NGA is involved in a program to improve them. The NGA is also involved in building various types of grain storage facilities in which to store its buffer stock.

The NGA is involved with the PCARR and various other agencies in research to improve post harvest practices in milling, storage and processing

of grains. It has also set up an educational institute to train workers of the various components of the industry and is cooperating with the BAE in education efforts for producers.

The NGA too, has a large full time staff with workers spread out throughout the country on a regional, provincial and municipal basis. The main office is so structured that six line departments were created to implement its six major programs. These are: 1) procurement and distribution, 2) corporate farming, 3) post harvest facility, 4) industry regulation, 5) research, and 6) extension programs.

The NGA is a new agency. It came into existence as a result of a reorganization of the government's Rice and Corn Administration which carried on many of the same functions. It has a large job to do to improve the grain industry for various studies have estimated that anywhere from 10% to 37% of the palay and corn crops are lost from harvest to retail sale. Complete revamping of storing-milling practices in particular are needed. The NGA has the government's backing and a good degree of financial support to carry out its programs. Again, only time will tell if it is to be successful in carrying out this change.

36) Bureau of Agricultural Extension--BAE

This is another agency of the Department of Agriculture. This agency is responsible for taking directly to the people the advances in research made by the BPI, BAI, UPCA, IRRI, etc. It also works with the NFAC in implementing the various food programs.

37) Philippine Tobacco Administration--PTA

The PTA is an adjunct agency of the DA. It initially was created as a private industry promotional organization. An adjunct organization has both

the secretary of the DA and producers directing its operation. It is also funded by both the government and producers. The PTA has been under DA control since only 1973. This agency is responsible for looking after and promoting the native tobacco industry. The PTA conducts a little tobacco research in conjunction with the BPI.

38) Philippine Virginia Tobacco Administration--PVTA

The PVTA is another adjunct agency of the DA. It too was set up as a private industry promotional organization. This agency is responsible for looking after and promoting the Virginia tobacco industry. It too conducts some research with the BPI.

39) Philippine Sugar Institute--PSI

The PSI is yet another adjunct agency of the DA. Formerly the PSI was entirely under control of a board of directors controlled by the sugar industry. All sugar related research is done by the PSI with some cooperation from the BPI. It still has quite strong industry ties.

40) Philippine Coconut Research Institute--PCRI

The PCRI is an adjunct agency of the DA. All coconut research is conducted under institute auspices with assistance from the BPI. It was set up and financed by the industry as a research institute.

41) Philippine Coconut Authority--PCA

Since its inception the PCA has been an agency of the DA. It is responsible for the development and promotion of all phases of the coconut agribusiness complex and has strong industry ties.

42) Marketing Research Unit--MRU

The MRU is the inhouse research arm of the NFAC which supplements BAECON activities. It has done a number of excellent studies on particular commodities. Its research is solely oriented to projects of a short term nature.

43) International Rice Research Institute--IRRI

The IRRI located in the Philippines is a private institution independent from the government of the Philippines. It was founded by and initially funded by the Rockefeller Foundation. It is presently funded by a consortium of international agencies such as USAID, ADB, IBRD and FAO as well as the Ford and Rockefeller Foundations. The IRRI has informal working ties with the BPI, UPCA and DA and is one of the leading rice research centers in the world today.

44) Bureau of Mines--BM

The BM is an agency of the DNR. It is in charge of mine research, development and safety. A top research priority of the BM is to conduct surveys and analysis of groundwater resources.

45) Bureau of Lands--BL

This is another agency of the DNR. The survey and the transfer of land to the tenants are the main functions of the Bureau of Lands. The BL works in cooperation with the Bureau of Land Acquisition Distribution and Settlement of the DAR in this program.

46) Bureau of Forest Development--BFD

This is another agency of the DNR. The BFD is in charge of managing the entire forestry system in the Philippines. It conducts research along with the College of Forestry of the UPLB.

47) Bureau of Fisheries and Aquatic Resources--BFAR

This is another agency of the DNR. It is responsible for research and development of all phases of the fisheries agribusiness complex. It conducts research in cooperation with the UPLB's Institute of Fisheries.

48) Bureau of Farm Management--BFM

The BFM is the extension service agency of the DAR. This agency aids the new lease holders or land owners in managing their farms. The BFM duplicates many of the services of the BAE of the DA. Many of its technicians are workers with the various food production programs of the NFAC.

49) Bureau of Land Acquisition, Distribution and Development--BLADD

This is an agency of the DAR. It initiates and is directly responsible for carrying out the land transfer programs in the Philippines.

50) Bureau of Resettlement--BR

The Bureau of Resettlement takes over the land transfer program after the BLADD job is over. The BR assists settlers in moving to their newly owned land.

51) Bureau of Agrarian Legal Assistance--BALA

This is an agency of the DAR. Its sole job is to represent farmers who are without counsel in disputed transfer cases before the Court of Agrarian Relations of the DJ.

52) Land Authority--LA

It is the agency of the BLADD that decides which lands are to be expropriated and when this will occur. It then decides which tenant will own which portion of land.

53) Land Bank--LB

The Land Bank is an agency of the BLADD. It is the inhouse bank of the DAR which is used as the LBP and the ARF to finance the acquisition of landed estates for division and resale to tenant holders.

54) Education and Correction Farms--EDCOR

The EDCOR's are administered by the LA of the BLDS. The operation of these farms was taken over from the Department of National Defense. They are farms used to train and assist defense recruits, and veterans and surrendered dissidents to be better producers. No information is available to this author as to what goes on in them.

55) Board of Investments--BOI

The BOI is the agency of NEDA that has a key responsibility in formulating economic development policies. It gives approval or rejection to many of the projects to which the DBP and PNB loan their money.

56) Cabinet Coordinating Council--CACC

The CACC is an agency of NEDA. It was founded for the purpose of coordinating all integrated Rural Development projects. Presently there are two rural development projects in progress. These are the Bicol River basin project funded by the USAID and the Mindoro Integrated Development project

which is being financed by the IBRD. Several other projects are currently under consideration.

57) Bureau of Cooperative Development--BCD

The BCD is an agency of the DLGCD. It is the agency charged with the development of any and all types of cooperatives in the Philippines.

58) Cooperative Marketing System of the Philippines--CMSP

The CMSP received its certificate of registration from the BCOD in January of 1975. It was organized largely as a result of BCOD initiatives and is in its infant stage of operation. The CMSP is a rice marketing cooperative set up in the attempt to increase the marketing power of all palay producers. The CMSP is attempting to do this through the establishment of an effective integrated marketing and input system that will support the efforts of provincial Area Marketing Cooperatives (AMC) and local Samahang Nayan (SN) Cooperatives. The CMSP-AMC's organizational relationship was initiated on a federated structure basis.

The BCOD is seen as having a strong continuing relationship with the CMSP. The Cooperative Rice Marketing System Study of the Philippines by the Agricultural Cooperative Development International stated that their relationship should be as partners in the effort to strengthen the cooperative system in the Philippines.

The funding of the CMSP has come from a variety of sources. The principal one being the CELF, as well as the PNB and ACA.

59) Area Marketing Cooperatives--AMC

The AMC's are the building blocks of the CMSP. An AMC by regulation must consist of at least ten local Samahang Nayan cooperatives. The

objective of the AMC is to aid the producer in marketing his product for the highest possible price.

The AMC's have experienced severe operating problems. They are under capitalized and generally lack competent managers. The BCOD is doing all it can to strengthen the actual operation of the AMC's.

60) Samahang Nayan--SN

The SN cooperatives are the basic building blocks of the AMC's. The CMSP-AMC-SN relationship is the rice cooperative marketing system. It is presently in operation in only a few provinces. Plans are being made to make it a nationwide system. The SN is a basic element of the land reform program because a farmer is required to join an SN to receive a certificate of land transfer from the BLADD and because SN's act as a guarantor of annual land amortization payments.

The SN involves farmers and nonfarmers of a barrio (local village) in a teaching and learning experience based on education, savings and discipline. All are required to learn basic cooperative principles. All are required to save money in some sort of barrio fund. Discipline is attempted to be built through the education and savings required by the BCOD in the SN program. All farmers in theory are to receive 65 weeks of basic agricultural training through their SN.

The only source of funding for the SN's are their own barrio funds. The CDLF will not loan money to the SN's.

61) Cooperative Management System--CMS

The CMS is an agency of the BCOD with its principal objective being to develop and provide highly qualified and trained professional managers for cooperatives. CMS undertakes to supply trained managers by contract for

service with AMC's and other cooperative organizations. This cost to the AMC is borne by the AMC and the BCOD.

62) Grain Marketing Cooperative of the Philippines--GRAMACOP

This is an agency of the DLGCD that is similar to the CMSP. It precedes the DMSP in existence by some eight years. It is now largely a defunct organization with operations carried out only in a few provinces. It has received loans from the CDLF and ACA. The recommendation is for this organization to be absorbed by the CMSP.

63) Farm Marketing Cooperatives--FACOMAS

The FACOMAS are the building blocks of the GRAMACOP. There are few of them still in operation today. The FACOMAS received credit in the past from the ACA.

64) National Irrigation Administration--NIA

The NIA is an agency of the BPWTC. All government irrigation activities are the responsibilities of the NIA.

65) Bureau of Public Works--BPW

It is an agency of the BPWTC. The BPW is working on various projects to improve the infrastructure in rural areas.

66) Farm Systems Development Corporation--FSDC

The FSDC is an agency of the BPWTC. It works with the NIA in the development of small-scale pump irrigation systems. It also receives ground water information from BM hydrological surveys of groundwater.

67) Irrigation Service Unit--ISU

It is an agency of the NIA. This agency provides service for the maintenance and operation of various irrigation systems.

68) National Institute of Science and Technology--NIST

The NIST is an agency of the NSDB. The NIST conducts agricultural related research under the guidelines of the PCARR.

69) Food Nutrition Research Center--FNRC

It is an agency of the NSDB which conducts research in food nutrition. The FNRC is also in charge of a nationwide program under the auspices of the NFAC designed to improve nutrition among all Filipinos.

70) Court of Agrarian Relations--CAR

It is an agency of the DJ. This is the court which has jurisdiction over all land transfer disputes.

71) Land Registration Commission--LRC

It is an agency of the DJ. All the deeds of the land transfer program are registered and catalogued in this agency.

72) College of Agriculture--UPCA

The College of Agriculture is a college in the University of Philippines at Los Banos. This is the leading agricultural research and teaching college of all the universities in the Philippines. It carries on extensive research activities in cooperation with the BPI, BAI, and BAECON. It coordinates its activities with the NFAC and PCARR.

73) Institute for Agricultural Development Administration--IADA

The IADA is an agency of the UPLB. It was formerly the Department of Agricultural Economics of the UPCA. In 1975 its status was elevated into an institute.

It has three departments: Economics, Agricultural Economics, and Agribusiness and Development Management. It does extensive research in these areas at the direction of the PCARR and NFAC. It also does research for other governmental units.

74) College of Veterinary Medicine--CVM

The CVM is a college of the UPLB. It turns out veterinarians and conducts research in cooperation with the PCARR, BAI and UPCA.

75) College of Forestry--CF

The CF is a college of the UPLB. It conducts research under the coordination of the PCARR of its own and in cooperation with the BFD.

76) Institute of Fisheries--UPIF

The UPIF is an agency of the UPLB. It conducts research under the coordination of the DCARR of its own and in cooperation with the BFAR.

77) Agricultural Credit and Cooperative Institute--ACCI

The ACCI is an agency of the UPLB. Its primary purpose is in the training of technicians for the CB, PNB and BCOD. It has strong ties with the BCOD in developing together cooperatives in the Philippines.

78) Department of Rural Banks--DRB

The DRB is an agency of the CB. It regulates and supervises the activities of all private commercial banks in the rural areas.

79) Department of Commercial Banks--DCB

It is an agency of the CB which regulates and supervises the activities of all commercial banks in the urban areas.

80) National Investment Development Corporation--NIDC

The NIDC is a subsidiary of the PNB through which various enterprises are owned. The NIDC was originally established to take over industrial enterprises which had gone bankrupt after borrowing heavily from the national government.

81) Philippine Exchange Company--Philex

Philex is a subsidiary of the NIDC which since 1974 has been the sole exporter of Filipino sugar.

82) Technical Board for Agricultural Credit--TBAC

The TBAC is the technical staff of the PCAC. It publishes and surveys the agricultural situation for the PCAC.

83) International Bank for Reconstruction and Development--IBRD

The IBRD is an international agency which provides assistance in the form of economic analysis and loans to various countries. The Philippines has been the recipient of an economic analysis of its country and funding for various development projects by the IBRD.

84) United States Agency for International Development--USAID

An agency of the U.S. federal government, it has provided much technical assistance and many millions of dollars of loans and grants to the Philippines. It has just concluded a developmental assistance plan for the Philippines. USAID work will be largely confined to assisting the government in agriculture and rural development.

85) Asian Development Bank--ADB

The ADB is an international agency which has provided a great deal of low interest loans and outright grants in the attempt to spur economic development of the Philippines.

86) Japanese Reparations and Government--JRG

The Japanese government, as a result of activities in the Philippines during World War II, has paid out reparations to the country. It has also provided by itself and in concert with various other international lending agencies loans for the development of the agricultural sector of the Philippines.

87) Commodity Credit Corporation--CCC

This agency of the United States Department of Agriculture has provided PL. 480 loans to the Philippines for the purchase of wheat and corn.

88) Masagana 99--Ms.99

Ms.99 is the principal food program of the NFAC. If the Philippines is to be successful in attaining self sufficiency in rice production, this program must work. The President has thrown the full weight of his office behind this program. It has been given top priority by the various agencies it is involved with.

Ms.99 came about as a result of the disastrous crop years of 1971 and 1972. The rice crops those years were ravaged by typhoons, flooding and the tungro disease. It was launched in May of 1973 and is envisaged as an ongoing program for many years.

Masagana is a Tagalog word meaning bountiful and 99 represents the goal of the program of 99 cavans (4.4 metric tons) per hectare. Ms.99 works toward this goal by removing all possible production constraints.

There are four principal components of the program. They are:

1) changes in credit system, 2) technology transfer program, 3) a fertilizer subsidy, and 4) increased marketing support from the government.

The agricultural credit system was completely revamped in 1972. Loans are made by the PNB, ACA, DBP and private rural banks to producers without having collateral. This was new to the Philippines. The loans are made because the government now promises a guarantee of 85% of all losses on these loans. Also the system of rediscounting these loans was changed by the CB, further expanding the credit available to the various banks to loan to producers.

The loans are made to producers who are grouped into Seldas' (a local producer organization) composed of 5-15 farmers who are jointly responsible for each other's loans. This was done because producers in the past have a poor record in repaying their loans. The loans are given to purchase pesticides and fertilizers, as well as to finance the increased labor costs to the producer as a result of the increased yields.

The transfer of technology is accomplished with the assistance of BAE, BFM, PNB and Ms.99 field workers. The farmers are shown how to use the pesticides and fertilizers correctly. They also are shown better and more productive ways to conduct their planting, harvest and post harvest activities.

The third major element of the Ms.99 program has been the subsidization of fertilizer for use in it by the FIA. The FIA subsidized fertilizer to rice farmers by reducing prices 21 percent.

The Ms.99 program has provided increased marketing support through the NGA to producers. The support price for rice has been raised and the NGA is

assisting AMC's in obtaining higher on-farm prices for palay. They are also providing aid to the AMC's as they sell and market the palay to millers.

The first year, due in large part to better weather, the operation of the Ms.99 was quite successful. The second year was not so successful due to increased fertilizer costs, overburdened technicians, poorer weather and the reduction in available credit due to the failure of producers to repay their loans. Crop production statistics are not available for the last two years of the programs so it is difficult to assuage the success of the Ms.99 program for those years.

Of all the ongoing programs of the government, this is ultimately the most important one. Before the Philippines can make significant economic advances it must raise the production level of its food crops and in particular the production level of its principal foodstuff. With this program, as with others, the verdict is yet to be rendered as to whether or not this program is succeeding.

89) Masaganang Maisan--MM

MM is a program under the control of NFAC to stimulate the production of white corn and feed grains which is similar to the Masagana 99 program. The program is geared primarily to meet the growing need of the animal feeds industry, to supply potential export markets and to provide for the growing industrial uses for corn.

Neither the emphasis nor the money have been given to this program by the government. Like the Ms.99 program, the program includes supervised credit, provision of cash inputs, a fertilizer subsidy, as well as marketing assistance from the NGA. Credit is provided by the same financial institutions participating in the rice program--the PNB, ACA, DBP and private for profit rural banks.

90) Palayan Ng Bayan--PB

The PB is a program aimed at increasing rice production by opening up presently uncultivated lands for cultivation. The PB program is headed by the wife of the President and the undersecretary of agriculture. Of the three programs designed to increase production of grain crops this has been assigned the lowest priority.

B) Analysis of Filipino Governmental Matrix

This matrix analyzes the lines of authority and communication between the governmental agencies and programs which directly affect Filipino agriculture. However, in this thesis there has been more emphasis on the agencies and programs which affect grain producers and the marketing system. For example, each agency of the DA has been carefully categorized and analyzed where under the DJ only the two agencies of it directly affecting Filipino agriculture have been included. In actuality, the DJ has twelve separable agencies within its department.

Every effort was taken to see that the current role of and purpose of each agency and program has been accurately recorded in the matrix. Yet no government is a static organization and many functions of the agencies and programs could quickly change. Especially so with a government which rules by decree and is in the process of creating a "New Society."

The analysis of the matrix will proceed on a row by row basis. The analysis of the matrix will be preceded by a listing of all the elements of that row. Where possible for the sake of brevity, matrix elements will be grouped in the analysis. This will often occur when there is a description and analysis of the relationship between various agencies of the same department.

1) President--(1,1) - (1,26), (1,28) - (1,30) (1,35), and (1,88) - (1,90)

- (a) (1,1) - (1,11)--These elements are the communication that the President has with each of his cabinet departments. All these departments report to and are directly responsible to the President. He directs, monitors and implements his policies through the secretaries of these departments.
- (b) (1,12) and (1,25)--These elements represent the UPLB and agricultural colleges and schools which receive funding from his office. The Chancellor of the UPLB serves at the pleasure of the President.
- (c) (1,13) - (1,17), (1,29)--These elements are the various banks which have been chartered through the President's office. It appoints many of the directors of these banks. They are utilized by the President and his office to achieve various goals and objectives of the government.
- (d) (1,18) is the ARCC which is located in his office through which he sees that the various agrarian reform programs are being carried out as smoothly as possible.
- (e) (1,19)--The PCARR is an agency which reports to the President and the DA through which all government funded research is cleared. The President expresses his desires and wishes in this area through the PCARR.
- (f) (1,20)--The President's office directs through the FIA national programs designed to increase fertilizer production and use. Its director is appointed by him.
- (g) (1,21) and (1,28)--The GMTFM and PEC are organizations chartered through his office. The President has made the appointments of the

directors of these organizations. His office oversees and gives final approval to all their projects.

- (h) (1,22) and (1,23)--The NEC and the PEC are the two economic agencies located in the President's office. The President directs their activities in such areas as formulating economic policy.
- (i) (1,24)--The PCAC is the committee the President oversees through which the credit needs of the agricultural sector are analyzed.
- (j) (1,25)--The President has contact with these agencies because of the funding which comes to them through his office.
- (k) (1,26) and (1,30)--The ARF and CDLF are agencies created by the President through which to funnel government monies to help finance the land transfer programs and cooperative programs, respectively.
- (l) (1,35)--The President receives an annual report from the NGA. The President realizes the importance of this agency and is carefully watching its progress directly and indirectly through reports of the Secretary of the DA, according to a paper published by the NGA about itself.
- (m) (1,88) - (1,90) are the three food production programs which the President has thrown the weight of his office behind. The President takes an especially active role in seeing the progress that the Ms.99 program is making.

2) Department of Agriculture--(2,1) - (2,12), (2,18) - (2,33), (2,25), (2,27) (2,28) (2,31) - (2,43) (2,83) (2,84), (2,86) - (2,90)

- (a) (2,1) - (2,11)--These elements represent the communication and cooperative activities that the DA has with each of the cabinet level departments.

- (b) (2,12) and (2,25)--These elements are the communication that the Secretary has with the UPLB and the various agricultural colleges and schools. They are formal and informal ties. They work together on committees such as the PCARR. They also try to coordinate their efforts to develop the agricultural sector of the country.
- (c) (2,18)--The Secretary serves on the ARCC governing council in its attempt to coordinate the agrarian reform programs. ARCC efforts with the DA are coordinated through this relationship.
- (d) (2,19)--The Secretary serves on the PCARR's governing council. All PCARR activities with the DA are coordinated through this relationship and by DA personnel serving and working on and with its technical board and management staff.
- (e) (2,20)--The Secretary works with the FIA in implementing its programs.
- (f) (2,21)--The Secretary serves on the Board of Directors of the GMTFM.
- (g) (2,22) and (2,23)--The Secretary serves on the NEC and he furnishes information to the PES.
- (h) (2,27) and (2,28)--The Secretary serves on the AGLF and PEC Board of Directors. The Board of Directors makes all essential operating policies for these bodies.
- (i) (2,31) - (2,42)--These are the various agencies and subagencies which report to and are directly responsible to the Secretary of Agriculture.
- (j) (2,43)--The Secretary has formal and informal ties with the IRRI to see that its research receives any needed government support and to

see that IRRI research is disseminated thoroughly in the Philippines.

(k) (2,83) and (2,84) and (2,86)--Loans and grants from the IBRD and USAID and JRG are made through the Secretary's office for use in various projects.

(l) (2,88) - (2,90)--As head of the NFAC the Secretary has a vital role in all phases of these programs.

3) Department of Natural Resources--(3,1) - (3,12), (3,18), (3,19), (3,21)

(3,25), (3,28), (3,35), (3,44) - (3,47) (3,83), (3,84)

(a) (3,1) - (3,11)--These elements represent the communication and cooperative activities that the DNR has with each of its fellow cabinet level departments.

(b) (3,12) and (3,25)--These elements are the communications that the Secretary has with the UPLB and the various agricultural colleges and schools on committees such as the PCARR and on forest and fishery development projects.

(c) (3,18)--The Secretary of the DNR serves on the ARCC as it attempts to coordinate the various agrarian reform programs. ARCC efforts with the DNR are coordinated through this relationship.

(d) (3,19)--The Secretary serves on the governing council of the PCARR. All PCARR activities with the DNR are coordinated through this relationship and by DNR workers serving and working with its technical board and management staff.

(e) (3,21) and (3,28)--The Secretary serves on the Board of Directors of the GMTFM and PEC which determines the operating policy of these organizations.

- (f) (3,31)--A representative from the Secretary's office is on the NFAC. Through this representative NFAC activities are coordinated with the DNR.
- (g) (3,35)--The Secretary works with the NGA to see that NGA and DNR departments cooperate fully. The NGA implements some phases of its program.
- (h) (3,44) - (3,47)--These are the various agencies which report to and are directly responsible to the Secretary of Natural Resources.
- (i) (3,83) and (3,84)--Loans and grants from the IBRD and USAID are channeled through the Secretary's office for use in various projects.

4) Department of Agrarian Reform--(4,1) - (4,12), (4,14) - (4,16), (4,18), (4,19), (4,27), (4,31), (4,35), (4,48) - (4,51), (4,60), (4,84), (4,88), (4,89)

- (a) (4,1) - (4,11)--These elements represent the communication and cooperation that the DAR has with each of its fellow cabinet level departments.
- (b) (4,12) and (4,25)--These elements are the communication that the Secretary has with the UPLB and ACS. They work together on the PCARR and have formal and informal ties in seeing that various agrarian reform programs are carried out.
- (c) (4,14) - (4,16) (4,27)--These elements represent the ties the PNB, DBD, ACA and AGLF have with the Secretary as they finance various components of the agrarian reform programs.
- (d) (4,18)--The Secretary of the DAR serves on the ARCC which attempts to coordinate all agrarian reform programs. ARCC efforts with the DNR are coordinated through this relationship.

- (e) (4,19)--The Secretary serves on the PCARR governing council. All PCARR activities with the DAR are coordinated through this relationship and by DAR workers serving and working on and with its technical board and management staff.
- (f) (4,31)--A representative from the Secretary's office is a member of the NFAC. Through this representative NFAC activities are coordinated with the DAR.
- (g) (4,35)--The Secretary works with the NGA in seeing that its programs which work with DAR agencies operate as smoothly as possible.
- (h) (4,48) - (4,51)--These are the various agencies which report to and are directly responsible to the Secretary of Agriculture.
- (i) (4,60)--The DAR is doing what it can to see that each SN succeeds.
- (j) (4,84)--Loans from the USAID are made through the Secretary's office for use in various projects.
- (k) (4,88) and (4,89)--The Secretary of the DAR is throwing his complete support behind these food programs. The DAR is actively involved in some phases of it.

5) National Economic Development Authority--(5,1) - (5,12), (5,18), (5,19), (5,22) (5,23), (5,33), (5,55) (5,56), (5,73), (5,84), (5,86)

- (a) (5,1) - (5,11)--These elements stand for the communication and cooperative activities that the NEDA has with each of its fellow cabinet level departments.
- (b) (5,12) and (5,25)--are the communication that the Director General has with the UPLB and ACS on the PCARR.
- (c) (5,18)--The NEDA provides overall policy guidance to the ARCC.

- (d) (5,19)--The Director General is a member of the governing council of the PCARR. All PCARR activities with the NEDA are coordinated through this relationship and by NEDA workers serving and working on and with its technical board and management staff.
 - (e) (5,22) and (5,23)--The Director General of the NEDA is on the NEC and he and his office furnish information to the PES.
 - (f) (5,33)--The NEDA is at the apex of agricultural data gathering system in the Philippines. BAECON provides data to it.
 - (g) (5,55) and (5,56)--are two agencies which report to and are directly responsible to the Secretary of Agriculture.
 - (h) (5,73)--The NEDA and IADA conduct joint research on some agribusiness and agricultural economic related projects.
 - (i) (5,84) and (5,86)--Loans and grants from the USAID and JRG are made through the office of the director general for use in the regional development projects.
- 6) Department of Local Government and Community Development--(6,1) - (6,11), (6,14) - (6,18), (6,30), (6,31), (6,35), (6,57), (6,62), (6,84), (6,88) - (6,90)
- (a) (6,1) - (6,11)--These elements represent the communication and cooperative activities that the DLGCD has with each of its fellow cabinet level departments.
 - (b) (6,14) - (6,17) and (6,30)--These elements represent the ties that PNB, LBP, ACA, DBP and CDLF have with the office of the Secretary in financing cooperative development.
 - (c) (6,18)--The secretary of the DLGCD serves on the ARCC which attempts to coordinate all the agrarian reform programs. ARCC efforts with the DLGCD are coordinated through this relationship.

- (d) (6,31)--A representative from the Secretary's office is a member of the NFAC. Through this representative NFAC activities are coordinated with the DLGCD departments in order to operate as smoothly as possible.
- (e) (6,57) and (6,62)--These elements stand for the agencies which report to and are directly responsible to the Secretary of the DLGCD.
- (f) (6,84)--Loans and technical assistance from the USAID are funded through the Secretary's office for use in cooperative development.
- (g) (6,88 - (6,90)--Some phases of these food production programs involve DLGCD agencies under the NFAC's guidance.

7) Department of Public Works, Transportation and Communication--(7,1) - (7,11), (7,18), (7,64) - (7,66)

- (a) (7,1) - (7,11)--represents the communication and cooperation that the DPWTC has with each of its fellow cabinet level departments.
- (b) (7,18)--The Secretary of the DPWTC is on the ARCC. The ARCC efforts with the DPWTC are coordinated through this relationship.
- (c) (7,64) - (7,66)--are the agencies which report to and are directly responsible to the Secretary.

8) National Science Development Board--(8,1) - (8,11), (8,19), (8,24), (8,68), (8,69)

- (a) (8,1) - (8,11)--These elements stand for the communication and cooperative activities that the NSDB has with each of its fellow cabinet level departments.
- (b) (8,19)--The Secretary of the NSDB is head of the governing council of the PCARR. All PCARR activities with the NSDB are coordinated

through this relationship and by NSDB workers serving and working on and with its technical board and management staff.

(c) (8,24)--The NSDB furnishes information through the office of the Secretary to the PCAC. This is due to the FNRC being under its supervision.

(d) (8,68) and (8,69)--are the agencies on this matrix which report to and are directly responsible to the Secretary.

9) Department of Education and Culture--(9,1) - (9,11), (9,35)

(a) (9,1) - (9,11)--These elements represent the communication and cooperative activities that the DEC has with each of its fellow cabinet level departments.

(b) (9,35)--The DEC is involved in a corporate farming program with the NGA to train farmers to farm better.

10) Department of Justice--(10,1) - (10,11), (10,18), (10,70), (10,71)

(a) (10,1) - (10,11)--These elements stand for the communication and cooperative efforts the DEC has with each of its fellow cabinet level departments.

(b) (10,18)--A representative from the DJ serves on the ARCC which attempts to coordinate all the agrarian reform programs. ARCC efforts with the DJ are coordinated through this relationship.

(c) (10,70), (10,71)--The CAR and LRC are two agencies of this matrix which report to and are directly responsible to the Secretary.

11) Department of Finance--(11,1) - (11,11), (11,13), (11,19), (11,27), (11,28)

(a) (11,1) - (11,11)--represents the communication and cooperative

efforts that the DF has with each of its fellow cabinet level departments.

- (b) (11,13)--The DJ and CB plan with the President the monetary and fiscal policies of the country.
- (c) (11,19)--Government research funding is funneled through the DF to the PCARR.
- (d) (11,27) and (11,28)--The Secretary served on the board of directors of each of these agencies. The operating policy of these agencies is made by the board of directors.

12) University of Philippines at Los Banos--(12,1), (12,5), (12,12), (12,19), (12,25), (12,33), (12,35), (12,72) - (12,77)

- (a) (12,1)--The UPLB receives its funding from the President's office and its chancellor serves at the pleasure of the President.
- (b) (12,5)--The office of the chancellor communicates with the NEDA to see that the arrangements it has with some of the colleges and institutes are working smoothly. This is done through formal and informal ties.
- (c) (12,19)--The chancellor is a member of the PCARR. All PCARR activities with the UPLB and its colleges are coordinated through this relationship and by UPLB personnel serving and working on and with its technical board and management staff.
- (d) (12,25)--The UPLB has many ties with the other agricultural colleges and institutes of the UPLB.
- (e) (12,33) and (12,35)--The office of the chancellor works with the BAECON and the NGA to help coordinate its activities with the various colleges and institutes of the UPLB.

(f) (12,72) - (12,77)--These elements stand for the colleges and institutes which report to and are directly responsible to the chancellor.

13) Central Bank of the Philippines--(13,1), (13,11), (13,13) - (13,18), (13,22), (13,24), (13,26) - (13,28), (13,35), (13,73), (13,78), (13,79), (13,83) - (13,85)

- (a) (13,1)--The director of the CB and its board is appointed by the President. The CB is also chartered through his office. The President completely controls this institution.
- (b) (13,11)--The CB works with the DF in developing the monetary and fiscal policy of the Philippines.
- (c) (13,13) - (13,18), (13,26) and (13,27)--These elements are the communication and financial relationships the CB has with the PNB, DBD, ACA, LBD, AGF and AGLF. The CB has provided funds for the three banks and the ACA, ARF and AGLF to loan to others. It has some equity in the three banks.
- (d) (13,22), (13,23) and (13,24)--The director of the CB serves on the NEC, PCAC and also provides information for the PES and PCAC.
- (e) (13,35)--The CB is providing some financial analysis of NGA projects and some banking for them.
- (f) (13,73)--The CB and IADA have conducted some joint research on agribusiness and agricultural economic projects.
- (g) (13,78) and (13,79)--These elements stand for the agencies which report to and are directly responsible to the director of the CB. These two agencies regulate the operation of private commercial and rural banks.

(h) (13,83) - (13,85)--Loans and grants from the IBRD, USAID and ADB are sometimes funneled through the CB for use in various programs.

(i) (13,88)--The CB through the PNB, ACA, DBP, LBP and AGF are providing government funds to be loaned for the Ms.99 program.

14) Philippine National Bank--(14,1), (14,4), (14,6), (14,13) - (14,17), (14,21), (14,24), (14,29), (14,31), (14,35), (14,47), (14,55), (14,58), (14,80), (14,88), (14,89)

(a) (14,1)--The PNB is chartered by the office of the President. Many of its directors are appointed by the President, permitting him to wield effective control of this agency.

(b) (14,4) and (14,6)--The PNB provides loans to programs administered by these agencies. The office of the Secretaries of these organizations often work with the PNB on the size, terms and often directly to whom these loans are directed.

(c) (14,13) - (14,17) and (14,29)--The PNB has fairly strong ties with each of these agencies. The PNB receives some funds from the CB. The PNB works with the LBP, DBP, ACA and PDCP in providing information to one another, in making some joint loans, and in deciding who is going to loan to whom.

(d) (14,21)--The PNB has been one of the main credit sources of the GTMFM.

(e) (14,24)--A representative from PNB serves on the PCAC and provides information to the PCAC.

(f) (14,31)--The NFAC identifies and projects priority areas for loans from the PNB due to the Ms.99 program.

(g) (14,35)--The PNB too is providing some financial analysis and funding for several NGA projects.

(h) (14,47) and (14,58)--The PNB is providing credit to both these government agencies for fishery and cooperative development, respectively.

(i) (14,80)--The NIDC is an investment subsidiary of the Philippines.

(j) (14,88) and (14,89)--The PNB is making land transfer and production credit loans to producers who are involved in these programs.

15) Development Bank of the Philippines--(15,1), (15,4), (15,6), (15,13) - (15,17), (15,21), (15,29), (15,31), (15,35), (15,49), (15,55), (15,78), (15,83), (15,88), (15,90)

(a) (15,1)--The DBP is chartered through the office of the President. The DBP reports directly to him.

(b) (15,4) and (15,6)--The DBP provides loans to programs administered through these offices. The office of the Secretaries of these organizations often work with the DBP on the size, terms and often to whom these loans are directed.

(c) (15,13) - (15,17), (15,29)--The DBP has fairly strong ties with each of these agencies. The DBP works with these agencies in providing some information to one another, in making some joint loans and in deciding who is going to loan to whom. Also, a representative from the DBP serves on the PCAC.

(d) (15,21)--The GMTFM is now officially a financial project of the DBP. It has eclipsed the PNB as the principal source of credit for

all phases of the GMTFM's operation. The director of the DBP is now chairman of its board.

- (e) (15,31)--The NFAC identifies and projects priority areas for loans to be made by the DBP.
- (f) (15,35)--The DBP provides some credit for some of the long term projects of the NGA.
- (g) (15,49)--The DBP is providing credit for part of the land transfer programs of the BLADD.
- (h) (15,55)--The DBP gives credit to BOI approved projects. It also exchanges information with it.
- (i) (15,78)--The DBP has been working with the DRB in a joint program to supervise and improve the operating procedures of privately owned rural banks.
- (j) (15,83)--Loans are made from IBRD to the DBP to be channeled throughout the agricultural sector.
- (k) (15,88) - (15,90)--The DBP makes loans to various parts of these food production programs.

16) Agricultural Credit Administration--(16,1), (16,4), (16,6), (16,13) - (16,), (16,24), (16,30), (16,31), (16,35), (16,58) - (16,60), (16,62), (16,84)

- (a) (16,1)--The ACA although not a bank is an agency of the government located in the President's office. It reports to and is directly responsible to him.
- (b) (16,4) and (16,6)--The ACA channels government monies through the office of the Secretaries of these organizations for operation of the land transfer and cooperative development programs.

- (c) (16,13) - (16,16), (16,30) and (16,49)--The ACA has a number of ties with each of these agencies. The ACA works with these agencies in providing some information to one another in making some joint loans, and in deciding who is going to loan to whom.
- (d) (16,24)--It provides information on its loan activities to the PCAC.
- (e) (16,31)--The NFAC identifies project priority areas for loans to be made by the ACA.
- (f) (16,35)--The ACA has made some production loans to producers involved in NGA programs at its request.
- (g) (16,58) - (16,60), (16,62) and (16,63)--The ACA in its enabling legislation was set up to give government funds for the establishment of a cooperative marketing system. It has given loans to each level of cooperative activity.
- (h) (16,84)--The ACA has received loans from the USAID to in turn loan out.
- (i) (16,88), (16,89)--The ACA has given production credits to producers involved in these programs.

17) Land Bank of the Philippines--(17,1), (17,6), (17,13) - (17,18), (17,24), (17,49), (17,59), (17,60)

- (a) (17,1)--The LBP is another government owned bank which operates under the President's control.
- (b) (17,6), (17,59) and (17,60)--The LBP in conjunction with the PNB, ACA and the DBP is presently looking into making joint loans through the office of the Secretary of the DLGCD to AMC's and SN's.

(c) (17,13) - (17,17), (17,49)--The LBP has a number of ties with each of these agencies. The LBP works with these agencies in providing some information to one another, in making some joint loans, and in deciding to loan to whom.

(d) (17,24)--The LBP gives information on its loan activities to the PCAC.

13) Agrarian Reform Coordinating Council--(18,1) - (18,7), (18,10), (18,13), (18,18), (18,26)

The ARCC coordinates under the President and Secretary of the DAR all agrarian reform programs. It operates on a cabinet level to cabinet level basis along with two government financial agencies which are also located in the President's office.

19) Philippine Council for Agricultural and Resources Research--(19,1) - (19,5), (19,8), (19,11), (19,12), (19,19), (19,25), (19,31) - (19,41), (19,43) - (19,47), (19,55), (19,68), (19,69), (19,72) - (19,77)

(a) (19,1) and (19,2)--The PCARR was established by Presidential decree and is under control of the President's office and the DA. It is located for administrative purposes in the DA.

(b) (19,3) - (19,5), (19,8), (19,12) and (19,25)--The heads of these agencies are on the governing council of the PCARR. All PCARR activities are coordinated through this relationship and by personnel from all these agencies serving and working on its technical board and management staff.

(c) (19,11)--Funding for PCARR activities comes through the DF and DA offices.

(d) (19,31) - (19,41), (19,43) - (19,47), (19,68), (19,69), (19,72) - (19,77)--Through the guidelines set down by the governing council of the PCARR and implemented by its management staff, the PCARR controls the government funded research activities of all these agencies and the ones listed in 19(a).

20) Fertilizer Industry Authority--(20,1), (20,2), (20,20), (20,88), (20,89)

(a) (20,1)--The FIA was created by Presidential decree and it is located in the office of the President. It reports to and is directly responsible to him.

(b) (20,2), (20,88), (20,89)--The FIA works with the DA in allocating the fertilizer production and subsidies to the Ms.99, and MM food production programs.

21) Greater Manila Terminal Food Market, Inc.--(21,1) - (21,2), (21,14), (21,15), (21,21), (21,31), (21,55)

(a) (21,1)--The GMTFM was created by Presidential decree. The President's executive secretary also serves on the board of directors.

(b) (21,2), (21,3), (21,14), (21,15) and (21,55)--Members from these agencies serve on the board of directors. The head of the DBP is chairman of the board, the undersecretary of agriculture is a director and President of the GMTFM. Representatives from the DNR, PNB and BOI also serve on its board.

(c) (21,14), (21,15)--The GMTFM is a financial project of DBP. The PNB has also financed a portion of it.

(d) (21,31) and (21,35)--The GMTFM is working with the NFAC and NGA in developing a comprehensive marketing and processing system for food production.

22) National Economic Council--(22,1), (22,2), (22,5), (22,13), (22,22), (22,23), (22,29)

- (a) (22,1)--This element stands for the economic council located in the office of the President and chaired by him.
- (b) (2,22), (2,25), (22,13)--These elements represent various secretaries of cabinet level agencies who serve on the NEC.
- (c) (22,23)--The NEC directs much of the work of the PES.
- (d) (22,29)--Before any loan can be made by the PDGP with monies it obtains from international sources it first must obtain approval from the NEC for loans to agricultural projects.

23) Presidential Economic Staff--(23,1), (23,2), (23,5), (23,13), (23,23), (23,22)

- (a) (23,1)--The PES is the inhouse team of economists for the President. They do economic work solely for him.
- (b) (23,2), (23,5), (23,13)--The PES conducts much of its work with assistance from the DA, NEDA and CB.
- (c) (23,22)--The PES also does work for the NEC at its direction.

24) Presidential Committee on Agricultural Credit--(24,1), (24,2), (24,8), (24,13) - (24,17), (24,24), (24,26), (24,27), (24,33), (24,35), (24,82)

- (a) (24,1)--The PCAC is an agency located in the office of the President.
- (b) (24,2), (24,8), (24,13) - (24,17), (24,26), (24,27), (24,33), (24,35)--The PCAC gathers information from all these agencies and does analytical work on the credit needs for the agricultural sector. Members from many of these agencies serve on the PCAC.
- (c) (24,82)--is the full time technical staff of the PCAC.

25) Agricultural Colleges and Schools--(25,1), (25,2), (25,3), (25,12), (25,31) - (25,36), (25,46), (25,47), (25,77)

- (a) (25,1)--The ACS receives some funding from the President's office.
- (b) (25,2), (25,3), (25,12), (25,77)--The ACS works with and for the DA, SNR, UPLB and UPCA on various research and educational projects.
- (c) (25,19)--The president of the association of the ACS serves on the PCARR. All PCARR activities are coordinated through this relationship and through ACS personnel working on and with the management staff of it. All of its federally funded research is coordinated by this organization.
- (d) (25,31)--The ACS involvement in any food production program is coordinated by the NFAC. No information could be found which directly implicated the ACS in any food production program but logic dictates that it must play some role. If it does it would be with the NFAC.
- (e) (25,32) - (25,36), (25,46), (25,47)--The ACS conducts research with and for these DA and DNR agencies.

26) Agrarian Reform Fund--(26,1), (26,13), (26,18), (26,24), (26,26), (26,49)

- (a) (26,1), (26,13)--The ARF was set up by Presidential decree and financed solely by funds from his office. This financing was done through the CB purchasing stock issued by it.
- (b) (24,18)--Much of the ARF's credit is assigned to finance the land transfer program as the ARCC directs.
- (c) (26,24)--The ARF gives information on its outstanding loans to the PCAC.
- (d) (26,49)--The ARF works with the BLADD helping to finance its land transfer program.

27) Agricultural Guarantee Loan Fund--(27,2), (27,4), (27,11), (27,13), (27,24), (27,27), (27,85)

(a) (27,13)--This fund is financed and funded through the CB. The governor of the CB sits on its board of directors.

(b) (27,2), (27,4), (27,11)--The Secretaries of these agencies also sit on the AGLF board of directors. The fund made production credit loans to producers.

(c) (27,24)--The AGLF gives information on its outstanding loans to the PCAC.

(d) (27,84)--The AGLF received a loan from the USAID which had been funneled to it through the CB to loan to producers.

28) Philippine Export Council--(28,1) - (28,3), (28,5), (28,11), (28,13), (28,28)

(a) (28,1)--The PEC is an agency created by Presidential decree in May of 1976. The President must give final approval to all decisions made by the board of directors.

(b) (28,2), (28,3), (28,5), (28,11), (28,13)--The Secretaries of these agencies are on the board of directors of the PEC. The board of directors makes all operating policy decisions subject to the above qualification.

29) Private Development Corporation of the Philippines--(29,1), (29,14), (29,15), (29,22), (29,29), (29,55), (29,83) - (29,85)

(a) (29,1) and (29,22)--The PDCP while not a bank is subject to increasing intervention from the President's office as it conducts its loaning activities. The NEC must give priority to any agriculture related loans on funds the PDCP obtains abroad.

(b) (29,14), (29,15)--The PDCP has had loans channeled to it through the PNB. The DBP also owns a portion of the equity of the PDCP.

(c) (29,55)--The BOI of NEDA must give prior approval to monies obtained from international sources for use in any industrial project.

(d) (29,83) - (29,85)--The PDCP has obtained loans from these international governmental agencies.

30) Cooperative Development Loan Fund--(30,1), (30,6), (30,16), (30,30), (30,58), (30,59), (30,62)

(a) (30,1)--The CDLF was established by Presidential decree. All of its funds are appropriated through the President's office.

(b) (30,6), (30,58), (30,59), (30,62)--The CDLF has worked through the secretary of the DLGCD and head of the BCOD in making funds available to cooperatives--the CMSP, AMC and GRAMACOP.

(c) (30,46)--The CDLF has given loans to cooperatives on some occasions in conjunction with the ACA.

31) National Food and Agricultural Council--(31,2), (31,4), (31,14) - (31,16), (31,19), (31,21), (31,31) - (31,36), (31,42), (31,43), (31,47), (31,64), (31,69), (31,72), (31,73), (31,83) - (31,85), (31,88), (31,89)

(a) (31,2)--The NFAC is an agency of the DA. It is chaired by the secretary of the DA.

(b) (31,4), (31,6), (31,14) - (31,16), (31,31) - (31,36), (31,42), (31,47), (31,64), (31,69)--The NFAC is composed of representatives from all these governmental agencies. All NFAC activities with these agencies are coordinated through this relationship and with various personnel of these agencies working with the NFA and its

MRU. The NFAC directs and coordinates the activities of these agencies in the various food programs such as Ms.99, MM and P3. This also represents the communication that the NFAC has with each of its fellow departments of the DA.

- (c) (31,19) and (31,43)--The NFAC works with the PCARR, IRRI and BAE in seeing that the research from the lab is transferred as quickly as possible to the participants in the food programs.
- (d) (31,21)--The NFAC through its ties with the NGA assists the GMTFM in reaching its objectives.
- (e) (31,72), (31,73)--The NFAC directs and coordinates the efforts of the UPCA and IADA in its work in the food production programs.
- (f) (31,83) - (31,85)--The NFAC receives monies from these agencies for use through the office of the secretary and the various banks for use in the food production programs.
- (g) (31,88) and (31,89)--The NFAC is responsible for directing, implementing and coordinating all phases of the Ms.99 and MM food production programs.

32) Bureau of Plant Industry--(32,2), (32,19), (32,25), (32,31) - (32,41), (32,43), (32,72), (32,85), (32,88), (32,89)

- (a) (32,2)--The BPI reports to and is directly responsible to the Secretary of Agriculture. The BPI's funding comes from the DA.
- (b) (32,19)--The BPI is primarily a research agency. Since all of its funding is from the national government it must obtain final approval for all research projects from the PCARR.
- (c) (32,25), (32,22)--The BPI conducts research by itself and in conjunction with the ACS and UPCA.

- (d) (32,32) - (32,41)--These elements represent the communication and cooperation the BPI has with its fellow departments of the DA. BPI works with the NFAC in the technology phase of the food production programs. The BPI works with the PTA, PVTA, PSI and PCRI (adjunct agencies of the DA) in conducting research in those areas. It works with BAE in bringing its advances to the producers.
- (e) (32,43)--The BPI rice research is coordinated to some degree with the IRRI. There are many formal and informal ties between them as they attempt to increase production through better HYV seeds, harvest and post-harvest practices.
- (f) (32,85)--The BPI has received funding for some of its research projects through the ADB.
- (g) (32,88), (32,89)--The BPI works under NFAC guidance in these two food production programs.

33) Bureau of Agricultural Economics--(33,2), (33,5), (33,12), (33,19),

(33,24), (33,25), (33,31) - (33,36), (33,41), (33,69), (33,72), (33,73)

- (a) (33,2)--The BAECON reports to and is directly responsible to the secretary of agriculture. BAECON's funding comes through the DA.
- (b) (33,5) and (33,24)--BAECON is part of the agricultural data gathering system of the NEDA. It furnishes basic data to the NEDA and PCAC.
- (c) (33,13), (33,25), (33,77), (33,73)--The BAECON works with the UPCA and ACS in gathering statistical information. The BAECON and IADA have conducted research projects together, such as project ADAM.
- (d) (33,19)--The funding of various BAECON projects such as project ADAM must get final approval from the PCARR.

- (e) (33,31) - (33,36), (33,41)--These elements represent the communication and cooperative activities that BAECON has with each of its fellow departments of the DA. BAECON is working with NGA and BAE workers to improve its data gathering system.
- (f) (33,69)--BAECON works with the FNRC as it gathers food consumption statistics.

34) Bureau of Animal Industry--(34,2), (34,19), (34,25), (34,31) - (34,36), (34,41), (34,72) - (34,74), (34,88)

- (a) (34,2)--The BAI reports to and is directly responsible to the secretary of agriculture. BAI's funding comes through the DA.
- (b) (34,19)--All BAI research is funded through government funds so all its research must get final approval from the PCARR.
- (c) (34,25), (34,72) - (34,74)--The BAI conducts research with the ACS, UPC and CVM. The IADA has done some agribusiness related research for the BAI.
- (d) (34,31) - (34,36), (34,41)--This represents the communication and cooperation that the BAI has with each of its fellow departments of the DA.
- (e) (34,89)--The BAI works with the MM program to expand the use of feed grains for the expanding beef, swine and poultry industry which it promotes.

35) National Grains Authority--(35,1) - (35,4), (35,6), (35,9), (35,12) - (35,16), (35,19), (35,21), (35,24), (35,25), (35,27), (35,31) - (35,36), (35,41), (35,43), (35,46), (35,58), (35,59), (35,64), (35,69), (35,84), (35,87) - (35,90)

- (a) (35,1)--The NGA makes an annual report to the President. The President through the DA is actively overseeing the efforts of this agency.
- (b) (35,2)--The NGA reports to and is directly responsible to the Secretary of Agriculture. The NGA's funding comes through the DA.
- (c) (35,3) - (35,6), (33,9)--The NGA works with these cabinet level departments to implement various phases of its program.
- (d) (35,12), (33,25)--The NGA works with the UPLB and ACS in implementing educational and research activities of its programs.
- (e) (35,13) - (35,16)--These elements represent the various financial agencies which lend monies to the activities of the NGA.
- (f) (35,19)--All NGA research must be cleared through the PCARR.
- (g) (35,21), (35,24), (35,27)--These elements represent agencies involved in NGA programs.
- (h) (35,31) - (35,36), (35,41)--These elements represent the communication and cooperation that the NGA has with its fellow departments of the DA. The NGA coordinates the activities of its programs with these departments.
- (i) (35,43)--This element represents the communication the NGA has with the IRRI in its efforts to bring more quickly its research to grain producers.
- (j) (35,46)--The NGA is working with the BFD and PB in the expansion of new lands for rice cultivation.
- (k) (35,38), (35,39)--The NGA is required by law to aid the CMSP and AMC's in their marketing efforts.
- (l) (35,64)--The NGA works with the NIA in its efforts to expand and improve irrigation systems for grain producers.

- (m) (35,69)--The NGA works with the FNRC and BAE in its surveys. It uses the surveys in its analysis of how production is being utilized.
- (n) (35,84)--The USAID has granted loans to the NGA for use on various projects.
- (o) (35,87) - (35,90)--Under NFAC direction the NGA is involved in these food production programs.

36) Bureau of Agricultural Extension--(36,2), (36,19), (36,25), (36,31) - (36,41), (36,72), (36,88), (36,89)

- (a) (36,2)--The BAE reports to and is directly responsible to the Secretary of Agriculture. BAE's funding comes through the DA.
- (b) (36,19)--All research conducted by the BAE comes from government appropriations which must first be approved by the PCARR.
- (c) (36,25) and (36,72)--The BAE works through and with the ACS and UPCA in receiving and transmitting information to the people.
- (d) (36,31) - (36,41)--These elements represent the communication and cooperative activities that the BAE has with each of its fellow departments and the adjunct agencies of the DA. BAE brings the new advances from these departments to the people.
- (e) (36,88) and (36,89)--Under NFAC direction, BAE workers are involved in various phases of these two food production programs.

37) Philippine Tobacco Administration--(37,2), (37,19), (37,32), (37,36), (37,37), (37,38)

- (a) (37,2)--The PTA is an adjunct organization of the DA. Adjunct because the Secretary of Agriculture and tobacco producers through a board of directors direct its operation.

- (b) (37,19) and (37,32)--By itself and in conjunction with the BPI, government funded research is carried out on native tobaccos under the authority of the PCARR.
- (c) (37,36)--BAE carries out information from the PTA to tobacco producers, etc.
- (d) (37,38)--Although the PTA and PVTA are rival organizations as a result of their relationship with the DA, there exist formal ties with one another.

38) Philippine Virginia Tobacco Administration--(38,2), (38,19), (38,32), (38,36), (38,37), (38,38)

- (a) (38,3)--The PVTA is an adjunct organization of the DA. The secretary of the DA and producers through a board of directors direct its operation.
- (b) (38,19), (38,32)--By itself and in cooperation with the BPI, government funded research on Virginia tobaccos is carried out under the authority of the PCARR.
- (c) (38,36)--BAE carries out information from the PVTA to tobacco producers, etc.
- (d) (38,37)--Although the PVTA and PTA are rival organizations, as a result of their relationship with the DA there exist formal ties with one another.

39) Philippine Sugar Institute--(39,2), (39,19), (39,32), (39,36), (39,39)

- (a) (39,2)--The PSI is another adjunct agency of the DA. The PSI is run by the Secretary of Agriculture and producers through a board it elected.

(b) (39,19) and (39,32)--By itself and in cooperation with the BPI, government funded research on sugar cane is carried out under the authority of the PCARR.

(c) (39,36)--BAE carries out information from the PVTa to sugar cane producers, etc.

40) Philippine Coconut Research Institute--(40,2), (40,19), (40,32), (40,36), (40,40), (40,41)

(a) (40,2)--The PCRI is another adjunct agency of the DA. The Secretary of the DA and producers direct its operation.

(b) (40,19), (40,32), (40,41)--By itself and in cooperation with the BPI and PCA, government funded research on coconuts is carried out under the authority of the PCARR.

(c) (40,41)--The PCRI works with the PCA in the development of the coconut industry also.

41) Philippine Coconut Authority--(41,2), (41,19), (41,32) - (41,36), (41,40), (41,41)

(a) (41,2)--The PCA reports to and is directly responsible to the Secretary of the Agriculture. All of the PCA's financing comes through the DA.

(b) (41,19), (41,32), (41,40)--By itself and in conjunction with the BPI and PCRI, the PCA conducts research in all areas of the coconut industry under the authority of the PCARR.

(c) (41,32) - (41,36)--These elements represent the communication and cooperative activities that the PCA has with each of its fellow departments and the adjunct agencies of the DA.

42) Marketing Research Unit--(42,2), (42,31), (42,47)

The MRU is attached to the NFAC of the DA. The MRU does research through its NFAC affiliation on various projects with many of the agencies the NFAC directs. It has also done research on specific projects at the direction of the Secretary of Agriculture.

43) International Rice Research Institute--(43,2), (43,19), (43,31), (43,32), (43,35), (43,43), (43,73), (43,88)

(a) (43,2)--The IRRI has formal and informal ties with the Secretary of Agriculture.

(b) (43,19), (43,31), (43,32), (43,35), (43,73), (43,88)--The IRRI transmits its research results to these institutions. It works to a limited degree with some of these agencies on rice related research areas.

44) Bureau of Mines--(44,3), (44,19), (44,44), (44,47), (44,64), (44,66)

(a) (44,3)--The BM is an agency which reports to and is directly responsible to the DNR.

(b) (44,19), (44,64), (44,66)--The BM is conducting groundwater research projects under the authority of the PCARR. It is distributing the research results to the NIA and FSDC.

(c) (44,44), (44,47)--These elements represent the communication and cooperative activities that the BM has with each of its fellow departments in the DNR.

45) Bureau of Lands--(45,3), (45,19), (45,44) - (45,47), (45,49)

(a) (45,3)--The BL is an agency which reports to and is directly responsible to the DNR.

(b) (45,19), (45,49)--The BL is surveying land for the land transfer program under the authority of the PCARR. The information from land surveys are sent to BLADD for use in distributing land to tenants.

(c) (45,44) - (45,47)--These elements represent the communication and cooperative efforts that the BL has with each of its fellow departments in the DNR.

46) Bureau of Forest Development--(46,3), (46,19), (46,25), (46,35), (46,44) - (46,47), (46,75), (46,90)

(a) (46,3)--The BFD reports to and is directly responsible to the Secretary of Agriculture. All of the BFD's funding comes through the DNR.

(b) (46,19), (46,25), (46,75)--By itself and in cooperation with the ACS and CF, the BFD conducts research under the authority of the PCARR. Results are transmitted through each of the organizations to those involved in the forest industry.

(c) (46,35) and (46,90)--The BFD is working with the NGA and PB in the expansion of new lands for rice cultivation.

(d) (46,44) - (46,47)--These elements represent the communication and cooperative activities that the BFD has with its fellow departments of the DNR.

47) Bureau of Fisheries and Aquatic Resources--(47,3), (47,14), (47,19), (47,75), (47,31), (47,44) - (47,47), (47,76)

(a) (47,3)--The BFAR reports to and is directly responsible to the Secretary of Agriculture.

- (b) (47,14), (47,19), (47,25), (47,76)--By itself and with the ACF and UPIF, the BFAR conducts research under the authority of the PCARR. The research is financed through the government and through international loans funneled through the PNB.
- (c) (47,31)--The NFAC is coordinating the BFAR's role in the expanded fish production program.
- (d) (47,44) - (47,47)--This represents the communication and cooperative activities departments of the DNR.

48) Bureau of Farm Management--(48,4), (48,48) - (48,51), (48,88), (48,89)

- (a) (48,4)--The BFM reports to and is directly responsible to the secretary of the DAR. The BFM is the extension arm of the DAR.
- (b) (48,48) - (48,51)--These elements represent the communication and cooperative activities that the BFM has with its fellow departments in the DAR.
- (c) (48,88), (48,89)--The NFAC directs some of the BFM workers who are involved in the Ms.99 and MM programs.

49) Bureau of Land Acquisition, Distribution and Development--(49,4),

- (49,15), (49,17), (49,26), (49,45), (49,48) - (49,53), (49,60), (49,71)
- (a) (49,4)--The BLADD reports to and is directly responsible to the Secretary of the DAR.
- (b) (49,15), (49,17), (49,26)--The DBP, LBP and AF work directly with the BLADD in financing the land transfer program.
- (c) (49,45)--The BLADD receives the results of the land surveys from the BL.
- (d) (49,48) - (49,51)--This denotes the communication that the BLADD has with its fellow agencies in the department.

50) Bureau of Resettlement--(50,4), (50,48) - (50,51)

(a) (50,4)--The BR reports to and is directly responsible to the secretary of the DAR.

(b) (50,48) - (50,51)--These elements represent the communication and cooperative activities that the BR has with its fellow department members in the DAR. It works most closely with the BLADD.

51) Bureau of Agrarian Legal Assistance--(51,4), (51,48) - (51,51), (51,70)

(a) (51,4)--The BALA reports to and is directly responsible to the secretary of the DAR.

(b) (51,48) - (51,51)--These elements denote the communication and cooperative activities that the BALA has with its fellow department members in the DAR.

(c) (51,70)--The BALA serves land reform clients in the CAR who cannot afford representation.

52) Land Authority--(52,49), (52,52) - (52,54)

(a) (52,49)--The LA is an agency of the BLADD which actually redistributes land to tenants.

(b) (52,53)--This element represents the communication and cooperative activities that the LA has with the LB as agencies of the BLADD and as they carry out the land transfer program.

(c) (52,54)--The LA runs the EDCOR farms.

53) Land Bank--(53,49), (53,52), (53,53)

(a) (53,49)--The LB is an agency of the BLADD. It is the inhouse bank of the DAR to finance land transfer programs.

- (b) (53,52)--This element represents the communication that the LA has with the LB as agencies of the BLADD and as they carry out the land transfer program.

54) Education and Correction Farms--(54,52) - (54,54)

The EDCOR farms are run by the LA of the BLADD.

55) Board of Investments--(55,5), (55,14), (55,15), (55,21), (55,29), (55,55)

- (a) (55,5)--The BOI reports to and is directly responsible to the director general of the NEDA.
- (b) (55,14) and (55,15)--The BOI must give its approval before loans obtained through international sources can be made to industrial and agricultural sector projects. The BOI also works with the PNB and DBP in determining the credit worthiness of certain projects.
- (c) (55,21) and (55,29)--Representatives from the BOI serve on the board of directors of these agencies.

56) Cabinet Coordinating Council--(56,8), (56,56), (56,73), (56,83) - (56,85)

- (a) (56,8)--The CACC is an agency in the office of the director general of the NEDA.
- (b) (56,73)--The IADA has done some research for the CACC.
- (c) (56,83) - (56,85)--The CACC coordinates all of the integrated rural development projects. The IBRD, USAID and ADD are involved in the planning and financing of these projects with the CACC and the ties the NEDA has with the PCARR and NFAC.

57) Bureau of Cooperative Development--(57,6), (57,57), (57,58) - (57,61)

- (a) (57,6)--The BCOD reports to and is directly responsible to the secretary of the DLGCD.

(b) (57,58) - (57,60)--The BCOD is in charge of developing the CMSP and the AMC's.

(c) (57,61)--The BCOD works with the CMS as it trains coop managers.

(d) (57,77)--The ACCI provides many trained workers for the BCOD.

58) Cooperative Marketing System of the Philippines--(58,14), (58,16), (58,30), (58,35), (58,57), (58,58), (58,59), (58,60)

(a) (58,14), (58,16), (58,30)--These agencies are providing assistance in the forms of credits and financial management assistance to the CMS.

(b) (58,35)--The NGA by law must give assistance to the CMSP in the marketing of its goods.

(c) (58,57)--The BCOD is the governmental agency the CMSP goes to for help and guidance. The CMSP charter for incorporation came from this office.

(d) (58,59), (58,60)--The building blocks of CMSP are the AMC's and the SN's.

59) Area Marketing Cooperatives--(59,16), (59,17), (59,30), (59,35), (59,57), (59,58) - (59,61)

(a) (59,16), (59,17), (59,30)--These agencies are providing assistance in the forms of credits and financial management assistance to the AMC's.

(b) (59,35)--The NGA by law must give assistance to the AMC's in the marketing of their goods.

(c) (59,57)--The AMC's go to this governmental agency for help and guidance.

(d) (59,58) - (59,60)--This indicates the relationship that the AMC's have with the CMSP and SN's.

(e) (59,61)--The AMC's contract with the CMS for providing some of its managers. The cost to the AMC is partially subsidized by the BCOD.

60) Samahang Nayan--(60,4), (60,16), (60,17), (60,57), (60,59), (60,60)

(a) (60,4) and (60,57)--The DAR's land transfer program is tied into the development of SN's. The BCOD also oversees the development of the SN's.

(b) (60,16) and (60,17)--These two agencies are providing assistance in the forms of credits and financial management assistance to the SN's.

(c) (60,59)--The SN's are the building blocks of the AMC's.

61) Cooperative Management System--(61,57), (61,59), (61,61)

The CMS is chartered through the office of the BCOD. They work together to provide managers for the AMC's.

62) Grain Marketing Cooperative of the Philippines--(62,6), (62,16), (62,30), (62,62), (62,63)

(a) (62,6)--The GRAMACOP is an agency located in the DLGCD.

(b) (62,16) and (62,30)--The GRAMACOP has received loans from these agencies.

(c) (62,63)--The building blocks of the GRAMACOP have been the FACOMAS.

63) Farm Marketing Cooperative--(63,16), (63,62), (63,63)

(a) (63,16)--The FACOMAS have received financial assistance from the ACA.

(b) (63,62)--The FACOMAS are the building blocks of the GRAMACOP.

64) National Irrigation Administration--(64,7), (64,31), (64,35), (64,44),
(64,64) - (64,67), (64,73)

- (a) (64,7)--The NIA reports to and is directly responsible to the Secretary of the DPWTC.
- (b) (64,31)--The NFAC directs some of the efforts of the NIA as a result of the food production programs.
- (c) (64,35)--The NIA works with the NGA in its efforts to expand and improve irrigation systems for grain producers.
- (d) (64,44)--The NIA receives information from the groundwater surveys done by the BM.
- (e) (64,64) - (64,67)--These elements represent the communication and cooperative activities that the NIA has with its fellow departments in the DPWTC.
- (f) (64,73)--The IADA has done some research projects for the NIA.

65) Bureau of Public Works--(65,7), (65,64) - (65,66)

- (a) (65,7)--The BPW reports to and is directly responsible to the Secretary of DPWTC.
- (b) (65,64) - (65,66)--These elements represent the communication and cooperative activities that the BPW has with its fellow departments in the DPWTC.

66) Farm Systems Development Corporation--(66,7), (66,44), (66,64) - (66,66)

- (a) (66,7)--The FSDC is an agency which reports to and is directly responsible to the BPWTC.
- (b) (66,44)--It too receives information from the groundwater services done by the BM.

(c) (66,64) - (66,66)--These elements represent the communication and cooperative activities that the FSDC has with its fellow departments in the DPWTC. Especially strong ties are with the NIA as a result of the irrigation development programs they carry out together.

(d) (66,67)--The ISU of the NIA also does work for the FSDC.

67) Irrigation Service Unit--(67,64), (67,66), (67,67)

(a) (67,64)--The ISU is an agency of the NIA. The NIA directs its work.

(b) (67,66)--The ISU carries out work also for the FSDC.

68) National Institute of Technology--(68,8), (68,19), (68,68), (68,69)

(a) (68,8)--This agency reports to and is directly responsible to the Secretary of the NSDB.

(b) (68,19)--The NIST is a wholly funded government agency. So all of its research is under the authority of the PCARR.

(c) (68,69)--This element represents the communication and cooperative activity that the NIST has with its fellow departmental members on the matrix.

69) Food Nutrition Research Center--(69,8), (69,19), (69,31), (69,33), (69,35), (69,68), (69,69)

(a) (69,8)--The FNRC reports to and is directly responsible to the Secretary of the NSDB.

(b) (69,19)--The FNRC conducts government funded research so its research is under the authority of the PCARR.

(c) (69,31), (69,33), (69,35)--The FNRC conducts research and is implementing a nationwide program to improve nutrition in conjunction

with the NFAC. It also provides information and does some research with the BAECON. It also furnishes information on food consumption to the NGA.

- (d) (69,68)--This element represents the communication and cooperative activity that the FNRC has with a fellow departmental member of the NSDB.

70) Court of Agrarian Relations--(70,10), (70,51), (70,70), (70,71)

- (a) (70,10)--The CAR reports to and is directly responsible to the Secretary of the DJ.
- (b) (70,51)--The CAR is where land transfer disputes are convened. The BALA represents their clients before the CAR.
- (c) (70,71)--This element represents the communication and cooperative activity that the CAR has with a fellow departmental member of the DJ.

71) Land Registration Commission--(71,10), (71,49), (71,70)

- (a) (71,10)--The LRC reports to and is directly responsible to the Secretary of the DJ.
- (b) (71,49)--The LRC is where all the deeds for land transfers are registered. The LRC gets these deeds from the BLADD.
- (c) (71,70)--This element represents the communication and cooperative activity that the DJ has with a fellow departmental member of the DJ.

72) College of Agriculture--(72,12), (72,19), (72,25), (72,31) - (72,34), (72,36), (72,72) - (72,77), (72,88), (72,89)

- (a) (72,12)--The UPCA reports to and is directly responsible to the chancellor of the UPLB.
- (b) (72,19)--All the government funded research done by the UPCA must be first cleared through the PCARR.
- (c) (72,31) - (72,34), (72,36)--These elements represent the research conducted in cooperation with these DA agencies. It also represents the various formal and informal communication between the members of these various organizations.
- (d) (72,25), (72,72) - (72,77)--These elements represent the communication and cooperative activities that the UPCA has with its fellow colleges and the institutes of the UPLB and ACS.
- (e) (72,31), (72,88), (72,89)--The NFAC coordinates UPCA involvement in the Ms.99 and MM food production food programs.

73) Institute of Agricultural Development Administration--(73,5), (73,12), (73,13), (73,18), (73,31), (73,33), (73,34), (73,43), (73,56), (73,64), (73,72) - (73,77)

- (a) (73,5), (73,13), (73,31), (73,33), (73,34), (73,43), (73,56), (73,64)--The IADA has done research for and with each of these agencies.
- (b) (73,12)--The IADA reports to and is directly responsible to the chancellor of the UPLB.
- (c) (73,19)--All IADA research projects are done under the authority of the PCARR.
- (d) (73,72) - (73,77)--These elements represent the communication and cooperative activities that the IADA has with its fellow institutes and the colleges of the UPLB.

74) College of Veterinary Medicine--(74,12), (74,19), (74,34), (74,72) - (74,77)

- (a) (74,12)--The CVM reports to and is directly responsible to the chancellor of the UPLB.
- (b) (74,19 and (74,34)--By itself and in conjunction with the BAI, the CVM conducts research under the authority of the PCARR.
- (c) (74,72) - (74,77)--These elements represent the communication and cooperative activities that the CVM has with its fellow colleges and the institutes of the UPLB.

75) College of Forestry--(75,12), (75,19), (75,46), (75,72) - (75,77)

- (a) (75,12)--The CF reports to and is directly responsible to the chancellor of the UPLB.
- (b) (75,19) and (75,46)--By itself and in conjunction with the BFD, the CF conducts research under the authority of the PCARR.
- (c) (75,72) - (75,77)--These elements represent the communication and cooperative activities that the CF has with its fellow colleges and the institutes of the UPLB.

76) Institute of Fisheries--(76,12), (76,19), (76,47), (76,72) - (76,77)

- (a) (76,12)--The UPIF reports to and is directly responsible to the chancellor of the UPLB.
- (b) (76,19) and (76,47)--By itself and in conjunction with the BFAR, the UPIF conducts research under the authority of the PCARR.
- (c) (76,72) - (76,77)--These elements represent the communication and cooperative activities that the UPIF has with its fellow institutes and the colleges of the UPLB.

77) Agricultural Credit and Cooperative Institute--(77,12), (77,19), (77,57),
(77,72) - (77,78)

- (a) (77,12)--The ACCI reports to and is directly responsible to the chancellor of the UPLB.
- (b) (77,19)--The ACCI conducts government funded research under the authority of the PCARR.
- (c) (77,57)--The ACCI trains many of the workers for the BCOD.
- (d) (77,72) - (77,77)--These elements represent the communication and cooperative activities that the ACCI has with its fellow institutes and the colleges of the UPLB.
- (e) (77,78)--The ACCI and the DRB conduct classes and workshops to train the personnel in private rural banks in an attempt to improve the banks. Personnel of rural banks are now required to take the classes the ACCI and DRB offer in their areas.

78) Department of Rural Banks--(78,13), (78,15), (78,77), (78,78)

- (a) (78,13)--The DRB reports to and is directly responsible to the governor of the CB.
- (b) (78,15)--The DRB has been working with the DBP to supervise and improve the operating procedures of privately owned rural banks.
- (c) (78,77)--The DRB and the ACCI conduct classes and workshops to train the personnel in private rural banks in an attempt to improve the running of the banks. Personnel of rural banks are now required to take classes these agencies offer in their areas.

79) Department of Commercial Banks--(79,13), (79,79)

The DCP reports to and is directly responsible to the governor of the CB.

80) National Investment Development Corporation--(80,14), (80,80), (80,81)

(a) (80,14)--The NIDC is a wholly owned subsidiary of the PNB.

(b) (80,81)--The NIDC owns Philex.

81) Philippine Exchange Company--(81,80), (81,81)

The NIDC owns Philex, the only legal sugar exporter of the Philippines.

82) Technical Board for Agricultural Credit--(82,24), (82,82)

The TBAC is the full time operating staff of the TBAC.

83) International Bank for Reconstruction and Development--(83,2), (83,3),

(83,13), (83,15), (83,29), (83,31), (83,56), (83,83), (83,88)

The IBRD has channeled loans and grants and given technical assistance to these various government agencies and programs.

84) United States Agency for International Development--(84,2) - (84,6),

(84,13), (84,16), (84,29), (84,31), (84,35), (84,56), (84,84)

The USAID has channeled loans and grants and given technical assistance to these various government agencies and programs.

85) Asian Development Bank--(85,13), (85,27), (85,29), (85,31), (85,32),

(85,56), (85,85)

The ADB has funneled loans and grants and given technical assistance to these government agencies and programs.

86) Japanese Reparations and Government--(86,2), (86,5), (86,86), (86,88)

The JRG has channeled loans and reparation payments through these government agencies.

87) Commodity Credit Corporation--(87,2), (87,35)

The CCC channels P.L. 480 loans of wheat and corn through these two organizations.

88) Masagana 99--(88,1), (88,2), (88,4), (88,6), (88,13) - (88,16), (88,20), (88,31), (88,32), (88,35), (88,43), (88,48), (88,72), (88,83), (88,86), (88,88)

The Ms.99 program involves the combined efforts of these governmental agencies in its attempt to increase palay production.

89) Masaganang Maisan--(89,1), (89,2), (89,4), (89,6), (89,14) - (89,16), (89,20), (89,31), (89,32), (89,34), (89,35), (89,48), (89,72), (89,89)

The MM program involves the combined efforts of these governmental agencies in its attempt to increase white corn and feed grain production.

90) Palayan Ng Bayan--(90,1), (90,2), (90,6), (90,15), (90,35), (90,46), (90,90)

The PB program involves the combined efforts of these governmental agencies in its attempt to increase rice production through the expansion of the cultivated area of palay.

C) Concluding Remarks

Prevailing public policy dictates the way producers and those involved in the marketing process can operate and function. If producers and marketers are to be successful in their efforts then conducive public policy must have been present in the recent past and be prevailing presently.

The conclusion of the ERS, IBRD, and the World Bank Study is that generally the establishment of the Masagana 99, Masaganang Maisan programs

and the NGA is in itself a tacit admission by the government that past government efforts have been unsuccessful in promoting increased production and more efficient marketing practices.

Positive steps have been made by the President to rectify many of these problems. The establishment of super agencies such as the PCARR, FNA and NGA were moves in the right direction to eliminate past problems. The President, as can be seen by the high profile role he has taken in the Ms.99 program, has been taking much more active participation in seeing that government agencies and programs in the agricultural sector follow through on their jobs.

The Masagana 99 and Masaganang Maisan programs seem to be making genuine headway in increasing food production levels. The key factor, according to the Grains Industry Development Plan and Economic Aspects of Agrarian Reform Under the New Society, as to whether they can succeed is whether continual follow-up of initial efforts can be made.

The National Economic Development Authorities, four year development plan FY 1974-77, provided a blue print and set goals to be strived for. A sense of direction as a result of it now so importantly prevails in the Philippines.

Once again, as with so many of the programs generated by President Marcos since his takeover of the government, only time will tell if they will succeed. As of yet the new prevailing public policies have not been in operation long enough so as to fairly judge the fruits they have produced. The verdict cannot yet be rendered.

CHAPTER V

AN ANALYSIS OF PRODUCTION: HARVEST AND
POST HARVEST PRACTICES

The problems of marketing are closely interrelated with the characteristics and institutions of production. The required marketing organization depends inherently upon the quantities of total national and regional production and the relationship of this production to consumption. An understanding of the characteristics and institutions of Filipino grain producers is essential then if the marketing system is to be fully understood.

Three principal grains are produced in the Philippines. They are rice, corn and sorghum. The most important grain crop is rice. Two types of corn are grown: white corn for human consumption and yellow corn for feed consumption. Sorghum is a relatively new crop for the Philippines. Experts believe that there is much potential for significant quantities of sorghum to be produced in the future.

Palay

Based on the four climate types in Map 2 from the Philippine Almanac, the following planting calendar holds true for Philippine rice production:

Crop	Climate Type/Planting Calendar			
<u>Rice</u>	I	II	III	IV
Lowland	June-Sept. Oct.-Dec.	Oct. -Dec.	June-Aug.	May -July Aug.-Oct.
Palagad (dry season)	Jan.-Feb.	May -July	Nov.-Jan.	Nov.-Jan.
Upland	Apr.-June	June -Aug. Sept.-Nov.	Apr.-June	Apr.-June

There are three major cropping systems and seasons for palay (rough rice) production in the Philippines. The major cropping system, lowland with or without irrigation, involves planting rice in May and June during the wet season with the harvest coming in the period November through February. The second system, lowland dry season with irrigation, known there as palagad, involves planting in the period November through February with the harvest coming in the months of March through June. The third system, upland, normally involves planting in the period April through June, also generally during the wet season, with harvest and marketing occurring from September through December. Table 15 shows the monthly percentage distribution of the palay harvest nationally and by region.

About 75% of the annual palay production comes from rice planted during the wet season. Table 15 illustrates this point by showing that approximately 60% of the crop is harvested each year during the months of October through the end of December. The remaining 15% of the wet season crop comes in other months due to difference in planting and harvest. The palagad or dry season crop represents about 20% of total production each year. This, too, is indicated by the percentage of the crop harvested during the months of March through the end of May.

The rice plants "are usually harvested with the use of a serrated or plain blade scythe or sickle ('lilik') of varied designs. They are usually harvested by holding the sickle in one hand for cutting and the other for gathering."²⁴ Other methods of harvesting such as Japanese made reaper

²⁴The Philippine Recommends for Rice 1977 by Philippine Council for Agricultural and Resources Research, Los Banos, 1977, p. 81. This journal is annually updated in an attempt to bring the latest technological breakthroughs to the producer. They are also made for corn and sorghum. Consult them for more detail on all harvest and post harvest practices by Filipino grain producers.

binder and combines which are widely used in other countries are not in wide use in the Philippines.

Table 16 gives the statistics on palay production in the Philippines. The large decline in palay production in the years 1971-72 and 1972-73 was due to a series of natural calamities. In 1971-72 the crop was ravaged by the tungro disease. In 1972-73 there was disastrous flood and typhoon damage to the palay crop. Relative rice self-sufficiency had been achieved in the two previous years (see Table 17).

Project Adam, a joint undertaking of the Bureau of Agricultural Economics, and the U.S.D.A. Economic Research Service, is a project to develop a linear programming model for use in agricultural policy and planning analyses. One of the byproducts of this project is an analysis of the national changes in production, area and yield of palay production.

The project divided the long term national trends in production, area and yield into four historical periods: 1) decreasing yield but increasing area and production from 1954 to 1956, 2) increasing area but decreasing yield and production from 1957 to 1958, 3) period of fluctuating but gradually increasing area production, and yield from 1959 to 1969, and 4) an abrupt increase in production and yield but slight decrease in area from 1969 to 1971.²⁵

Overall national increases in total palay production from 1954-57 to 1969-72 was approximately 55%. An increase of 18 percent in total area and 31 percent in the national average yield per hectare were also attained by the Philippines over that study period (see Table 18).

²⁵See Papers and Proceedings--Evaluation Seminar Workshop, Project Adam, Department of Agriculture, Bureau of Agricultural Economics, Quezon City, October 1976, p. 147.

This same type of analysis was applied to each region of the Philippines by the Project Adam team. Significant variations were shown to exist between regions in the average change of production, area and yield (see Table 18).

Production increased substantially in all of the regions except Eastern Visayas and Northern and Eastern Mindanao for the period 1954-57 to 1962-65 and Southern and Western Mindanao for the period 1962-65 to 1969-72. The decrease in production in Eastern Visayas resulted from the negative changes in area and yield. For this period production declined in Northern and Eastern Mindanao due to a decline in average yield. The production dropoff for that particular period in Southern and Western Mindanao was due to a decline in the total area harvested.

For the first period 1954-57 to 1962-65, upward changes in production for the regions of Ilocos, Cagayan Valley, Southern Tagalog and Southern and Western Mindanao were influenced more by positive changes in area than yield. Yield influenced production, on the other hand, more than area in the other five regions.

For the second period analyzed by the Project Adam team on Table 18, yield had influenced changes in production more than area in every region but two. One of them being Central Luzon, the major rice producing region of the country.

For the third period analyzed, 1954-57 to 1969-72, changes in production were attributed primarily to changes in yield rather than in area for almost every region with the exceptions of the regions of Cagayan Valley and Northern and Eastern Mindanao which make up less than 20% of total annual production in any year.

Finally the Project Adam team concluded that, "The data further showed that the actual yields in 1959-63 and 1964-68 were respectively higher than

the 1954-58 yield by 1.1 and 12.1 percent only. However, the actual 1969-72 yield was higher than the 1954-58 yield by 35.2 percent. This implies that spectacular rice yield increases had been obtained during the last four years."²⁶

What was the source(s) of this spectacular increase in palay yield? For national paddy yields were virtually stagnant at about 1.2 metric tons per hectare until the mid-1960's. However by 1970 the national yield was over 1.6 metric tons per hectare (see Table 16).

The impressive gains over this time period, Mears concluded in his work Rice Economy of the Philippines, were due to three principal factors. They were: 1) introduction and broad distribution of new high yielding varieties of rice, 2) expansion of irrigated rice area, for both wet and dry season crops, for which the new varieties are best adapted, and 3) the area under cultivation in the low yielding upland areas was reduced approximately one-third thus raising average yields.

The combination of both the higher yielding varieties (HYV's) of rices and irrigation pushed the average national yield upward. By the year 1968-69 22.5% of the area harvested has this combination of inputs. By 1971-72 29.0 percent of the area harvested utilized both irrigation and the HYV's. The yield from land with this specific combination of inputs was 1.71 metric tons per hectare in 1968-69 and 2.05 metric tons per hectare in 1971-72. This is a yield of 117.2% and 128.2%, respectively, of the national average yields for those years (see Table 19).

²⁶See Papers and Proceedings--Evaluation Seminar Workshop, Project Adam, Department of Agriculture, Bureau of Agricultural Economics, Quezon City, October 1976, p. 152. From a paper entitled: An Analysis of Trends in Food and Commercial Crop Production, Area and Yield in the Philippines, 1954-72 by H. M. Receno, C. C. Olalo, and A. R. Libero of the Project Adam team.

The area harvested in 1968-69 of land under irrigation was greater than the area of land harvested which utilized the HYV's. But this situation was reversed by 1971-72 for the area harvested utilizing HYV's was 51% and the area harvested which had irrigation was 42.8% of the total land area. In fact the total area of production under irrigation increased from 1968-69 to 1971-72 by only 0.3%. This was due to the breakdown and disrepair of irrigation systems under the area harvested without HYV's. The area under irrigation which cultivated the HYV's did increase by 6.5% over this time frame (see Table 19). Despite the significant investments in irrigation systems, once they broke down they remained so. This was due to two principal reasons: 1) lack of trained repairmen and 2) lack of adequate capital to finance the repairing, according to the World Bank Study.

Total annual production from the area with the higher yielding varieties of rice in comparison to the area without the higher yielding varieties showed dramatic changes. In 1971-72 over 57% of the total production came from land utilizing the HYV's when only 41.1% of it came from such plantings in 1968-69 (see Table 19).

There is no one particular higher yielding variety of rice in use for "the varieties of palay grown are so numerous that even within a region or province a wide range of varieties is produced. One study reported a total of 83 varieties . . . [grown]."²⁷ The Bureau of Plant Industry (BPI), the University of Philippines at Los Banos College of Agriculture (UPCA) and the International Rice Research Institute (IRRI) are responsible for developing

²⁷ Lawrence Darrah and Fabian Tiongsin, Agricultural Marketing in the Philippines (Los Banos: University of Philippines, College of Agriculture, 1969), p. 144.

these new varieties of rice. "Rice research in the Philippines is probably as encompassing and productive as any country in the world."²⁸

As a result of the tungro disease outbreak in 1971 and 1972, new HYV's are being distributed throughout the country. This process is expected to be completed within the next year. By 1980 the I.B.R.D. study predicted that new varieties from the IRRI will result in even higher yields due to new technological advances in seed improvement.

After the palay has been harvested it undergoes a number of processes before use for either home or commercial purposes. These include such activities as drying, bundling or piling, threshing, cleaning, packaging and storing.

Palay is sold by weight in the Philippines. Proper drying makes threshing easier and increases the storage life of the product. Usually the palay is left in the sun to dry before threshing on the field. Palay, too, is dried along the sides of roads, on concrete floors, near to warehouses, or at other convenient, sunny places. Only a little mechanical drying is done by large traders and millers. The traditional means for determining dryness according to Mears in his definitive study The Rice Economy of the Philippines is by biting the grain or compressing it in the palm. Only large millers use mechanical means to determine moisture content in the palay.

Threshing of palay, either with or without prior drying is performed in five important ways. They are: "1) Machine threshing is of growing importance especially on the leading and larger farms. . . . 2) hand threshing by use of a pestle (bundles of palay are placed on a surface and pounded with a wooden pestle), 3) by flailing the palay stalks over a wood frame, 4) by

²⁸IBRD, vol. III, annex 6, p. 6.

holding the stalks against a manually operated wooden wheel and 5) by tramping the grain loose from the straw by human feet or by a work animal."²⁹

The mode of threshing palay determines to a great degree the amount of foreign material in the palay and the need for cleaning, according to Mears and Darrah. When animal or human feet are used to thresh the grain, intense cleaning is necessary. The most common procedure utilized in cleaning is the use of hand winnows which are made of woven bamboo. Another common cleaning procedure they noted involves the use of elevated platforms whereby the palay is poured from the platform and the wind carries the empty hulls and other light foreign matter to be blown away. However, the use of these procedures will allow heavy objects to remain in the palay for the most part.

The harvest and post harvest practices of Filipino palay producers can still be characterized as being traditional and indigenous. The time honored methods of harvest, drying, threshing and cleaning still prevail.

Corn

Crop	Climate Type/Planting Calendar (from the Philippine Almanac)			
	I	II	III	IV
<u>Corn</u>				
Dry Season	Oct.-Jan.	Mar.-May	Oct.-Dec.	Sept.-Nov.
Rainy Season	May -June	Jan.-Feb. Aug.-Sept.	Apr.-June	Apr. -June
Third Crop			Dec.-Feb.	Dec. -Feb.

Corn is grown in both the lowlands and uplands in the Philippines. The uplands, in contrast to the lowlands for palay production, constitute the major cropping system for corn production in the Philippines. The planting season varies more significantly for corn than palay production.

²⁹Darrah and Tiongsin, p. 138.

Although no statistics giving a monthly distribution of corn harvest are kept, harvest is a year round job for Filipino grain producers. Quite often, according to the Philippine Almanac, the peak harvest month is August for the regions of Ilocos, Cagayan Valley, and Western Visayas. In the region of North and East Mindanao the peak harvest month comes in December. These are all months of high rainfall and high relative humidity for these regions. In contrast in South and West Mindanao, the largest corn growing region, the peak harvest month is in February when it is relatively dry.

Depending upon the variety of corn used, harvest can come anywhere from 85-115 days after planting for there are many varieties of corn (see Librero, An Integrated Study on the Economics of Corn). Most harvesting is done by hand by the individual producer. However, most large livestock farms now own their own tractors, silage harvesters, and corn picker/harvesters or picker shellers. Custom tractor service is now available in some parts of Mindanao. No percentage breakdowns on mode of harvesting are yet kept.

The statistics on corn--white and yellow--production in the Philippines are found in Table 20. In 1974 about 2.3 million metric tons of corn were produced in the Philippines. This represents a 96 percent increase in total production since the crop year 1960-61. During this time the total area nationally devoted to corn production increased by 50% and average national yield increased by 31% (see Table 21).

The principal corn growing region is Southern and Western Mindanao. In 1970 it accounted for about 50% of total annual corn production (see Table 21). About 70% of total corn production in 1970 came from provinces which had the climate types III and IV. These are the climate types where rainfall is most equally distributed throughout the year, therefore allowing a third crop to be grown (Map 2 and Table 21).

The Philippines grows two principal types of corn for two purposes: white corn for human consumption and yellow corn for feed consumption. In 1970 about 88 percent of total corn production consisted of white corn. The region of Southern and Western Mindanao produced about 55% of the white corn that year (Table 22).

The ratio of yellow corn production to total production has dropped each year. This is due to the development and distribution of higher yielding varieties of white corn.

Corn imports are minimal in the Philippines. The increases in corn imports in 1972 and 1973 were due to increased P.L. 480 sales from the United States (see Table 23).

For the period 1970 to 1974 about 90 percent of annual white corn production was used for food purposes. For that same period it is estimated that "about 6-8% of the current white corn production is consumed by the starch, glucose and other industries."³⁰ The remaining white corn production, all of the yellow corn production and corn imports make up the corn consumed by the feed sector in the Philippines (see Table 24). It is estimated that between 20-25 percent of the population use corn as a staple food in the form of grits. These consumers are largely located in the Visaya and Mindanao regions.

Corn used as feed grain comes in three principal forms. They are:

1) byproduct feed from milling of white corn for grits, equal to about 30% of the grain weight, 2) surplus white corn, and 3) the entire crop of yellow corn minus corn on the cob consumption.

³⁰ IBRD, vol. III, annex 7, p. 4.

Another of the byproducts of Project Adam was an analysis of the national changes in production, area and yield of corn. Again, an analysis was made of national and regional changes of these three factors.

The project team divided the long term national trends in corn production, area and yield into two periods. They are: 1) a period of fluctuating but generally increasing area and production but gradually decreasing yield from 1954-59 and 2) a period of moderately increasing trend in the three components from 1960 to 1972.

Over the study period, they found that the annual rates of growth in production, area and yield were 5.1, 4.2 and 0.9 percent, respectively. Overall they found that from 1954-57 to 1969-72 corn production in the Philippines increased by 131.3 percent. This increase in production was brought about by positive changes in both area by 59.1% and yield by 44.2% (see Table 25).

Again this type of analysis was also done regionally in the Philippines. In comparison to the analysis of palay production, corn production showed even larger variations in average change of production area, and yield between regions.

Each region but Eastern Visayas exhibited positive increases in total production over the study period. This increase was a result of increased total area in each region devoted to corn production. Unlike the regional analysis of palay production, the trends in production, area, and yield of corn production remained largely constant from study period to study period. Unlike palay production the primary source of the increase in national production was the increase in the total area devoted to production, both in the expansion in area and the shift in the expansion to land in regions where the production of corn is more favorable.

Since 1961, the national average corn yield has increased by around 25 percent. The IBRD study done in 1973 concluded that farming practices have remained essentially the same since World War II and further there has been no development of irrigation systems or widespread use of fertilizers in corn production. "In fact, the reason for continued use of traditional varieties revolved mainly on what farmers had become used to as well as unavailability of HYV seeds."³¹

However, there have been relatively large increases in yield for some regions. These large increases in yield occur in those regions where there also has been an expansion in the area harvested but only in provinces that have climate types III and IV which allow a third crop and are best suited for corn production (see Map 2 and Table 26). The average annual increases in the area devoted to production were greatest in the regions with the highest average annual yield. The two largest corn producing regions, Southern and Western Mindanao and Cagayan Valley, accounted for about sixty percent of the total production in 1970. For these two provinces, 86 and 96 percent of the increase in their regional production levels, respectively, were due to an expansion in area (see Tables 25 and 26).

There are five major post-harvest practices which are carried out on Filipino corn producer farms. These are: 1) husking, 2) drying, 3) shelling, 4) storing and 5) packaging.

According to Darrah and Tionsin about three-fourths of all corn is husked on the farm. About one-half of the husking is done in the field and

³¹Arda Libero et al., "The Economics of Corn," University of Philippines, Institute of Agricultural Development and Administration, p. 7. (mimeographed.)

the other half is done outside of the producer's home. Where the husking is done varies greatly from region to region.

When drying is done, the corn is layed out in the sun to dry in either the field or near the home. The average drying period using this mode is three days. Some mechanical drying is done only on the farms of large livestock producers and millers. However, "A high proportion of the farmers (80 to 95 percent) do not dry the corn, and this is true for the average as well as the leading corn growers."³²

The husked corn is usually sold shelled. The preponderance of producers shell the corn by hand, but a small and growing proportion use hand powered or motor driven shellers.

Unlike many palay producers, corn is stored on corn producers' farms. Ear corn is usually stored on most farms by all sizes of producers. Generally, storage occurs just after the ears have been removed from the stalks or after the corn is husked. "It is uncommon to store shelled corn. Essentially this means that the storage of corn by farmers is primarily limited to that necessary in performing the functions of husking, drying, and shelling. Once corn has been shelled it is marketed promptly."³³

On the smaller to average size corn farms, the producers usually package the corn in containers for sale. On the larger productive farms, only about one-half of the farmers perform the packaging. The other half of the packaging is done by the buyers of the corn.

Harvest and post harvest practices are largely traditional and indigenous for corn production in the Philippines. Yet in comparison to palay

³²Darrah and Tiongsin, p. 172.

³³IBRD, vol. III, annex 7, p. 25.

production there is a great deal more mechanization in its production processes.

Sorghum

Sorghum is a relatively new grain crop in the Philippines. This is denoted by the small total number of hectares devoted to production. This is best reflected by the fact that there is no separate listing for sorghum production in the NEDA Statistical Yearbook, Crop Statistics of the Department of Agriculture or the Philippine Almanac and Handbook of Facts.

Sorghum can be grown during both the wet and the dry season. When planted during the wet season, planting is timed such that harvest falls within the initial dry season month.

There is no particular harvest time for sorghum in the Philippines. Harvest takes place generally 110-115 days after planting. Sorghum is harvested by hand using a scythe or sickle.

Southern and Western Mindanao is the primary sorghum producing region (see Table 27). The National Food and Agricultural Council (NFAC) is in charge of the program to expand production to a level of 250,000 metric tons annually from an area of 96,500 hectares. Hopefully this goal will be achieved by 1980.

"Threshing of this new crop (sorghum) poses a problem to farmers. . . . Larger farmers use paddy threshers or run tractors over harvested sorghum heads on ground. Small farmers thresh by hand or simply sell heads to middlemen."³⁴

³⁴IBRD, vol. III, annex 7, p. 25.

Sorghum, the same as palay and corn, is dried by using solar energy. The sorghum heads or threshed seeds are layed on a canvass or concrete floor to dry.

Sorghum is utilized almost entirely as a feed grain. Yet in the Philippine Recommends for Sorghum there are twenty-one recipes listed using sorghum as the primary foodstuff. Sorghum is being promoted as a substitute for corn by this extension journal when there exists acute shortages of corn.

For the Philippines, major increases have been made in increasing total and average annual production for both palay and corn. Yet in comparison with other Asian countries, the typical Filipino producer's output is very low. For the period 1971-73, average annual palay and corn yields were sixty-six and forty-five percent, respectively, of the yield obtained by other Asian countries (see Table 28).

Problems in Palay Production

Why are average yields among the lowest in Asia? There is no simple answer. Serious problems exist in all phases of production. The causes are so intertwined it is like answering the question of which came first, the chicken or the egg. The existence of the Masagana 99 Program introduced in May of 1973 indicates the seriousness of the problems facing the Philippines in their attempt to raise production levels (see Masagana 99 Program under Section IV).

There are seven major problems affecting palay production in the Philippines, according to Mears and IBRD. These are: 1) lack of inputs, 2) lack of credit, 3) ineffective extension service, 4) inefficient irrigation systems, 5) lack of price incentive, 6) poor harvest and post harvest practices and 7) producer resistance to change.

There continues to be a severe shortage of inputs necessary to increase the average annual yield. The rate of fertilizer application to rice paddys is one of the lowest in Asia. This is due to shortages and price levels which make it uneconomical for most palay producers to use much fertilizer. Although more widely available than fertilizer, the same situation exists for pesticides.

Rats cause significant damage in rice paddys. It is estimated that about 4.5 percent of the total crop each year is destroyed by them.³⁵

Even when the desire exists to buy the HYV seeds, fertilizer and pesticides the money is not there to be lent to the producer. Most of the credit which they do obtain is from non-institutional sources such as landlords or millers at exorbitant rates. Annual interest rates often exceed 150% according to a study by Sacaz on The Agricultural Credit System of the Philippines for these non-institutional loans. Rural banks have lacked the desire and the capital to lend to most producers, the study also concluded.

The extension service has been poorly trained and managed. For many years there has been no coordination between extension and the Department of Agriculture. The extension workers have been given too many programs to manage with too little training. Their low pay has resulted in a high turnover in personnel each year.

The irrigation systems have been inefficient. Many of the pump irrigation systems have broken down and have remained in a state of disrepair for long periods of time. Many of the gravity irrigation systems have been severely damaged by natural elements and remain unrepaired for reasons mentioned earlier.

³⁵There is an interesting article on rats in the July, 1977 National Geographic Magazine. Detailed information is given on the crop damage they do in the Philippines.

The national government has attempted to implement a policy of floor prices for palay; first, through the now defunct Rice and Corn Administration and presently, by the National Grains Authority. Government efforts to maintain a floor price have failed, according to the NGA in a paper entitled Grains Industry Development Plan. On-farm palay prices have been consistently below the government established floor prices. Further, during periods of rapid price rises for milled rice, on-farm palay prices have remained constant due to the lack of dissemination of market information, the structure of palay production, and traditional means of sale. And on the other hand, palay producers have borne the brunt of rapid increases in input prices which have occurred. This situation has greatly inhibited further expansion of HYV seeds, and the use of fertilizers and pesticides.

The improvement in palay production due to the HYV's and irrigation systems has created problems in harvesting and post-harvest operations of producers. The traditional methods of harvesting, threshing, drying, etc. can not cope with the increased grain yield. The Philippine Recommends for Rice extension journal estimates that 1 to 3 percent of total palay production is lost as a consequence of traditional harvesting methods. And that in the bundling and piling of palay and pre-threshing handling there is anywhere from a 2-7 percent loss in total production. The traditional threshing methods cause an additional 2-6 percent loss and drying an additional 1-5 percent loss in total palay production. If these losses were eliminated or traditional methods improved upon, rice self-sufficiency would exist for the Philippines.

Problems in Corn Production

Presently the obstacles to increased corn production do not seem as complex and involved as those regarding palay production. This is due in

large part to the smaller size of corn output, and the relative smaller improvement in corn production technology in the Philippines vis-a-vis to the technological advances in palay production.

There has not been a very widespread distribution of the HYV corn seeds states Librero. He estimated that only about 13 percent of the area devoted to corn production uses the HYV seeds. Also, Librero stated that corn seed technology is not as advanced as that of rice seed. As a result, relative increases in corn yield through use of the HYV seeds have not been as great as the increases in palay yields. No irrigation is utilized to boost corn production.

As with palay production, practically no fertilizer or pesticides are applied to the corn fields. The IBRD in its work estimated that at present yield level, if recommended pesticide usage was followed by producers, total annual corn production could increase by almost 50%.

The traditional practice of not drying the corn after harvest results in severe losses, according to Darrah and Librero. Poor on-farm storage facilities further reduce the marketable supply to the country.

The corn producers, too, have been resistant to change in production methods. Librero has documented that there has been a great deal of reluctance in some corn growing provinces to shifting to the new HYV seeds even when they are available and provided by the government.

The national government of the Philippines has implemented the Masagana 99 and Masaganang Maisan programs to alleviate these production bottlenecks. Since they have been in operation for only a few years, a final verdict cannot yet be reached as to whether or not they will succeed in increasing total production. Also, a Fertilizer Industry Authority has been established to increase national production of fertilizer. Time, too, will tell if the efforts of this agency will be successful in increasing supply

and reducing the price of fertilizer in the Philippines. (See Masagana 99 and Masaganang Maisan under Section IV--Government for more information.)

TABLE 15
MONTHLY PERCENTAGE DISTRIBUTION OF PALAY HARVEST
NATIONALLY AND BY REGION
(Crop Years: 1967-68 and 1969-70)

Region	Month		Jul.		Aug.		Sept.		Oct.		Nov.	
	Year		1967	1969	1967	1969	1967	1969	1967	1969	1967	1969
Philippines			1.8	0.7	2.2	2.6	6.0	4.4	12.4	20.6	20.8	21.7
Ilocos			a	0.2	0.2	0.2	3.1	.1	24.4	10.2	37.9	47.5
Cagayan Valley			6.2	1.8	5.7	10.6	4.1	8.4	4.1	7.1	5.1	7.8
Central Luzon			0.5	0.1	0.5	0.4	8.0	1.5	5.7	8.2	23.6	23.3
Southern Tagalog			1.0	1.2	0.2	1.1	6.8	5.3	20.8	18.5	19.9	25.1
Bicol			a	0.1	1.7	0.4	2.9	2.8	14.8	51.0	24.9	15.0
Eastern Visayas			a	a	a	0.1	1.3	.6	9.9	13.7	29.3	27.3
Western Visayas			0.1	0.2	3.0	0.9	6.9	5.8	32.6	33.5	8.1	14.6
Northeastern Mindanao			9.7	1.3	11.1	5.2	5.3	8.5	10.2	13.7	31.2	19.6
Southwestern Mindanao			4.9	1.8	5.8	6.1	4.7	7.9	10.2	14.3	24.5	33.0

SOURCE: Leon Mears, Rice Economy of the Philippines (Quezon City: University of the Philippines, 1974), p. 349.

NOTE: a is equal to less than 0.1 percent of production.

TABLE 15--Continued

Dec.		Jan.		Feb.		Mar.		Apr.		May		Jun.	
1967	1969	1967	1969	1967	1969	1967	1969	1967	1969	1967	1969	1967	1969
21.0	20.1	4.9	2.0	5.6	3.0	4.2	5.0	10.9	8.9	6.0	7.0	4.2	4.0
17.0	23.8	0.6	a	a	a	.4	a	2.9	1.7	13.0	10.4	.5	5.9
1.9	6.1	15.6	10.4	33.0	15.3	15.5	18.5	6.3	6.0	0.5	6.6	2.0	1.4
33.8	42.6	4.1	0.9	3.5	2.6	3.6	6.4	9.9	5.3	2.7	2.8	6.1	5.9
14.8	14.6	5.7	3.0	1.0	1.7	1.5	2.9	13.8	8.6	10.2	13.9	4.3	4.1
6.1	3.9	3.8	0.4	0.5	0.7	5.3	1.4	24.7	14.2	14.4	7.7	0.9	2.4
6.0	3.8	a	a	0.1	a	0.3	2.6	31.2	37.8	21.0	10.6	0.9	3.5
31.8	25.9	4.3	2.2	2.0	3.2	3.6	6.5	6.3	6.4	1.1	0.6	0.2	0.2
16.3	23.5	0.2	a	0.1	0.7	0.5	1.1	11.8	16.9	1.5	5.2	2.1	4.3
11.8	12.0	1.6	0.1	1.4	0.4	0.3	0.8	3.9	2.8	10.9	13.0	20.0	7.8

TABLE 16
PALAY PRODUCTION STATISTICS

Palay Production				
	Area Planted (in thousand hectares)	Production (in thousand metric tons)	Yield (in metric tons per hectare)	Production Index (1965=100)
1961	3,197.8	3,704.8	1,158	93
1965	3,199.7	3,992.5	1,248	100
1970	3,113.4	5,233.4	1,681	131
1971	3,112.6	5,342.9	1,716	134
1972	3,246.4	5,100.1	1,571	128
1973	3,111.8	4,414.6	1,419	110
1974	3,436.8	5,594.1	1,627	140

SOURCE: NEDA, Statistical Yearbook of the Philippines for 1976, pp. 134 and 148.

Annual Regional Production as a Percent of Total Production

Region	Year		
	1961	1965	1970
Ilocos	3.6	5.2	3.8
Cagayan Valley	13.3	13.2	13.1
Central Luzon	23.2	25.3	27.4
Southern Tagalog	10.3	13.6	12.0
Bicol	8.8	13.5	7.1
Eastern Visayas	9.2	5.5	6.3
Western Visayas	14.1	10.1	12.4
Northern and Eastern Mindanao	5.4	3.0	6.3
Southern and Western Mindanao	16.1	10.6	11.6

SOURCE: Leon Mears, Rice Economy of the Philippines (Quezon City: University of the Philippines, 1974), p. 346.

NOTE: The delineation of provinces were rearranged after 1972. This chart represents the old arrangement yet it substantially corresponds to Table 3.

TABLE 17
DOMESTIC PRODUCTION AND IMPORTS
OF MILLED RICE
(in thousand metric tons)

	Domestic Production	Net Imports	Import Dependence ^a
1961	2,570	188	6.9
1965	2,690	569	17.5
1969	3,264	---	---
1970	3,582	---	---
1971	3,496	370	9.6
1972	3,149	451	12.5
1973	2,879	310	9.7
1974	3,279	168	4.9

SOURCE: The World Bank, The Philippines--Priorities and Prospects for Development, Washington, D.C., 1976, p. 138.

^aImport Dependence is the ratio of imports to total supply.

TABLE 18
GROWTH RATES AND PERIODICAL CHANGES IN PALAY
PRODUCTION, BY REGION, 1954-72
(in percent)

Region	Production			
	Annual Growth Rate 1954-72	Average Changes		
		1954-57 to 1962-65	1962-65 to 1969-72	1954-57 to 1969-72
Philippines	2.5	20.9	28.1	54.9
Ilocos	7.4	41.0	55.0	167.1
Cagayan Valley	3.0	28.4	40.4	64.3
Central Luzon	1.3	3.2	36.5	40.9
Southern Tagalog	2.1	25.9	31.4	65.6
Bicol	3.9	49.8	34.2	101.1
Eastern Visayas	1.1	-15.1	26.9	7.7
Western Visayas	1.0	0.1	21.8	21.9
Northern and Eastern Mindanao	0.5	-17.2	47.4	22.0
Southern and Western Mindanao	6.7	133.5	- 3.1	126.1

SOURCE: Papers and Proceedings--Evaluation Seminar-Workshop on Maagap (Project Adam), Bureau of Agricultural Economics, Quezon City, October, 1976, p. 164.

TABLE 18--Continued

Area				Yield			
Annual Growth Rate 1954-72	Average Changes			Annual Growth Rate 1954-72	Average Changes		
	1954-57	1962-65	1954-57		1954-57	1962-65	1954-57
	to 1962-65	to 1969-72	to 1969-72		to 1962-65	to 1969-72	to 1969-72
1.1	16.8	1.4	18.4	1.4	3.5	26.3	30.7
2.3	19.6	14.5	47.0	4.9	17.9	35.6	82.0
2.8	42.5	0.4	39.0	0.2	- 9.9	39.8	18.0
0.3	-14.9	25.2	6.5	1.0	21.2	9.0	32.2
1.2	25.8	1.6	27.7	0.9	0.2	29.3	29.6
-0.1	13.6	2.0	16.0	4.0	31.9	31.5	73.4
-1.0	- 4.9	1.3	- 3.6	2.2	- 5.2	25.9	11.8
-0.2	-20.1	1.9	-18.6	1.2	25.4	19.5	49.8
0.4	33.2	- 6.0	25.2	0.4	- 3.5	56.8	- 2.5
7.9	182.6	-20.4	24.8	-1.1	-17.4	21.8	0.6

TABLE 19
USE OF HIGH YIELDING VARIETIES (HYV) SEED AND
IRRIGATION IN THE PHILIPPINES
(1968-69 and 1971-72)

	1968-69		1971-72 ^a	
	Amount	Percent	Amount	Percent
I. Area Harvested				
Area with HYV's	1,140	35.1	1,604	51.0
Irrigated	731	22.5	912	29.0
Rainfed	409	12.6	692	22.0
Area without HYV's	2,110	64.9	1,542	49.0
Irrigated	650	20.0	434	13.8
Rainfed	1,017	31.3	714	22.7
Upland	443	13.6	394	12.5
Total	3,250	100.0	3,146	100.0
II. Yield (metric tons per hectare)				
Area with HYV's				
Irrigated	1.712	117.2	2.05	128.2
Rainfed	1.300	88.9	1.46	91.2
Area without HYV's				
Irrigated	1.700	116.5	1.74	109.2
Rainfed	1.280	87.5	1.39	87.2
Upland	.880	60.3	.92	57.8
Average National Yield	1.460	100.0	1.60	100.0
III. Production (thousands of metric tons of palay)				
Area with HYV's	1,950	41.1	2,893	57.6
Irrigated	1,419	29.9	1,743	34.7
Rainfed	531	11.2	1,150	22.9
Area without HYV's	2,796	58.9	2,130	42.4
Irrigated	1,106	23.3	753	15.0
Rainfed	1,300	27.4	1,015	20.2
Upland	390	8.2	362	7.2
Total	4,796	100.0	5,023	100.0

SOURCE: The World Bank, The Philippines--Priorities and Prospects for Development, Washington, D.C., 1976, p. 136.

^aRepresents a 3-year average.

^bIrrigated, Rainfed categories represent lowland cropping system for both wet and palagad crops.

TABLE 20
CORN PRODUCTION STATISTICS

Crop Year	Area Planted (in thousand hectares)	Production (in thousand metric tons)	Yield (in metric tons per hectare)	Production Index (1965=100)
1961	1,845.5	1,165.3	.631	89
1965	1,922.8	1,312.7	.683	100
1970	2,419.6	2,008.2	.830	153
1971	2,392.2	2,005.0	.838	153
1972	2,431.7	2,012.6	.828	153
1973	2,325.4	1,831.1	.787	140
1974	2,763.0	2,288.7	.828	174

SOURCE: NEDA, Statistical Yearbook of the Philippines for 1976, pp. 135 and 148.

TABLE 21
ANNUAL REGIONAL PRODUCTION OF CORN AS A
PERCENT OF TOTAL PRODUCTION

Region	1961	1965	1970
Ilocos	1.0	1.0	1.0
Cagayan Valley	11.0	9.0	10.0
Central Luzon	3.0	2.0	2.0
Southern Tagalog	4.0	6.0	7.0
Bicol	3.0	3.0	3.0
Eastern Visayas	15.0	11.0	9.0
Western Visayas	15.0	12.0	10.0
Northern and Eastern Mindanao	17.0	11.0	8.0
Southern and Western Mindanao	31.0	44.0	50.0

SOURCE: International Bank for Reconstruction and Development, vol. III, annex 7, Table 4.

TABLE 22
TYPE OF CORN PRODUCTION
(in thousand metric tons)

Region	White	Yellow	Others ^a	Total ^b
Philippines	1,773.91	185.34	48.96	2,008.20
Ilocos	4.01	4.42	1.74	10.12
Cagayan Valley	170.74	5.49	24.71	200.90
Central Luzon	30.73	9.33	1.92	41.98
Southern Tagalog	41.85	97.54	10.24	149.63
Bicol	44.56	22.08	0.93	67.57
Eastern Visayas	180.71	1.03	.05	181.79
Western Visayas	154.68	31.45	5.49	191.62
Northern and Eastern Mindanao	169.11	0.06	1.44	170.61
Southern and Western Mindanao	977.53	13.94	2.44	993.91

SOURCE: IBRD, vol. III, annex 7, Table 5 (converted to metric tons).

^aOthers--are Sweet Corn, Glutinous Corn and Popcorn.

^bNot exact due to rounding off.

TABLE 23
CORN IMPORTS
(in thousand metric tons)

Year	
1961	5.460
1965	.359
1970	.065
1971	39.190
1972	90.000
1973	91.000
1974	91.300

SOURCE: IBRD, vol. IV, annex 15.

TABLE 24
CONSUMPTION OF CORN BY SECTOR
(in thousand metric tons)

Year	Food	Feed	Other ^a	Total
1970	1,600	300	108	2,008
1971	1,650	305	50	2,005
1972	1,700	290	23	2,013
1973	1,730	250	- 59	1,921
1974	1,780	300	280	2,380

SOURCE: The World Bank, The Philippines--Priorities and Prospects for Development, Washington, D.C., 1976, p. 140; From NEDA, The Philippine Food

^aOther consists of corn used by the starch, glucose and other related industries.

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TABLE 25
GROWTH RATES AND PERIODICAL CHANGES IN CORN
PRODUCTION, BY REGION, 1954-72
(in percent)

Region	Production			
	Annual Growth Rate 1954-72	Average Changes		
		1954-57 to 1962-65	1962-65 to 1969-72	1954-57 to 1969-72
Philippines	5.1	53.4	50.8	131.3
Ilocos	3.9	- 37.0	59.6	57.1
Cagayan Valley	5.6	20.1	77.4	106.7
Central Luzon	11.7	- 23.4	59.1	21.9
Southern Tagalog	5.6	53.1	81.6	178.1
Bicol	3.9	27.0	66.0	110.9
Eastern Visayas	- 0.2	- 8.0	6.0	- 2.0
Western Visayas	0.4	10.6	24.0	37.2
Northern and Eastern Mindanao	2.7	65.7	6.9	77.2
Southern and Western Mindanao	10.9	170.3	73.1	367.5

SOURCE: Papers and Proceedings--Evaluation Seminar-Workshop on Maagap (Project Adam), Bureau of Agricultural Economics, Quezon City, October, 1976, p. 165.

TABLE 25-Continued

Area				Yield			
Annual Growth Rate 1954-72	Average Changes			Annual Growth Rate 1954-72	Average Changes		
	1954-57 to 1962-65	1962-65 to 1969-72	1954-57 to 1969-72		1954-57 to 1962-65	1962-65 to 1969-72	1954-57 to 1969-72
4.2	30.4	22.0	59.1	0.9	17.6	23.6	45.4
3.9	- 3.6	11.6	45.0	nil	-34.8	43.1	8.0
5.4	18.3	72.7	99.8	0.4	1.5	2.8	3.5
3.3	- 17.3	33.1	10.1	0.9	- 7.0	19.6	10.7
4.7	10.3	57.9	74.2	0.7	38.9	14.9	59.6
4.3	17.8	44.8	70.6	-0.3	7.7	14.6	23.6
1.3	- 7.8	-17.5	-23.9	-0.2	0.2	78.5	28.8
1.1	- 1.6	9.9	8.1	0.9	12.4	12.8	26.9
3.2	38.9	11.4	54.8	0.4	19.3	- 4.0	14.5
9.4	143.4	35.4	229.5	1.4	10.9	27.9	41.9

TABLE 26
CORN AREA AND YIELD, BY REGION

Region	1960		1965		1970	
	Area	Yield	Area	Yield	Area	Yield
Ilocos	21.2	513	16.5	399	20.9	478
Cagayan Valley	128.6	678	121.8	929	201.1	1,000
Central Luzon	71.5	678	58.6	573	79.3	529
Southern Tagalog	80.5	673	93.3	849	161.4	929
Bicol	76.3	627	70.2	627	101.5	670
Western Visayas	302.7	496	275.2	570	304.0	632
Eastern Visayas	446.0	524	367.6	410	333.2	546
Northern and Eastern Mindanao	269.3	695	223.7	713	260.7	648
Southern and Western Mindanao	449.3	770	832.2	827	957.5	1,038

SOURCE: IBRD, Volume III, Annex 3, Parts of Tables 2 and 3.

TABLE 27
SORGHUM, AREA, PRODUCTION YIELD BY REGION
FOR THE YEAR 1970-71

Region	Area (in hectares)	Production (in metric tons)	Yield (in metric tons per hectare)
Philippines	7,043	15,155	2.15
Ilocos	68	101	1.49
Cagayan Valley	88	150	1.79
Central Luzon	301	333	1.49
Southern Tagalog	165	274	1.66
Bicol	39	39	1.00
Western Visayas	32	18	.545
Eastern Visayas	---	---	---
Northern and Eastern Mindanao	---	---	---
Southern and Western Mindanao	6,350	14,240	2.25

SOURCE: IBRD, Volume III, Annex 7, Table 13.

TABLE 28
AVERAGE ANNUAL YIELDS OF PALAY (PADDY RICE) AND CORN
FOR SELECTED ASIAN COUNTRIES
(in metric tons per hectare)

	1961-65	1966-70	1971-73
<u>Palay</u>			
Philippines	1.26	1.51	1.53
Asia	2.05	2.17	2.32
Indonesia	1.76	1.91	2.30
Thailand	1.78	1.81	1.90
Republic of Korea	4.11	4.31	4.68
Red China	2.78	2.93	3.15
<u>Corn</u>			
Philippines	.66	.80	.82
Asia	1.65	1.99	1.83
Indonesia	1.00	.95	1.01
Thailand	1.93	2.09	1.80
India	.99	1.07	1.04
Red China	2.48	2.69	2.80

SOURCE: Food and Agricultural Yearbook, 1972 and 1973 by Food and Agricultural Organization, Rome.

CHAPTER VI

MARKETING OF RICE AND CORN

"Marketing is the performance of all business activities involved in the flow of goods and services from the point of initial production until they are in the hands of the ultimate consumer."³⁶ This definition shall be used for the purposes of studying palay/rice and corn marketing in the Philippines.

A matrix was constructed to analyze the flow of palay/rice from the producer to the ultimate consumer. Information was not available to construct such a matrix for either corn or sorghum marketing.

In this section there will be a definition and description of each of the posts of the matrix followed by an analysis of the marketing channels described in the matrix. There will be a discussion of the transportation system utilized in palay/rice marketing and an analysis of some of the problems in the system.

The breakdown of the palay/rice marketing posts is drawn principally from the research done by Mears in his definitive study entitled Rice Economy of the Philippines. Each post and its definition in the matrix, except posts 8, 9, 14 and 16, is drawn from his book. These other posts were not in existence at the time of the writing of his book. How each new post fits into the marketing system was determined principally from the IBRD four-volume study Agricultural Sector of the Philippines, from Gugsby's Cooperative

³⁶Richard Kohls, Marketing of Agricultural Products (New York: MacMillan Co., 1967), p. 9.

Rice Marketing System Study, the Grains Industry Development Plan and NGA Program 1975-76.

A) Palay/Rice Marketing

Description of Matrix Posts

1) Producers

After final post harvest activities are completed, the palay is ready to be marketed. For the purposes of this matrix, all palay production by any type of producer is included in this post.

2) Local Stores

These are small stores located in the barrios near the producers. The Filipinos call them sari-sari stores. Business is conducted on a full service basis in these stores. All local stores are by definition for this matrix in the rural areas.

3) Kiskisan Mills

These rice mills primarily serve producers in rural areas and operate solely on a localized basis. They serve a dual role as a processor and as a local assembler of palay.

Milling of palay involves the removal of the husk and outer bran layer to produce a polished rice acceptable in the market. This operation can involve several separate stages some of which may be combined or be even absent in the simpler milling processes.

Kiskisan mills are small and employ a relatively simple milling process. These features have attracted nearly 80 percent of the small palay producers. Storage facilities are seldom available, so the newly milled rice is sold

immediately. Many different types of kiskisan mills are manufactured with consideration for either fixed or mobile operations. The most predominant type utilizes the Engleberg steel huller.

The capacity of most kiskisan mills is between 250 to 400 kg per hour. It hulls and polishes or whitens the rice in one simple combined operation. "Its operating principle requires the application of excessive pressure and friction on the grain producing low total rice recovery, high amount of broken grains and low quality bran because of the rice hulls ad mixture."³⁷ An NGA study showed that the recovery rate for some kiskisan mills was around 57 percent. Mears, in his study, stated that nationally the average recovery rate was between 59 to 63 percent.

Many of the larger cono or rubber roller type mills (see Post #10 for information on these types of mills) require a certain minimum quantity of palay before they will mill it. Many of the producers do not even produce that minimum quantity so they are shut out from utilizing the larger, more efficient mills. Also, producers that can meet the minimum quantity of milling often do not have the means themselves to transport the palay to the mills. These factors make the use of local kiskisan mills much more convenient. Due to poor communication, producers also lack the information as to when a cono or rubber roller miller might want shipments of palay for milling.

The Filipino palay producer is very tradition bound. He deals with the kiskisan millers because he always has done so. Often the kiskisan millers are friends of long standing from the local barrio. Many palay producers have been brought up eating rice milled only by kiskisan mills. They have developed a strong taste preference for rice milled in the kiskisans. They

³⁷The Philippines Recommends for Rice-1977, Los Banos, Philippine Council for Agriculture and Resources Research, 1977, p. 89.

do not like as much the taste of palay milled in the cono or rubber roller mills. In complete contrast, the people who reside in the urban areas strongly dislike the taste of milled rice from the kiskisan mills. Kiskisan milled rice can therefore be utilized in urban areas only when severe shortages exist.³⁸

So due to these four principal reasons: 1) small milling requirements, 2) limited transportation and communication, 3) tradition, 4) taste preference, the popularity of the kiskisan mills will continue.

4) Local Consumers

These are the non-palay producing residents of rural areas. These individuals for the most part reside in the barrios. Most of these local consumers are employed in other sectors of agriculture such as sugar, coconut production, etc.

5) Middlemen and Agents

The middlemen are self-employed and the agents which are directly employed by the mills/warehouses, or by the wholesalers both large and small. These middlemen are known in the Philippines as compradors. They deal only in the marketing of palay to either wholesalers or directly to the cono or rubber roller type of mills. They themselves do not own any long term storage facilities.

6) Landlords

They receive a share of the production each year from the tenants. They also receive another share of the production because they are often a major source of credit for tenants who use the money to purchase needed inputs.

³⁸For more information see Mears, Chapter 4, Section 4 on consumer tastes and preferences, p. 74.

7) Farmers Cooperative Marketing Association--Facomas

They are private producer owned marketing cooperatives. They are the building blocks of the GRAMACOP (see Chapter IV, Section A, #63 for more information). They serve as a local assembler of palay. After assembling the palay they ship it to the cono or rubber roller mills for milling, a few of which they own. After receiving back the milled rice they ship it to the GRAMACOP.

8) Samahang Nayon

The SN's are producer owned cooperatives. They are the building blocks of the Area Marketing cooperatives (see Chapter IV, Section A, #60 for more information). They serve as local assemblers of palay. After assembling the palay they either ship it to a private cono or rubber roller mill for milling or ship it directly to an AMC. After receiving the milled rice back they ship it to the AMC or in some circumstances to the small palay/rice wholesalers and retailers.

9) Area Marketing Cooperatives

The AMC's are producer cooperatives which are the building blocks of the CMSP (see Chapter IV, Section A, #59 for more information). The AMC either receives palay or milled rice from the SN's. If it is still palay, the AMC's send it to either the cono or rubber rolled mills, a few of which they own, for milling. After assembling, the milled rice is then shipped to the CMSP.

10) Mills and Warehouses

For the purposes of this matrix, this post is defined as the large mills and warehouses located at transit markets in the principal market towns of the producing areas. These mills and warehouses are tandem operations. "At

the mills and warehouses large quantities of palay are accumulated, stored and processed before sale within the region and for shipment to major consumer centers at terminal markets."³⁹

There are two types of large mills in the Philippines. These are: 1) cono and 2) rubber roller. Approximately 20 percent of the mills in the Philippines are of the cono variety and less than 1 percent of the mills are the rubber roller type. Although these are classified as large mills, this is only in comparison with the kiskisan mills. In 1967, for example, only about one-third of them employed more than five people.

The cono mill processes palay in different stages. The cono mill usually contains a cleaner, disk sheller or huller, palay separator, one to three cone type polishers and other related parts. An average cono mill has a capacity that ranges anywhere from one-fourth to 4 tons per hour. The cono mill removes the hulls and the bran in different machines. Most of the commercial bulk milling in the country is done by cono mills. The cono mills have a higher recovery rate. Mears states that the national average recovery rate for cono mills is between 66 to 69 percent.

The rubber roller mill utilizes the most advanced technology of the three types of mills. The major improvement being that palay is husked as it passes between the surface of the two rubber rollers rotating at different speeds and in opposite directions. The recovery rate of rubber rolled mills is according to the NGA and Mears as being between 70 to 71 percent.

As with the kiskisan mills, the bulk of these two types of mills are privately owned. In 1971, 80 percent of these two types of mills were privately owned. The rest being NGA and cooperative owned.

³⁹Mears, p. 94.

Each cono or rubber rolled miller owns a large warehouse. The stored grain is usually in the form of palay because of its superior storing qualities. "Under usual Philippine conditions palay can be stored successfully over a year if dried to 14 percent moisture content."⁴⁰ However, according to Mears and the IBRD study, palay is generally never stored longer than a couple of months.

These warehouses are called bodegas in the Philippines. Most of these buildings are constructed with wooden or iron framework with concrete floors. The walls are made of corrugated iron sheets or concrete blocks with louver type ventilators. Most of the palay is stored by these millers and warehouse owners in gunny sacks on wooden pallets. There is very little bulk storage in bins and silos.

11) Palay and Rice Wholesalers

There is another group of middlemen located in the transit market away from the local assembly market of palay. For purposes of the matrix, they are being called Palay and Rice Wholesalers. These businessmen purchase palay from producers, the middleman in the local markets, and from the landlords. They sell the palay to the mills/warehouses outright or they send it there to be milled. They receive back their milled rice and then sell it to the viajeros or to the retailers in the terminal markets. They, too, own many warehouses. Their warehouses are similar in construction to those the mill owners operate.

12) Small Palay and Rice Wholesalers and Retailers

These wholesalers and retailers operate in the same manner as the palay

⁴⁰Mears, p. 118.

and rice wholesalers of post #11 with one exception. Because of their small size they are also retailers because they do not deal in large enough quantities of milled rice to be an acceptable source for the wholesalers and retailers in the terminal markets.

They do own some warehouses. They send the palay they purchase from various outlets to the cono or rubber mills for sale as palay or they receive back as milled rice for sale.

13) Viajeros

The viajeros are variants of the rice palay wholesaler. They are merchant truckers who can be characterized as operating on a relatively small scale, having great mobility (due to their trucks) and lacking any warehousing or milling facilities of their own. "Viajeros, in the majority, are essentially the agents, directly or indirectly, of a well-organized, heavily financed system of rice millers located in deficit palay producing areas who have no other option but to 'pirate' surplus producing areas for their supply of palay."⁴¹

Viajeros operate on commissions from the millers which are based on the mileage and loaded capacity of their trucks. The viajeros work in four or five man teams using 10 to 12 ton trucks. Some viajeros are licensed with the NGA although this author is unsure if a license is required of all.

14) National Grains Authority--Agents, Millers, Warehouses

The NGA has been discussed in detail in Chapter IV of this paper. No further elaboration here will be made on it.

⁴¹Reid Grigsby, et al., Cooperative Rice Marketing System Study of the Philippines, Agricultural Cooperative Development International, Washington, D.C., 1975, p. 28.

NGA agents purchase palay from the producers. The NGA operates its own mills and warehouses. The NGA assists the SN's, AMC, and CMSP as they market their palay or milled rice.

15) Grain Marketing Cooperative of the Philippines

The FACOMA's are the building blocks of the GRAMACOP (see Chapter IV, Section A, #62 for more information). The GRAMACOP only markets milled rice.

16) Cooperative Marketing System of the Philippines

The AMC's are the building blocks of the CMSP (see Chapter IV, Section A, #58 for more information). The CMSP only markets milled rice.

17) Imports

Imports of milled rice have regularly been made. The NGA is the only legal importer of milled rice in the Philippines. Thailand and Burma are the two leading exporters of milled rice to the Philippines.

18) Local Wholesalers

These are the wholesalers located in the terminal markets. They are distinguished frequently from those in the transit market by the fact that they deal only in milled rice and not in palay. The local wholesalers in Manila run quite large operations with many of them vertically integrated backwards to the transit markets. Some of these wholesalers own their own mills and warehouses.

19) Small Local Wholesalers and Retailers

These businessmen are located in the terminal markets also. They perform the same functions of posts 18 and 20.

20) Retailers

Throughout all the terminal markets there are four basic types of retailers. These are: 1) supermarkets, 2) sari-sari stores, 3) public markets, and 4) roadside markets.

Supermarkets are a type of retail store which is still relatively new and of growing importance in the major urban centers. These supermarkets are modeled to a large degree like the ones here in our country.

In the terminal markets, as in the barrios, there exist sari-sari stores. They handle almost solely non-perishable goods. In the major urban areas a great deal of the milled rice is still marketed through the sari-sari stores.

Public markets are those located in the major urban areas. . "Public market retailers have long been the major source of food and many other products for consumers. They are to be found almost everywhere that significant numbers of people live."⁴² These markets are open every day of the week. Even many smaller cities, municipalities and barrios may have them.

Roadside markets operate alongside heavily traveled highways in producing areas or near important urban areas. The products sold are usually purchased from local farmers or from buyers of farm produce located in some other area.

21) Consumers

These are the people who purchase and consume the milled rice in the major transit and terminal markets.

22) Government Institutions

Milled rice is directly purchased by such government institutions as the Army, Air Force, etc.

⁴²Darrah and Tiongsin, p. 114.

B) Analysis Palay/Rice Marketing System

This analysis will center on "who does what" or the institutional approach to the analysis of marketing. A second matrix, entitled Palay/Rice Marketing Matrix, has been constructed to show the interrelationships among the various agencies.

There presently exist two channels for palay/rice marketing in the Philippines. These are: 1) the private channel and 2) the government channel. The private channel markets the bulk of the palay/rice in the country. This channel is made up almost entirely of small, competitive business units. No one or group of businesses dominates the private channel.

The government channel consists entirely of the NGA. It serves as both a regulatory agency and as a marketer of palay/rice. By law no more than 10 percent of the total crop in any one year can be marketed by the NGA. So far, only a fraction of that amount has been handled by the NGA. The NGA in its regulatory capacity is supposed to enforce the mandatory minimum floor price for palay. However, NGA has stated in its Grain Industry Development Plan that the floor price is ineffectually enforced and usually not received by most of the small producers.

Palay/rice distribution leads through three general levels of markets. These are: 1) local assembly, 2) transit, and 3) terminal markets. This distinction is made because of the function each performs and because of the geographical distance each is located from the producer.

The local assembly market refers to the general area where the crop is produced, field processed and collected as palay (after storage) for immediate or future shipment to transit and terminal market areas. "Research over the years suggests that the small farmer, on the basis of convenience, sentiment, prior contract and economy, is apt to dispose of his palay in one sale

to a local middleman or nearby (kiskisan) miller. The choice of outlets by farmers appears to have changed only slightly during the past 40 years although different sample frames and survey procedures make comparisons at best suggestive."⁴³ Posts 1 through 8 and 14 are institutions throughout the country which comprise the local assembly market. In some parts of the Philippines, posts 9, 10 and 12 are also part of this local assembly market.

Transit markets in the Philippines are situated in the main market towns of producing areas. Here large quantities of palay are accumulated, stored and processed before sale within the region and shipment to major consuming areas at terminal markets. Three principal transit markets are Carbanatuan in Central Luzon, Iloilo City in Western Visayas and Cotabato City in Southern Mindanao. Posts 9-14 are institutions throughout the Philippines which make up the transit market. Depending upon the region or province, posts 15 and 16 can sometimes be considered part of the transit market.

Terminal markets in this paper are referred to as those markets in large cities or areas of consumer concentration which are deficient in production for their own needs. Manila is the principal terminal market. The cities of Cebu in Central Visayas, Zamboanga del Sur in Western Mindanao are also important terminal markets. Posts 14-22 are in general the institutions which make up the terminal markets.

1) Producers--(1,1) - (1,8), (1,10) - (1,14)

- (a) (1,2)--A substantial portion of the palay is sold by producers to local stores. There are two reasons: 1) convenient outlet and

⁴³Mears, pp. 91-92.

- 2) the local stores loaned goods during the year as an advance on a certain amount of the crop.
- (b) (1,3)--The producer usually delivers his palay to be milled by the kiskisan mill on a custom basis. The payment for this service is usually a portion of the milled palay.
 - (c) (1,4)--A custom still practiced in the Philippines is for producers to sell palay directly to nearby residents.
 - (d) (1,5), (1,10) - (1,14)--Palay is purchased by various businessmen, cooperatives and the NGA directly from the producers by representatives from these groups. A substantial portion of the palay grown by farmers are already committed to the middlemen, agents, millers and palay wholesalers each year. To assure themselves of an adequate supply of palay they make loans to producers in return for a certain percentage of the crop.
 - (e) (1,6)--Those producers who farm as tenants are obligated to give a portion of their crop each year to the landlord. This portion can vary greatly for the landlords are often the most important source of credit for the tenants. When loans are made to pay for some of the inputs, an increased portion of the crop is obligated to the landlord.
 - (f) (1,7) and (1,8)--In the few provinces where these cooperatives are viable entities, producer members sell their palay to them.
- 2) Local Stores--(2,1) - (2,4), (2,10)
- (a) (2,1)--The local stores through purchases and loan repayments obtain palay from the producers.
 - (b) (2,3) and (2,10)--Local stores take the palay usually to the

kiskisan mills but some take it to the cono or rubber roller mills to be milled. The kiskisan mills are chosen for three reasons: 1) tradition, 2) transportation difficulties, and 3) taste preferences of their customers. The local stores also purchase milled rice from the kiskisan mills which they in turn sell to local customers.

(c) (2,4)--The local stores sell milled rice to non-palay producers of the local barrio and surrounding villages.

3) Kiskisan Mills--(3,1) - (3,4)

(a) (3,1)--These mills custom mill the palay for local palay producers. The mobile kiskisan mills generally operate only in a small geographical area.

(b) (3,2) and (3,4)--The kiskisan mills lack storage facilities so when they receive payment in kind for their services they immediately sell it to either local consumers or to the local sari-sari stores.

4) Local Consumers--(4,1) - (4,4)

(a) (4,1)--Local consumers obtain palay through purchases from producers.

(b) (4,2)--Milled rice is purchased by them from the sari-sari stores.

(c) (4,3)--The palay which is purchased from the producers is taken to the kiskisan mills to be milled. Local consumers also purchase milled rice from the kiskisan mills.

5) Middlemen and Agents--(5,1), (5,5), (5,10) - (5,13)

(a) (5,1)--Middlemen and agents acting directly or indirectly for the mills, palay wholesalers, small palay wholesalers and retailers and the viajeros purchase rice from the producers.

(b) (5,10) - (5,13)--Depending upon whom they are working for or who offers them the best prices, these middlemen and agents compile many small quantities of palay into a large supply for immediate sale.

6) Landlords--(6,1), (6,6), (6,10) - (6,12)

(a) (6,1)--The landlords receive a portion of the crop harvested by the tenants of their land. The size of this portion depends upon if any production type loans were also made to the tenant.

(b) (6,10) - (6,12)--The landlords sell the palay to any of these three groups. They own storage facilities and because of the market information and position they have, they receive higher prices for their palay than do the producers.

7) Facomas--(7,1), (7,7), (7,10), (7,12), (7,15)

(a) (7,1)--The Facomas purchase the palay from the members of their cooperative.

(b) (7,10)--The Facomas, after assembling the palay, ship it to be milled in the cono or rubber roller mills which they own or to private ones.

(c) (7,12), (7,15)--The Facomas either ship the milled rice to the GRAMACOP or they sell it to the small palay/rice wholesalers/retailers.

8) Samahang Nayan--(8,1), (8,8) - (8,10), (8,12), (8,14)

(a) (8,1)--The SN's purchase palay from the members of their cooperative.

(b) (8,10) and (8,12)--The SN's take the palay to the cono or rubber

roller mills to be milled. The milled rice is then shipped to the AMC's. In some cases the SN's ship palay to the AMC's.

- (c) (8,14)--By law, the NGA is required to aid the CMSP-AMC's-SN's in the marketing of their palay/rice. So often the NGA might aid them in some manner, it all depends upon the circumstance.

9) Area Marketing Cooperatives--(9,8) - (1,10), (9,12), (9,14), (9,16)

- (a) (9,8)--The AMC's receive either palay or milled rice from the SN's.
- (b) (9,10)--If they receive palay from the SN's, the AMC take the palay to be milled in the cono or rubber roller mills which they own or to private ones.
- (c) (9,12)--In some situations, the palay or milled rice is sold to small palay rice wholesalers and retailers. This occurs due to operating problems in the CMSP.
- (d) (9,14)--Sometimes the NGA aids the AMC in its marketing of the palay or rice.
- (e) (9,16)--The AMC sells its milled rice to the CMSP. Most of the rice is distributed to it.

10) Mills and Warehouses--(10,1), (10,2), (10,5) - (10,13), (10,18) - (10,22)

- (a) (10,1) and (10,2)--The mills and warehouses purchase palay directly from some of the large producers. They mill the palay for the fee and return it as milled rice. The mills and warehouses also enter into the local assembly market through the sale of milled rice to the local stores.
- (b) (10,5) and (10,6)--These mills and warehouses purchase palay from these groups. Some of the mills have agents working full time for

them while others buy from middlemen who are independent businessmen.

- (c) (10,7) - (10,9)--These cooperatives often use the milling facilities for the palay they market.
- (d) (10,11) and (10,12)--The mills and warehouses perform two functions for the palay/rice wholesalers and small palay/rice wholesalers and retailers. They either purchase palay from them or they mill palay for them which the wholesalers and retailers then sell elsewhere.
- (e) (10,13)--The viajeros either work directly for the mills and warehouses or indirectly by the fact they sell palay solely to them as a group. The viajeros who work for the mills and warehouses, too, take milled rice from the mills and warehouses and distribute it to the retailers.
- (f) (10,18) - (10,22)--The mills and warehouses sell milled rice directly to each of these groups. The vast majority of this rice is sold to the local wholesalers of the terminal markets.

11) Palay and Rice Wholesalers--(11,1), (11,5), (11,6), (11,10) - (11,13), (11,20)

- (a) (11,1), (11,5), (11,6), (11,13)--Palay and rice wholesalers purchase palay from these groups.
- (b) (11,10)--The palay and rice wholesalers send their palay to the cono or rubber roller mills to be milled.
- (c) (11,12) and (11,20)--Milled rice is sold by the palay and rice wholesalers to these two groups.

12) Small Palay/Rice Wholesalers and Retailers--(12,1), (12,7), (12,8), (12,10), (12,11), (12,12), (12,21)

- (a) (12,1), (12,7), (12,8)--Palay is purchased from these groups.
- (b) (12,10)--The purchased palay is sent to the privately owned cono or rubber roller mills to be milled.
- (c) (12,11)--Either palay or milled rice is purchased from the palay/rice wholesalers.
- (d) (12,21)--Milled rice is sold directly to consumers.

13) Viajeros--(13,1), (13,5) (13,10) (13,11), (13,13), (13,19), (13,20)

- (a) (13,1) and (13,5)--Palay is purchased by the viajeros from the producers and middlemen. Most of the palay which they purchase is from the middlemen.
- (b) (13,10) and (13,11)--Whether they are employed by the mills or not, all of the viajeros' palay is brought to the mills/warehouses or to the large palay/rice wholesalers.
- (c) (13,19) and (13,20)--The milled rice the viajeros obtain from the mills/warehouses or large palay/rice wholesalers is then brought to the small wholesalers retailers or retailers by them for final disposition.

14) National Grains Authority--Agents/Mills/Warehouses--(14,1), (14,8), (14,9), (14,14), (14,16), (14,17), (14,19), (14,20), (14,22)

- (a) (14,1)--NGA agents purchase palay directly from the producers.
- (b) (14,8), (14,9), (14,6)--The NGA is required by law to assist those cooperatives in the marketing of palay and milled rice. The degree to which they help out at each level of cooperative activity depends upon the particular circumstances.

(c) (14,17)--All imports of milled rice are made through the NGA.

(d) (14,18), (14,19), (14,20), (14,22)--NGA milled rice is sold to these institutions. The NGA is required by law not to sell their milled rice at a loss which could pose problems in the sale of their milled rice.

15) Grain Marketing Cooperative of the Philippines--(15,7), (15,15), (15,18)-(15,20)

(a) (15,7)--The GRAMACOP receives milled rice from the FACOMAS.

(b) (15,18) - (15,20)--The GRAMACOP distributes the milled rice to these institutions.

16) Cooperative Marketing System of the Philippines--(16,9), (16,14), (16,16), (16,18) - (16,20)

(a) (16,9)--The CMSP receives its milled rice from the AMC's.

(b) (16,14)--The CMSP is aided when necessary by the NGA.

(c) (16,18) - (16,20)--The CMSP distributes its milled rice to these institutions.

17) Imports--(17,14), (17,17)

All imported milled rice is marketed through the NGA.

18) Local Wholesalers--(18,10), (18,14), (18,15), (18,16), (18,18) - (18,20)

(a) (18,10), (18,14), (18,15), (18,16)--The local wholesalers receive milled rice from these institutions.

(b) (18,19) and (18,20)--The local wholesalers sell milled rice to these institutions.

19) Small Wholesalers and Retailers--(19,10), (19,13) - (19,16), (19,18) - (19,21)

(a) (19,10), (19,13) - (19,16), (19,18)--The small wholesalers and retailers receive milled rice from these institutions.

(b) (19,20) and (19,21)--The small wholesalers and retailers sell milled rice to these institutions.

20) Retailers--(20,10), (20,13) - (20,16), (20,18) - (20,21)

(a) (20,10), (20,13) - (20,16), (20,18), (20,19)--The retailers receive milled rice from these institutions.

(b) (20,21)--The retailers sell milled rice to the consumers.

21) Consumers--(21,10), (21,12), (21,19) - (21,21)

Consumers purchase milled rice directly from these institutions.

22) Government Institutions--(22,10), (22,14)

Government institutions purchase milled rice directly from these institutions.

The analysis of the palay/rice marketing system has been only descriptive in nature because data showing information on volume and flow is not available. Only approximations of the volume handled by each marketing institution have been made. Mears believes that approximately 40 percent of total annual palay production remains in the local assembly market. During the 1960's the IBRD study concluded that this marketed surplus increased almost 80 percent, or from approximately 47.5 to 60.5 percent of total production.

The remaining 60 percent of the palay is shipped to the transit market, then milled and sent as milled rice to the terminal markets. Over half of

the palay is handled by the mills and warehouses according to Mears and the IBRD study. Yet neither of these studies would guess how much of the annual production is handled by the mills and warehouses in the transit markets. According to the NGA it has yet to market more than 7 percent of the palay in any one year.

In the terminal markets there operate tens of thousands of wholesalers and retailers. Many of these marketing institutions are integrated vertically backwards. Yet their "resulting market control is insufficient to provide a marketwide impact at any level."⁴⁴

The NGA has established a strict standard for the grading of palay and rice within their varietal classifications. However, "although strict grading procedures are laid down there is no evidence that these are followed by other buyers."⁴⁵

Despite the palay/rice marketing system shortcomings, both the IBRD study and Mears believe that it is fairly efficient. Efficient being defined as marketing the palay/rice near the lowest possible price. "Available evidence suggests that product market organization approaches that of a competitive model and that its economic efficiency may be relatively high."⁴⁶

The palay/rice is transported on the surface through the marketing system by practically every available means. As previously noted, due to its topography, transportation is often difficult in the Philippines. This situation is greatly aggravated by the lack of a quality infrastructure to facilitate transportation.

⁴⁴Mears, p. 113.

⁴⁵IBRD, vol. III, annex 10, p. 13.

⁴⁶Mears, p. 14.

The highway infrastructure is lacking in paved roads of quality. The Philippine National Railroad is in a state of general disrepair. Most sea-ports used in transporting palay are inadequate and poorly maintained states Mears.

Short distance transport on and off farms ranges from human porters with carrying poles or baskets to carabao-drawn sleds, carts or tricycles or jeepney. Trucks, however, are the most important means of long distance transport with less than 5 percent of the total production moving on large ships and less than 1 percent by rail. In theory, common carrier truck and ship rates are regulated by the Public Service Commission of the Philippines. In actuality, however, rates vary appreciably from official ones.

Finally, the ownership of palay/rice changes hands often during the marketing system. The palay/rice can easily exchange ownership seven times as it passes through the system. For example, it can go from (1,1) to (1,5) to (1,11) to (1,12) to (1,13) to (1,19) to (1,20) to (1,21).

Palay/rice flows from surplus to deficit areas. This rice flow map shows its movement throughout the Philippines (see Map 4).

C) Problems in Marketing Palay/Rice

There are two serious problems in the marketing system of palay/rice in the Philippines. They are poor storage and milling practices which result in unnecessary losses.

These avoidable losses represent a significant portion of the total palay produced in the country. Estimates of total palay production lost to shoddy storage practices range from 5 to 10 percent of total production.⁴⁷

⁴⁷Mears, p. 239.

The low recovery rates obtained by the kiskisan and cono mills is another major source of avoidable loss perhaps totaling as high as 15 percent of total annual production.

One study concluded that, "Today's private Cono rice milling sector--the basic commercial processors of marketable milled rice for Manila and all other deficit areas--is a national tragedy. The abuse in handling farmers' palay (regardless of quality); the complete lack of concern for the health and safety of millions of Filipino consumers they are supposed to serve; the high percentage of rat excrete, bird droppings, sand, stones and offensive odors in milled rice is unacceptable by any standards of sanitation in developing or developed countries."⁴⁸

If these through-put losses could be largely eliminated, then the Philippines would be self-sufficient in palay production. A drain on foreign exchange earnings could also be eliminated. The NGA is the governmental agency working to reduce these throughput losses by regulatory enforcement, research, and conducting an educational institute to train millers and warehouse owners to operate more efficiently.

D) Corn Marketing

There has yet to be made a thorough comprehensive study of the corn marketing system of the Philippines, but one is presently being conducted by Librero. Librero's Integrated Study on the Economics of Corn is presently the most comprehensive work in this subject area. This situation has existed for three probable reasons: 1) relative unimportance of corn production in comparison to palay production, 2) the fact that much corn

⁴⁸Cooperative Rice Marketing System Study, p. 28.

is grown in the more undeveloped parts of the Philippines, and 3) much of the corn is grown in the Muslem areas of Mindanao, where there has been much religious and ethnic discrimination towards this minority.

The marketing system of corn is quite similar to that of palay. Both private and government channels exist through which to market corn. It appears that three markets exist also for corn production. These are: 1) local assembly markets, 2) transit markets, and 3) terminal markets.

The millers and wholesalers are the dominant institutions in the transit markets for corn marketing. As in palay marketing, there seems to exist an extensive network of middlemen and agents who assemble corn in the local markets for sale to the millers and wholesalers.

Both Kiskisan and cono type corn mills are employed for milling purposes. These are comparable to their counterparts in palay milling. The kiskisan mills are employed for custom milling by the small producers. The cono mills are used for the corn product. That represents the marketable surplus of the corn producers to terminal markets. A study found that "kiskisan millers channelled 55 percent of their product to retailers of the same province while cono millers sold more than half of their product to other provinces within the same region."⁴⁹

Corn is marketed in the form of grain or grits almost solely within the Mindanao and Visayas regions of the Philippines. The terminal markets are located here. These regions are where the corn eating population resides and where the animal and starch manufacturing industries are located. The animal feed and starch manufacturers make the largest unit purchases of corn and thus exercise the most influence in the terminal markets.

⁴⁹Integrated Study on the Economics of Corn, p. 14.

Many of the same problems plague the corn marketing institution as they do the palay marketing institutions. These are poor storage, milling and grading practices. The modes of transportation employed by corn marketers are the same as those of palay marketers, and encounter the same difficulties. Grading standards have been established by the NGA. Again as with palay, they are not widely observed or enforced.

MAP 4

RICE FLOW MAP

CLASSIFICATION OF PROVINCES, BY GEOGRAPHICAL REGIONS, 1972

I. CITY OF MANILA

II. ILOCOS

1. Abra
2. Ilocos Norte
3. Ilocos Sur
4. La Union
5. Mountain Province
6. Benguet
7. Ifugao
8. Kalinga-Apayao

III. CAGAYAN VALLEY

9. Batanes
10. Cagayan
11. Isabela
12. Nueva Vizcaya

IV. CENTRAL LUZON

13. Bataan
14. Bulacan
15. Nueva Ecija
16. Pampanga
17. Pangasinan
18. Tarlac
19. Zambales

V. SOUTHERN TAGALOG

20. Batangas
21. Cavite
22. Laguna
23. Marikina
24. Mindoro Occidental
25. Mindoro Oriental
26. Palawan
27. Quezon
28. Rizal

VI. BICOL

29. Albay
30. Camarines Norte
31. Camarines Sur
32. Catanduanes
33. Masbate
34. Sorsogon

VII. WESTERN VISAYAS

35. Aklan
36. Antique
37. Iloilo
38. Capiz
39. Negros Occidental
40. Romblon

VIII. EASTERN VISAYAS

41. Bohol
42. Cebu
43. Northern Leyte
44. Southern Leyte
45. Eastern Samar
46. Negros Oriental
47. Northern Samar
48. Western Samar

IX. NORTHERN & EASTERN MINDANAO

49. Agusan del Norte
50. Bukidnon
51. Lanao del Norte
52. Lanao del Sur
53. Misamis Occidental
54. Misamis Oriental
55. Surigao del Norte
56. Surigao del Sur
57. Agusan del Sur
58. Compostela

X. SOUTHERN & WESTERN MINDANAO

59. Cotabato
60. Davao del Norte
61. Zamboanga del Norte
62. Zamboanga del Sur
63. Sulu
64. South Cotabato
65. Davao del Sur
66. Davao Oriental

*Not shown in map.

PHILIPPINES RICE FLOW (1968)

Scale of flow (in Cavans Palay 45 kgs)

- Less than - 500,000
- 500,000 - 2,000,000
- 2,000,000 - 3,500,000
- 3,500,000 - 5,000,000
- 5,000,000 - Over

- District boundaries
- Regional boundaries
- International boundaries

50 0 50 100 150 200
Kilometers

Pacific
Ocean

South China
Sea

Sulu Sea

Celebes Sea



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DESCRIPTION AND ANALYSIS OF PHILIPPINE
GRAIN MARKETING SYSTEM

by

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ABSTRACT

This paper presents a description and analysis of the Philippine grain marketing system and of the government agencies and programs which directly affect its agriculture. It is organized into six major sections: 1) Introduction, 2) General Overview, 3) Agricultural Overview, 4) Government Agencies and Programs, 5) Analysis of Production Practices and 6) Marketing of Rice and Corn.

The Philippines--the country, the economy and the agricultural sector--compose the first three chapters. A matrix with an accompanying description and analysis makes up Chapter IV. In Chapter V the description of grain production practices is located. Another matrix was constructed to describe and analyze the marketing of palay/rice in Chapter VI as well as a description of corn marketing.